4.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential adverse impacts of the No-Action and Action Alternatives for each impact topic. More detailed information for each topic area is presented in technical reports filed with WETA. For the Action Alternative, impacts are described for short-term construction activities, long-term operations, and potential cumulative impacts resulting from growth in travel demand (1 percent annually) over the planning horizon (Caltrans, 2005; Fehr & Peers, 2004). In conformance with CEQA guidelines, and to tie the cumulative analysis to the combined effects of multiple development projects occurring within proximity of the ferry terminal sites, a list-based approach, described in Chapter 5, was also used. In addition, other CEQA requirements, including a summary of growth-inducing impacts, the significance criteria used in determining significant and potentially significant impacts, and a summary of impacts and associated mitigation measures are presented in Chapter 5.

4.1 TRANSPORTATION AND CIRCULATION

Transportation and circulation impacts of the ferry terminal alternatives and ferry service on vehicular circulation, transit operation, and bicycle and pedestrian circulation are presented below. A description of the assessment methodology, including significance criteria, adverse impacts that could occur from the construction or operation of the ferry terminal facilities and service, and proposed mitigation strategies is provided for each mode. More detailed background information regarding the travel demand forecasting modeling and results for the project, on which much of the transportation analysis is based, is provided in Section 2.4.1

4.1.1 Traffic

METHODOLOGY

The study area roadways are overseen by several jurisdictions: the cities of Berkeley and Albany, Alameda County Congestion Management Agency (ACCMA), and Caltrans. For this analysis, 17 study area intersections were analyzed to determine whether impacts would occur at these intersections with and without project for existing and future (2030) conditions. All 17 intersections are subject to Berkeley or Albany impact thresholds, whereas Caltrans criteria only apply to San Pablo Avenue and I-80 interchange intersections, and ACCMA criteria apply to the Caltrans intersections and to University Avenue intersections east of I-80.

In general, if traffic circulation at key intersections deteriorates to critical levels because of the ferry terminal alternatives, mitigation strategies are recommended to minimize potential adverse impacts. The determination of adverse effects is primarily through LOS and vehicle delay calculations (described in the Transportation section of Chapter 3). In general, adverse impacts are created when the project—or the project in combination with future growth—reduces intersection LOS to E or F. If the intersection is operating or forecast to operate at LOS F and the project causes an increase in the v/c ratio of 0.01 or greater, the added delay is also considered an adverse impact. Specific analysis thresholds that pertain to each of the jurisdictions that govern roadways in the study area are described below.

Alameda County Congestion Management Agency Roadways

Significance Criteria. The LOS standard set by the ACCMA is LOS E, except where an intersection or roadway is already operating at LOS F, which becomes the threshold.

Mitigation Approach. Mitigation measures are to be developed so that the LOS standards are maintained on the ACCMA designated roadway system, which are San Pablo Avenue and University Avenue in the study area.

Caltrans Intersections

Significance Criteria. Caltrans recommends a target LOS C for the I-80 interchange intersections and for San Pablo Avenue intersections. If the intersection at LOS D, E, or F, then the existing level of service needs to be maintained.

Mitigation Approach. All mitigations must follow Caltrans standards and specifications, and if mitigation measures require work in the state right-of-way, an encroachment permit from Caltrans is required.

Berkeley and Albany Intersections

Significance Criteria. For this study, the City of Albany agreed to abide by the City of Berkeley's criteria, which are generally more difficult to meet. LOS D is the level of service standard for City-controlled intersections. For those intersections that are currently operating at or are forecast to operate at LOS E or F without the project, significance criteria are defined depending on the type of traffic control involved.

- **Signalized Intersections.** The cities have established average delay thresholds as follows: LOS D to E = 2 seconds; LOS E and LOS E to F = 3 seconds. Delay can increase dramatically with small increases of traffic after LOS F has been reached. In this case, an increase of 0.01 in the v/c ratio is used as the impact threshold.

- **Unsignalized Intersections.** Unlike signalized intersections, it is difficult to establish fixed significance thresholds for unsignalized intersections, particularly those with only side-street stop control. In general, mitigations are required if a movement is at LOS F, the peak hour signal warrant is met, and a minimum of 10 vehicles is added to the critical movement. Nevertheless, as delays increase dramatically once LOS F is reached, consideration is given to the number of new trips added by a project and other factors, such as the feasibility of alternative routes and the proximity of adjacent traffic signals.

- **Roundabouts Intersections.** The new roundabout planned by Caltrans for the Gilman Street/I-80 interchange intersections was included in the analysis using the Gilman Interchange Project Study Report methodology.

Mitigation Approach. Mitigations may include low-cost improvements (such as revised striping, signing, modified signal timing) and capital improvements. Appropriate mitigation measures would be developed in consultation with and approval of the local jurisdiction.

NO-ACTION ALTERNATIVE

As described in the Transportation section of Chapter 3, eight of 17 critical intersections have existing substandard operation during peak periods under the No-Action Alternative. They are:

- Buchanan at Cleveland – LOS F during the a.m. peak
- San Pablo at Marin – LOS E during a.m. and p.m. peak
- Gilman at I-80 WB ramps – LOS F during a.m. and p.m. peak
- Gilman at I-80 EB ramps – LOS F during p.m. peak
- Gilman at Eastshore – LOS F during a.m. and p.m. peak
- University at Frontage Road – LOS F during p.m. peak
- University at Sixth – LOS F during a.m. and p.m. peak
- University at San Pablo – LOS E during p.m. peak

Traffic volumes for 2030 were estimated to increase from current volumes by 1 percent annually. This increase is consistent with the Gilman Interchange Project Study Report methodology (Caltrans, 2005). The 2030 analysis also assumes that the roundabout improvements to the Gilman Interchange are in place. According to the Gilman Interchange Project Study Report, the roundabouts would operate satisfactorily. However, nine of 17 study intersections are expected to have unsatisfactory traffic operations in 2030 under the No-Action Alternative. They are:

- San Pablo at Solano – LOS E during p.m. peak
- Buchanan at Cleveland – LOS F during the a.m. peak
- San Pablo at Marin – LOS E during a.m. and LOS F during p.m. peak
- Gilman at San Pablo – LOS E during a.m. and LOS F during p.m. peak
- University at Frontage Road – LOS F during a.m. and p.m. peak
- University at I-80 WB ramps – LOS F during a.m. and p.m. peak
- University at I-80 EB ramps – LOS F during a.m. and p.m. peak
- University at Sixth – LOS F during a.m. and p.m. peak
- University at San Pablo – LOS E during a.m. and LOS F during p.m. peak

ACTION ALTERNATIVES

A comparison of existing and future (2030) traffic conditions with and without the Action Alternatives is included in Tables 4-1 through 4-8 and discussed under “Operations” impacts below.

Table 4-1
A.M. and P.M. Peak Hour Intersection LOS – Comparison of Existing Conditions with and without Project Alternative A

Study Intersection	Intersection Control	Without Project Scenario				With Project Alternative A				Impacted (Yes/No)
		A.M.		P.M.		A.M.		P.M.		
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
1. Solano Avenue at Pierce Street	AWSC	C	20.1	A	9.3	C	20.1	A	9.3	
2. San Pablo Avenue at Solano Avenue*	S	C	30.7	D	41.8	C	30.7	D	41.8	No
3. Buchanan Street at I-80 WB Ramps *	S	B	19.4	B	16.6	B	19.4	B	16.6	
4. Buchanan Street at I-80 EB Ramps*	S	B	10.2	B	10.5	B	10.2	B	10.5	
5. Buchanan Street at Cleveland Avenue/Pierce Street**	TWSC	F	>50 (SB)	C	20.3 (SB)	F	>50 (SB)	C	20.3 (SB)	No
6. San Pablo Avenue at Marin Avenue*	S	E	64.3	E	73.0	E	65.1	E	73.2	No
7. Gilman Street at W. Frontage Road	TWSC	B	14.5 (NB)	C	15.3 (NB)	B	14.7 (NB)	C	15.3 (NB)	
8. Gilman Street at I-80 WB Ramps	TWSC	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	No
9. Gilman Street at I-80 EB Ramps	TWSC	C	23.5 (NB)	F	>50 (NB)	C	23.6 (NB)	F	>50 (NB)	No
10. Gilman Street at Eastshore Highway	TWSC	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	No
11. Gilman Street at 6th Street*	S	B	16.7	C	24.6	B	16.7	C	26.2	
12. Gilman Street at San Pablo Avenue	S	C	30.9	D	50.0	C	31.2	D	50.4	No
13. University Avenue at Marina Boulevard	TWSC	B	10.3 (WB)	B	13.1 (WB)	B	11.4 (WB)	C	16.3 (WB)	
14. University Avenue at W. Frontage Road**	AWSC	C	23.7	F	>50	D	29.7	F	>50	No
15. University Avenue at I-80 WB Ramps	TWSC	C	21.1 (NB)	D	28.6 (NB)	C	22.7 (NB)	E	43.5 (NB)	Yes (Change in LOS for P.M. peak to LOS E)
16. University Avenue at 6th Street	S	F	>80	F	>80	F	>80	F	>80	Yes (Increase in v/c for A.M. peak by 0.01)
17. University Avenue at San Pablo Avenue	S	D	40.1	E	78.9	D	40.3	F	>80	Yes (Change in LOS for P.M. peak to LOS F)

Source: Wilbur Smith Associates, 2008.

Notes:

* Indicates signalized intersections under Caltrans jurisdictions.
** Indicates that changes were made to intersection geometry so as to enable analysis using the *HCM 2000* methodology.
S – Signalized, TWSC – Two-Way STOP-Controlled, AWSC – All-Way STOP-Controlled.
LOS – Level of Service.
v/c – volume to capacity ratio.
Delay indicates Average Vehicle Delay in seconds per vehicle.
Values in **RED** indicate LOS exceeds acceptable threshold.

Table 4-2
A.M. and P.M. Peak Hour Intersection LOS – Comparison of Year 2030 Conditions with and without Project Alternative A

Study Intersection	Intersection Control	Without Project Scenario				With Project Alternative A				Impacted (Yes/No)
		A.M.		P.M.		A.M.		P.M.		
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
1. Solano Avenue at Pierce Street	AWSC	F	>50	B	12.1	F	>50	B	12.1	No
2. San Pablo Avenue at Solano Avenue*	S	D	40.7	E	72.1	D	40.6	E	72.4	No
3. Buchanan Street at I-80 WB Ramps *	S	C	31.2	C	22.5	C	28.2	C	22.5	No
4. Buchanan Street at I-80 EB Ramps*	S	B	12.0	B	13.4	B	12.0	B	13.4	No
5. Buchanan Street at Cleveland Avenue/Pierce Street**	TWSC	F	>50 (SB)	D	27.3 (SB)	F	>50 (SB)	D	27.3 (SB)	No
6. San Pablo Avenue at Marin Avenue*	S	E	73.4	F	>80	E	73.7	F	>80	No
8. Gilman Street at W. Frontage Road at I-80 WB Ramps	Roundabout	A	2.9	A	7.3	A	2.9	A	7.3	No
10. Gilman Street at I-80 EB Ramps at Eastshore Highway	Roundabout	A	3.3	B	13.5	A	3.3	B	13.5	No
11. Gilman Street at 6th Street*	S	B	14.2	D	47.0	B	14.2	D	47.1	No
12. Gilman Street at San Pablo Avenue	S	E	65.7	F	>80	E	65.7	F	>80	No
13. University Avenue at Marina Boulevard	TWSC	B	10.9 (WB)	C	18.2 (WB)	B	12.2 (WB)	D	34.6 (WB)	No
14. University Avenue at W. Frontage Road**	AWSC	F	>50	F	>50	F	>50	F	>50	No
15. University Avenue at I-80 WB Ramps	TWSC	F	>50 (NB)	F	>50 (NB)	F	>50 (NB)	F	>50 (NB)	No
16. University Avenue at 6th Street	S	F	>80	F	>80	F	>80	F	>80	No
17. University Avenue at San Pablo Avenue	S	E	63.8	F	>80	E	64.2	F	>80	No

Source: Wilbur Smith Associates, 2008.

Notes:

* Indicates signalized intersections under Caltrans jurisdictions.
** Indicates that changes were made to intersection geometry so as to enable analysis using the *HCM 2000* methodology.
S – Signalized, TWSC – Two-Way STOP-Controlled, AWSC – All-Way STOP-Controlled.
LOS – Level of Service.
Delay indicates Average Vehicle Delay in seconds per vehicle.
Values in **RED** indicate LOS exceeds acceptable threshold.

Table 4-3
A.M. and P.M. Peak Hour Intersection LOS – Comparison of Existing Conditions with and without Project Alternative B

Study Intersection	Intersection Control	Without Project Scenario				With Project Alternative B				Impacted (Yes/No)
		A.M.		P.M.		A.M.		P.M.		
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
1. Solano Avenue at Pierce Street	AWSC	C	20.1	A	9.3	C	20.1	A	9.3	
2. San Pablo Avenue at Solano Avenue*	S	C	30.7	D	41.8	C	30.7	D	41.8	No
3. Buchanan Street at I-80 WB Ramps *	S	B	19.4	B	16.6	B	19.4	B	16.6	
4. Buchanan Street at I-80 EB Ramps*	S	B	10.2	B	10.5	B	10.2	B	10.5	
5. Buchanan Street at Cleveland Avenue/ Pierce Street**	TWSC	F	>50 (SB)	C	20.3 (SB)	F	>50 (SB)	C	20.3 (SB)	No
6. San Pablo Avenue at Marin Avenue*	S	E	64.3	E	73.0	E	65.1	E	73.2	No
7. Gilman Street at W. Frontage Road	TWSC	B	14.5 (NB)	C	15.3 (NB)	B	14.7 (NB)	C	15.3 (NB)	
8. Gilman Street at I-80 WB Ramps	TWSC	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	No
9. Gilman Street at I-80 EB Ramps	TWSC	C	23.5 (NB)	F	>50 (NB)	C	23.6 (NB)	F	>50 (NB)	No
10. Gilman Street at Eastshore Highway	TWSC	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	No
11. Gilman Street at 6th Street*	S	B	16.7	C	24.6	B	16.7	C	26.2	
12. Gilman Street at San Pablo Avenue	S	C	30.9	D	50.0	C	31.2	D	50.4	No
13. University Avenue at Marina Boulevard	TWSC	B	10.3 (WB)	B	13.1 (WB)	B	11.2 (WB)	C	15.1 (WB)	
14. University Avenue at W. Frontage Road**	AWSC	C	23.7	F	>50	D	29.7	F	>50	No
15. University Avenue at I-80 WB Ramps	TWSC	C	21.1 (NB)	D	28.6 (NB)	C	22.7 (NB)	E	43.5 (NB)	Yes (Change in LOS for P.M. peak to LOS E)
16. University Avenue at 6th Street	S	F	>80	F	>80	F	>80	F	>80	Yes (Increase in v/c for A.M. peak by 0.01)
17. University Avenue at San Pablo Avenue	S	D	40.1	E	78.9	D	40.3	F	>80	Yes (Change in LOS for P.M. peak to LOS F)

Source: Wilbur Smith Associates, 2008.

Notes:

* Indicates signalized intersections under Caltrans jurisdictions.
** Indicates that changes were made to intersection geometry so as to enable analysis using the *HCM 2000* methodology.
S – Signalized, TWSC – Two-Way STOP-Controlled, AWSC – All-Way STOP-Controlled.
LOS – Level of Service.
v/c – volume to capacity ratio.
Delay indicates Average Vehicle Delay in seconds per vehicle.
Values in **RED** indicate LOS exceeds acceptable threshold.

Table 4-4
A.M. and P.M. Peak Hour Intersection LOS – Comparison of Year 2030 Conditions with and without Project Alternative B

Study Intersection	Intersection Control	Without Project Scenario				With Project Alternative B				Impacted (Yes/No)
		A.M.		P.M.		A.M.		P.M.		
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
1. Solano Avenue at Pierce Street	AWSC	F	>50	B	12.1	F	>50	B	12.1	No
2. San Pablo Avenue at Solano Avenue*	S	D	40.7	E	72.1	D	40.6	E	72.4	No
3. Buchanan Street at I-80 WB Ramps *	S	C	31.2	C	22.5	C	31.2	C	22.5	No
4. Buchanan Street at I-80 EB Ramps*	S	B	12.0	B	13.4	B	12.0	B	13.4	No
5. Buchanan Street at Cleveland Avenue/Pierce Street**	TWSC	F	>50 (SB)	D	27.3 (SB)	F	>50 (SB)	D	27.3 (SB)	No
6. San Pablo Avenue at Marin Avenue*	S	E	73.4	F	>80	E	73.7	F	>80	No
8. Gilman Street at W. Frontage Road at I-80 WB Ramps	Roundabout	A	2.9	A	7.3	A	2.9	A	7.3	No
10. Gilman Street at I-80 EB Ramps at Eastshore Highway	Roundabout	A	3.3	B	13.5	A	3.3	B	13.5	No
11. Gilman Street at 6th Street*	S	B	14.2	D	47.0	B	14.2	D	47.1	No
12. Gilman Street at San Pablo Avenue	S	E	65.7	F	>80	E	67.3	F	>80	No
13. University Avenue at Marina Boulevard	TWSC	B	10.9 (WB)	C	18.2 (WB)	B	12.1 (WB)	D	26.6 (WB)	No
14. University Avenue at W. Frontage Road**	AWSC	F	>50	F	>50	F	>50	F	>50	No
15. University Avenue at I-80 WB Ramps	TWSC	F	>50 (NB)	F	>50 (NB)	F	>50 (NB)	F	>50 (NB)	No
16. University Avenue at 6th Street	S	F	>80	F	>80	F	>80	F	>80	No
17. University Avenue at San Pablo Avenue	S	E	63.8	F	>80	E	64.2	F	>80	No

Source: Wilbur Smith Associates, 2008.

Notes:

* Indicates signalized intersections under Caltrans jurisdictions.
** Indicates that changes were made to intersection geometry so as to enable analysis using the *HCM 2000* methodology.
S – Signalized, TWSC – Two-Way STOP-Controlled, AWSC – All-Way STOP-Controlled.
LOS – Level of Service.
Delay indicates Average Vehicle Delay in seconds per vehicle.
Values in **RED** indicate LOS exceeds acceptable threshold.

Table 4-5
A.M. and P.M. Peak Hour Intersection LOS – Comparison of Existing Conditions with and without Project Alternative C

Study Intersection	Intersection Control	Without Project Scenario				With Project Alternative C				Impacted (Yes/No)
		A.M.		P.M.		A.M.		P.M.		
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
1. Solano Avenue at Pierce Street	AWSC	C	20.1	A	9.3	C	20.1	A	9.3	
2. San Pablo Avenue at Solano Avenue*	S	C	30.7	D	41.8	C	30.7	D	41.8	No
3. Buchanan Street at I-80 WB Ramps *	S	B	19.4	B	16.6	B	19.4	B	16.6	
4. Buchanan Street at I-80 EB Ramps*	S	B	10.2	B	10.5	B	10.2	B	10.5	
5. Buchanan Street at Cleveland Avenue/ Pierce Street**	TWSC	F	>50 (SB)	C	20.3 (SB)	F	>50 (SB)	C	20.3 (SB)	No
6. San Pablo Avenue at Marin Avenue*	S	E	64.3	E	73.0	E	64.3	E	73.2	No
7. Gilman Street at W. Frontage Road	TWSC	B	14.5 (NB)	C	15.3 (NB)	C	16.2 (NB)	C	19.3 (NB)	
8. Gilman Street at I-80 WB Ramps	TWSC	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	No
9. Gilman Street at I-80 EB Ramps	TWSC	C	23.5 (NB)	F	>50 (NB)	D	33.5 (NB)	F	>50 (NB)	No
10. Gilman Street at Eastshore Highway	TWSC	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	No
11. Gilman Street at 6th Street*	S	B	16.7	C	24.6	B	16.5	C	23.9	
12. Gilman Street at San Pablo Avenue	S	C	30.9	D	50.0	C	31.6	D	51.3	No
13. University Avenue at Marina Boulevard	TWSC	B	10.3 (WB)	B	13.1 (WB)	B	10.3 (WB)	B	13.1 (WB)	
14. University Avenue at W. Frontage Road**	AWSC	C	23.7	F	>50	C	23.7	F	>50	No
15. University Avenue at I-80 WB Ramps	TWSC	C	21.1 (NB)	D	28.6 (NB)	C	21.1 (NB)	D	28.6 (NB)	No
16. University Avenue at 6th Street	S	F	>80	F	>80	F	>80	F	>80	No
17. University Avenue at San Pablo Avenue	S	D	40.1	E	78.9	D	40.1	E	79.9	No

Source: Wilbur Smith Associates, 2008.

Notes:

* Indicates signalized intersections under Caltrans jurisdictions.
** Indicates that changes were made to intersection geometry so as to enable analysis using the *HCM 2000* methodology.
S – Signalized, TWSC – Two-Way STOP-Controlled, AWSC – All-Way STOP-Controlled.
LOS – Level of Service.
Delay indicates Average Vehicle Delay in seconds per vehicle.
Values in **RED** indicate LOS exceeds acceptable threshold.

Table 4-6
A.M. and P.M. Peak Hour Intersection LOS – Comparison of Year 2030 Conditions with and without Project Alternative C

Study Intersection	Intersection Control	Without Project Scenario				With Project Alternative C				Impacted (Yes/No)
		A.M.		P.M.		A.M.		P.M.		
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
1. Solano Avenue at Pierce Street	AWSC	F	>50	B	12.1	F	>50	B	12.1	No
2. San Pablo Avenue at Solano Avenue*	S	D	40.7	E	72.1	D	40.6	E	72.4	No
3. Buchanan Street at I-80 WB Ramps *	S	C	31.2	C	22.5	C	31.2	C	22.5	No
4. Buchanan Street at I-80 EB Ramps*	S	B	12.0	B	13.4	B	12.0	B	13.4	No
5. Buchanan Street at Cleveland Avenue/Pierce Street**	TWSC	F	>50 (SB)	D	27.3 (SB)	F	>50 (SB)	D	27.3 (SB)	No
6. San Pablo Avenue at Marin Avenue*	S	E	73.4	F	>80	E	73.6	F	>80	No
8. Gilman Street at W. Frontage Road at I-80 WB Ramps	Roundabout	A	2.9	A	7.3	A	4.5	A	9.1	No
10. Gilman Street at I-80 EB Ramps at Eastshore Highway	Roundabout	A	3.3	B	13.5	A	3.7	B	16.0	No
11. Gilman Street at 6th Street*	S	B	14.2	D	49.8	B	14.2	D	49.8	No
12. Gilman Street at San Pablo Avenue	S	E	65.7	F	>80	E	68.1	F	>80	Yes (Increase in v/c for P.M. peak by 0.01)
13. University Avenue at Marina Boulevard	TWSC	B	10.9 (WB)	C	18.2 (WB)	B	10.9 (WB)	C	18.2 (WB)	No
14. University Avenue at W. Frontage Road**	AWSC	F	>50	F	>50	F	>50	F	>50	No
15. University Avenue at I-80 WB Ramps	TWSC	F	>50 (NB)	F	>50 (NB)	F	>50 (NB)	F	>50 (NB)	No
16. University Avenue at 6th Street	S	F	>80	F	>80	F	>80	F	>80	No
17. University Avenue at San Pablo Avenue	S	E	63.8	F	>80	E	63.8	F	>80	No

Source: Wilbur Smith Associates, 2008.

Notes:

* Indicates signalized intersections under Caltrans jurisdictions.
** Indicates that changes were made to intersection geometry so as to enable analysis using the *HCM 2000* methodology.
S – Signalized, TWSC – Two-Way STOP-Controlled, AWSC – All-Way STOP-Controlled.
LOS – Level of Service.
v/c – volume to capacity ratio.
Delay indicates Average Vehicle Delay in seconds per vehicle.
Values in **RED** indicate LOS exceeds acceptable threshold.

Table 4-7
A.M. and P.M. Peak Hour Intersection LOS – Comparison of Existing Conditions with and without Project Alternative D

Study Intersection	Intersection Control	Without Project Scenario				With Project Alternative D				Impacted (Yes/No)
		A.M.		P.M.		A.M.		P.M.		
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
1. Solano Avenue at Pierce Street	AWSC	C	20.1	A	9.3	D	26.8	A	9.3	
2. San Pablo Avenue at Solano Avenue*	S	C	30.7	D	41.8	C	30.7	D	41.8	No
3. Buchanan Street at I-80 WB Ramps *	S	B	19.4	B	16.6	C	22.6	C	20.8	
4. Buchanan Street at I-80 EB Ramps*	S	B	10.2	B	10.5	B	10.9	B	11.8	
5. Buchanan Street at Cleveland Avenue/ Pierce Street**	TWSC	F	>50 (SB)	C	20.3 (SB)	F	>50 (SB)	C	20.3 (SB)	No
6. San Pablo Avenue at Marin Avenue*	S	E	64.3	E	73.0	E	66.0	E	76.1	Yes (Increase in delay for P.M. peak by 3.1 s)
7. Gilman Street at W. Frontage Road	TWSC	B	14.5 (NB)	C	15.3 (NB)	B	14.5 (NB)	C	15.3 (NB)	
8. Gilman Street at I-80 WB Ramps	TWSC	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	No
9. Gilman Street at I-80 EB Ramps	TWSC	C	23.5 (NB)	F	>50 (NB)	C	24.3 (NB)	F	>50 (NB)	No
10. Gilman Street at Eastshore Highway	TWSC	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	F	>50 (SB)	No
11. Gilman Street at 6th Street*	S	B	16.7	C	24.6	B	16.7	C	24.6	
12. Gilman Street at San Pablo Avenue	S	C	30.9	D	50.0	C	31.0	D	50.8	No
13. University Avenue at Marina Boulevard	TWSC	B	10.3 (WB)	B	13.1 (WB)	B	10.3 (WB)	B	13.1 (WB)	
14. University Avenue at W. Frontage Road**	AWSC	C	23.7	F	>50	C	23.7	F	>50	No
15. University Avenue at I-80 WB Ramps	TWSC	C	21.1 (NB)	D	28.6 (NB)	C	21.1 (NB)	D	28.6 (NB)	No
16. University Avenue at 6th Street	S	F	>80	F	>80	F	>80	F	>80	No
17. University Avenue at San Pablo Avenue	S	D	40.1	E	78.9	D	40.1	E	79.8	No

Source: Wilbur Smith Associates, 2008.

Notes:

* Indicates signalized intersections under Caltrans jurisdictions.
** Indicates that changes were made to intersection geometry so as to enable analysis using the *HCM 2000* methodology.
S – Signalized, TWSC – Two-Way STOP-Controlled, AWSC – All-Way STOP-Controlled.
LOS – Level of Service.
Delay indicates Average Vehicle Delay in seconds per vehicle.
Values in **RED** indicate LOS exceeds acceptable threshold.

Table 4-8
A.M. and P.M. Peak Hour Intersection LOS – Comparison of Year 2030 Conditions with and without Project Alternative D

Study Intersection	Intersection Control	Without Project Scenario				With Project Alternative D				Impacted (Yes/No)
		A.M.		P.M.		A.M.		P.M.		
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
1. Solano Avenue at Pierce Street	AWSC	F	>50	B	12.1	F	>50	B	12.1	No
2. San Pablo Avenue at Solano Avenue*	S	D	40.7	E	72.1	D	38.7	F	>80	Yes (Change in LOS for P.M. peak to LOS F)
3. Buchanan Street at I-80 WB Ramps *	S	C	31.2	C	22.5	C	33.9	C	28.0	No
4. Buchanan Street at I-80 EB Ramps*	S	B	12.0	B	13.4	B	13.2	B	15.0	No
5. Buchanan Street at Cleveland Avenue/Pierce Street**	TWSC	F	>50 (SB)	D	27.3 (SB)	F	>50 (SB)	D	27.5 (SB)	No
6. San Pablo Avenue at Marin Avenue*	S	E	73.4	F	>80	E	75.2	F	>80	Yes (Increase in v/c for P.M. peak by 0.03)
8. Gilman Street at W. Frontage Road at I-80 WB Ramps	Roundabout	A	2.9	A	7.3	A	2.9	A	7.4	No
10. Gilman Street at I-80 EB Ramps at Eastshore Highway	Roundabout	A	3.3	B	13.5	A	3.3	B	13.7	No
11. Gilman Street at 6th Street*	S	B	14.2	D	54.0	B	14.2	D	47.2	No
12. Gilman Street at San Pablo Avenue	S	E	65.7	F	>80	E	65.9	F	>80	No
13. University Avenue at Marina Boulevard	TWSC	B	10.9 (WB)	C	18.2 (WB)	B	10.9 (WB)	C	18.2 (WB)	No
14. University Avenue at W. Frontage Road**	AWSC	F	>50	F	>50	F	>50	F	>50	No
15. University Avenue at I-80 WB Ramps	TWSC	F	>50 (NB)	F	>50 (NB)	F	>50 (NB)	F	>50 (NB)	No
16. University Avenue at 6th Street	S	F	>80	F	>80	F	>80	F	>80	No
17. University Avenue at San Pablo Avenue	S	E	63.8	F	>80	E	63.9	F	>80	No

Source: Wilbur Smith Associates, 2008.

Notes:

* Indicates signalized intersections under Caltrans jurisdictions.
** Indicates that changes were made to intersection geometry so as to enable analysis using the *HCM 2000* methodology.
S – Signalized, TWSC – Two-Way STOP-Controlled, AWSC – All-Way STOP-Controlled.
LOS – Level of Service.
v/c – volume to capacity ratio.
Delay indicates Average Vehicle Delay in seconds per vehicle.
Values in **RED** indicate LOS exceeds acceptable threshold.

The tables compare LOS at 17 critical intersections in the study area and indicate if intersections operating at LOS F would experience greater delays because of the ferry terminal alternatives. Peak hour traffic turning movements for each study intersection under existing and 2030 conditions are presented in Appendix E. The following paragraphs discuss whether any potential adverse traffic impacts would result from construction, operation, or cumulative effects of the ferry terminal alternatives.

Construction Impacts

Impact 1: Potential to cause temporary traffic impacts during construction.

Alternative A. Traffic circulation into and out of the Berkeley Marina and the Doubletree Hotel would be maintained during project construction. Marina Boulevard would not be blocked or have circulation impeded during this period. No adverse impacts on traffic circulation would occur as a result of project construction activities.

Alternative B. Traffic circulation along University Avenue to the Berkeley Fishing Pier would be unaffected by project construction. The roadway serving the Waterfront and Berkeley Marina businesses would remain open. No adverse impacts on traffic circulation would occur as a result of project construction activities.

Alternatives C and D. Traffic circulation on Gilman and Buchanan Streets would remain unchanged during ferry terminal construction, maintaining access to Golden Gate Fields and surrounding recreational uses. No adverse impacts on traffic circulation would occur as a result of project construction activities.

CEQA Determination: No significant or potentially significant impacts would occur as a result of project construction activities.

Operations and Cumulative Impacts and Mitigation

As indicated under the No-Action Alternative, eight critical intersections currently operate unsatisfactorily, and nine are expected to have deficient operation in 2030. The addition of ferry terminal traffic to the 17 study intersections is projected to have different impacts for each of the four ferry terminal alternatives for existing conditions and for 2030 conditions as described below. As mentioned earlier, the 2030 conditions include an annual growth factor of 1 percent.

Impact 2: Potential to cause traffic impacts at key study area intersections.

Alternative A. As indicated in Table 4-1, three of the 17 study intersections are projected to be affected by Alternative A given existing traffic conditions:

- Intersection 15 (University Avenue at I-80 WB ramps)
- Intersection 16 (University Avenue at Sixth Street)
- Intersection 17 (University Avenue at San Pablo Avenue)

The incremental increase in project-related traffic at Intersections 15, 16, and 17 would produce adverse effects at project start-up according the analysis criteria stated above. As indicated in Table 4-2, these intersections are expected to deteriorate to LOS F during the planning period without the project. Compared with the growth in area traffic volumes over the planning period, the relatively minor increase produced by Alternative A would not exceed the local threshold, which is an increase in the v/c ratio of 0.01 or more at an intersection already forecast to operate at LOS F.

Alternative B. Alternative B would have impacts similar to those described for Alternative A (Table 4-3). Three intersections along University Avenue—Intersection 15 (I-80 WB ramps), Intersection 16 (Sixth Street), and Intersection 17 (San Pablo Avenue)—would be affected by ferry traffic under existing conditions. As described for Alternative A, traffic conditions at these intersections are expected to deteriorate over the long term to LOS F without the project. As indicated in Table 4-4, compared with the growth in area traffic volumes over the planning period, the relatively minor increase in traffic produced by Alternative B would not exceed the local threshold, an increase in the v/c ratio of 0.01 or more at an intersection already forecast to operate at LOS F.

Alternative C. Table 4-5 indicates that, under existing conditions, Alternative C would not produce adverse traffic impacts on study intersections. However, in 2030, Alternative C would produce sufficient incremental increase in traffic to adversely affect Intersection 12 (Gilman Street and San Pablo Avenue), which is expected to operate at LOS F in 2030 (Table 4-6). Ferry traffic would increase the v/c ratio by 0.01, the defined impact threshold, an adverse impact.

Alternative D. As indicated in Table 4-7, under existing conditions, Alternative D is expected to adversely affect one intersection: Intersection 6 (San Pablo Avenue and Marin Avenue). Average vehicle delay during the p.m. peak traffic hour is projected to increase by 3.1 seconds, which exceeds the significance threshold for intersections that operate at LOS E, an adverse impact.

Table 4-8 indicates that under 2030 conditions, two intersections would be adversely affected by traffic generated for Alternative D: Intersection 2 (San Pablo Avenue and Solano Avenue) and Intersection 6 (San Pablo Avenue and Marin Avenue). Ferry operation would substantially increase traffic at Intersection 2, reducing LOS from E to F during the p.m. peak traffic hour. At Intersection 6, the v/c ratio would increase by 0.03, producing an adverse impact according to the defined impact criteria.

Mitigation. For Alternative A, the analysis indicates that minor refinements to intersection traffic controls or intersection design would mitigate the potential impacts at Intersections 16 and 17, but these refinements may not completely mitigate the unsatisfactory operation of the I-80 WB ramps at University Avenue/Frontage Road Intersection 15 (refer to the Transportation Technical Report).

For Alternative B, potential adverse impacts at Intersections 16 and 17 could be mitigated with minor traffic signal timing changes, but, as described for Alternative A, traffic control and intersection redesign could not, at project start-up, successfully mitigate the potential adverse impacts at Intersection 15.

For Alternative C, one potential significant traffic impact was identified at Gilman/San Pablo (Intersection 12) over the long term (2030). This impact cannot be successfully mitigated.

For Alternative D, under existing conditions, potential traffic impacts at San Pablo/Marin would be reduced to a less-than-significant level by re-timing the signal (Wilbur Smith, 2008). However, long-term (2030) project-related traffic impacts at San Pablo/Solano and San Pablo/ Marin could not be mitigated.

CEQA Determination. For Alternative A, potential traffic impacts resulting from project implementation under existing conditions could be mitigated to a less-than-significant level at Intersections 16 and 17, but not completely at Intersection 15, an unavoidable impact. However, over the long term, Intersection 15 would deteriorate to unacceptable levels without the project. The contribution of traffic resulting from Alternative A would not generate substantial traffic volumes to exceed the impact threshold. Therefore, no long-term or cumulative traffic impacts would occur at Intersection 15.

For Alternative B, potential adverse impacts at Intersections 16 and 17 could be mitigated to a less-than-significant level, but not completely at Intersection 15, an unavoidable impact. However, over the long term, Intersection 15 would deteriorate to unacceptable levels without the project. The contribution of traffic resulting from Alternative B would not generate substantial traffic to exceed the impact threshold. Therefore, no long-term or cumulative traffic impacts would occur at Intersection 15.

For Alternative C, one potential significant traffic impact was identified at Gilman/San Pablo (Intersection 12) over the long term (2030). This impact cannot be successfully mitigated, and would therefore be unavoidable.

For Alternative D, under existing conditions, potential traffic impacts at San Pablo/Marin would be reduced to a less-than-significant level by re-timing the signal (Wilbur Smith, 2008). However, long-term (2030) project-related traffic impacts at San Pablo/Solano and San Pablo/ Marin could not be mitigated, and would therefore be unavoidable.

4.1.2 Parking

METHODOLOGY

Parking demands for a ferry terminal serving the Berkeley/Albany waterfront area are projected to require approximately 400 spaces, including several spaces designated for the disabled. The patronage forecast assumed a $2 daily parking charge for ferry patrons. For the purposes of this analysis, the cities of Berkeley and Albany agreed to a common definition of adverse impacts for parking as described below.

On-Street Parking Significance Criteria. Analysis of on-street parking is required if the net peak hour vehicle trips generated by the project exceed 25. The ferry terminal project is estimated to generate 152 vehicle trips during both the a.m. and p.m. peak traffic hours and has therefore been analyzed in this document.

Off-Street Parking Significance Criteria. Analysis of off-street parking, circulation, and project driveway are required regardless of the number of trips generated by the project. The City of Berkeley has established specific off-street parking requirements for different zoning classifications

and land use types. The classifications consider the demand for off-street parking and the desire to promote the use of alternative modes of travel. Required parking based on the zone where the development site is located should always be the starting point, and any proposed deductions should be thoroughly justified. Parking reductions and high modal splits have to be justified separately.

Site plans for each alternative presented in Chapter 2 indicate the proposed location of ferry terminal parking. As mentioned previously, parking areas are sized to accommodate peak ferry patron demand and are placed adjacent to the ferry terminal entry. The site plans indicate pier and terminal siting, landside circulation, pedestrian access, and drop-off and parking areas. These facilities will be designed to meet federal-ADA, state, and local standards. The site plans are conceptual, reflecting a limited (10 percent design) level of engineering. Detailed dimensions for parking areas, bicycle and pedestrian circulation paths, and loading/drop-off zones are not stipulated, but will be incorporated into the preliminary engineering plans (30 percent design) after the LPA is chosen and the next phase of project development commences. Designated parking areas would be the subject of negotiation between WETA and the property owner for transferring control of and responsibility for the parking areas to WETA. The negotiations would occur after WETA selects the site to be the LPA.

Each site often incorporates existing parking or asphalt areas into the site plan, existing spaces that may be currently used by business patrons or recreational users. An adverse impact would occur if on-street parking were displaced by the project or if the project reduced off-street parking to substantially affect access to residences, recreational uses, and businesses that could detrimentally affect their client base.

NO-ACTION ALTERNATIVE

The No-Action Alternative would retain parking along the Berkeley-Albany waterfront in the current areas as presently configured and designed. With the exception of the Gilman Street Playing Fields parking area being constructed at the foot of Gilman Street, no development plans have been approved that would alter this arrangement.

ACTION ALTERNATIVES

Construction Impacts and Mitigation

Impact 3: Potential to temporarily displace existing parking at nearby businesses or residences.

Alternative A. Multiple parking spaces along the Berkeley Marina at the location of the bus transit center and in the south end of the existing Doubletree Hotel Lot would be temporarily displaced by construction activities, therefore an adverse impact is possible.

Alternative B. The parking area adjacent to the Berkeley Fishing Pier would be restriped to accommodate ferry patrons. Restriping would be scheduled to allow adequate parking for the restaurants in the area. As a result, no temporary adverse impacts on parking would occur.

Alternatives C and D. Construction would occur in existing parking areas that are not fully used. Access to these parking areas would be maintained during construction. No temporary adverse impact on parking would occur.

Mitigation. For Alternative A, signage to advise drivers of alternative parking available in the vicinity (Lots 4 through 8, as illustrated in Figure 3-4) would mitigate the temporary impact to parking spaces caused by construction activities.

CEQA Determination. Potential construction impacts on parking for Alternative A could be reduced to a less-than-significant level with mitigation. No other construction-related parking impacts would occur.

Operations and Cumulative Impacts and Mitigation

Impact 4. Potential to permanently displace existing parking at nearby businesses or residences.

As indicated in Section 2.4.1, the travel demand forecast for Alternative 17 estimated the parking demand at all Berkeley-Albany site alternatives to be 388 spaces. The following analysis describes potential adverse impacts on businesses and other users of existing parking that would be incorporated into the project's designated parking area at each terminal site.

Alternative A. A total of 1,096 spaces, including spaces that are used by guests of the Doubletree Hotel, exist in the area surrounding the Doubletree Hotel. The site plan for Alternative A proposes to reassign a total of 400 parking spaces in three locations for ferry patron use: (1) 200 spaces along the unstriped area on the east side of Marina Boulevard; (2) 96 spaces in the parking area adjacent to the Berkeley Marina on the west side of Marina Boulevard; and (3) 104 spaces in the Doubletree Hotel's surface lot just south of the porte cochere. Only the spaces on the east side of Marina Boulevard could be used for ferry patron parking without affecting Doubletree Hotel and Berkeley Marina patrons.

Alternative B. The proposed parking plan for Alternative B is to re-stripe Lots 4B and 5B (see Figure 3-4), increasing the number of total spaces from 410 to 470 spaces. This concept would retain 70 spaces in the re-striped lots for Hs Lordships patrons. Parking along the waterfront for recreational users south of the Berkeley Fishing Pier would be reassigned for ferry patron use. The viability of the restaurant would be compromised with Alternative B's limited amount of adjacent parking for Hs Lordships patrons, particularly during the weekday lunch period.

More than 700 parking spaces currently exist in the vicinity of Alternative B. Accepting increased walking distances for restaurant patrons and recreation users could help to address the estimated parking demand. This option would include the use of 50 spaces each of Lots 2 and 3, the possibility to use 50 spaces on weekdays at the Sailing Club, and the potential to develop 80 on-street spaces along University Avenue. This option would have to be complemented by parking policies and enforcement to prevent use by ferry patrons of the area intended for Hs Lordships patrons.

Alternative C. While Alternative C displaces Golden Gate Field stables, it does not displace any parking resources, and therefore does not affect parking availability immediately south of the

racetrack. The bountiful parking supply could also accommodate future increased patronage at the racetrack, where no other development is currently planned.

Alternative D. The site is currently lightly used. On a typical weekday and weekend, fewer than 10 cars and several charter buses were observed parking on this lot. Alternative D would require only a small portion of the existing parking lot to be used for ferry parking, retaining most of the lot for Golden Gate Field patrons. The bountiful parking supply could also accommodate future increased patronage at the racetrack, where no other development is currently planned.

Mitigation. For Alternative A, potential impacts to parking for Doubletree Hotel and Berkeley Marina patrons could be mitigated through supply management measures, including enforcement of free parking resources and a parking availability information system. Negotiations with the hotel and Berkeley Marina might lead to a mutual agreement on the use of spaces in Lots 2A and 3A (see Figure 3-4). In addition, negotiations could provide agreement on use of approximately 50 spaces in Lot 7A and 100 spaces in Lot 6A, which are farther away from the ferry terminal and Doubletree Hotel front entry, as well as other available areas of Lots 4A, 5A, and 8A. Growth in recreation use could be accommodated at this site since most of the spaces required for recreation users would be used primarily on weekends when ferry service demand would be lower.

For Alternative B, demand management strategies could help to reduce the park and ride demands for the ferry service, including the use of valet parking on those days with high volumes of lunchtime clients. Bicycle and transit/shuttle enhancements combined with parking pricing could also be instituted. A combination of the aforementioned mitigation strategies would minimize potential impacts to restaurant patrons and to recreation users. Growth in recreation use at this site could be accommodated because most of the spaces required for recreation users would be used on weekends when ferry service demand would be lower.

If WETA selects either Alternative A or Alternative B as the LPA, WETA will negotiate with the City of Berkeley, the property owner, and if appropriate, the businesses that are lessees and are currently using this parking, to assume control and responsibility of the designated ferry terminal parking area. As a part of the Final EIS, WETA will develop and implement a Parking Mitigation Plan that addresses potential parking impacts on adjacent uses, particularly nearby businesses.

CEQA Determination. For Alternatives A and B, mitigation measures would reduce potential parking impacts on adjacent businesses and on recreation users to a less-than-significant level. For Alternatives C and D, no significant parking impacts would occur.

4.1.3 Transit

METHODOLOGY

AC Transit load factor standards are used to determine whether the ferry project would overcrowd AC Transit buses serving each of the ferry terminal alternative sites, thereby creating

an adverse impact on transit service. Specifically, an adverse impact would occur if the number of ferry riders using transit to access ferry service would contribute to passenger loads on buses greater than the AC Transit load factor standard. The analysis assumes that existing transit routes in the vicinity of the ferry terminal alternative sites and the AC Transit load factor standard would remain unchanged with or without the project. The analysis also assumes that WETA is committed to providing shuttle service between bus connections and the ferry as appropriate. The analysis focuses on peak periods, because the commute period is when the most substantial numbers of ferry riders are likely to use AC Transit service to access the ferries. Mitigation strategies are proposed if an adverse impact on AC Transit is likely to occur.

Significance Criteria. A load factor standard of 1.25 is used, representing buses at seated capacity plus 25 percent standees. Buses that exceed this threshold are considered to be overcrowded. This standard applies to all bus routes that would serve the ferry terminal alternative sites, as indicated in Table 4-9.

NO-ACTION ALTERNATIVE

The No-Action Alternative would not alter the transit service in the study area and would not produce adverse impacts on transit.

ACTION ALTERNATIVES

Construction Impacts and Mitigation

Impact 5: Potential for construction activities to temporarily disrupt existing transit service.

Alternatives A through D. Currently, AC Transit operates only one bus route that approaches the ferry terminal sites. Route 9 has stops close to Alternatives A and B, Berkeley Marina and Berkeley Fishing Pier sites, respectively. The route terminates at the foot of University Avenue near Skates Restaurant. Construction activities at Alternative A would be several blocks distant from Route 9, and would therefore not affect its operation. Development of the parking area for Alternative B could interfere with Route 9 operations at the terminal location, potentially producing temporary adverse impacts.

Mitigation. To prevent interference with bus movements at this location, flagmen would be assigned to the construction area where materials and supplies would be moved into and out of the parking area adjacent to the Berkeley Fishing Pier site. If construction activities require repaving or use of the area where Route 9 currently terminates, WETA will work with AC Transit to temporarily relocate the terminal location and provide signage for bus drivers and riders to locate the temporary terminal.

CEQA Determination. With mitigation, the temporary impacts to Route 9 from construction activities at Alternative B would be reduced to a less-than-significant level.

Table 4-9
Weekday Maximum Load Points for Routes 9 and 18

Direction		Current Load at Highest Maximum Load Point	Maximum Number of Riders Transferring to/from Ferry	Total Ridership	Location	Current Load Factor	New Load Factor
Route 9 – Transit Service Study Area – Weekday Load Points							
A.M. Peak	EB	22	2	24	6th-Gilman-Hopkins	0.56	0.62
	WB	26	21	47	Ashby-San Pablo-Dwight	0.67	1.21
P.M. Peak	EB	13	15	28	Dwight-San Pablo-Ashby	0.33	0.72
	WB	12	9	21	Hopkins Street and Gilman Street	0.31	0.54
Off Peak	EB	23	6	29	Dwight-San Pablo-Ashby	0.59	0.74
	WB	18	21	39	Hopkins Street and Gilman Street	0.46	1.00
Route 9 – Transit Service Study Area – Weekday Load Points							
A.M. Peak	EB	16	2	18	Buchanan-San Pablo-Solano-Alameda	0.33	0.38
	WB	19	21	40	Solano-Alameda-Buchanan-San Pablo	0.40	0.83
P.M. Peak	EB	14	15	29	Buchanan-San Pablo-Solano-Alameda	0.29	0.60
	WB	30	9	39	Solano-Alameda-Buchanan-San Pablo	0.63	0.81
Off Peak	EB	14	6	20	Buchanan-San Pablo-Solano-Alameda	0.29	0.42
	WB	23	21	44	Solano-Alameda-Buchanan-San Pablo	0.48	0.92

Source: AC Transit Planning Department data collected at various times in period from August 2003 to March 2007.

Load points are based on the single trip with the highest load within each peak/off-peak period and within each study area.

Information for each route was collected within different time frames and may not represent a 100 percent sample of all scheduled trips.

Operations and Cumulative Impacts and Mitigation

The Programmatic EIR for implementing regional ferry service projected more than 1,700 weekday riders using the Berkeley/Albany ferry service to San Francisco. Of this total, 19 percent would also use the bus to complete their trips. Assuming many of these ferry patrons are new transit riders, the ferry service would provide an alternative to the automobile and increase transit use, a beneficial impact. A discussion of the project's effect on AC Transit is presented below.

Impact 6: Potential to adversely affect transit operations and ridership.

WETA will provide shuttle service to accommodate ferry patrons who are estimated to use transit for their journeys to and from the ferry terminal. The approximately 330 weekday transit riders would be shuttled between the nearest bus stop or intermodal facility and the ferry terminal. Since most of the patrons are expected to be from the surrounding communities, most of the shuttle riders would be expected to transfer to nearby AC Transit routes as indicated below.

Alternatives A through D. The bus routes that travel closest to the ferry terminal sites and the load factors for these routes are indicated in Table 4-9. Although many transit riders are likely to use WETA shuttles to access the ferries, it is important to determine if nearby AC Transit routes have capacity to carry additional riders. For Alternatives A, B, and C, the closest AC Transit line running near these ferry terminal sites is the 9 line. With the project, the 9 line (EB) would have a maximum load factor of 0.62 in the a.m. peak and 0.72 in the p.m. peak, while the 9 line (WB) would have a maximum load factor of 1.21 in the a.m. peak and 0.54 in the p.m. peak. For Alternative D, the closest AC Transit line running near the ferry terminal site is the 18 line. As noted in Table 4-9, the 18 line (EB) would have a maximum load factor of 0.38 in the a.m. peak and 0.60 in the p.m. peak, while the 18 line (WB) would have a maximum load factor of 0.83 in the a.m. peak and 0.81 in the p.m. peak.

The number of additional transit riders, ferry patrons transferring between the ferries and AC Transit buses on WETA shuttles, is estimated to be more than 300 per day. An additional 30 passengers are expected to walk between buses and the ferry terminal. Since load factors on AC Transit routes in the study area are quite low, ferry patrons using AC Transit are not expected to increase load factors so substantially that they approach or exceed the AC Transit Maximum Load Factor Standard of 1.25. Similarly, growth in AC Transit ridership in the study area combined with additional riders traveling to and from the ferries is not expected to contribute to cumulative impacts.

CEQA Determination. None of the ferry terminal alternatives would produce significant impacts on transit operations.

4.1.4 Bicycle and Pedestrian Circulation

METHODOLOGY

Analysis of pedestrian and bicycle impacts is required regardless of the number of new trips generated. Impacts on alternative modes can result from projects that in themselves generate a significant number of trips for these modes or that are located on roadways that have been designated to serve these modes of travel. The assessment of impacts may be based on one or more of the following factors: (1) counts for bicycle and pedestrian movements; (2) street width; (3) collision history; (4) approved land use and transportation plans; and (5) approved capital improvement projects. In addition, the project could potentially produce adverse impacts on existing or future facilities designated to serve these modes of travel.

Analysis Threshold. Criteria from AASHTO's *Guide for the Development of Bicycle Facilities*, 1999, and Caltrans *Highway Design Manual*, 6th Edition, September 1, 2006, were used to assess potential bicycle and pedestrian impacts and recommend potential mitigation measures for the four ferry terminal alternatives. The major pedestrian pathway in the vicinity of the terminal sites is the Bay Trail. Disruption or interference with the Bay Trail, either by construction or implementation of the ferry terminal site plan, would also be considered an adverse impact. The Bay Trail impact assessment is provided in Section 4.4, Parklands and Recreational Facilities.

NO-ACTION ALTERNATIVE

No change to bicycle and pedestrian circulation would occur in the study area under the No-Action Alternative except for extension of the Bay Trail along the Berkeley/Albany waterfront, a beneficial impact.

ACTION ALTERNATIVES

Construction Impacts and Mitigation

Impact 7: Potential for construction activities to adversely affect bicycle and pedestrian circulation.

Alternatives A through D. Construction of the ferry terminal alternatives could potentially cause disruption to pedestrian and bicycle access through temporary closure of sidewalks and pathways, narrowing of adjacent roadways, and/or degradation of paving surfaces.

Mitigation. Access through the project site for pedestrians and bicyclists will be maintained during construction by minimizing sidewalk and pathway closures, providing suitable alternatives for necessary closures, and maintaining pavement surfaces in the construction zone so as not to be a hazard to pedestrians and bicyclists. Pedestrian and/or bicycle detour signage may be necessary to denote the temporary detour route for these modes.

CEQA Determination. With mitigation, construction impacts would be reduced to a less-than-significant level.

Operations Impacts and Mitigation

Impact 8: Potential to permanently affect bicycle circulation in the study area.

As indicated in Section 2.4.4, project-related bicycle or pedestrian facilities would be designed according to standard practices as outlined in the following documents:

- Caltrans Highway Design Manual, Chapter 1000 – Provides design standards for on-street and off-street bicycle facilities as well as for intersection treatments including intersections of bicycle lanes with freeway interchanges.

- Manual of Uniform Traffic Control Devices, Part 9 (FHWA and California Supplement) – Provides standards for striping and signage of bicycle lanes, bicycle routes, and shared-use paths.

- AASHTO Guide for the Development of Bicycle Facilities – Reiterates many of the design guidelines specified above but also includes description of various mid-block crossing treatments.

After selection of the LPA is made, refinements to bicycle and pedestrian circulation will be considered for the LPA and, if required, additional analysis conducted and presented in the Final EIS/EIR

By following these guidelines, bicycle and pedestrian facilities would be readily identified and designed to optimize the safety of the users. Potential adverse impacts to bicycle and pedestrian circulation at each alternative site are described below.

Alternative A. *The Berkeley Bicycle Plan* (February 22, 2005) designates future bicycle lanes on Marina Boulevard between University Avenue and Spinnaker Way. Although the striping of bicycle lanes on Marina Boulevard is not necessarily the responsibility of this project, adequate road right-of-way will be maintained to accommodate these lanes in the future. The site design will also facilitate bike access to and from the ferries. In addition, the site plan design will incorporate pedestrian pathways that include striped crosswalks, signage, and adequate lighting to ensure visibility of pedestrians walking between the ferry terminal and the parking area. The Alternative A site plan (Figure 2-8) indicates the location of the proposed bike lane, Bay Trail, and pedestrian circulation through the area. The site plan incorporates and accommodates all existing and proposed pedestrian and bicycle plans identified in Figure 3-6. Therefore, no long-term adverse impacts to bicycle and pedestrian circulation would result from implementing this alternative.

Alternative B. An existing segment of the San Francisco Bay Trail follows Seawall Drive. Because it is unimproved and narrow, it is not suitable for sharing between bicyclists and pedestrians. Adequate road right-of-way will be maintained into and through the parking area to accommodate bicyclists and to facilitate bike access to and from the ferries. Safe passage of pedestrians and bicyclists will be provided by use of striped crosswalks, signage, and adequate

lighting to ensure visibility of pedestrians. The Alternative B site plan (Figure 2-10) indicates the location of the Bay Trail and pedestrian circulation paths (no bicycle facilities exist or are planned through this site). The site plan incorporates and accommodates all existing and proposed pedestrian plans identified in Figure 3-6. Therefore, no long-term adverse impacts to bicycle and pedestrian circulation would result from implementing this alternative.

Alternative C. This project site is located along a future segment of the San Francisco Bay Trail that would provide a bicycle and pedestrian connection between Buchanan Street and the existing San Francisco Bay Trail, which currently terminates at Gilman Street. The site plan indicates a future connection of the Bay Trail through the project site. Adequate road right-of-way will be maintained into and through the parking area to accommodate bicyclists and to facilitate bike access to and from the ferries. Pedestrian pathways to the ferry terminal will contain striped crosswalks, signage, and adequate lighting to ensure visibility of pedestrians. The Alternative C site plan (Figure 2-11) indicates the location of the Bay Trail and pedestrian circulation paths (no bicycle facilities exist or are planned through this site). The site plan incorporates and accommodates all existing and proposed pedestrian plans identified in Figure 3-6. Therefore, no long-term adverse impacts to bicycle and pedestrian circulation would result from implementing this alternative.

Alternative D. The existing Bay Trail pedestrian pathway along the water's edge would be retained for pedestrian access. Pedestrian pathways to the ferry terminal will contain striped crosswalks, signage, and adequate lighting to ensure visibility of pedestrians. The site design will accommodate bicyclists traveling through the parking area to arrive at the ferry plaza. Pedestrian crossing(s) would be provided at logical pedestrian access points between the ferry plaza and the parking area and include striped crosswalks, signage, and adequate lighting to ensure visibility of pedestrians. The Alternative D site plan (Figure 2-12) indicates the location of the Bay Trail and pedestrian circulation paths (no bicycle facilities exist or are planned through this site). The site plan incorporates and accommodates all existing and proposed pedestrian plans identified in Figure 3-6. Therefore, no long-term adverse impacts to bicycle and pedestrian circulation would result from implementing this alternative.

CEQA Determination. No significant bicycle or pedestrian impacts would occur under Alternatives A through D.

Cumulative Impacts and Mitigation

Alternatives A through D. Cumulative pedestrian and bicycle impacts would not result from use of the Bay Trail in combination with use of waterfront areas at the terminal sites because terminal area improvements will incorporate the Bay Trail alignment, which will be designed to address the increase in recreational users and allow continued and unobstructed use. In addition, the pedestrian and bicycle improvements that the cities and regional agencies are planning along the Berkeley/Albany waterfront would create cumulative beneficial effects at the terminal sites.

CEQA Determination. No cumulative pedestrian and bicycle impacts would occur.

4.2 LAND USE, PLANS, AND POLICIES

This section discusses the potential impacts of the ferry terminal alternatives on land uses within the project area. The focus of the analysis is on the project components that are on the landside, which primarily consist of the ferry plaza, bay trail, bus and car drop off, and parking areas.

4.2.1 Methodology

The analysis in this section focuses on the compatibility of land uses between existing and planned land use proposed for the project area. To determine the potential impacts, a review was performed of how the land use would be changed by the proposed project, along with a consistency review of applicable plans, policies, or regulations. Currently, the Berkeley Marina and Pier sites have a land use designation of "Waterfront/Marina" and zoning designation of "Unclassified." The Gilman Street site currently has a land use designation of "Waterfront/ Marina" and zoning designation of "Specific Plan." The Buchanan Street site has a land use designation of "Park and Recreation" and a zoning designation of "Waterfront."

4.2.2 Significance Criteria

The proposed project would have potentially adverse impacts on the environment if it would do any of the following:

- Cause community disruption resulting in the displacement of existing houses or businesses, either directly or indirectly.
- Disrupt community cohesion by physically dividing or otherwise substantially disrupting a community, either directly or indirectly.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

The analysis in this section has been performed to address each of the criteria listed above, to determine potential impacts under NEPA and CEQA guidance.

4.2.3 Impacts and Mitigation

4.2.3.1 No-Action Alternative

Under the No-Action Alternative, the Project Alternatives would not be implemented, and land use would not change. The No-Action Alternative would not result in new development and would not cause displacement of existing houses or businesses; physically divide a community; conflict with any applicable land use plan for the project area; or alter or conflict with existing

planning documents, policies, and regulations. Therefore, the No-Action Alternative would not result in adverse direct or indirect land use impacts.

4.2.3.2 Action Alternatives

Construction Impacts and Mitigation

Impact 1: The potential to temporarily affect or displace land uses in and near the project sites due to construction activities.

Construction activities associated with implementation of all ferry terminal alternatives would require landside and waterside construction activities. Landside activities would consist of parking lot striping and repaving, ferry plaza construction, and Bay Trail incorporation into the design of the ferry terminal alternatives. Waterside construction activities would consist of pier driving associated with the construction of the enclosed pier and gangway, and dredging to create a navigable channel.

Alternative A. Construction activities at the Berkeley Marina site could impede access to the Bay Trail, The Berkeley Yacht Club, The Doubletree Hotel, and Hs Lordships Restaurant. Impediments to access could include construction equipment or trucks hauling, picking up, and dropping off materials, and blocking entrances to local business and facilities. Construction activities may temporarily disrupt the established business and facilities at the Berkeley Marina area. Furthermore, it is expected that access to the area would be maintained as much as possible. As a result, no adverse impacts are anticipated.

Alternative B. As with the Berkeley Marina site, the construction activities mentioned above could disrupt the business practices of Hs Lordships Restaurant. However, because construction activities are temporary, no permanent or substantial disruption to Hs Lordships Restaurant and no physical division of the area or displacement of business would occur. Therefore, no adverse impacts are anticipated.

Alternative C. The construction of the parking lot would be the main construction activity at the Gilman Street site. It would temporarily disrupt and impede access to a few existing horse stables. The disrupted horse stables would be relocated to another area of the property rather than be displaced, because adequate land exists to accommodate this change. Therefore, no adverse impacts are anticipated.

Alternative D. Construction activities at the Buchanan Street site, such as the striping and repaving of the parking lot area and the construction of the ferry plaza, would not result in the division or displacement of an established community as none exist in the area. Therefore, no potentially adverse impacts are anticipated.

CEQA Determination. No significant land use impacts resulting from construction would occur.

Operations Impacts and Mitigation

COMMUNITY DISRUPTION AND DISPLACEMENT

Impact 2: The potential to disrupt or displace existing land uses or communities.

Alternative A. The Berkeley Marina site is owned by the City of Berkeley and currently consists of a marina with docks, yachts, moorings, the Doubletree Hotel, a restaurant, a parking lot, and an unimproved portion of the Bay Trail. The Hornblower dock is proposed to be moved approximately 250 feet northwest from its current location at the Berkeley Marina to an area along the same dock. In addition, approximately eight slips within the Marina would be displaced.

The Berkeley Marina site would use approximately 104 parking spaces which are currently being used by the Doubletree Hotel. This would result in a net loss of parking spaces for the Doubletree Hotel unless a shared parking lot agreement is implemented between the project proponent and the Doubletree Hotel. The land use of the parking lot would not change due to implementation of the ferry terminal alternative at the Berkeley Marina site. Therefore, no adverse impacts on land use are anticipated (see Section 4.1, Transportation and Circulation; and Section 4.3, Socioeconomics).

Alternative B. The Berkeley Fishing Pier site is owned by the City of Berkeley and consists of a parking lot, Seawall Drive, and Shorebird Park. It is adjacent to an unimproved portion of the Bay Trail and Hs Lordships Restaurant. No adverse impacts would occur at this site because no established residential community would be divided or displaced as a result of this alternative.

As with the Berkeley Marina site, parking issues would not result in an adverse impact because no change in land use would occur. This issue is further explored in Section 4.1, Transportation and Circulation; and Section 4.3, Socioeconomics.

Alternative C. The Gilman Street site is owned by Magna Corporation and currently consists of a parking lot and a large paved area used by Golden Gate Fields for ancillary buildings. These ancillary buildings consist of temporary and permanent horse stables connected to sporting events at Golden Gate Fields. The parking lot for the Gilman Street site would require the relocation of approximately four permanent horse trailers. Though not considered an established community, the relocation of the horse trailers would be the responsibility of the project proponent, because these horse trailers are directly connected to an established business at Golden Gate Fields. This would include negotiations with the owners of Golden Gate Fields. As it appears that there is adequate land at Golden Gate Fields to relocate the horse stables, no displacement would occur, and no adverse land use impacts would occur. This issue is further discussed in Section 4.3, Socioeconomics.

Alternative D. The Buchanan Street site currently consists of a large parking lot. None of the current land uses at this site are residential or commercial in nature, nor are they representative of a community. Therefore, implementation of this ferry terminal alternative would not result in

the displacement or division of an established community or business, and no potentially adverse impacts are anticipated.

CEQA Determination. No significant community disruption and displacement of land uses would occur from project operation.

LAND USE COMPATIBILITY WITH PLANS, POLICIES AND REGULATIONS

Impact 3: The potential to conflict with existing plans, policies and regulations that govern the areas at and near the ferry terminal alternatives.

The plans identified below are described in Section 3.2.

San Francisco Bay Plan (2003)

Alternatives A, B, and D. Transportation Policy 5 in the Plan states that ferry terminals should be sited at locations that are near navigable channels, which would not rapidly fill with sediment, and would not significantly impact tidal marshes, tidal flats, or other valuable wildlife habitat. According to the Phase 1 Site Alternative Analysis, the Berkeley Marina site would require 77,000 cubic yards of dredge volume to be considered navigable, while the Berkeley Fishing Pier site would require 18,000 cubic yards of dredge volume. Neither site contains tidal marshes, tidal flats, or valuable wildlife which could be adversely impacted due to implementation of these ferry terminal alternatives. Since both sites would be navigable after dredging, and do not contain tidal marsh areas or valuable wildlife habitats, the ferry terminal alternatives would be consistent with Transportation Policy 5 and no potentially adverse impacts are anticipated.

According to the BCDC, a permit is needed for any development in and within 100 feet of the Bay. Since all elements of the ferry terminal alternative sites are within the jurisdiction of the BCDC, all elements would have to be permitted (McCrae, 2007). BCDC has stated that a ferry terminal is a compatible land use with their Bay Plan (McCrae, 2007). Because the proposed project would be compliant with the BCDC permitting process, no potentially adverse impacts are anticipated.

Alternative C. In addition to the permit requirement mentioned above, Alternative C contains a significant amount of valuable wildlife habitat in the form of eelgrass. According to the Phase 1 Site Alternative Analysis, a significant impact would occur if any portion of the eelgrass area was impacted by ferry service. Potential adverse impacts on eelgrass are analyzed and mitigations are proposed in Section 4.9, Biological Resources.

CEQA Determination. The project is compatible with the San Francisco Bay Plan and will not conflict with plan policies. No potentially significant impacts would occur for Alternatives A, B, or D. For Alternative C, implementation of eelgrass mitigations included in Section 4.9, Biological Resources, would result in compliance with Transportation Policy 5 in the San Francisco Bay Plan and reduce potentially adverse impacts to a less-than-significant level.

Eastshore State Park General Plan (2002)

Alternatives A and B. The proposed parking lot for the Berkeley Marina site would be located adjacent to the "Meadow" area of the Eastshore State Park, but would not impede upon lands belonging to the park. No part of the Berkeley Fishing Pier site would impact the Eastshore State Park, because the site is not located within its jurisdiction. Therefore, no adverse impacts on Eastshore State Park are anticipated at the Berkeley Marina or Berkeley Fishing Pier sites.

Alternatives C and D. The Gilman Street and Buchanan Street sites are located within an area identified as "Aquatic Parklands" of the Plan. According to Brad Olson of the EBRPD, the construction of ferry terminals within Eastshore State Park boundaries is not permitted, would be inconsistent with the Eastshore State Park General Plan, and would be a difficult project to implement (Olson, 2007). Therefore, construction of a ferry terminal at the Gilman Street and Buchanan Street sites would result in a significant unavoidable impact. In addition, in conformance with Section 4(f) and 6(f) requirements, park use for transportation projects must demonstrate that no prudent and feasible alternatives exist to receive federal funding support (refer to Section 3.4.1, Regulatory Framework for Parklands and Recreational Facilities).

CEQA Determination. Alternatives A and B are compatible with the Eastshore State Park General Plan and would produce no significant impacts on the plan policies. For Alternatives C and D, construction of a ferry terminal on lands under the jurisdiction of the Eastshore State Park General Plan is not permitted, and the Park District has stated that such a project would be difficult to implement. Therefore, this impact cannot be mitigated to a less-than-significant level, and remains a significant unavoidable impact.

City of Berkeley General Plan (2001) – Land Use Element and Open Space Element

Alternatives A, B, and C. Only sites A, B, and C are within the City of Berkeley and subject to Berkeley General Plan guidelines and policies. The Berkeley Marina and Berkeley Fishing Pier sites would not conflict with the City's General Plan Land Use and Open Space Elements. Both sites are located in areas that would not result in the loss or modification of open space. Shorebird Park, Cesar Chavez Park, Horseshoe Park, and The Meadow (part of Eastshore State Park) near the Berkeley Marina would not be impacted in any way by the project. Patrons would be able to continue to enjoy the Berkeley Marina and Gilman Street areas in the same way as they would in the absence of the project. The project would maintain the waterfront area of Berkeley as an area for recreational and open space uses, including access to the Bay Trail, while providing public transportation connections that would attract Bay Area residents to the area.

No general plan land use or zoning designation change is expected as a result of the project. However, according to the Berkeley Planning and Development Department, all Berkeley ferry terminal alternative sites would require Design Review and Use Permit applications and approval by the Design Review Committee and the Zoning Adjustment Board. Permits for the Alternative A and B sites would require Planning Commission approval because they are included in the Unclassified zoning district. Alternative C would require Waterfront

Commission approval because the site is included in the Specific Plan zoning district (whereas the Berkeley Marina and Berkeley Fishing Pier sites require Planning Commission approval). According to the Berkeley Planning and Development Department, there are no explicit standards for development along the Berkeley Waterfront, and all projects are reviewed on a case-by-case basis (Crane, 2007).

CEQA Determination. Based on the aforementioned reasoning, project implementation at the Berkeley sites would not conflict with Berkeley's General Plan Land Use and Open Space Elements. No potentially significant impacts are anticipated.

Bay Trail Plan

Alternatives A and B. Implementation of Alternatives A or B would not conflict with the Bay Trail Plan, which intends to encircle much of the Bay shoreline with a pedestrian and bicycle pathway. The site plans would be designed to accommodate and incorporate the Bay Trail where it traverses the site, a beneficial impact. For specific temporary effects on the Bay Trail resulting from project construction activities, refer to Section 4.4, Parklands and Recreational Facilities for project construction and other project operation impacts.

Alternatives C and D. Implementation of Alternative C or D is not anticipated to adversely affect the implementation of the Bay Trail through these sites as indicated in the Bay Trail Plan. At Alternatives C and D, the project would most likely precede Bay Trail operation. To accommodate the Plan, the sites would be designed to incorporate the Bay Trail where it traverses the sites.

CEQA Determination: None of the alternatives would conflict with or adversely affect implementation of the Bay Trail Plan.

City of Berkeley Waterfront Master Plan (1986) – Waterfront Land Use Policies

Alternatives A, B, and C. Only sites A, B, and C are within the City of Berkeley and subject to Berkeley Waterfront Master Plan guidelines and policies. As with Berkeley's General Plan, the Berkeley sites are consistent with the policies outlined in the City's Waterfront Master Plan. All Plan policies have been integrated into the City's General Plan. As previously discussed, the Berkeley ferry terminal alternatives would require Design Review and Use Permit applications and approval by the Design Review Committee, Zoning Adjustment Board, and the Planning Commission or the Waterfront Commission, as this is the standard procedure for development projects along the Berkeley Waterfront. The project would not interfere with the provisions of the Plan, because it would maintain existing open spaces, views, and natural resources along the Berkeley Waterfront. No conflict with the Plan is anticipated and no adverse impacts are anticipated.

CEQA Determination. Based on the aforementioned reasoning, project implementation at the Berkeley sites would not conflict with Berkeley's Waterfront Master Plan. No potentially significant impacts would occur.

Berkeley Bicycle Plan (1998, updated 2005)

Alternatives A, B, and C. Only sites A, B, and C are within the City of Berkeley and subject to Berkeley Bicycle Plan guidelines and policies. The Berkeley sites are consistent with *The Berkeley Bicycle Plan.* The project would not interfere with existing bicycle routes that traverse the project area. Existing bicycle routes in the Berkeley Marina and Pier follow the Bay Trail. Because the project would integrate the Bay Trail into the design of the ferry terminal, existing Berkeley bicycle routes would be preserved. Therefore, no adverse impacts are anticipated.

CEQA Determination. Based on the aforementioned reasoning, project implementation at the Berkeley sites would not conflict with Berkeley's Bicycle Plan. No potentially significant impacts would occur.

City of Albany General Plan (1990-2010)

Alternative D. Only Site D is in the City of Albany and subject to City of Albany plans and policies. The Buchanan Street site is consistent with the policies and provisions of the Albany General Plan. The provisions of the General Plan are intended to preserve and restore the Albany Waterfront (City of Albany, 1990). Furthermore, the Plan states that "Any future development must account for public access…" which the project would do by incorporating the Bay Trail into its design. Moreover, the design of the ferry terminal would be "low-impact" and would allow that area of the Albany Waterfront to preserve existing scenic viewsheds. Minimal landside work preparation would be required, because the area is already paved and the ferry terminal would extend out from the shoreline, resulting in preservation of natural features found around the site. The project site is included in the Waterfront Zone, and design review and use permit applications would have to be approved by the Planning and Zoning Commission. The project would preserve and restore Albany's waterfront, and as such is consistent with the City's General Plan. No adverse impacts are anticipated.

CEQA Determination. Alternative D does not produce significant impacts or conflicts with the Albany General Plan.

Albany Bicycle Plan

Only Site D is in the City of Albany and subject to City of Albany plans and policies. The Buchanan Street site is consistent with the Albany Bicycle Plan because operation of a ferry service at this site would not interfere with existing bicycle routes which traverse the project area. Existing bicycle routes in the project site area follow the Bay Trail. Because the project would integrate the Bay Trail into the design of the ferry terminal, existing Albany Bicycle routes would be preserved. Therefore, no adverse impacts are anticipated.

CEQA Determination. Alternative D does not produce significant impacts or conflicts with the Albany Bicycle Plan.

Cumulative Impacts and Mitigation

Cumulative Impact from Displacement of Existing Housing or Businesses. Area growth, including the implementation of approved projects in the study area, would not result in the displacement of existing housing because most of the projects would be in-fill projects located on parcels where no housing exists. Alternative C would relocate Golden Gate Field facilities on-site. This action would not cause businesses to relocate and would not contribute to a cumulative effect of business displacement of development projects in the study area.

Cumulative Impact from Physical Division of Established Communities. Implementation of ferry terminal alternatives plus approved development projects in the study area would not result in the physical division of established communities. A physical division of established communities would not occur because no established communities are present at any of the sites. None of the cumulative projects would require the acquisition of land where an established community is located and subsequently could be divided. Therefore, no cumulative impacts from the physical division of an established community would occur.

Cumulative Plan Consistency. The ferry terminal alternatives, as well as approved development projects, are consistent with the local General Plan and Zoning Code, although some of the development projects may have received General Plan and Zoning Code amendments to proceed. As stated in the Operations analysis, Alternatives C and D are inconsistent with the Eastshore State Park Plan. Their adverse impact on the parklands is project-specific and would not create a cumulative effect based on growth in recreational users of Eastshore State Park or construction of nearby development projects.

4.3 SOCIOECONOMICS

This section includes an analysis and determination of the potential adverse and beneficial project impacts on socioeconomics and environmental justice, each described under separate headings. The construction and/or operation of new transportation infrastructure could have adverse impacts on local communities and/or businesses through disruption of the community. This section is a generalized description of the overall effects on the ferry terminal alternatives on the area's population, housing, employment, and the local economy. The information presented pertains to all ferry terminal site alternatives, because their socioeconomic and environmental justice implications and potential impacts are similar. The potential impacts and benefits of project construction and operation are discussed below.

4.3.1 Methodology

Plausible adverse effects were evaluated through the analysis of the proposed project's socioeconomics and environmental justice impacts. These subjects were evaluated through comparison of the potential project's direct and indirect impacts to overall projected population, employment, housing growth forecasts of the City of Berkeley, the City of Albany, and Alameda County, as well as historical minority and low-income population comparisons.

4.3.2 Significance Criteria

Historical and projected data included in Section 3.3, Socioeconomics, were analyzed to determine whether the ferry terminal alternatives would result in potential impacts on employment, population, and housing. A socioeconomic impact would be considered adverse if the proposed project would:

- Directly or indirectly induce substantial population growth;
- Displace or create severe hardship for a substantial number of people, housing, or businesses; or
- Disrupt or separate a neighborhood, including transportation improvements that could change traffic patterns.

To determine if the ferry terminal alternatives would result in adverse impacts on minority and/or low income populations, a process was used based on the guidance provided by the Council of Environmental Quality, U.S. EPA, and the FHWA. Through this process, the broad range of project-related potential environmental and human heath effects were evaluated; the geographic area affected by the project and the demographic character of this geographic area were determined; and the affected populations were analyzed to determine if environmental justice communities existed within these populations.

4.3.3 Socioeconomic Impacts and Mitigation

4.3.3.1 No-Action Alternative

The No-Action Alternative would not result in implementation of the ferry terminal alternatives and therefore would not affect socioeconomics or environmental justice. However, without the project the beneficial effects of providing ferry service would not be realized.

4.3.3.2 Action Alternatives

Since the ferry terminal alternatives are located in the same vicinity, they would have similar socioeconomic impacts. Therefore, the impacts discussed pertain to all sites, as indicated below.

Impact 1: The potential to induce population growth.

Construction. The project construction would not induce substantial population growth, nor would it displace a substantial number of existing housing or people. Because of the large workforce available within the San Francisco Bay Area, the majority of the construction workers will be hired locally, and they will not have to relocate for the project construction. Therefore, the project would result in temporary growth during construction, but no long-term substantial changes are expected, and less-than-significant induced population growth is anticipated due to the project construction.

Operation. The project operation would not induce substantial population growth, nor would it displace a substantial number of existing housing or people. The majority of the operational workers will be hired from within the San Francisco Bay Area, and they will not have to relocate for the project operation. Therefore, no change is expected during operations and no adverse impact is anticipated due to the project operations.

CEQA Determination. This impact is less than significant.

Impact 2: The potential to displace people, housing, or businesses.

Construction. The majority of the project construction workers will come from the San Francisco Bay Area, and the majority of construction materials will be purchased locally. Because the San Francisco Bay Area has a large labor force and a successful economy, this number of temporary construction jobs and payroll would not adversely affect the labor supply, housing prices, or availability of housing. Vessel construction would also generate one-time jobs but because there are no shipyards building ferry vessels in the San Francisco Bay Area, this construction would not create local jobs. Therefore, the project construction would not displace people, housing, or businesses, but would create jobs during construction, resulting in a small beneficial impact.

Operation. Project operations would generate 30 full time jobs, not including administrative jobs, with an average annual payroll per worker of $100,000. This amount includes benefits and social security. The majority of the operations workers will come from the San Francisco Bay Area. In the large economy of Alameda County and the San Francisco Bay Area, this economic benefit would be relatively small and considered insignificant. Therefore, project operations would not adversely affect people, housing, or businesses.

CEQA Determination. This impact is less than significant.

Impact 3: The potential to disrupt or change neighborhood transportation and traffic patterns.

Construction. Project construction will temporarily disrupt the business communities within the project area. However, this impact will be temporary in nature and WETA will work with the affected businesses to determine an appropriate mitigation for the disruption.

Operation. Construction and operation of the ferry service will displace parking spots used by local businesses. WETA will work with these local businesses to determine an appropriate mitigation for these displaced parking spots. WETA will also work with Golden Gate Fields to relocate horse trailers/sheds to accommodate ferry service construction and operation.

A project benefit would include having a reliable contingency mode of transbay access to reduce the disruption to the Bay Area economy in the event of a catastrophic event that interrupted bridge or BART travel for an extended period.

Therefore, the project would result in changes in traffic during construction and operations, but would be designed so that the neighborhood maintains cohesion. Existing routes will be enhanced, and no adverse impact anticipated. A beneficial change in traffic outside of project area will result because the ferry terminal would provide a transportation alternative to the private automobile and other transit modes.

CEQA Determination. This impact is less than significant.

Socioeconomic Cumulative Impacts

None of the ferry terminal alternatives in combination with regional growth or other cumulative development in the City of Berkeley or the City of Albany will contribute to substantial cumulative population, housing, or employment changes within Alameda County. The ferry terminal will serve the existing populations rather than stimulate new population growth. The project does create new construction and operation jobs, but the direct, indirect, and induced effects of the project construction and operation jobs would not create substantial employment growth. Based on the environmental criteria developed by WETA, and in accordance with CEQA, NEPA, and all applicable state and federal laws, the project would not have an adverse effect on the environment.

CEQA Determination. This impact is less than significant.

Environmental Justice Discussion

Section X, EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to consider environmental justice issues in their policies, activities, and procedures. The potential impacts and benefits of project construction and operation on environmental justice issues, such as ethnicity of the populations, low income, and poverty status, are discussed below.

Ethnicity of Population. Census Tract 4204 has a racial and ethnic population of more than 50 percent of its population; this typically constitutes an environmental justice community. However, the racial and ethnic population distribution can be attributed to the University Village, a University of California at Berkeley-owned family student housing facility located at 1125 Jackson Street in Albany, and to the proximity of the census tracts to the University of California at Berkeley. Approximately 65 percent of the students at UC Berkeley in the fall of 2006 were considered to be racial minorities (UC Berkeley, 2007). The project will increase mobility for these residents by providing an additional mode of public transportation. Project construction and operation will also increase the area's economic prosperity, because the majority of the project construction workers will come from the San Francisco Bay Area, and the majority of construction materials will be purchased locally.

Low-Income and Poverty Status. University Village is family student housing facility located in Albany, available to students who are married, single parents, and domestic partner student families. University Village encompasses 58 acres and has 760 one-, two- and three-bedroom

apartments and two-bedroom townhouses (UC Housing, 2007). Residents of Census Tract 4220 have a percentage of the population below the poverty level that is more than 2 percentage points higher than the percentage of population below the poverty level in Alameda County and the City of Albany. While Census Tract 4204 would indicate the presence of a low income and minority population that is technically an environmental justice community, the tract consists almost entirely of University family housing. While many residents are minority and/or low income, these residents are undergraduate and graduate university students and do not live in a community that suffers environmental hardships.

No disproportionately adverse impacts to minorities, ethnic groups, or low-income households are anticipated as a result of the ferry terminal alternatives. The high percentage of minority and low income residents is due to the inclusion of university students who are not working or work in lower paying jobs while going to school.

Americans with Disabilities Act. The Action Alternatives include design features to address accessibility issues for disabled persons and seniors (refer to Sections 2.2 and 2.3). The design features pertain to vessel, terminal, pedestrian walkway, and parking area accommodations to facilitate the use of the ferry service by disabled people and seniors. More detailed information about the ADA project design elements is included in Appendix G.

The project, in combination with regional growth or other cumulative development in the City of Berkeley or the City of Albany, would not impose adverse impacts disproportionately on any of the high minority or low income neighborhoods identified in this section. Based on the environmental criteria developed by WETA, and in accordance with CEQA, NEPA, and all applicable state and federal laws, the project would not have an adverse effect on the environment.

4.4 PARKLANDS AND RECREATIONAL FACILITIES

This section discusses the potential impacts of the ferry terminal alternatives on study area parklands and recreational areas, including potential Section 4(f) properties (which are defined in U.S. DOT 49 USC, Section 303 and 223 USC, Section 138).

4.4.1 Methodology

Eight parkland and recreational areas located in the study area were identified as Section 4(f) properties. These include the Albany Bulb, Albany Beach, Eastshore State Park, the Bay Trail, Cesar Chavez Park, Shorebird Park, Aquatic Park, and Horseshoe Park. An evaluation of the potential direct ("use") and indirect ("constructive use") effects associated with the implementation of the terminal alternatives was conducted for these parkland and recreational facilities. A direct effect occurs when land is permanently incorporated into a transportation facility, or if there is a temporary occupancy of land that is adverse in terms of preservation. An indirect effect occurs when there are adverse impacts that would substantially impair the significance or enjoyment of a park or recreation property.

4.4.2 Significance Criteria

NEPA THRESHOLDS

The following criteria were applied to evaluate the terminal alternatives. An alternative is considered to result in impacts to parklands and Section 4(f) properties when:

- Protected land is permanently acquired for transportation facilities;
- A temporary use is considered adverse; or
- Constructive use of a resource occurs.

A more detailed definition of "use" and "constructive use" is provided below.

Section 303, 49 USC Subtitle 1, known as Section 4(f) of the U.S. DOT Act, allows the use of land from a significant publicly owned public park, recreational area, wildlife or waterfowl refuge, or any significant historic site for use on a transportation project only when the Secretary of Transportation has determined that there is no feasible and prudent alternative. The project must also include possible planning to minimize harm to the property resulting from such use. The purpose of Section 303 is to preserve public parklands and recreation areas, refuges, and historic sites by limiting the circumstances under which such land can be used for transportation programs or projects. Protection also applies to non-publicly owned historic sites if officials having the jurisdiction determine they have federal, state, or local significance. Section 303 does not apply to archaeological resources if WETA, in consultation with the SHPO, determines they do not require preservation in place, and their important information can be recovered or preserved through study.

Within the meaning of Section 303, "use" is generally considered to occur when the project requires a physical taking or other direct control of the land for the purpose of the project, and as a consequence, the use is changed and adversely impacted. For example, acquiring and developing a portion of a park to build a transportation improvement would be considered a "use."

However, "use" within the meaning of Section 303 includes not only actual physical takings, but also adverse impacts (constructive use) as well. For example, it has been said that a project that respects a park's territorial integrity may still, by means of noise, air pollution, or otherwise, "dissipate its aesthetic value, crush its wildlife, defoliate its vegetation, and take it in every practical sense." Therefore, when applied to transportation projects developed near Section 303 resources, a "constructive use" may occur when impacts due to proximity of the project substantially impair the activities, features, or attributes of the resource. Substantial impairment occurs when the protected activities, features, or attributes of the resource are substantially diminished.

In addition, Section 6(f) of the LWCFA as amended (16 USC Sections 460l-4 et seq.) is addressed as appropriate. If Section 6(f) effects are determined, coordination and approval of the U.S. Department of the Interior (U.S. DOI), National Park Service (LWCFA liaison), and local agencies would be initiated. Replacement of Section 6(f) property for property used may be necessary.

If it is determined that a use of Section 303 and Section 6(f) of the LWCFA land would occur as result of implementing the LPA, WETA must determine that no feasible and prudent alternatives exist, and that all possible mitigation has been incorporated into the project. The resulting Section 4(f) and Section 6(f) evaluation would be summarized in a new chapter incorporated into the Final EIS/EIR.

CEQA THRESHOLDS

According to Appendix G of the CEQA Guidelines, a significant impact to park and recreational facilities would occur if:

- The project would result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts for parks;

- The project would increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or

- The project would include recreational facilities or require the construction or expansion of recreational facilities which may have an adverse physical effect on the environment.

4.4.3 Parklands and Recreational Facilities Impacts and Mitigation

4.4.3.1 No-Action Alternative

Under the No-Action Alternative, the ferry terminal alternatives would not be implemented. The conversion of parklands, recreational facilities, or Section 4(f) properties would not occur. Therefore, Section 4(f) does not apply, and the No-Action Alternative would not result in direct or indirect parklands or Section 4(f) impacts.

4.4.3.2 Action Alternatives

Construction Impacts and Mitigation

Impact 1: The potential for direct or indirect use of Section 4(f) properties during project construction.

Alternatives A and B. Construction activities at the Berkeley Marina and Berkeley Fishing Pier sites have the potential to temporarily impair the Bay Trail right-of-way. This impairment could result in temporary access impacts along the Bay Trail in these areas. According to the Section 4(f) statute, a temporary occupancy of property does not constitute a use of a Section 4(f) resource when the following conditions are satisfied: (1) the occupancy is of a temporary duration shorter than the period of construction; (2) no change in ownership of the property

occurs; (3) only minimal changes to the protected resource occur; (4) no permanent physical effects or interference with the purpose of the resource exist; (5) the resource can be fully restored at the completion of project construction; and (6) there is documented agreement of the appropriate officials having jurisdiction over the resource. These conditions will be met prior to and during construction of the ferry terminal facilities. Temporary rerouting of the Trail may be required to accommodate construction activities without impeding trail users.

Alternative A borders Eastshore State Park along the Marina Boulevard Parking area. Alternative B parking area borders Shorebird Park. In neither case would project construction affect access to or use of the parkland.

Alternatives C and D. Construction activities at both sites have the potential to temporarily impair the Bay Trail right-of-way, which is currently planned for the waterfront at Alternatives C and D, as described for Alternatives A and B. In addition, construction activities such as dredging and pier pile driving would take place within the "Aquatic Parklands" of Eastshore State Park. In accordance with the terms established under 49 USC, Section 303 and 223 USC, Section 138, the resource must be fully restored to its original condition at the completion of construction and the temporary use of the parkland must terminate before the end of the construction period. The daily use of the ferry terminal at these sites as well as the need for continual maintenance dredging for continued ferry operation would not conform to these regulations. As a result, if either Alternative C or D is selected as the LPA, a Section 4(f) evaluation would be required to determine if no feasible and prudent alternatives exist. Also, it is unlikely that a documented agreement to permit this use of the aquatic parkland will be authorized by State officials.

Mitigation. By following the conditions for temporary use of the Bay Trail according to the Section 4(f) statute, and temporarily rerouting the Bay Trail to accommodate construction activities, no adverse impacts would occur on the Bay Trail for all ferry terminal alternatives. For Alternatives C and D, mitigation measures that comply with Section 303 stipulations for temporary use of Eastshore State Park aquatic parklands are not likely to be met, producing an unmitigated adverse impact.

CEQA Determination. Less-than-significant parkland or recreational facilities impacts would occur for the Bay Trail, but Eastshore State Park impacts for Alternatives C and D may not be sufficiently mitigated, producing significant unavoidable impacts.

Operations Impacts and Mitigation

Impact 2: The potential for direct or indirect use of Section 4(f) properties during project operation.

Alternatives A and B. Implementation of the ferry terminal alternatives studied at the Berkeley Marina and Berkeley Fishing Pier sites would not require permanent land acquisition from any of the aforementioned Section 4(f)-eligible properties in the vicinity (Eastshore State Park, the Bay Trail, Cesar Chavez Park, Shorebird Park, or Horseshoe Park). The project parking area for

Alternative A, Berkeley Marina site, would be located adjacent to the "Meadow" portion of Eastshore State Park, but would not require park property or directly or indirectly affect the use or access to the park. The project parking area for Alternative B, the Berkeley Fishing Pier site, would be located adjacent to Shorebird Park, but would not require park property or affect use or access to this park. The Bay Trail is currently unimproved along these sites. The project design would incorporate the Bay Trail to facilitate unimpeded public access along the Trail and would not result in permanent displacement or acquisition of any portion of the Bay Trail. Because neither site would require the permanent acquisition of land designated as a Section 4(f) property, no potentially adverse impacts are anticipated.

Alternatives C and D. Implementation of the ferry terminal alternatives studied at the Gilman and Buchanan Street sites would require direct use of "Aquatic Parklands" of the Eastshore State Park. Operational project components at these sites, such as the new dock extension and dredged channel, would be located in areas designated as part of a Section 4(f) and Section 6(f) property (Eastshore State Park). Implementation of these ferry terminal alternatives would result in an unavoidable adverse impact to the Park, because permanent use of a Section 4(f)/Section 6(f) property would occur and cannot be mitigated. To receive federal funding support for either Alternative C or D, WETA must demonstrate that no feasible and prudent alternatives exist (refer to U.S. DOT and U.S. DOI guidelines stated in Section 3.4.1),

Historic Sites. No historic sites were identified at these sites, as described in Section 4.6, Cultural Resources. Therefore, no impacts would occur to Section 4(f) properties under provisions of Section 106 of the NHPA of 1966.

Mitigation. No mitigation is required for Alternatives A and B. For Alternatives C and D, mitigation outlined in Section 303 may not receive concurrence from the jurisdiction governing Eastshore State Park, an adverse impact that could not be mitigated.

CEQA Determination. No significant operations impacts would occur for Alternatives A and B, but for Alternatives C and D, mitigation measures to reduce significant impacts to a less-than-significant level may not be agreed to by Eastshore State Park officials, potentially producing significant unavoidable impacts.

Cumulative Impacts and Mitigation

Currently, the City of Albany provides 1.87 acres of parklands per 1,000 residents, while Berkeley provides 12 acres per 1,000 residents (City of Albany, 1990; City of Berkeley, 2001). Moreover, a number of regional parks such as Tilden Regional Park (2,079 acres), Eastshore State Park (1,854 acres), and Claremont Canyon Regional Reserve (205 acres) are all available for use by Albany and Berkeley residents. Therefore, the need for more parklands as a result of improved access due to the project and regional growth would not be expected to produce cumulative impacts on parklands and recreational facilities.

4.5 AESTHETICS AND VISUAL RESOURCES

The following section identifies and describes visual and aesthetics changes that would result if the Action Alternatives were implemented. The existing visual landscape surrounding the ferry terminal alternatives sites, as described in Chapter 3, provides the baseline data for comparing the No-Action Alternative with the visual and aesthetic quality of the area after the project is implemented.

4.5.1 Methodology

Field trips were conducted to the sites of the four ferry terminal alternatives. During the field visits, photos were taken from different viewpoints and perspectives to illustrate the existing visual quality of the area surrounding each site. The photos were used as graphic examples of the visual and aesthetic setting described in Chapter 3. They were then used as the basis for visual simulations that would illustrate how the shoreline would be visually transformed if the project were implemented at each site location. The simulations offer the reader an impression of the scale of the terminal facilities relative to the surrounding landscape but are not intended to show details of the actual structures as they will be finally designed.

To analyze impacts according to the criteria listed below, views across the shoreline out into the Bay and views on the land were used to indicate whether the scale of the surrounding landscape or the visual resources that distinguish these landscapes were substantially altered. If the visual context was substantially altered to produce adverse visual impacts, the impact was described and mitigation measures were proposed. In accordance with CEQA guidelines, the significance of the impact after mitigation was determined. Because construction activities would not permanently alter the visual landscape, the analysis focuses on long-term or operational effects.

4.5.2 Significance Criteria

As indicated in the Regulatory Framework described in Section 3.5, Aesthetics and Visual Resources, the principal regulations that govern design for new construction and limit the appearance, height, and bulk of a new project are local and regional. As such, CEQA guidelines tend to reinforce the issues addressed in permitting new construction. For the NEPA analysis involving transportation improvement projects, FTA considers the effect of the project alternatives on scenic vistas and scenic resources, as well as substantial light and glare. CEQA also considers these criteria in addition to those that provide a more local perspective of on the scale or visual character of the surrounding landscape. Impacts are determined to be adverse if the project would:

- Create a substantial effect on a scenic vista;
- Substantially alter or obstruct scenic resources, including trees;
- Substantially degrade the visual character or quality of the site;
- Substantially contrast with the scale and context of the surrounding landscape; or
- Create a new source of light or glare which would affect views in the area.

4.5.3 Aesthetics and Visual Resources Impacts and Mitigation

4.5.3.1 No-Action Alternative

The No-Action Alternative does not include projects that would change the visual landscape, either temporarily or permanently, along the Berkeley/Albany shoreline in the study area. No visual or aesthetic impacts would result from the No-Action Alternative.

4.5.3.2 Action Alternatives

Construction and Operations Impacts and Mitigation

Impact 1: The potential to substantially alter or block views of scenic vistas or resources.

Alternatives A through D. The terminal extends into the Bay as a linear visual element. The terminal design includes the pier, which lies low close to the water, and glass-enclosed sides that allow unobstructed views of San Francisco, the Bay Bridge, and the Golden Gate Bridge—the primary scenic vistas and visual resources from the Berkeley/Albany shoreline. Only the roof line is opaque, creating a new visual element to the landscape that accentuates, rather than obscures, the view of the Bay. Figures 4-1 and 4-2 are visual simulations of the ferry terminals at the Berkeley Marina and Buchanan Street sites, respectively. The extension of pedestrian access onto the pier will also enhance the view of the ferry patron, who will have an unobstructed 360-degree perspective of the waterfront, the Bay, and the distant hills to the east. The views to the east over the parking areas will remain essentially the same as today, broken by regularly spaced thin poles for lighting the surface parking areas. In the case of existing landscaping, some trees and shrubs would be removed in Alternatives B and C to facilitate vehicular movement in the parking areas. The limited removal of landscaping, primarily along the perimeter of the parking area, would not be extensive. Therefore, the visual quality of these scenic resources would not be substantially altered and the visual buffer with Shorebird Park, a scenic resource in the vicinity of Alternative B, would not be degraded. As a result, no impact to scenic views or resources would occur.

CEQA Determination. The impact is less than significant.

Impact 2: The potential to degrade or contrast with the scale, visual quality, or visual context of the existing landscape.

Alternative A. The new terminal and parking area would blend in with the character and scale of the existing Berkeley Marina docks and vessels. The parking area already exists along the road and in front of the Doubletree Hotel. No adverse impacts would occur.

Alternative B. The new terminal would add a second linear element to the visual landscape, paralleling and mimicking the scale and visual quality of the nearby Berkeley Fishing Pier. The landscaping surrounding the parking area would provide a visual buffer with Shorebird Park, although some trees would be removed. No adverse visual impact would be expected.

Alternatives C and D. The new terminal would produce an additional visual element along the existing shoreline, harkening back to the old piers that were at one time located in the North Basin. The displacement of horse trailers and stables at Alternative C would remove a visual element associated with the adjoining race track, but the project sponsor intends to relocate these facilities nearby to keep the visual quality and scale intact. The existing visual context of large parking areas surrounding the elevated race track stadium would remain unchanged, because these areas would be retained as ferry patron parking lots. No adverse visual effects are expected.

CEQA Determination. The impact is less than significant.

Impact 3: The potential for light and glare to adversely affect nearby uses.

All Alternatives. Although most of the lighting effects of the project would originate along the shoreline, the ferry vessels would travel across the Bay during morning and evening hours, producing new lighting on the Bay during the winter. The additional lighting would be similar to the lighting emanating from other vessels on the Bay. Due to the transitory nature of ferry operation, and because light-sensitive receptors would be confined to liveaboards in the Berkeley Marina, the incremental and temporary effect of light emanating from the ferries would not be a substantial source of light and glare to the existing receptors. No adverse effects from vessel lighting are expected.

Alternative A. The light from the terminal and parking area would add to the night lighting effect already present at the Berkeley Marina and Doubletree Hotel facilities. The additional light would be a beneficial impact in that it would enhance pedestrian safety along the Bay Trail and at the Berkeley Marina and Doubletree Hotel facilities. Because ferry service would terminate in the early evening, the project lighting could be turned off, thereby preventing any stray light and glare from affecting views or quality of life for the hotel and Berkeley Marina live-aboard residents. No adverse effects from light and glare are expected.

Alternative B. The additional light from the terminal and parking area would enhance pedestrian safety along access routes to Hs Lordships Restaurant, the Berkeley Fishing Pier, and Shorebird Park. No residences or hotels are adjacent to this site, so nighttime lighting would not disturb the views or use of the aforementioned facilities. No adverse effects of light and glare are expected.

Alternatives C and D. The area north and south of Golden Gate Field is surrounded by well-lit parking lots and horse facilities. The lighting of the ferry terminal and parking areas would add to the brightness emanating from the track, enhancing pedestrian safety and traffic circulation for those moving in and out of the area. Nearby residences are located across the freeway, removed from the ferry terminal sites, and would not be affected by the incremental and time-limited light and glare produced by ferry terminal operation in the early evening hours.

CEQA Determination. The impact is less than significant.

VISUAL SIMULATION OF FERRY TERMINAL DESIGN AT BERKELEY MARINA

Berkeley/Albany
Ferry Terminal Study

October 2008
28067367

URS

FIGURE 4-1

9/26/08 hk ..\WTA\EIS EIR 2008\F4-1_berkeley_marina.cdr

VISUAL SIMULATION OF FERRY TERMINAL DESIGN AT BUCHANAN STREET

Berkeley/Albany
Ferry Terminal Study

October 2008
28067367

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FIGURE 4-2

9/26/08 hk ..\WTA\EIS EIR 2008\F4-2_buchanan.cdr

Cumulative Impacts and Mitigation

The light from the vessels and terminal facilities is removed from residential land uses or approved development projects in the study area. In addition, the freeway and intermediate uses located between the terminal areas and the existing residential and commercial development to the east of I-80 would minimize the incremental effects of the light and glare emanating from the ferry terminal area, and would not produce additional light and glare in combination with approved development projects that are scattered throughout the study area. Cumulative development in Berkeley and Albany would not obstruct or alter views looking west over the Bay. No cumulative visual effects would occur.

4.6 CULTURAL RESOURCES

This section identifies adverse impacts to archaeological resources and historic properties if the ferry terminal alternatives were to be implemented. Construction and operation activities that would affect cultural resources are described for archaeological, paleontological, and historic resources below.

4.6.1 Methodology

FEDERAL MANDATES

Federal laws, procedures, and policies affecting the treatment of cultural resources include the Antiquities Act of 1906, Public Law 59 209, EO 11593, Section 106 of the NHPA of 1966 (Public Law 89 665) (as amended), Public Law 93 291, NEPA (Public Law 91 190), and regulations 36 CFR 60 and 36 CFR 800 of the Federal Land Policy Management Act (Public Law 94 94 579).

For management purposes, a cultural resource must be recommended as either eligible or not eligible to the NRHP to determine the effect and need for mitigation of effect. If the property (cultural resource) is determined eligible, then a determination of effect, as per 36 CFR 800, must be provided. "Effect means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." An adverse effect occurs "when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association" (36 CFR 800.5[a]). An effect, therefore, will only occur when a project activity has the potential to alter the characteristics of a historic property that qualifies it for inclusion in the NRHP. No historic properties have been identified within the APE for this project and no adverse effects are anticipated for this project.

If the property is identified as not eligible, then no determination of effect or mitigation measures is necessary. Recommendations are reviewed and approved by the SHPO and the ACHP. The letter from FTA to SHPO requesting this review is presented in Appendix D.

The NHPA requires all federal agencies to assess the effects of any agency-sponsored undertaking on cultural resources. The federal agency is responsible for project compliance with Section 106 of the NHPA and its implementing regulations, set forth by the ACHP at 36 CFR 800.

NEPA CRITERIA

Four evaluation criteria to determine a resource's eligibility to the NRHP, in accordance with the regulations outlined in 36 CFR 800, are identified at 36 CFR 60.4. To determine site significance through application of National Register criteria, several levels of potential significance that reflect different (although not necessarily mutually exclusive) values must be considered. As provided in 36 CFR 60.4:

> "The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> 1. That are associated with events that have made a significant contribution to the broad patterns of our history;
>
> 2. That are associated with the lives of persons significant in our past;
>
> 3. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> 4. That yield, or may be likely to yield, information important in prehistory or history."

These evaluation criteria are used to help determine what properties should be considered for protection from destruction or impairment resulting from project-related activities (36 CFR 60.2).

STATE MANDATES

In considering impact significance under CEQA, the significance of the resource itself must first be determined. At the state level, consideration of significance as an "important archaeological resource" is measured by cultural resource provisions considered under CEQA Sections 15064.5 and 15126.4, and the draft criteria regarding resource eligibility to the CRHR.

CEQA CRITERIA

Under CEQA, a historical resource (including built-environment historic and prehistoric archaeological resources) is generally considered significant if it meets the criteria for listing on the CRHR set forth in CEQA Section 15064.5. A resource that meets these criteria if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2. Is associated with lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. Has yielded, or may be likely to yield, information important in prehistory or history.

Section 15064.5 of CEQA also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under PRC Section 5097.98. Impacts to "unique archaeological resources" and "unique paleontological resources" are also considered under CEQA, as described under PRC 21083.2. A unique archaeological resource implies an archaeological artifact, object, or site which can be clearly demonstrated to have a high probability of meeting one of the following criteria (without merely adding to the current body of knowledge):

1. The archaeological artifact, object, or site contains information needed to answer important scientific questions, and there is a demonstrable public interest in that information;

2. The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type; or

3. The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person.

A non-unique archaeological resource implies an archaeological artifact, object, or site that does not meet the above criteria. Impacts to non-unique archaeological resources and resources which do not qualify for listing on the CRHR receive no further consideration under CEQA.

Under CEQA Section 15064.5, a project would potentially have significant impacts if it would cause substantial adverse change in the significance of one of the following:

1. A historical resource (i.e., a cultural resource eligible for the CRHR);

2. An archaeological resource (defined as a unique archaeological resource which does not meet CRHR criteria);

3. A unique paleontological resource or unique geologic feature (i.e., where the project would directly or indirectly destroy a site); or

4. Human remains (i.e., where the project would disturb or destroy burials).

A non-unique archaeological or paleontological resource is given no further consideration other than the simple recording of its existence by the CEQA lead agency.

Potential impacts to identified cultural resources need only be considered if the resource is an "important" or "unique" archaeological resource under the provisions of CEQA Sections 15064.5 and 15126.4 and the eligibility criteria. If a resource cannot be avoided, then the resource must be examined vis-à-vis the provisions of CEQA Sections 15064.5 and 15126.4 and of the eligibility criteria as an "important" or "unique" archaeological resource. In many cases, determination of a resource's eligibility can only be made through extensive research and archaeological testing. No mitigation measures are required unless previously undiscovered cultural resources are detected. Mitigation under CEQA must address impacts to the values for which a cultural resource is considered important. To mitigate adequately, it must therefore be determined what elements make a site eligible for the CRHR. The first line of mitigation is complete avoidance, when feasible, of all cultural resources.

UNDERWATER CULTURAL RESOURCES (FEDERAL AND STATE MANDATES)

Several federal mandates relate to underwater cultural heritage, including shipwrecks, related historic maritime resources, and submerged prehistoric sites. The acts cited below, although federal level, also apply to resources within state waters and are therefore relevant to both federal and state projects. The Submerged Lands Act of 1953, although largely superseded by the Abandoned Shipwreck Act, has been used to protect abandoned historic shipwrecks. The Abandoned Shipwreck Act (1987), 43 USC 2101-2106, asserts federal title to abandoned shipwrecks located within state waters if they are embedded in state-submerged lands; are embedded in the coralline formations protected by a state on submerged lands; or are resting on state-submerged lands and either included in or determined eligible for the NRHP.

4.6.2 Cultural Resources Impacts and Mitigation

4.6.2.1 No-Action Alternative

This ferry terminal alternative would continue the existing transit services connecting the East Bay communities of Berkeley and Albany with San Francisco without implementing ferry service. Programmed bus and rail transit improvements between the East Bay and San Francisco identified in the Regional Transportation Plan would be implemented as part of the No-Action Alternative. Programmed transit improvements that may result from the No-Action Alternative may cause substantial impacts to cultural resources that are unknown.

4.6.2.2 Action Alternatives

Construction and Operations Impacts and Mitigation

The Class I record search indicates that no known historical resources are located within the project area. Historical maps indicate that the ferry terminal alternatives would be located primarily on imported fill, and preliminary project engineering information indicates that

construction would not penetrate below the fill zone. In addition, a previous pedestrian survey encompassing portions of the study area was conducted in 2006 and failed to identify any resources (Allan, 2006). Therefore, no adverse impacts to known cultural resources or unique archaeological resources are anticipated. While the probability of encountering intact historical resources or unique archaeological resources during construction activities is extremely low, project construction activities such as ground disturbance and dredging of channels may cause significant impacts to subsurface or submerged and heretofore unknown historical resources and/or unique archaeological resources that have been redeposited or remain intact.

Impact 1: The potential to adversely affect unknown archaeological resources during construction.

Alternatives A through D. Project construction activities, including dredging, may cause substantial adverse impacts to unknown cultural resources, including unique archaeological resources and/or submerged cultural resources.

Mitigation. To reduce impacts associated with unanticipated discoveries, the following measures would be implemented. If, during the course of construction within the project area any prehistoric or historic cultural resources (e.g., large amounts of shell, dark soil residues, lithic material, or historic refuse) are discovered, all work in the vicinity must halt, and a qualified archaeologist shall be notified to assess the significance of the find according to CEQA Guidelines Section 5064.5. If any find is determined to be significant, the project proponent and the archaeologist will meet to determine the appropriate avoidance measures or other appropriate mitigation.

If human skeletal remains are uncovered during project construction, the project proponent (depending on the project component) will immediately halt work, contact the Alameda County coroner to evaluate the remains, and follow the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. If the County coroner determines that the remains are Native American, the project proponent will contact the NAHC, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and PRC 5097.98 (as amended by AB 2641). In accordance with PRC 5097.98, the landowner shall ensure that, according to generally accepted cultural or archaeological standards or practices, the immediate vicinity of the Native American human remains is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section (PRC 5097.98), with the most likely descendents regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.

CEQA Determination. With proposed mitigation, this impact would be less than significant.

Impact 2: The project could adversely affect unidentified paleontological resources.

Alternatives A through D. Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide and the enormous number of organisms that have lived through time,

preservation of plant or animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils—particularly vertebrate fossils—are considered to be nonrenewable resources. Because of their rarity and the scientific information they can provide, fossils are highly significant records of ancient life. The paleontological review and survey conducted on the project site did not identify any paleontologic sites or any geologic phenomena that may predict such resources.

While fossils are not expected to be discovered during project construction, significant fossils could be discovered during excavation activities, even in areas with a low likelihood of occurrence. Fossils encountered during excavation could be inadvertently damaged. If a paleontological resource is discovered, the impact to the resource could be substantial. However, implementation of the following mitigation measure would minimize this impact to a less-than-significant level.

Mitigation. In the event that paleontological resources are discovered, the project proponent (depending on the project component) will notify a qualified paleontologist. The paleontologist will document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in CEQA Guidelines Section 15064.5. If fossil or fossil bearing deposits are discovered during construction, excavations within 50 feet of the find will be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (in accordance with Society of Vertebrate Paleontology standards [Society of Vertebrate Paleontology, 1995]). The paleontologist will notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the project proponent determines that avoidance is not feasible, the paleontologist will prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important. The plan will be submitted to the project proponent for review and approval prior to implementation.

CEQA Determination. With mitigation, this impact would be less than significant.

Impact 3: The potential to adversely alter the characteristics of a historic property that qualifies it for inclusion in the NRHP.

Alternatives A through D. No historic properties have been identified within the APE for this project and no adverse effects on historic properties are anticipated for this project. No mechanisms to affect cultural resources (i.e., ground disturbance or material alteration of existing structures or buildings) would result from the operation of this project; therefore, no adverse cultural resource impacts are anticipated.

CEQA Determination. No significant impacts on historic resources are expected due to project construction or operation.

Cumulative Impacts and Mitigation

Impact 4: The potential to cause cumulative impacts to historical resources or unique archaeological resources.

Alternatives A through D. Given that project implementation would not result in significant impacts to known important cultural resources, it is unlikely that the project could have significant cumulative effects on cultural resources. The reasonably anticipated future projects within the cities of Berkeley and Albany that are subject to CEQA level environmental review are required to mitigate cultural resource impacts to a less-than-significant level. Therefore, cumulatively considerable impacts to cultural resources are not expected to occur.

If previously undiscovered archaeological resources are exposed during construction activities, an incremental effect to cultural resources may result. However, if these resources are properly evaluated and managed, no cumulatively considerable effect to cultural resources is expected to occur.

Mitigation. No mitigation necessary.

CEQA Determination. This impact is less than significant.

4.7 AIR QUALITY

This section describes adverse impacts to air quality resulting from construction and operation of the ferry terminal alternatives, as indicated below.

4.7.1 Methodology

PROJECT CONFORMITY

A conformity determination (in accordance with 40 CFR 93) is required for FHWA or FTA projects before the NEPA EIS process can be completed. Although the requirements of NEPA apply to all areas regardless of attainment status, projects located in areas designated as nonattainment or maintenance must make a determination of conformity with applicable SIPs prior to taking any action on the proposed project.

In accordance with 40 CFR 93 Subpart A, the general requirements for determining conformity for this proposed project are:

- **40 CFR 93.114 – Criteria and Procedures: Currently conforming transportation plan and transportation improvement plan (TIP).** There must be a currently conforming transportation plan and a currently conforming TIP at the time of project approval.

- **40 CFR 93.115 – Criteria and procedures: Projects from a plan and TIP.** The project must come from a conforming plan and program.

- **40 CFR 93.116 – Criteria and procedures: Localized CO, PM_{10}, and $PM_{2.5}$ violations (hot spots).** The project must not cause or contribute to any new localized CO, PM_{10}, and/or $PM_{2.5}$ violations or increase the frequency or severity of any existing CO, PM_{10}, and/or $PM_{2.5}$ violations in CO, PM_{10}, and $PM_{2.5}$ nonattainment and maintenance areas. This criterion is satisfied for all other FHWA/FTA projects in CO, PM_{10}, and $PM_{2.5}$ nonattainment and maintenance areas if it is demonstrated that during the timeframe of the transportation plan (or regional emissions analysis) no new local violations will be created and the severity or number of existing violations will not be increased as a result of the project.

- **40 CFR 93.117 – Criteria and procedures: Compliance with PM_{10} and $PM_{2.5}$ control measures.** The FHWA/FTA project must comply with any PM_{10} and $PM_{2.5}$ control measures in the applicable implementation plan. This criterion is satisfied if the project-level conformity determination contains a written commitment from the project sponsor to include those control measures in the final plans, specifications, and estimates for the project. The proposed project is included in a currently conforming regional transportation plan and is included in a transportation improvement program (MTC, 2006).

It should be noted that a hot spot analysis for particulate matter is not included in this analysis because the study area is federally designated as unclassified/attainment for the 24-hour and annual standards (both PM_{10} and $PM_{2.5}$). Hot spot analyses are only required for projects located in federal nonattainment or maintenance areas. Currently, there is not an applicable PM_{10} or $PM_{2.5}$ implementation plan for the study area. As such, there are no applicable implementation plan PM_{10} or $PM_{2.5}$ control measures for the project to adhere to. However, under the BAAQMD CEQA Guidelines, project-related fugitive and combustion particulate emissions will be controlled.

Similarly, a hot spot analysis for CO (which would result from the study area's current federal designation as a maintenance area) is not being conducted because the ferry terminal alternatives are not expected to create any new localized CO violations. This determination was made using the criteria established under the BAAQMD CEQA Guidelines.

4.7.2 Significance Criteria

In accordance with the CAAQS identified in CEQA guidelines (Appendix G, Environmental Checklist Form), the BAAQMD has established impact criteria that can be relied upon to determine whether the ferry terminal alternatives would:

- Conflict with or obstruct implementation of the applicable air quality plan;

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for O_3 precursors);

- Expose sensitive receptors to substantial pollutant concentrations; or

- Create objectionable odors affecting a substantial number of people.

Therefore, construction and operational emissions generated from the proposed project would result in significant air quality impacts under any of the following conditions (BAAQMD, 1999).

Construction (Short-Term Temporary Emissions)

- Control measures recommended by the BAAQMD are not incorporated into the project design or applied to project construction.

Operations (Long-Term Continual Emissions)

- Mobile-source emissions (local to the proposed project) of CO violate or contribute substantially to a violation of the NAAQS or CAAQS.

- Project emissions of reactive organic gas (ROG), NO_X, or PM_{10} exceed BAAQMD mass emissions thresholds of 15 tons per year or 80 pounds per day.

- The proposed project exposes members of the public to objectionable odors.

- The proposed project has the potential to expose sensitive receptors (including residential areas) or the general public to substantial incremental increases in TAC emissions that exceed 10 chances per million of excess cancer risk for the Maximally Exposed Individual (MEI) and/or a hazard Index of 1 for non-cancer risk for the MEI.

- The proposed project would be considered to have a significant cumulative air quality impact if it would individually have a significant air quality impact. For any project that does not individually have significant operational air quality impacts, the determination of significant cumulative impacts should be based on an evaluation of the consistency of the project with the local and regional air quality plans.

4.7.3 Air Quality Impacts and Mitigation

4.7.3.1 No-Action Alternative

The No-Action Alternative would not implement the ferry services project. Existing air quality issues would be addressed through the measures undertaken by the BAAQMD and identified in the SIP to reduce air pollutants to acceptable levels under federal and state guidelines.

4.7.3.2 Action Alternatives

Construction Impacts and Mitigation

Construction of the proposed project will result in short-term impacts to the existing air quality in the area. These impacts include temporary increases of CO, carbon dioxide (CO_2), NO_x, PM_{10}, $PM_{2.5}$, ROG, and oxides of sulfur (SO_x), emissions. Emissions resulting from the construction of this project are broadly categorized as follows:

- Equipment exhaust (CO, CO_2, NO_x, PM_{10}, $PM_{2.5}$, SO_x, and ROG);
- Fugitive dust from earth moving (PM_{10}, $PM_{2.5}$);
- Employee vehicle emissions (CO, CO_2, NO_x, PM_{10}, $PM_{2.5}$, SO_x, and ROG);
- Construction truck emissions (CO, CO_2, NO_x, PM_{10}, $PM_{2.5}$, SO_x, and ROG); and
- Paving emissions (ROG).

Impact 1: Construction of the proposed project would result in emissions of criteria pollutants.

Alternatives A through D. Construction of the Action Alternatives will create short-term emission increases of criteria pollutants and precursors. In accordance with the BAAQMD, the impacts of construction to air quality are considered to be adverse. The BAAQMD considers PM_{10} to be the pollutant of concern when evaluating impacts from construction.

Mitigation. The following BAAQMD-recommended mitigation measures will be implemented to reduce emissions of fugitive PM_{10} dust from construction activities:

- Basic Control Measures:
  - All active construction areas will be watered at least twice daily.
  - All construction trucks hauling soil, sand, and other loose materials will be covered or will maintain at least 2 feet of freeboard.
  - All unpaved access roads, parking areas, and staging areas at the construction sites will be paved, watered three times daily, or have a soil stabilizer (non-toxic) applied.
  - All paved access roads, parking areas, and staging areas at the construction sites will be swept daily (with water sweepers).
  - If visible soil material is carried onto adjacent public streets, the affected streets will be swept daily (with water sweepers).
- Enhanced Control Measures:
  - Hydroseed or soil stabilizers (non-toxic) will be applied to all construction areas (previously graded areas inactive for 10 days or more).

- All exposed stockpiles (e.g., dirt or sand) will be enclosed, covered, watered twice daily, or have soil binders (non-toxic) applied.
- Traffic speeds on unpaved roads will be limited to a maximum of 15 mph and, if possible, will avoid residential areas east of I-80.
- Sandbags or other erosion control measures to prevent silt runoff to public roadways will be installed.
- Vegetation in disturbed areas will be replanted as quickly as possible.

The following BAAQMD-recommended mitigation measures will be implemented to reduce the emissions generated from construction equipment exhaust, **when and where feasible:**

- Alternative-fueled or ultra-low sulfur fuel will be used on construction equipment if feasible
- Catalyst-equipped diesel construction equipment and other add-on emission control measures will be employed if feasible.
- Idling time (e.g., a maximum of 5 minutes) will be minimized.
- Heavy duty equipment hours of operation and/or the amount of equipment in use will be limited.
- All equipment used at the construction site will be maintained in good working order and properly tuned in accordance with manufacturers' specifications.
- Construction managers will be responsible for maintaining emission control mitigations and will conduct spot checks for compliance. If possible, receipts of fuel purchases/engine tuning will be kept

CEQA Determination. Implementation of the above mitigation will reduce the impacts of construction emissions to a less-than-significant-level.

Operational Impacts and Mitigation

Impact 2: Mobile source emissions of CO would violate or contribute substantially to a violation of the NAAQS or CAAQS.

Alternatives A through D. Operational emissions generated from the Action Alternatives would result in a significant air quality impact if mobile-source emissions (local to the proposed project) of CO violate or contribute substantially to a violation of the NAAQS or CAAQS (BAAQMD, 1999). Vehicle emissions of CO from the general public traveling to and from the ferry terminal are calculated at approximately 270 lb/day, assuming 3,217 vehicles per day and an average vehicle commuter distance from the East Bay to the ferry terminal of approximately 15 miles per one-way trip. It is important to note that this methodology is very conservative (assuming worst case for all inputs). In reality, far higher primary and secondary traffic volumes would have to be

exceeded to cause a violation of either CO CAAQS. Based on the traffic analysis (Section 4.1), peak 1-hour traffic volumes are not expected to exceed 8,500 vehicles per hour on any primary or secondary roads. As such, localized concentrations of CO would not create an adverse impact.

CEQA Determination. The impact of localized violations of the CO NAAQS and CAAQS is less than significant.

Impact 3: Project emissions of ROG, NO_x, or PM_{10} would exceed 15 tons per year or 80 pounds per day (BAAQMD, 1999).

Alternatives A through D. Operation of the Action Alternatives would result in air emissions (CO, CO_2, NO_x, PM_{10}, $PM_{2.5}$, SO_x, and ROG) from the operation of ferries. However, implementation of the proposed project would also result in a reduction of vehicle trips across Bay Area bridges. The primary users of the Berkeley/Albany Ferry Terminal will be residents of Alameda and Contra Costa Counties. It is estimated that operation of the ferry terminal will partially displace approximately 1,738 vehicles per day each way (assuming one car per person) traveling from the East Bay to San Francisco. The current average vehicle commuter distance from the East Bay to San Francisco is estimated to be approximately 30 miles per one-way trip (20 miles to the Bay Bridge and 10 miles into San Francisco).

Following implementation of the project, the average vehicle commuter distance (1,738 vehicles per day) from the East Bay to the ferry terminal is estimated to be at approximately 20 miles per one-way trip. Based on these approximations, implementation of the ferry terminal will result in 10 fewer vehicle miles per person per one-way trip. This one way 10-mile reduction represents the portion of travel over the Bay Bridge to a location in San Francisco.

Operational emissions from the ferry terminal must be compared to the existing emissions of the vehicles it will partially displace. Table 4-10 details this emissions scenario and compares the net increase to the emissions thresholds provided by BAAQMD. Calculations for the emissions presented in Table 4-10 are detailed in the Air Quality Technical Report.

The ferry emissions were estimated using a combination of site-specific data and available emission factors (assuming the ferries will comply with U.S. EPA Tier II Standards for Marine Vessels). Additionally, add-on control devices will be used to reduce NO_X and PM_{10} emissions. Selective catalytic reduction (SCR) and particulate traps are expected to reduce NO_X and PM_{10} emissions to 10 percent and 5 percent of Tier II emission levels, respectively.

Emissions from the operation of the ferry terminal alternatives would not exceed any BAAQMD significance thresholds, as shown in Table 4-10. Significance thresholds are not provided for CO, NO_X, and SO_X, because these emissions have remained within the BAAQMD threshold, and this project would not contribute to substantial increases in these emissions. Although the ferry terminal alternatives would contribute to increased CO emissions, no standard for CO has been set for the Bay Area. Therefore, no adverse air quality impacts are expected.

CEQA Determination. The impact of the proposed project's operational emissions is less than significant.

Table 4-10
Operational Emissions Comparison (lb/day)

Pollutant	Ferry Terminal[a]	Existing Condition[b]	Net Increase	Applicable Threshold[c]
CO	588.23	291.50	296.73	N/A
CO_2e[d]	139,268.79	103,175.91	36,092.88	N/A
NO_X	100.78	25.93	74.84	80
PM_{10}	8.30	9.06	-0.76	80
$PM_{2.5}$	6.06	5.72	0.33	N/A
ROG	66.90	38.61	28.30	80
SO_X	29.03	0.97	28.05	N/A

Notes:

[a] Ferry terminal emissions include contributions from operation of the ferry terminal plus emissions from vehicles traveling from the East Bay to the ferry terminal.

[b] Existing condition emissions represent vehicle emissions from vehicles traveling from the East Bay to San Francisco.

[c] N/A indicates that a threshold has not been established for the applicable pollutant.

[d] CO_2e represents CO_2 emissions plus methane (CH_4) and nitrous oxide (N_2O) emissions, with the latter two components weighted by their respective global warming potential values. In general, CH_4 and N_2O have 21 and 310 times the warming potential of CO_2, respectively.

Impact 4: The potential to expose members of the public to objectionable odors (BAAQMD, 1999).

Inhalation of objectionable odors rarely results in any physical harm to humans. However, particular odors are disagreeable and can cause discomfort to members of the public who are frequently exposed to them. For this reason, odor complaints are a frequent grievance received by air quality management districts.

The BAAQMD provides guidance for determining the significance of potential odor impacts, which involves the following two steps:

- Determine whether the project will result in an odor source and whether or not receptors are located within the screening distances, as indicated in BAAQMD CEQA Guidance; and

- If the proposed project will result in an odor source and receptors are located closer than the screening level distances indicated in BAAQMD CEQA Guidance, a more detailed odor analysis is required, as well as possible mitigation.

Alternatives A through D. The ferry project does not fall into any of the known categories of concern for objectionable odors identified by the BAAQMD. Operation of the ferry service would create exhaust emissions from the operation of diesel fueled ferries. However, ferries

would only expose receptors to exhaust emissions during periods of start-up, shut-down, and turn-around (i.e., loading of passengers.). Therefore, the majority of emissions generated by the ferries will be away from any public receptors close to the terminal. The majority of emissions will occur when the ferries are in transit, and the ferries would only operate from 6 a.m. and 7 p.m. Therefore, project odors will be limited to daytime hours.

Public exposure to potential odors from the operation of the proposed project is limited due to nature of the ferry operations. Odors are expected to be confined to the immediate vicinity of the ferries. Based on guidance provided by the BAAQMD, ferry operation is not considered a common odor source and should not warrant special consideration. No adverse impacts are expected.

CEQA Determination. Odor impacts from the operation of the proposed project are less than significant.

Impact 5: The potential to expose sensitive receptors or the general public to substantial incremental increases in TAC emissions (BAAQMD, 1999).

Operation of the proposed ferry terminal would expose members of the public to diesel exhaust, which contains a variety of gaseous and solid particulate chemical compounds, many of which have been identified as TACs by CARB. TACs are hazardous compounds that can lead with chronic exposure to a variety of human health problems, including cancer. Of the TACs found in diesel exhaust, the primary TAC of concern is DPM, which is generated from the combustion of diesel fuel. DPM is a combination of various particulate compounds found in diesel exhaust. According to supporting CARB studies, DPM represents 50 to 90 percent of the risk of mutations that lead to cancer from diesel exhaust. Therefore, DPM is generally used as a surrogate to identify the potential health risks from diesel emissions.

The BAAQMD provides two thresholds of significance for TACs in BAAQMD CEQA Guidance. They are as follows:

- Probability of contracting cancer for the MEI exceeds 10 in 1 million.
- Ground-level concentrations of non-carcinogenic TACs would result in a Hazard Index greater than 1 for the MEI.

According to this guidance, a cancer risk greater than 10 in 1 million is considered significant. DPM will be used as a surrogate to evaluate the cancer risk of diesel exhaust.

Alternatives A through D. Public exposure to DPM from the operation of the ferries is very limited due to nature of the ferry operations, because they only expose receptors to exhaust emissions during periods of start-up, shut-down, and turn-around (i.e., loading of passengers). Furthermore, the ferries would only operate from 6 a.m. to 7 p.m.; therefore, DPM emissions will be limited to daytime hours. The majority of emissions generated by the ferries will be away from any public receptors situated close to the ferry terminal sites and will occur when the ferries are in transit. In addition, the ferries will use particulate traps that will reduce PM_{10} emissions to 5 percent of the current U.S. EPA

Tier II requirements. Based on this information, it is expected that the cancer risk associated with DPM will be well below 10 in a million. No adverse impacts are expected.

CEQA Determination. The impact of DPM emissions is less than significant.

Cumulative Impacts and Mitigation

Impact 6: Operational emissions generated from the ferry terminal alternatives would result in a significant cumulative air quality impact if the proposed project would individually have a significant air quality impact. For any project that does not individually have significant operational air quality impacts, the determination of significant cumulative impact should be based on an evaluation of the consistency of the project with the local and regional air quality plans (BAAQMD, 1999).

The Action Alternatives do not have any significant operational air impacts, as shown in Impacts 1 through 5. In light of this fact, the cumulative determination will be based on an evaluation of the consistency of the project with local general plans and the consistency of the general plan with the regional air quality plan.

The BAAQMD periodically prepares and updates general air quality plans that outline future pollutant reduction strategies, for the purpose of achieving attainment of ambient air quality standards in the San Francisco Bay Area Air Basin. These plans are prepared in collaboration with the MTC and ABAG.

As stated in the BAAQMD CEQA Guidelines, "If a project is proposed in a city or county with a general plan that is consistent with the Clean Air Plan and the project is consistent with that general plan (i.e., it does not require a general plan amendment), then the project will not have a significant cumulative impact (provided, of course, the project does not individually have any significant impacts). No further analysis regarding cumulative impacts is necessary."

Alternatives A through D. These plans anticipate that new sources of emissions will locate within the District in future years and seek authority to emit air pollutants under the District's rules, guidelines, and regulations. To allow for such future economic growth, these plans anticipate that new sources would comply with "all feasible measures." The BAOS points out that no non-attainment area in the state has ever achieved a 5 percent reduction in O_3 precursor pollutants each year (in accordance with the requirements of the 1988 CCAA). As such, the majority of areas within the state, specifically the Bay Area, have opted to meet the requirements of the CCAA by applying "all feasible measures." Although there is no formal definition of "all feasible measures," the general consensus is that it implies adherence to all applicable emissions standards, permitting requirements, emissions limits, and the use of best available control technology. The project will operate ferries that will comply with all applicable federal and state rules and regulations. Furthermore, the ferries will use SCR add on controls that will reduce NO_x (precursor to O_3) emissions to 10 percent of the current U.S. EPA Tier II requirements. As such, the project is consistent with the 2005 BOAS and will not require a general plan amendment. No adverse impacts are expected.

CEQA Determination. The cumulative impacts are less than significant.

Greenhouse Gases

Currently, there are no published thresholds of significance for measuring or determining the impact of GHG from a project to global climate change. The OPR is responsible for adopting regulations implementing CEQA, yet that agency has not promulgated any regulations directly concerning analysis of global climate change. CARB is the statewide agency responsible for administering air quality programs within the state, and has been tasked with developing many of the regulatory programs required by AB 32, but has likewise not developed any regulations, guidance, or recommendations regarding evaluation of global climate change within CEQA documents. The BAAQMD is the regional agency responsible for regulating air emissions within the project area, but has yet to develop guidance regarding evaluation of global climate change within CEQA documents.

In the absence of adopted regulations, thresholds, or guidance, this section provides a qualitative component demonstrating how the project would comply with existing federal and state emission reduction strategies, including the state's goals of reducing GHG emissions to 1990 levels by 2020. With this approach, it is possible to conclude that the proposed project that implements all feasible and applicable emissions reduction strategies would have a less-than-significant impact on global climate change.

Construction of the proposed project would result in short-term and temporary increases in GHG emissions. These increases are associated with the operation of construction equipment, material hauling vehicles, and construction employee vehicles. Based on the implementation of the mitigation required for Impact 1 (which will reduce equipment exhaust, as required by BAAQMD CEQA Guidelines), and continuing compliance with any federal and state GHG regulations, construction of the project is not expected to conflict with the state's goals of reducing GHG emissions to 1990 levels by 2020 and would have a less-than-significant impact on global climate change.

GHG regulations allow for development and growth. Operation of the ferry service would result in long-term increases in GHG emissions. These increases are associated with the combustion of fuel in the ferries. However, control technologies applied to the ferries will achieve significant reductions of NO_x and PM_{10} emissions from current U.S. EPA Tier II requirements for ferries. Furthermore, the project will comply with any applicable federal and state GHG regulations. Therefore, operation of the project is not anticipated to conflict with the state's goals of reducing GHG emissions to 1990 levels by 2020 and would have a less-than-significant impact on global climate change.

4.8 NOISE AND VIBRATION

The following section describes the potential noise impacts that expanded ferry service to Berkeley or Albany could have on the noise-sensitive land uses around the potential ferry and on the underwater environment. It is organized by operational impacts, construction impacts, and cumulative impacts. This section provides an evaluation of impacts for each ferry terminal alternative. Where differences in the magnitude or type of effect occur between alternatives, they are discussed separately for each alternative. Otherwise, the impacts are discussed and

evaluated for all of the ferry terminal alternatives. Where applicable, mitigation measures are addressed that can be adopted to avoid or minimize these effects.

4.8.1 Significance Criteria

Impacts would be considered adverse if they would:

- Result in an overall noise level at the noise-sensitive land uses of 65 dB CNEL or more;
- Result in an overall increase in noise level at the noise-sensitive land uses of 3 dB or more;
- Exceed the prescribed criteria listed within the Noise Ordinance for either level or duration of stationary noise sources;
- Cause underwater sound pressure levels during construction or operation that exceed NMFS guidelines for protection of marine mammals (i.e., 160 dB referenced to 1 μPa); or
- Conflict with any other locally applicable policies protecting noise-sensitive land uses.

4.8.2 Noise and Vibration Impacts and Mitigation

4.8.2.1 No-Action Alternative

This alternative would result in no additional noise-generating sources at any of the potential docking sites, and there would be additional impacts to the communities surrounding those sites. All of the existing transit services connecting the East Bay communities of Berkeley and Albany with San Francisco would continue without implementing ferry service.

Therefore, there would be no construction or operational impacts to any noise-sensitive receptors and the ambient noise environment would remain the same as the existing setting.

4.8.2.2 Action Alternatives

Construction Impacts and Mitigation

POTENTIAL IMPACTS ON SEA ANIMALS

Impact 1: Underwater noise from pile driving and other construction activities could affect nearby fish.

Underwater noise and acoustic pressure from pile driving could affect aquatic resources by causing both behavioral avoidance of the construction area and/or sublethal or lethal effects on sensitive species. The severity of adverse effects on fish (e.g., behavioral avoidance) is dependent upon a number of factors, including the concentration and location of fish within the area, species-specific

differences in sensitivity to acoustic pressures, the depth of water, bottom- and surface-water characteristics, and the type of pile (steel, concrete, and hammer size). Exposure to sound pressure levels associated with pile driving decreases in water exponentially as a function of the distance from the source. Sound pressure levels of 180 dB referenced to 1 μPa are known to cause permanent injury to the lateral line and inner ear of fishes (Hastings et al., 1996), resulting in damage to these organs, disorientation, and the inability to locate food and avoid predators. Delayed mortality may also occur. In addition, exposure to low-frequency underwater sound may result in reduced hatching rates of fish eggs and reduced larval fish survival (see Section 4.9, Biological Resources).

Alternatives A through D. Widening of the San Mateo Bridge required the driving of 900 to 1,200 concrete piles with 2- to 3-foot diameters. No fish kills were reported during this pile driving operation. Pile driving for the Berkeley/Albany ferry terminal facilities would include small-diameter concrete piles, such as those used for the San Mateo Bridge. It is therefore not expected that significant fish mortalities would result from pile driving. Harmful sound pressures may still occur, which could produce adverse temporary effects on fish.

Mitigation. Underwater sound monitoring would be conducted if estimated sound pressure levels could approach those that may harm fish (e.g., 180 dB). Measures to reduce sound pressure levels in surrounding waters, such as bubble jackets surrounding the piles, may have to be deployed if sound pressure levels exceed those that could harm fish.

CEQA Determination. This impact would be less than significant after implementation of the mitigation.

POTENTIAL EFFECTS ON MARINE MAMMALS

Impact 2: Underwater pile driving noise could disturb marine mammals.

Underwater noise related to pile driving could result in temporary disturbance to foraging or migrating marine mammals. Under the Marine Mammal Protection Act of 1972 (amended in 1994), it is forbidden to intentionally harass marine mammals. NMFS considers, as a guideline, underwater sound pressure levels at or above 160 dB referenced to 1 μPa to constitute harassment to marine mammals.

Alternatives A through D. Caltrans conducted a Marine Mammal Impact Assessment for the Pile Installation Demonstration Project as part of studies conducted for the San Francisco–Oakland Bay Bridge East Span Seismic Safety Project (Caltrans, 2001). The Caltrans study included a series of underwater noise measurements made during pile driving activities. Data from the study was used to correlate the energy of the impact strike with the noise level made in the water, and to develop an equation to calculate the impact noise level from a given impact energy level at various distances, as indicated in Table 4-11. The impact from the piles driven for this project is expected to generate a noise level of 188 to 189 dB root mean square at a distance of 100 meters (328 feet) from the pile, as shown below. Pile driving noise levels are expected to exceed the 160 dB referenced to 1 μPa guideline, a temporary adverse impact.

Table 4-11
Pile Driver Energy and Underwater Sound Level

Energy (kilojoules)	Sound Level dB Root Mean Square (at 100 meters)	Distance to 190 dB Contour (feet)	Distance to 180 dB Contour (feet)	Distance to 160 dB Contour (feet)
136	188	252	796	7,955
203	189	308	974	9,743

Mitigation. Pile driving noise levels in excess of standard would require an Incidental Harassment Authorization from NMFS. In addition, avoidance mitigation measures, identified in Section 4.9, Biological Resource, would also be applied.

CEQA Determination. This impact would be less than significant after implementation of the aforementioned mitigation measure.

POTENTIAL EFFECTS ON ADJACENT NOISE-SENSITIVE LAND USES

Impact 3: Project construction could impact existing noise-sensitive receptors adjacent to the alternative terminal sites.

Alternative A. Pier and plaza construction will take place within approximately 125 feet south of the Doubletree Hotel on Marina Boulevard. The pile driving activities associated with the construction may have an impact on the sleeping, dining, and meeting activities of the guests at the hotel. The diesel powered impact hammer driving a prestressed concrete pile is expected to generate a sound power level (SPL) of 128 dBA, which translates to a maximum sound pressure level of 85.5 dBA at a distance of 125 feet from the driver. Transient noise levels of this magnitude can interfere with sleep, conversation, or business related activities, constituting an adverse impact.

Alternative B. Pier and plaza construction will take place within approximately 300 feet of the south end of Shorebird Park. At this distance, the sound pressure level from the pile driving is expected to be about 80 dBA SPL, potentially constituting an adverse impact. The pier and plaza for this ferry terminal alternative will also be located within approximately 500 feet of Hs Lordships Restaurant, which is at the south end of the Berkeley Fishing Pier. At this distance, the sound pressure level from the pile driving is expected to be about 73.5 dBA SPL.

Alternatives C through D: There are no noise-sensitive receptors within 1,000 feet of the pier or plaza construction areas for these ferry terminal alternatives. Therefore, no noise-sensitive receptors will be impacted during construction at these sites. No adverse impacts are expected.

Mitigation. If the pile driving activities of the construction process can be completed within a period 10 days, then the commercial noise standard of 85 dBA for construction noise would apply for activities conducted during the weekdays. In this case, the noise ordinance standard could be

exceeded at the site of Alternative A, but would be met at the park and the restaurant adjacent to the site for Alternative B. Should the pile driving activities be conducted for a period of more than 10 days, then the noise standard for commercial land uses drops to 70 dBA and the noise ordinance limits would be exceeded at both the Alternative A and B sites. To be consistent with the Construction Noise Ordinance for the City of Berkeley, the following steps must be implemented:

- The construction activities must be conducted during the week days between the hours of 7:00 a.m. and 7:00 p.m.

- The commercial land uses that could be impacted must be notified of the noise generating construction activities prior to the start of construction. These businesses shall be provided with a phone number where the construction foreman can be reached prior to the start of the job.

- Noise from power equipment or other noise producing activities shall be mitigated with the use of sound barriers, muffling devices, lower settings on power equipment, and shortened work periods. It is recommended that the pile drivers be mitigated with noise blankets, such as the KNC Noise Control Curtain barrier, by Kinetics Noise Control. It is also recommended that the Flexoply shock absorbing pad be used in the anvil chamber to further reduce the impact noise. Both of these measures are recommended for construction activities at the Alternative A and B sites.

- If power equipment is to be used, preliminary noise readings should be taken to determine whether the construction activities may be in violation of the noise ordinance. These readings should be taken at the closest adjacent property line from the noise source.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impact would be less than significant.

Operational Impacts and Mitigation

POTENTIAL EFFECTS ON MARINE ANIMALS

Impact 4: Transiting ferries disturb marine mammal resting and foraging activities.

Human activities have been shown to adversely affect the behavioral patterns of marine mammals. Seals react to both visual and acoustic disturbances (Richardson et al., 1995). According to Green et al. (2001), the primary sources of disturbance for harbor seals in San Francisco Bay are boats, kayaks, jet skis, aircraft, foot traffic, and dogs in the vicinity of haul-out sites. Disturbance sources that occur closer to the animals tend to provoke a stronger negative response.

Alternatives A through D. Disturbance by ferries to foraging marine mammals is expected to be similar to existing boat traffic. NMFS guidelines would be followed to minimize acoustic

disturbance on nearby mammals, and no adverse impact would be created (see Section 4.9, Biological Resources).

CEQA Determination. This impact would be less than significant if ferry operation follows NMFS guidelines.

POTENTIAL EFFECTS ON ADJACENT NOISE-SENSITIVE RECEPTORS

Impact 4: Project operation could impact existing noise-sensitive receptors adjacent to the ferry terminal alternative sites.

Alternatives A through D. Ferry operational activities will generate noise levels less than the exterior noise standard for all noise-sensitive receptors at all ferry terminal alternative locations for all operational cases. No adverse impacts would occur.

CEQA Determination. Impacts to noise-sensitive land uses from operations would be less than significant for all Action Alternatives.

Cumulative Impacts and Mitigation

Impact 5: Cumulative traffic impacts could affect existing noise-sensitive receptors in the study area.

Alternatives A through D. Table 4-12 presents the cumulative traffic noise levels at key intersections with and without the project. The intersections with the greatest increases—Alternative C, Gilman Street (1.6 dB); and Alternative A, Marina Boulevard (1.3 dB)—are both in areas without any noise sensitive receptors. There is an increase along 6th Street of 1.0 dB, but that is not great enough to be considered an adverse cumulative impact.

CEQA Determination. Cumulative impacts to noise-sensitive land uses from traffic would be less than significant for all Action Alternatives.

4.9 BIOLOGICAL RESOURCES

The following section describes the potential impacts that expanded ferry service to Berkeley or Albany could have on the biological environment. It is organized by construction impacts, operational impacts, and cumulative impacts, and then by major biological habitat or species type (e.g., overall Bay habitat, benthic environment, fish, birds, and marine mammals). This section provides an evaluation of impacts for each ferry terminal alternative. Where differences in the magnitude or type of effect occur between ferry terminal alternatives, they are discussed separately. Otherwise, the impacts are discussed and evaluated together for all of the project alternatives. Where applicable, mitigation measures that can be adopted to avoid or minimize these effects are addressed.

Table 4-12
Traffic Noise Levels 50 Feet from Roadway Centerline

Road Segment	Speed (mph)	Peak Hour Percentage	Existing		Future No-Action		Change
			ADT	dB CNEL	ADT	dB CNEL	
Buchanan Street/Marin Avenue							
West of Pierce Street	40	8.5	25,235	71.6	34,035	72.9	1.3
Gilman Street							
West of W. Frontage Road	45	8.5	3,188	63.7	4,000	64.6	1.0
University Avenue							
West of Marina Boulevard	35	7.2	5,569	64.0	7,000	65.0	1.0
East of Marina Boulevard	45	7.2	9,514	68.4	11,958	69.4	1.0
West of W. Frontage Road	45	7.2	9,375	68.3	11,792	69.3	1.0
East of I-80 WB Ramps	45	7.2	25,903	72.8	32,389	73.7	1.0
West of 6th Street	45	7.2	45,333	75.2	56,986	76.2	1.0
East of 6th Street	45	7.2	31,458	73.6	39,542	74.6	1.0
West of San Pablo Avenue	45	7.2	29,542	73.3	37,125	74.3	1.0
Marina Boulevard							
North of University Avenue	25	10.0	3,540	59.6	4,450	60.6	1.0
W. Frontage Road							
South of Gilman Street	35	10.0	12,630	67.6	16,050	68.6	1.0
North of University Avenue	35	10.0	11,980	67.3	15,070	68.3	1.0
6th Street							
South of Gilman Street	40	10.0	7,440	66.3	9,360	67.3	1.0
North of University Avenue	40	10.0	13,480	68.9	13,320	68.9	-0.1
South of University Avenue	40	10.0	14,130	69.1	17,760	70.1	1.0

4.9.1 Methodology

Under NEPA, impacts are evaluated on the basis of magnitude and duration of the impact. CEQA evaluates significance of impacts relative to criteria established for the project.

4.9.2 Significance Criteria

For this project, impacts would be considered significant if they would:

- Substantially decrease the acreage or quality of waterfowl breeding or wintering habitat, or substantially decrease the acreage or quality of migrant and wintering shorebird habitat;

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other applicable Habitat Conservation Plan;

- Result in the "take" of any federal or state listed threatened, endangered, or protected species or the habitat of such species;

- Alter or diminish federally designated critical habitat or a special aquatic site, including eelgrass beds, mudflats, and wetlands;

- Result in the reduction of, or have a substantial adverse effect on, protected wetland habitat as defined in Section 404 of the CWA;

- Result in alteration of desirable functions and values of protected wetland habitat through direct removal, filling, hydrological interruption, or other means;

- Cause underwater sound pressure levels during construction or operation that exceed NMFS guidelines for protection of marine mammals (i.e., 160 dB referenced to 1 μPa);

- Cause the introduction or substantial spread of invasive nonnative plants or wildlife;

- Interfere substantially with the movement of any native resident or migratory fish, or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

- Cause substantial or sustained impact to spawning habitat of commercially important species (e.g., Pacific herring); or

- Conflict with any locally applicable policies protecting biological resources.

4.9.3 Biological Resources Impacts and Mitigation

4.9.3.1 No-Action Alternative

This alternative would continue the existing transit services connecting the East Bay communities of Berkeley and Albany with San Francisco without implementing ferry service. Programmed bus and rail transit improvements between the East Bay and San Francisco identified in the Regional Transportation Plan would be implemented as part of the No Build/No-Action Alternative. Therefore, there would be no construction or operational impacts to biological resources and biological conditions would remain the same as the existing setting.

4.9.3.2 Action Alternatives

Construction Impacts and Mitigation

POTENTIAL IMPACTS ON HABITAT

This section identifies impacts that could affect biological habitat types. These habitat types include tidal marshes (including salt and brackish marshes), mudflats, agricultural baylands, salt ponds, and sandy or rocky shorelines.

Impact 1: Construction of terminal facilities and access channels could result in the loss or disturbance of jurisdictional wetlands.

Both young salt marsh and young brackish marsh are present within the study area, as are seasonal wetlands. Project construction would not take place within any jurisdictional wetland; therefore, no direct loss of these wetlands is expected to occur during construction of any of the ferry terminal alternatives.

Alternative A. No wetlands occur within the Berkeley Marina; therefore, no loss of wetlands would be expected under this ferry terminal alternative and no adverse impacts would be produced.

Alternative B. The closest tidal wetlands to the construction site on the Berkeley Pier are near the Brickyard, approximately 0.75 mile east. No loss of tidal wetlands would occur under this ferry terminal alternative and no adverse impacts would be produced.

Alternatives C and D. Within the study area, small salt marshes exist along the entire shoreline of the Albany mudflat, the east shore of the Albany Bulb, and at the mouth of Codornices Creek. Construction is not planned within any marsh areas, no loss of wetlands would be expected under this ferry terminal alternative, and no adverse impacts would be produced.

Mitigation. No loss of wetland habitat would be expected under any of the proposed ferry terminal alternatives; therefore, no mitigation is necessary.

CEQA Determination. The impact is less than significant.

Impact 2: Project construction could result in the disturbance of "Special Aquatic Sites," including eelgrass beds and mudflats.

Eelgrass beds and mudflats are considered special aquatic sites and are subject to USACE jurisdiction under Section 404 of the CWA and BCDC jurisdiction under Section 66605 of the McAteer-Petris Act.

Mudflats serve as important foraging areas for shorebirds species and provide shallow water habitat for juvenile fish. Dredge channels are not planned to cross any of the mudflats within the project area. No loss of mudflat acreage would occur as a result of project construction.

Eelgrass in the Bay provides spawning habitat for herring, and serves as a nursery ground and shelter for juvenile fish, among other functions. Eelgrass could be impacted directly or indirectly by project construction, resulting in the permanent loss of this habitat type. Dredging may directly remove eelgrass beds. In addition, eelgrass may be indirectly impacted by turbidity and increased sedimentation in areas adjacent to, or down current from, dredging operations. Potential removal or other disturbance causing degradation to eelgrass beds would be considered an adverse impact.

Dredging for project construction would increase suspended sediments in the vicinity of the project site. Dredging activities for channel construction are expected to increase the concentration of suspended sediments for short periods of time. However, concentrations are expected to be within the natural variability of the Central Bay.

Alternatives A and B. No eelgrass beds or mudflats are known within or adjacent to either potential dredge footprint directly in the ferry path for either the Berkeley Marina or Berkeley Fishing Pier options, and direct removal via dredging may be ruled out for both of these areas. Indirect effects due to turbidity and sedimentation are possible, but are expected to be minimal. The nearest known eelgrass beds are more than 0.6 mile to the south of the proposed dredged channel for Alternative B and nearly 1 mile south of the proposed Alternative A channel. No adverse impacts would be expected.

Alternatives C and D. Eelgrass beds were documented just north of the Buchanan Street Beach in 2003. Merkel & Associates are currently conducting a 1-acre eelgrass mitigation pilot project for the East Span Bay Bridge construction south of Gilman Street, with the potential to expand northward, eventually encompassing 15 acres (Merkel, 2007). This mitigation site is just offshore from the proposed Alternatives C and D sites.

The proposed dredged channel for Alternative C would directly remove a portion of eelgrass at the Caltrans eelgrass mitigation site, an adverse impact. Direct shading of remaining beds by piers and floating docks may also adversely affect eelgrass by reducing available light required for photosynthesis.

Indirect effects are also possible due to sedimentation and turbidity. Turbidity plumes from dredging operations may temporarily reduce light penetration in waters adjacent to the plumes. Sediment near areas of dredging may settle on eelgrass blades and affect the viability of the eelgrass in beds that are not directly removed via dredging, but are adjacent to dredging operations, a potentially adverse effect of Alternatives C and D. Eelgrass beds are easily affected by changes in water quality and turbidity because their growth and survival is a direct function of light penetration within the water column. However, as discussed above, turbidity affects from dredging are expected to be short-lived and within natural variability.

Mitigation. For Alternatives C and D, additional eelgrass surveys would be conducted to update existing eelgrass mapping at these locations and more precisely determine current locations and density of eelgrass. Methods would include use of side-scan sonar techniques, possibly in

conjunction with other techniques such as visual surveys. If eelgrass beds cannot be avoided, suitable compensatory mitigation would be designed in consultation with the appropriate state and federal agencies, such as the USACE, U.S. EPA, CDFG, BCDC, and the San Francisco Bay RWQCB. Correspondence that identifies agencies contacted for consultation on potential biological resource impacts is presented in Appendix C. Mitigation would provide enhanced functions and values relative to the impacted special aquatic sites. A mitigation plan would include monitoring and evaluating the success of the mitigation effort, and a contingency plan if the mitigation fails.

It should be noted that very little eelgrass mitigation has been done in San Francisco Bay and that mitigation of eelgrass impacts may not be feasible or successful in all cases. Furthermore, that some of the eelgrass that could potentially be disturbed is itself part of a mitigation project. Should Alternative C be carried forward, this Caltrans mitigation site would be adversely affected, and the amount of necessary compensatory or offsetting mitigation for ferry routing may be increased by the amount previously deemed necessary for the Bay Bridge east span construction.

For Alternatives C and D, indirect impacts to eelgrass beds from sedimentation and turbidity may be avoided or reduced through the use of silt curtains to protect the beds from sedimentation, or other methods that would protect the eelgrass from turbidity plumes generated during dredging. The use of silt curtains would have to be evaluated on a site-specific basis to determine feasibility for each ferry terminal alternative. Silt curtains can to be logistically difficult to deploy and can be ineffective in areas of high current velocity.

CEQA Determination. This impact would be less than significant for Alternatives A and B and would be considered less than significant after successful implementation of proposed mitigation measures for Alternatives C and D.

Impact 3: Construction activities could result in increased potential for the spread of invasive nonnative plant species, potentially altering local habitat.

Nonnative invasive species are of particular concern in San Francisco Bay. The nonnative smooth cordgrass, *Spartina alterniflora*, which has invaded the study area in the last decade, is of particular concern. This species has the ability to invade and exclude the native Pacific cordgrass, alter native northern saltmarsh habitat, colonize tidal mudflats, and reduce open-water areas, potentially resulting in reduced habitat for foraging shorebirds, fish, and invertebrates. Dredging in areas of nonnative cordgrass infestations can increase the spread of this species by creating root fragments and rhizomes that disperse with the tides.

Alternatives A and B. *Spartina alterniflora* is an intertidal colonizer of mud or sand flats. Appropriate *Spartina alterniflora* habitat does not occur in areas to be disturbed by either of these ferry terminal alternatives; therefore, no potential for spread of this invasive species exists.

Alternatives C and D. *Spartina alterniflora* and other nonnative plants are documented within Eastshore State Park (CDPR, 2001) and were mapped both north and south of the study area in 2004 by the invasive spartina project (San Francisco Estuary Project, 2004).

Mitigation. Alternatives C and D involve dredging and construction of new facilities in areas potentially colonized by *Spartina alterniflora* and other invasive plants. Construction activities may further spread the invasion via dispersal of root fragments and rhizomes. Preconstruction surveys by a qualified biologist would be conducted to identify and map areas of *Spartina alterniflora* or hybrids within the project area. Identified stands of nonnative cordgrass would be removed to the extent feasible prior to dredging or construction activities. The methods of removal would be developed in coordination with the USACE. Eradication of this species at a site would be done in advance of construction.

CEQA Determination. This impact would be less than significant after successful implementation of the proposed mitigation.

Impact 4: Construction of a breakwater would remove soft-bottom habitat.

Alternatives A, C, and D. No breakwater would be constructed for these ferry terminal alternatives.

Alternative B. Construction of a breakwater would be necessary to provide wind and wave protection for the docking and docked ferry. Current plans call for a 300-foot-long breakwater, either sheetpile (vertical wall) or rock (sloping wall). A sheetpile breakwater footprint would remove between 0.02 and 0.05 acre of soft bottom habitat. A rock breakwater would remove approximately 0.48 acre of soft bottom habitat.

Although soft bottom subtidal habitat would be removed by construction of the breakwater, hard substrate habitat would be added. This breakwater would have the potential to create a "reef effect" or area of locally high biodiversity based on a manmade structure colonized by marine organisms. Hard substrate creates suitable habitat for algal growth and sessile invertebrates, which in turn create habitat (including food, shelter, and larval attachment sites) for diverse marine biota both subtidally and intertidally. Typical hard substrate subtidal and intertidal habitat in San Francisco Bay supports seaweeds, sponges, starfish, barnacles, mussels and marine snails, small crustaceans such as amphipods and isopods, sea anemones, and small fish. Either sheetpile or rock construction would add an equal or greater area of hard substrate habitat, in the form of subtidal and intertidal breakwater walls, than the soft-bottom habitat removed.

CEQA Determination. Biological impacts from removal of soft-bottomed habitat are considered less than significant with the addition of hard bottom substrate that would be created.

Impact 5: Construction of pile-supported piers, shoreline retaining, and wing walls for the ferry pier would remove soft-bottom habitat.

Alternatives A through D. Pier construction plans call for the use of 24-inch octagonal concrete piles. Current plans call for the use of approximately 34 piles for Alternative A, approximately 18 piles each for Alternatives B and C, and approximately 22 piles for Alternative D, which would entail amounts of soft-bottom habitat that are fractions of an acre (0.00258, 0.00136, and 0.00167 acre, respectively). These areas are small relative to the amount of soft bottom habitat locally and through the Bay. While small amounts of soft bottom habitat would be removed by each pier, both subtidal and intertidal hard substrate habit would be added in the form of piles. Other constructed features such as retaining and wing walls would also replace small amounts of soft-bottom habitat with hard substrate. The surface area for attachment of organisms would exceed the loss of soft bottom habitat, providing hard substrate habitat benefits as discussed above.

CEQA Determination. Biological impacts from removal of soft-bottomed habitat are considered less than significant.

POTENTIAL EFFECTS ON PLANKTON/PRODUCTIVITY

Impact 6: Turbidity caused by dredging would reduce light penetration in the water column and could locally reduce phytoplankton production.

Phytoplankton, a major source of primary productivity in the Bay, is the base of a food chain that supports zooplankton, invertebrates, fish, aquatic birds, and marine mammals. Phytoplankton productivity requires solar energy, or sunlight, plus nutrients. Increased sediment concentrations in the upper water column reduce sunlight penetration, thus reducing the depth of the photic zone and magnitude of phytoplankton productivity. Suspended sediment concentrations have been measured for hydraulic dredging and mechanical dredgers, including clamshell dredging, one of the most common dredge types. Both hydraulic and mechanical dredgers increased suspended sediment above background levels by 10 to 400 mg/L, with an average of 60 mg/L for mechanical and 83 mg/L for hydraulic (Anchor Environmental, 2003). Dredging activities for channel construction are expected to increase the concentration of suspended sediments for a short period of time, but concentrations are expected to be within the natural variability of the Central Bay. The Biological Resources Technical Report provides more detailed information about turbidity and its effects on plant and animal life.

Alternatives A through D. The impact of a turbidity plume on phytoplankton productivity via decreased light transmission would depend largely on the difference between natural turbidity and added turbidity via dredged material during the time period in which dredging takes place. The western or offshore portions of dredged channel for all ferry terminal alternatives are situated in exposed water, subject to strong winds and intense mixing. Turbidity plumes in these portions of the project may be quickly diluted to near or within background particulate concentrations. The nearshore portions of Alternatives A and C, however, occur in more protected water, and

here the difference between natural turbidity and added turbidity may be sufficient to affect small-scale phytoplankton productivity in these areas. However, given the scale of the nearshore dredge plume compared to the area of the Bay where primary production occurs, dredging necessary for construction of new terminals and nearshore access channels would not result in an adverse impact on Baywide phytoplankton productivity.

CEQA Determination. This impact is less than significant.

POTENTIAL EFFECTS ON BENTHOS

Impact 7: Construction activities could result in the temporary or permanent loss of benthic (bottom dwelling) organisms and temporary or permanent disruption of benthic communities.

Dredging would directly impact benthic communities through physical disruption and direct removal of sessile benthic organisms, resulting in the loss of most, if not all, organisms in the dredge path. Following dredging, disturbed areas are anticipated to recolonize, beginning with mobile and opportunistic species. Opportunistic species, characterized by rapid growth and reproduction, may or may not be the same species that were present in the area prior to the disturbance. The project would not result in the introduction of any new species to the Bay.

Alternative A. Dredging for Alternative A would occur in an area that has historically been maintained by dredging as a shipping channel. Although the benthic community can be assumed to be highly disturbed, this is not considered an adverse impact.

Alternatives B, C, and D. Dredging for these ferry terminal alternatives would affect Bay bottom that is not regularly dredged. The benthic community in the dredge path is expected to recover over a period of months. On the scale of the soft bottom habitat of the Central Bay, this disturbance is relatively small and not considered adverse.

CEQA Determination. Given that benthic communities will recover in dredged disturbed areas, the impacts to benthic communities are not considered significant.

Impact 8: Construction activities may remove native oysters.

While they are not a state or federally listed species, native oysters (*Ostrea conchaphila*) are considered a historical keystone species for the Bay. A century ago, native oysters were a highly visible component of Bay ecosystems, covering thousands of Bay shore acres, and supporting industries from cement-making to gourmet dining. *Ostrea conchaphila* requires hard substrate for larval settlement, preferably other oyster shells, and this settling habit led to the formation of vast oyster reefs, the nooks and crannies of which supported diverse communities of fish, crab, and other native invertebrates. By the early 1900s, however, overfishing, habitat degradation and the introduction of non native shellfish led to the decline of Native oysters. Native oyster recovery is now closely watched by several groups, including Save The Bay, San Jose State University, the National Oceanic and Atmospheric Association (NOAA) Fisheries Restoration

Center, the Smithsonian Environmental Research Center, Restore America's Estuaries, and others.

Native oysters are currently known in the study area, although surveys for the site are unavailable. Given the lack of survey data, estimates of potential native oyster removal from each dredging alternative can not be made.

Alternatives A through D. Native oysters are known to occur within the Berkeley Marina. Populations may exist at or near the other three alternatives sites. Dredging could permanently remove this native bivalve, and, as they are slow to recolonize, this habitat may be taken over by invasive benthic species. In the absence of native oysters at this location, current benthic communities may undergo temporary disruption and loss of organisms, and may be recolonized by a higher percentage of nonnative species.

Mitigation. If Alternative A were selected as the LPA, WETA would work with NOAA Fisheries, CDFG, and other interested resource agencies to determine whether native oysters would be adversely affected by dredging, using the results of studies currently being conducted at the terminal site for the South San Francisco project and other sites in the Bay. Alternatively, WETA may agree to conduct pre-construction surveys for native oysters at the Marina site. Given the outcome of the surveys, WETA would consult with the resource agencies to determine whether mitigation measures are required to re-establish the affected beds. Correspondence identifying on going consultation with agencies concerned with potential biological resource impacts is presented in Appendix C.

CEQA Determination. Removal of native oysters, or replacement of native oysters by nonnative species, would not be considered significant under the criteria established for this project.

POTENTIAL EFFECTS ON FISH

Impact 9: Dredging could adversely affect fish species near construction activities.

Alternatives A through D. Increased turbidity levels caused by dredging can decrease water column dissolved oxygen concentrations in the vicinity of the plume. Mobile animals such as fish and crustaceans tend to avoid areas of high turbidity and may be temporarily displaced from the area during dredging operations. Dredge-induced increases in suspended sediment concentration are predicted to be short-lived and generally within the range of normal suspended sediment variability in the Bay. Special-status fish species are addressed under Impact 15.

Mitigation. Turbidity caused by dredging may briefly and locally affect fish movements. Mitigation for Impact 2 would apply and would help to confine the spread of turbidity in the water turbidity.

CEQA Determination. This impact is considered less than significant.

Impact 10: Dredging and associated turbidity could affect spawning by Pacific herring.

Dredging activity during the Pacific herring spawning season (starting as early as November and ending as late as March [Watters et al., 2004]) in areas where spawning is occurring could impact spawning success. Spawned eggs are very susceptible to suspended sediments at concentrations as low as 125 to 250 mg/L, which would likely be achieved during dredging activities. As yet unpublished data by researchers at Bodega Marine Laboratory suggest that such concentrations impact eggs only during an approximate 2-hour window after spawning, as the eggs' adhesive layer becomes sticky and sediments adhere to the eggs. Sediment adhesion to eggs within this window can cause larval abnormalities during later development (Cherr, 2007). Herring may also be excluded from areas where they might otherwise spawn during dredge-induced high turbidity events.

Alternatives A through D. As pier pilings and boat hulls are a common spawning habitat within the Bay (Watters et al., 2004), it can be assumed that spawning is equally likely, and equally likely to be affected, at locations of all of the ferry terminal alternatives. The adverse impact is not expected to vary among ferry terminal alternatives.

Mitigation. Dredging would be limited to resource agency designated work windows, avoiding the spawning period from December 1 to March 1. If dredging must extend outside of the work window, a waiver from CDFG must be obtained. This waiver may include specifications such as monitoring by a qualified biologist and halting of dredging activities for a specified period if herring spawning activity is noted in the construction area.

The use of silt curtains while dredging may reduce turbidity adjacent to the dredging area and protect undetected spawning activity. The use of silt curtains would have to be evaluated on a site-specific basis to determine feasibility for each ferry terminal alternative. Silt curtains can be logistically difficult to deploy and can be ineffective in areas of high current velocity.

CEQA Determination. This impact would be less than significant after implementation of proposed mitigation measures.

Impact 11: Underwater noise from pile driving and other construction activities could affect nearby fish.

Underwater noise and acoustic pressure resulting from pile driving could affect aquatic resources by causing avoidance of the construction area and/or sublethal or lethal effects on sensitive species. The severity of adverse effects on fish (e.g., behavioral avoidance) is dependent upon a number of factors, including the concentration and location of fish within the area, species-specific differences in sensitivity to acoustic pressures, the depth of water, bottom- and surface-water characteristics, and the type of pile (steel, concrete, and hammer size). Exposure to sound pressure levels associated with pile driving decreases in water exponentially as a function of the distance from the source. Sound pressure levels of 180 dB referenced to 1 μPa are known to cause permanent injury to the lateral line and inner ear of fishes (Hastings et al., 1996). Damage

to these organs results in disorientation and the inability to locate food and avoid predators. Delayed mortality may also occur.

Exposure to low-frequency underwater sound may result in reduced hatching rates of fish eggs and reduced larval fish survival. Fish eggs are known to be especially vulnerable to vibration and acoustic pressure waves during the first few days after fertilization. Fish larvae and small juvenile fish have been found to be much more vulnerable to elevated sound pressure levels than adult fish (Yelverton et al., 1975).

Fish could be temporarily displaced by noise from construction activities (barges, workboats, etc.), but would return once the construction activities ceased. Construction activity associated with pile driving would result in increased underwater noise and acoustic pressure waves.

Alternatives A through D. Recent experience in San Francisco Bay during a pile installation test for the Bay Bridge East Span indicated that the use of large pile drivers can result in the death of fish with swim bladders (Caltrans, 2001). In comparison to the Bay Bridge construction, widening of the San Mateo Bridge required the driving of 900 to 1,200 concrete piles with 2- to 3-foot diameters. No fish kills were reported during this pile driving operation. Pile driving for the ferry terminal fixed pier would be 24-inch octagonal precast, prestressed concrete, such as those used for the San Mateo Bridge and would be unlikely to have the same sorts of impacts as bridge projects using much larger piles. Although it is not expected that significant fish mortalities would result from pile driving, adverse impacts could occur.

Mitigation. Underwater sound monitoring would be conducted if estimated sound pressure levels could approach those that may harm fish (e.g., 180 dB). Measures to reduce sound pressure levels in surrounding waters, such as bubble jackets surrounding the piles, may have to be deployed if sound pressure levels exceed those that could harm fish.

CEQA Determination. This impact would be less than significant after implementation of the proposed mitigation measure.

POTENTIAL EFFECTS ON BIRDS

Impact 12: Construction activities could result in loss of habitat for waterfowl, shorebirds, and migratory bird species.

San Francisco Bay is an important stopover for many species of migratory waterfowl in the Pacific Flyway. Flying is a high-energy activity for waterfowl (Korschgen and Dalhgren, 1992) and frequent flying due to human disturbance may take away from the energy reserves that would normally be used to complete migration. Large flocks appear to be more susceptible to disturbance than small flocks and canvasback and scaup are especially vulnerable (USFWS, 1992; Mori et al., 2001). Habitats that could be temporarily or permanently affected during construction include upland nesting areas, tidal wetland, sandy beach, rocky shoreline, and bay waters.

Alternative A and B. The Berkeley Marina and Berkeley Fishing Pier are highly disturbed areas where human activity is consistent and ongoing. Birds within these areas are accustomed to human activity and noise. Dredging outside of the Berkeley Marina would occur in an area exposed to frequent boat traffic. Construction activity in this area is not expected to adversely affect avian species. Construction within the Berkeley Marina or on the Berkeley Fishing Pier is not expected to adversely impact aquatic avian species. However, upland species, including white-tailed kite, northern harrier, and burrowing owl may be temporarily adversely impacted by construction related traffic and noise from Alternative A. These impacts are discussed more fully in Impact 15.

Alternatives C and D. At least 122 bird species were recorded in the North Basin during a 3-year survey conducted between 2004 and 2006 (Shafer, 2007). These include waterfowl such as sea ducks, loons, and grebes that rest and forage on the waters during high tides; wading birds such as egrets and herons that forage in shallow water and exposed soft bottom at low tides; and shorebirds that roost, forage, and nest on rocky shorelines and sandy beaches surrounding the flats.

Shallow open water foraging areas, wetlands, tidal flats, and sandy beaches, such as those in the North Basin near Alternatives C and D, are valuable to migratory birds. Human activity can affect bird fitness, as measured by energy balance, especially during migration and winter. When disturbed, waterfowl often flush or take flight. Surf scoters, canvasback, and lesser scaup appear to be more sensitive to human activity than other species (Goals Project, 2000; Korschgen and Dahlgren, 1992; Korschgen et al., 1985; Huffman, 1999).

Pier construction (including pile driving), dredging, and construction staging would add temporary but frequent human disturbance to habitats used migratory species. Birds that do not vacate the area entirely may suffer from the energetic costs of responding to and avoiding construction activity. Temporary or permanent relocation out of the North Basin may also adversely affect these species, depending on the habitat quality and carrying capacity of the areas to which birds relocate.

Mitigation. During construction, Alternatives C and D would result in temporary but adverse impacts to the quality of nearshore bird habitats, affecting a high diversity of avian species. No appropriate mitigation for this impact has been identified. Specific impacts to special-status species are detailed in Impact 15.

CEQA Determination. Alternatives A and B would result in less-than-significant impacts. Alternatives C and D are expected to cause temporary but potentially significant and unavoidable impacts.

POTENTIAL EFFECTS ON MARINE MAMMALS

Impact 13: Increased turbidity and activity from dredging operations could affect marine mammal foraging.

Alternatives A through D. Increased turbidity and activity during dredging may disturb marine mammal foraging activities by temporarily decreasing visibility or causing removal of mobile prey from the area affect by the sediment plume. Given the lack of marine mammal breeding areas or haul out sites within the study area, the relative paucity of marine mammals off this shoreline, and the relatively large feeding ranges of marine mammals in the Bay, this would not result in an adverse impact to marine mammals.

CEQA Determination. No potentially significant impact would occur.

Impact 14: Underwater pile driving noise could disturb marine mammals.

Underwater noise related to pile driving could result in temporary disturbance to foraging or migrating marine mammals. Under the Marine Mammal Protection Act of 1972 (amended in 1994), it is forbidden to intentionally harass marine mammals. Harassment is defined under the Act as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment) or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption to migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment)." Pile driving activities would be considered Level B harassment.

Alternatives A through D. Caltrans conducted a Marine Mammal Impact Assessment for the Pile Installation Demonstration Project as part of studies conducted for the San Francisco–Oakland Bay Bridge East Span Seismic Safety Project (Caltrans, 2001). The Caltrans study, which included a series of underwater noise measurements made during pile driving activities, was used to estimate the underwater noise level that could be generated by the pile driver expected to be used for construction of the Berkeley/Albany ferry terminal alternatives. Because pile driving noise levels are expected to exceed the 160 dB NMFS guideline, pile driving could produce a temporary adverse impact on marine mammals (see Section 4.8, Noise and Vibration).

Mitigation. An Incidental Harassment Authorization from NMFS would be needed for pile-driving activities, even though activities would not occur near known haul-out sites. To minimize harassment to marine mammals, the following avoidance measures are proposed:

- Work would occur only during daylight hours (7 a.m. to 7 p.m.) so that marine mammals are visible at all times during the pile installation.

- A safe zone would be enforced during pile driving operations. A marine mammal monitor would survey the area either from the work boats or a separate vessel prior to the startup of pile driving equipment. Installation would not begin until

no marine mammals are sighted within a designated "safe zone" for at least 15 minutes prior to the initiation of the drilling.

- For pile driving activities, the proposed safety zone would be a radius of 1,000 feet from the pile location. At 1,000 feet, sound levels from drilling are expected to be below 180 dB.

- Once pile driving begins, installation would continue until completed. Before driving the next pile, the monitor would again confirm that the safety zone is clear of marine mammals.

- The construction contractor would establish daily "soft start" or "ramp up" procedures for pile-driving activities. This technique would be used at the beginning of each piling installation to allow any marine mammal that may be in the area to leave before pile driving activities reach full energy. The contractor would provide an initial three strikes at reduced energy (40 percent), followed by a 1-minute waiting period, then subsequent 3-strike sets.

- A qualified biological monitor would visually survey the area 1 day prior to the start of drilling operations to establish a baseline.

CEQA Determination. This impact would be less than significant after implementation of the proposed mitigation measures.

POTENTIAL EFFECTS ON SPECIAL-STATUS SPECIES

Impact 15: Project construction could result in the "take" of state or federally listed species or loss of degradation of critical habitat.

Plants

No special-status plants are expected to occur within areas disturbed by project construction.

Fish

Alternatives A through D. Special-status fish with potential to be affected by project construction include Central California Steelhead (*Oncorhynchus mykiss*), winter run Chinook Salmon (*Oncorhynchus tshawytscha*), and Green Sturgeon (*Acipencer medirostris*). These species may be adversely affected by dredging activity as described under Impacts 2, 6, 7, 9, and 10, and by pile driving noise, as described under Impact 11.

Birds

Potentially suitable habitat for California Black Rail (*Latterallus jamaicensis coturniculus*), California Clapper Rail (*Rallus longistostris obsoletus*), Saltmarsh Common Yellowthroat (*Geothlypis trichas sinuosa*), and Alameda Song Sparrow (*Melospiza melodia pusillula*) occurs

within the study area. Although potential habitat is present, these birds are not currently known to occur within the study area and are not expected to be impacted.

California brown pelican (*Pelecanus occidentalis californicus*) and double-crested cormorant (*Phalacrocorax auritus*) may forage at all of the ferry terminal alternative locations. No nesting colonies of either bird exist within 300 feet of any of the alternatives. Construction activities and noise may cause birds to flush from resting or foraging activities. However, these species are common to highly impacted areas such as harbors marinas and forage over large areas of the Bay. No adverse impacts are expected.

California least terns have nested on a small island just south of Central Avenue to the north of the ferry terminal alternative locations. This island is approximately 1 to 1½ miles north of the construction sites for the ferry terminal alternatives, to the north of the Albany Bulb. California least terns tend to forage within 1 to 2 miles of their nesting site (del Nevo et al., 1997). There is the potential that foraging could be adversely affected during dredging activities if terns are nesting at the time.

Alternative A. Northern harriers (*Circus cyaneus)* are known to nest in the northwest corner of Berkeley Meadows, within 300 feet of the proposed ferry terminal. Northern harriers, like owls, have sound-reflecting facial ruffs that allow them to locate prey by sound (Ehrlich et al., 1988). Construction noise and activity may disturb harrier foraging and nesting.

Burrowing owls *(Athene cunicularia hypugea)* have been reported in the study area in ruderal grassland and ruderal scrub habitats, including the south shoreline of the North Basin, although it is unknown whether the owls use these areas year-round or if breeding occurs. Suitable nesting habitat for burrowing owls is being incorporated into the restoration of Berkeley Meadows as designated by the restoration plan. Construction noise and activity may adversely affect burrowing owls as they do harriers, if nests are present at the time of construction.

Alternative B. No bird nests are known near the ferry terminal site under this alternative. The planned dredging and construction sites are situated in open bay developed riprap shoreline. Neither of these habitats are known to be heavily used by sensitive avian species, and no adverse impacts would occur.

Alternatives C and D. Sensitive avian species known to use habitats surrounding the North Basin include burrowing owl *(Athene cunicularia hypugea)*, white-tailed kite (*Elanus leucurus)*, American peregrine falcon (*Falco peregrinus anatum*), osprey *(Pandion haliaetus)*, and long-billed curlew (*Numenius americanus*). Construction activity and noise, including dredging, staging, pile driving, and other nearshore and onshore construction activity, may disturb foraging and resting behaviors, decrease time available for foraging, and increase energetic costs as a result of increased flight times and startling responses. Construction may adversely affect the use of portions of the North Basin by these birds for the duration of construction.

Mitigation. Underwater noise impacts to special-status fish would be mitigated as described in Impact 11. NMFS would be informally consulted as to any seasonal restrictions on pile driving

or other measures to avoid take of listed species. If mitigation that avoids take cannot be implemented, then WETA would enter into formal consultation with NMFS to obtain an incidental take permit.

Environmental work windows for dredging have been established for the protection of special-status fish species as part of the Long-Term Management Strategy (LTMS) for placement of dredged materials in San Francisco Bay. The dredging work window for steelhead in the Central Bay, where the ferry terminal alternatives are located, is from June to November. Dredging during this time period would reduce impacts to this listed species and no consultation with NMFS would be required. If this work window cannot be adhered to, WETA would enter into formal consultation with NMFS to obtain an incidental take permit. This permit may include specifications for monitoring and other mitigation measures to reduce impacts during dredging activities.

To reduce impacts to other special-status bird species and ensure compliance with the Migratory Bird Treaty Act (16 U.S.C. 703-712) and California Fish and Game Code (§§3503, 3511, and 3513) the following measures would be implemented:

- Preconstruction bird surveys should be conducted by a qualified biologist no more than 2 weeks prior to the start of construction for activities occurring during the breeding season (February 1 to August 31) or during the wintering period (September 1 to January 31) for sensitive wintering species.

- If active nests of special-status bird species are found where work is to occur within 300 feet of raptor or 100 feet of passerine nests the construction limits, a non-disturbance buffer would be established at a distance sufficient to minimize nest/roost disturbance based on the nest location, topography, cover, the species' sensitivity to disturbance, and the intensity/type of potential disturbance. The buffer size would be determined in cooperation with the CDFG and the USFWS.

- If rescheduling of work around active nests/roosts of special-status bird species is infeasible, a qualified biologist should monitor nests for signs of disturbance. If it is determined that project activities are resulting in nest/roost disturbance, work should cease immediately and the CDFG and the USFWS would be contacted.

The LTMS contains a dredging work window for California least terns that applies to the area from the Berkeley Marina south to San Lorenzo Creek. The work window is between August 1 and November 30. Dredging during this time period would reduce impacts to this listed species and no consultation with USFWS would be required. If this work window cannot be adhered to, WETA would enter into consultation with USFWS to obtain an incidental take permit as necessary. This permit may include specifications for monitoring and other mitigation measures to reduce impacts during dredging activities.

CEQA Determination. Impacts to special-status species for all ferry terminal alternatives would be less than significant after implementation of the proposed mitigation measures.

Impact 16: Contaminated sediments could become resuspended during construction and dredging operations and be toxic to Bay organisms, including plankton, benthos, fish, birds, and marine mammals.

Alternatives A through D. Dredging of sediments for any of the ferry terminal alternatives has the potential to resuspend into the water column contaminants associated with the sediments. The resuspension of the sediments may have adverse toxic effects on marine life in the Bay in the vicinity of the dredging.

Mitigation. Dredging would be conducted under the appropriate permits as indicated in Section 4.10, Water Resources. Prior to dredging, a dredged materials sampling and management plan would be developed. Sediments would be sampled and tested prior to the start of dredging activities. Testing would include analysis of chemical constituents and bioassay testing to determine potential for environmental toxicity. If tests show potential for environmental toxicity, appropriate impact minimization measures would be developed in consultation with the appropriate agencies.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impact would be less than significant.

Operational Impacts and Mitigation

POTENTIAL EFFECTS ON HABITATS

Impact 17: Habitats: Wetlands, eelgrass, bayflats, and sandy beaches.

Sensitive shorelines and ecosystems may experience increased traffic (foot, car, bus, or boat) due to ferry operations. This traffic may lead to adverse habitat impacts including erosion, sedimentation, and permanent lowering of habitat value as avian resting, foraging, or nesting areas.

Alternative A. The Berkeley Marina currently experiences high levels of human use, including car, foot, and boat traffic. No tidal wetlands, eelgrass, bayflats, or sandy beaches are expected to be affected by ferry operations within the Berkeley Marina. No adverse impacts would occur.

Alternative B. The Berkeley Fishing Pier currently experiences high levels of human use, including car, foot, and boat traffic. No wetlands, eelgrass, bayflats, or sandy beaches are expected to be affected by ferry operations under this terminal alternative. Wake wash from vessels entering the Alternative B pier site would be ameliorated by the effects of the breakwater on wave attenuation. The breakwater would reduce the effects of wave action on nearby habitats to less than ambient levels. Draft Technical Memorandum Conceptual Engineering Design and Analysis for the proposed Berkeley Ferry Terminal, Coast and Harbor Engineering, August 8, 2007. No adverse impacts would occur.

Alternatives C and D. Bayflats along the shore of the North Basin to Albany Beach are important foraging zones for a number of sensitive bird species. Eelgrass beds, described in Impact 2, may be subjected to physical disturbance, including uprooting and sedimentation, by

ferry passage and wake. Two areas of sandy beach habitat occur north of the Buchanan Street (Alternative D), one of them within 200 feet of planned ferry dock. Although sandy beaches are not protected habitat, they are rare in the Central Bay and play an important role in the bay ecology. Erosion of sandy beach habitat would be considered adverse.

Mitigation. For Alternatives C and D, bayflats and eelgrass beds may be adversely affected by ferry passage, and sandy beach habitat may be impacted by ferry passage under Alternative D if wake from the transiting ferries causes erosion of nearshore habitats. A no-wake policy within the North Basin would be implemented to reduce erosion of tidal wetlands, bayflats, and sandy beaches; reduce suspension of bay sediments; and minimize physical disturbance of eelgrass beds. In addition, prior to project construction, eelgrass beds would be studied to see if they have shifted location.

CEQA Determination. Impacts to biological resources in the North Basin are expected to be less than significant after implementation of the mitigation.

POTENTIAL EFFECTS ON PLANKTON

Impact 18: Ferry operations, including maintenance dredging, could disrupt phytoplankton productivity.

Alternatives A through D. As discussed under Impact 6, impacts to phytoplankton productivity from maintenance dredging operations are not expected to adversely affect plankton productivity on a larger scale. Turbidity from ferry movement, wake effects, and wake-induced erosion are expected to be minor and have no adverse effect on productivity.

CEQA Determination. This impact would be less than significant.

POTENTIAL EFFECTS IN BENTHOS

Impact 19: Periodic maintenance dredging or ferry operations may adversely impact the benthic community.

Alternatives A through D. As discussed under Impact 7, disturbance to benthos from dredging are expected to be adverse and temporary. Erosion and sedimentation of the bay bottom from ferry movement, wake effects, and wake-induced erosion could be adversely affected.

Mitigation. Mitigation measures for Impact 16 would apply.

CEQA Determination. The mitigation measures would reduce this impact to a less-than-significant level.

POTENTIAL EFFECTS ON BIRDS

Impact 20: Ongoing, regular large boat traffic could disturb roosting and foraging water waterfowl in the vicinity of ferry activity and may decrease use of project areas by sensitive bird species.

The effects of human activity, including various types of boat traffic, are discussed in detail under Impact 12.

Alternative A. Ferry activity would be similar to current boating traffic for this ferry terminal alternative. No adverse impacts are expected.

Alternative B. This site is not commonly used by a sensitive bird species because it is highly exposed and subject to much human activity. No adverse impacts are expected.

Alternatives C and D. The North Basin is currently closed to motorized boat traffic. Ferries traveling to and from piers in either Alternative C or D would therefore comprise the only motor-driven boats in the North Basin. This addition of boat traffic to an area currently without boat traffic may cause changes to the behavior of sensitive avian species using this habitat. The disturbance on waterbirds was described under Impact 12. Adding ferry traffic to the North Basin is expected to have an adverse and long-term impact on avian species here.

Mitigation. Burger (1998) found that racing motorboats and boats outside established boating channels elicited strong responses in a nesting colony of Common terns, as did particularly loud boats such as personal watercraft (jet skis). Therefore, limiting engine noise and speed of ferries entering the North Basin, as proposed in Impact 17, may decrease, but may not entirely mitigate, the disturbance of sensitive birds in the vicinity of the ferry.

CEQA Determination. Impacts to birds from ferry operations are considered less than significant for Alternatives A and B, and significant for Alternatives C and D. For Alternatives C and D, the impact may remain significant and unavoidable after implementation of this mitigation measure.

POTENTIAL EFFECTS ON MARINE MAMMALS

Impact 21: Transiting ferries disturb marine mammal resting and foraging activities.

Human activities have been shown to adversely affect the behavioral patterns of marine mammals. Seals react to both visual and acoustic disturbances (Richardson et al., 1995). According to Green et al. (2001), the primary sources of disturbance for harbor seals in San Francisco Bay are boats, kayaks, jet skis, aircraft, foot traffic, and dogs in the vicinity of haul-out sites. Disturbance sources that occur closer to the animals tend to provoke a stronger negative response.

Alternatives A through D. No haul out or resting sites for any marine mammals currently exist within the study area. Disturbance by ferries to foraging marine mammals is expected to be

similar to existing boat traffic. Although NMFS does not regulate normal watercraft operations or require Incidental Harassment Authorizations for regular shipping and pleasure craft operations, NMFS does have guidelines for avoidance of marine mammals to reduce disturbance and avoid producing adverse effects.

CEQA Determination. This impact is less than significant.

Impact 22: High-speed ferries could strike gray whales in San Francisco Bay.

Alternatives A through D. Because of the increase in gray whale sightings in San Francisco Bay over the last several years, concern exists about collisions between whales and vessels during normal operations. No documented collisions between gray whales and any type of vessel have occurred in San Francisco Bay (Cordero, 2001). Ferry operators will be made aware of the potential for whales entering the Bay. The USCG reports whale sightings and distance to vessels when they receive reports of whale sightings. Ferry captains would be made aware of these reports and exercise diligence when a whale sighting has been reported.

CEQA Determination. Given the extremely low risk of a whale strike, this impact would be considered less than significant.

POTENTIAL EFFECTS ON SPECIAL-STATUS SPECIES

Impact 23: Project operation could result in the "take" of state or federally listed species.

Operational activities that could affect listed species or critical habitat include ferry movement to and from the ferry pier; ferry-related car, bus, and foot traffic onshore; and maintenance dredging of access channels.

Plants

No special-status plants are likely to occur within the study area.

Fish

Alternatives A through D. Special-status fish with potential to be occur in the study area include Central California steelhead (*Oncorhynchus mykiss*), winter run Chinook salmon (*Oncorhynchus tshawytscha*), and green sturgeon (*Acipencer medirostris*). These species may be adversely impacted by periodic maintenance dredging activity as described under Impact 15.

Birds

Alternative A. Northern harriers are known to nest in the northwest corner of Berkeley Meadows, within 300 feet of the new ferry. Ferry operations, including ferry passenger parking, are expected to be similar to current human use of the Berkeley Marina, and thus are not expected to adversely impact Northern harriers. Burrowing owl occur in the Berkeley Meadow

adjacent to the proposed parking area for this alterative. Since no habitat will be taken for the parking lot, no adverse impacts are expected.

Alternative B. No bird nests are known near the ferry terminal site under this alternative. This area is not heavily used by special-status bird species and no adverse impacts are expected.

Alternatives C and D. Operational impacts to special-status bird species within the North Basin are expected to be similar to those detailed under Impact 15. Ferry operations may disturb foraging or resting for burrowing owl, white-tailed kite, American peregrine falcon, osprey, and long-billed curlew. The repeated disturbance may cause these species to reduce their use of these locations for foraging and resting, constituting an adverse impact.

Mitigation. Mitigation Measures for Impact 15 related to dredging would be followed for periodic maintenance dredging activities. Ferry operations may repeatedly disturb special-status species in the North Basin or may cause reduced use of areas of the North Basin under Alternatives C and D. No mitigation for this potential impact has been identified.

CEQA Determination. Impacts to special-status species from operations would be less than significant for Alternatives A and B, with implementation of the proposed mitigation measures. For Alternatives C and D, continued disturbance of habitat used for foraging and resting by special-status bird species is considered a significant and unavoidable impact.

Impact 24: Creation of piers could increase shading and add structural cover which could be used by predatory fish

Alternatives A through D. The construction of new piers in San Francisco Bay would primarily affect subtidal shallow water bay mud habitat. The alternatives would create structural cover and increase shading to the waters below the pier. Alternatives B, C, and D would be roughly similar in length and width, ranging from 352 feet (Alternative B) to 389 feet (Alternative D) in length. All alternatives would be 17 feet in width. Alternative A would result in the longest pier, at 522 feet. This pier, within the Berkeley Marina, is in an area were there are a number of other docks and piers.

Subtidal shallow water bay habitat in San Francisco Bay provides habitat for a variety of species. Prey species such as topsmelt (*Antherinops affinis*), anchovy (*Engraulis mordax*), and shiner surfperch (*Cymatogaster aggregata*) use this habitat to forage for food and as shallow water refuge. Shallow estuarine habitats throughout the world are recognized as valuable nursery grounds for juvenile fishes (Sheaves, 2001). Many predatory fish, such as striped bass (*Morone saxatilis*), are associated with structure (Haeseker et al., 1996) and would be expected to occur within the area associated with the new piers. This could result in a slight increase in predation on larval and young fish in the local project area. This increase would be most pronounced during high tide, when larger predatory fish move into shallow water to feed. However, larval or young fish would most likely tend to concentrate in areas that are not shaded by the pier. Increased productivity of algae, warmer water temperatures, and emergent vegetation provide a more ideal habitat for larval fish. Therefore, the increase in predation on larval fish would not

likely be significant. Other predatory fish found within San Francisco Bay, such as California halibut (*Paralichthys californicus*), are not associated with structure. Halibut move onto shallow mud flats during high tide to feed on benthic invertebrates and fish. While they could be expected to occur near and under the pier, their densities would not be expected to increase as a result of the pier construction, and increased predation by these fish would therefore not occur.

The construction of a new pier in San Francisco Bay would shade the water below the pier. This could lead to a potential decrease in the amount of emergent vegetation, the production of algae and planktonic food, and water temperatures beneath the pier. Garrison et al. (2005) found that the installation of a pier shifts the aquatic plant community in freshwater Wisconsin lakes toward more shade-tolerant species with overall less plant life. Planktonic algae (phytoplankton) float through the area with the currents and would not be expected to remain in shaded areas. The area of shade is small relative to the size of the Bay, and the impact on the food chain is expected to be negligible.

CEQA Determination. This impact is considered less than significant.

4.9.4 Cumulative Impacts and Mitigation

Projected growth and planned development in the study area are not expected to produce cumulative effects on biological resources. An approved project in the vicinity of Alternative C, the Gilman Street playing fields, has the potential for impacts to biological resources. This project may affect burrowing owls, if still present on the site. Mitigation measures have been specified and no cumulative adverse impacts would occur.

All of the ferry terminal alternatives would involve dredging of approach channels to the proposed dock locations. While this would add to current dredging operations at various marinas and ports in San Francisco Bay, cumulative effects from dredging may be adverse in a limited area for a short duration.

CEQA Determination. Cumulative effects of dredging on biological resources are not considered significant.

4.10 WATER RESOURCES

This section describes the potential impacts that expanded ferry service to Berkeley or Albany could have on water resources, including water quality, water supply, flood hazards, and navigation. This section is organized by construction impacts, operational impacts, and cumulative impacts. It provides an evaluation of impacts for each ferry terminal alternative and, where applicable, mitigation measures that can be adopted to avoid or minimize these effects.

4.10.1 Significance Criteria

Impacts could have an adverse effect on the environment if they would:

- Cause a degradation in water quality due to release of contaminated sediments during initial or maintenance dredging activities;
- Cause a degradation in water quality from on-site construction of new terminal facilities including buildings and associated structures;
- Result in a flood hazards to human safety and property due to construction in floodplain;
- Result in a degradation in water quality due to increases stormwater runoff from paved or regraded areas;
- Result in fuel spills from vessel operations; or
- Result in significant wake wash impacts to shorelines or to small vessels.

Mitigation measures for addressing potential safety risks from ferry operation cited in the Water Resources section of the Programmatic EIR for the Regional Ferry Implementation Plan are incorporated by reference into this document.

4.10.2 Water Resources Impacts and Mitigation

4.10.2.1 No-Action Alternative

This alternative would not involve construction of a ferry terminal or operation of a new ferry service. Therefore, there would be no construction or operational impacts to water quality, and water quality would remain the same as the existing setting.

4.10.2.2 Action Alternatives

Construction Impacts and Mitigation

All of the ferry terminal alternatives would require dredging along the approach channels and in the turning basins at the terminals. Approach channels were assumed to be 150 feet wide and 10 feet deep (MLLW), and have side slopes of 3 horizontal to 1 vertical (3:1). For all ferry terminal alternatives, the turning basin area beneath the boarding float was also assumed to require a 10-foot depth (MLLW).

Impact 1: Dredging could impact water quality through mobilization of contaminated sediment.

Contaminated sediments are known to occur near historical industrial sites along the San Francisco Bay shoreline. Disturbance of contaminated sediment could impact water quality.

Alternative A. Approximately 110,000 cubic yards of dredging would be required in the channel approaching the Berkeley Marina and in the Berkeley Marina. The Berkeley Marina currently maintains a channel depth of 7 feet MLLW and a depth within the Berkeley Marina of approximately 15 feet (City of Berkeley, 2006).

Dredging volumes and areas were calculated by Coast & Harbor Engineering (CHE), using the recent hydrographic survey and conceptual channel designs (CHE, 2007). A detailed bathymetric survey would be required to determine the actual required dredge volume and area. The footprint of the required dredge area (approximately 57.8 acres) is shown on Figure 4-3.

Alternative B. Approximately 150,000 cubic yards of dredging would be required along the channel to the Berkeley Fishing Pier. From the shore, the water depth increases quickly to 8 feet, based on MLLW (CHE, 2007). The depth is approximately 8 feet for 6,000 feet in the direction of the San Francisco Ferry Terminal; beyond this distance, water depths gradually increase.

The footprint of the required dredge area based on the available survey (2001) is shown on Figure 4-3. The dredge footprint (including the proposed breakwater) represents approximately 59.2 acres.

Alternative C. A ferry route to the Gilman Street site would require approximately 240,000 cubic yards of dredging along the channel and terminal turning basin (CHE, 2007). The water depth directly offshore of the Gilman Street site is 4 feet MLLW, gradually increasing to 6 feet just west of Cesar Chavez Park. Water depth remains at approximately 7 feet for 3,000 feet west of the park.

Both the shoreward (eastern) end of the dredged channel and the terminal would be located within the aquatic parklands of Eastshore State Park (Figure 4-4). Approximately 1,400 feet of the channel alignment closest to the shore are within the Park. The footprint of the required dredge area is shown on Figure 4-3. The dredge footprint represents approximately 48 acres.

Alternative D. The Buchanan ferry terminal site alternative would require the largest dredge volume, approximately 280,000 cubic yards (CHE, 2007). Water depth is approximately 4 feet offshore of the Buchanan Street site. Depths slowly increase to 6 feet at a distance of 3,000 feet from the shoreline.

Both the shoreward end of the dredged channel and the terminal would be located within the aquatic parklands of Eastshore State Park (Figure 4-4). Approximately 1,250 feet of the channel alignment closest to the shore are within the Park. The footprint of the required dredge area is shown on Figure 4-3. The dredge footprint would represent approximately 42.8 acres.

Mitigation. All ferry terminal alternatives require dredging of between 110,000 and 280,000 cubic yards of Bay sediment. Before dredging can be performed, a Sampling and Analysis Plan (SAP) detailing sediment sampling and analysis would be submitted to the San Francisco Dredged Material Management Office (DMMO), which includes representatives from the USACE, RWQCB, BCDC, U.S. EPA, and other resource agencies. If the results of the SAP indicate that water quality would not be impacted by dredging, a consolidated Dredging – Dredge Material Reuse/Disposal permit would be issued by the USACE. The permits covers both Section 404 of the CWA and Section 10 of the Rivers and Harbors Act and is functionally equivalent to a RWQCB Report of Waste Discharge, pursuant to Article 4, Chapter 4, of the Porter-Cologne Water Quality Control Act. The water quality impacts due to dredging would be

minimal, both spatially and temporally, because suspended sediment is anticipated to settle quickly out of the water column. If contaminated sediment is encountered, further sediment characterization and a sediment removal plan (including upland disposal or beneficial reuse) would be required to protect water quality.

Additional mitigation measures would be required for dredging for Alternatives C and D. Dredging for these ferry terminal alternatives would be within aquatic parklands of Eastshore Park (Figure 4-4) and would require approval of the EBRPD and California State Parks Department of Parks and Recreation, in addition to the USACE/DMMO process. Based on regulatory agency input, a more detailed level of environmental analysis would be required before dredging could be considered at these sites. (NOAA Fisheries, BCDC, and California State Parks input provided at stakeholder meetings). The EBRPD and California State Parks Department of Parks and Recreation indicated that even with mitigation measures, dredging within aquatic parklands of Eastshore Park would still be considered an adverse impact.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impacts for Alternatives A and B would be less than significant. For Alternatives C and D, dredging within aquatic parklands of Eastshore Park would be considered significant and unavoidable.

Impact 2: Dredge material disposal could exceed the capacity of disposal sites.

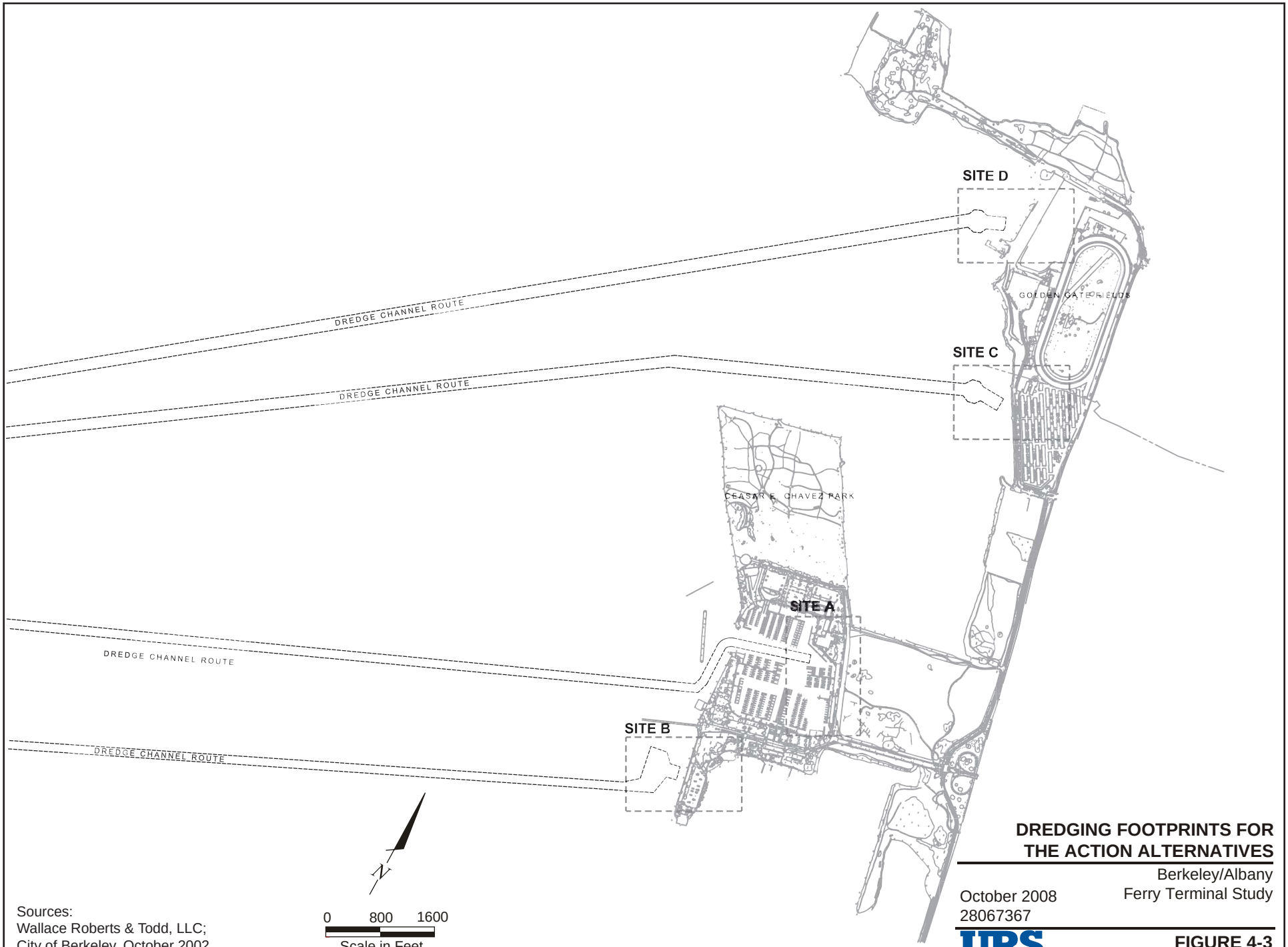
Long-term dredging and disposal needs for the Bay Area were estimated at approximately 300 million cubic yards over a 50-year period, an average of 6 million cubic yards per year (U.S. EPA and USACE, 1998). This is a conservatively high estimate based on historical dredge volumes.

The U.S. EPA, USACE, RWQCB, and BCDC have established the LTMS Program for the dredged material from the Bay Area (USACE, 2000). The LTMS goals are to:

- Maintain in an economically and environmentally sound manner those channels necessary for navigation in San Francisco Bay;
- Eliminate unnecessary dredging activities in the Bay and estuary;
- Conduct dredged material disposal in the most environmentally sound manner;
- Maximize the use of dredged material as a resource; and
- Establish a cooperative permitting framework for dredging and disposal applications.

Dredged material disposal sites are:

- In the Bay (e.g., Alcatraz);
- Deep ocean;
- Upland; and
- Beneficial reuse (i.e., wetlands restoration).



Sources:
Wallace Roberts & Todd, LLC;
City of Berkeley, October 2002.

DREDGING FOOTPRINTS FOR THE ACTION ALTERNATIVES

Berkeley/Albany Ferry Terminal Study

October 2008
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URS

FIGURE 4-3

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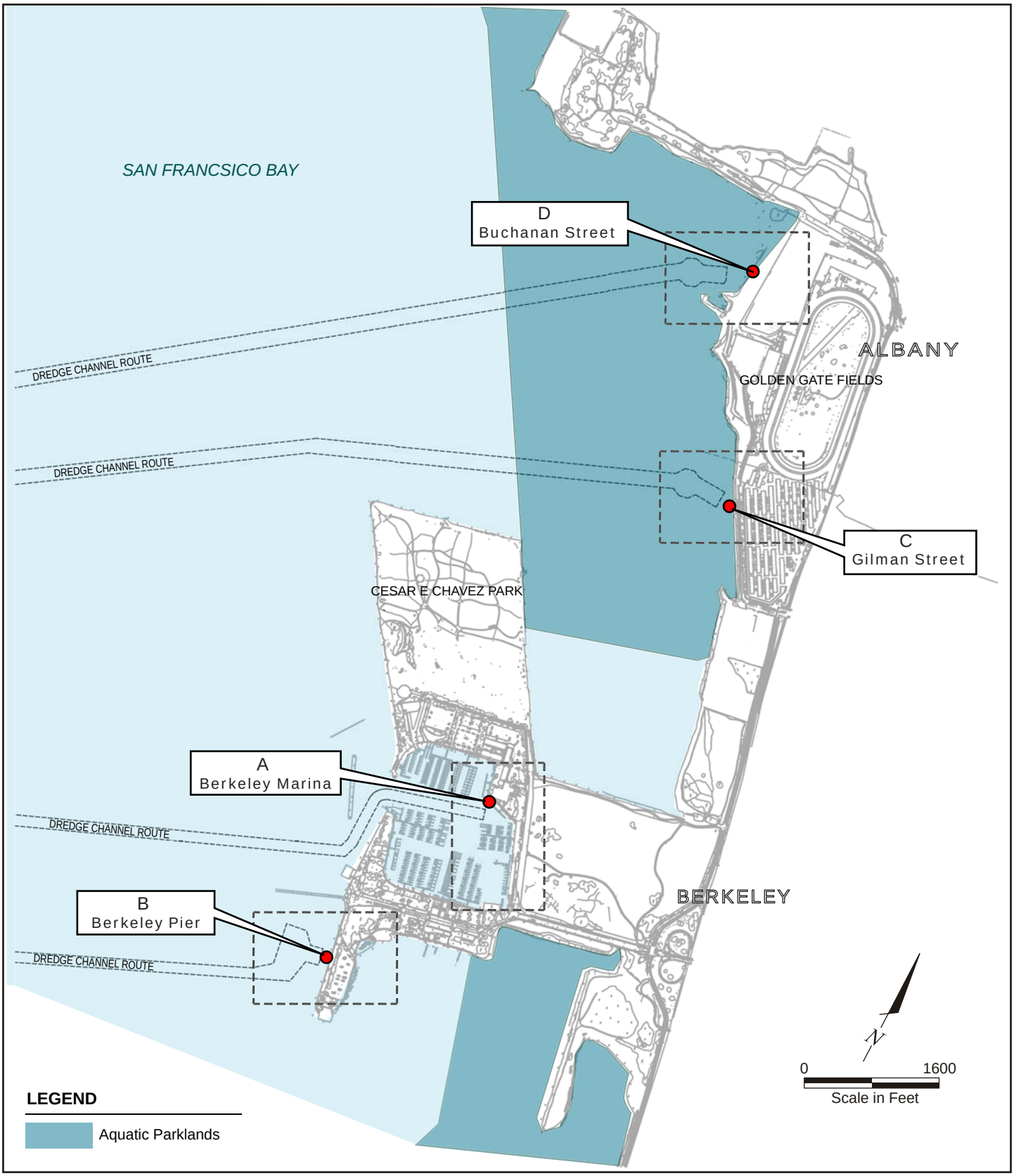

EASTSHORE STATE PARK
AQUATIC PARKLANDS

Berkeley/Albany
Ferry Terminal Study

October 2008
28067367

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FIGURE 4-4

Source:
Winzler & Kelly, Aug. 2007

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The dredged material produced by the dredging for the proposed project would be disposed at the San Francisco Deep Ocean Disposal Site (SF-DODS). This site is located on the continental shelf, approximately 50 nautical miles west of the Golden Gate, at a depth of approximately 760 feet.

Alternatives A through D. The volumes of dredged materials for Alternatives A through D range from 110,000 to 280,000 cubic yards. This volume is minor compared to the capacity of the SF-DODS. This site was designated in 1994 under Section 102 of the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA). It can accept up to 4.8 million cubic yards per year. MPRSA requires project sponsors to consider feasible, practicable, and environmentally superior alternatives to this site, if such alternatives are available.

Mitigation. The dredged materials will be evaluated for potential disposal within the Bay, disposal at an upland Facility, or beneficial reuse.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impact would be less than significant.

Impact 3: Onshore construction activities could cause stormwater contamination.

Onshore construction activities such as site grading could increase the potential for erosion and uncontrolled runoff of stormwater contaminated with sediments or other pollutants that could impact surface water quality and sedimentation.

Alternatives A and D. Onshore site construction would include a ferry plaza connecting the parking area with the terminal pier and a new parking area in the existing gravel area adjacent to the Eastshore State Park fence line.

Alternative B. Onshore site construction would include a ferry plaza, and new pavement if the existing parking area between Hs Lordships and Skates restaurants requires reconfiguration to provide additional parking and circulation.

Alternative C. Onshore site construction would include a ferry plaza connecting the parking area with the terminal pier, and construction of a new surface parking area to accommodate 388 cars in an area of the Golden Gate Fields facility that is currently used for horse barns.

Mitigation. Impacts to surface water from erosion are expected to be minimal during construction. Erosion will be controlled in accordance with an approved Erosion Control Plan. In addition, all construction activities will be performed in accordance with the California NPDES General Permit for Storm Water Discharge Associated with Construction Activities (SWRCB, 1999), requiring the implementation of best management practices (BMPs) to control sediment and other pollutants mobilized from construction activities.

Temporary BMPs could include revegetation, slope stabilization, construction of berms, ditches, and sediment barriers such as straw bales or silt fences to prevent sediment discharges from the

site. These measures will be developed and described for the construction activities in a construction Storm Water Pollution Prevention Plan (SWPPP) that must be prepared before construction begins. With proper implementation of BMPs, no significant impacts to surface water quality are anticipated during short-term construction activities. In addition, use of existing infrastructure will minimize physical impacts from construction activities. No adverse impacts to surface water or groundwater are anticipated as a result of construction activities.

Permanent erosion control measures could include drainage systems and revegetation. Operation of the facility will be in conformance with the California NPDES General Permit for Storm Water Discharge Associated with Industrial Activities (SWRCB, 1997). In accordance with this permit, an industrial SWPPP will be developed, and BMPs will be implemented to control pollutants in stormwater discharges. As applicable, BMPs will include refueling and maintenance of equipment only in designated lined and/or bermed areas, isolating hazardous materials from stormwater exposure, and preparing and implementing spill contingency plans in specified areas. With proper implementation of these and other BMPs in the SWPPP, no adverse impacts to water quality are anticipated during the long-term operation of the facility.

An Engineering, Procurement, and Construction (EPC) contractor will engineer and construct the terminal, including connections to existing facilities. The EPC contract will include provisions requiring the EPC contractor to be responsible for the proper storage, handling, and disposal of all construction-related wastes, including hazardous wastes.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impact would be less than significant.

Impact 4: Fuel spills/leaks could impact water quality.

Alternatives A through D. Inadvertent spills during construction and/or operation of the ferry terminal could affect water quality.

Mitigation. Petroleum products and chemical substances (termed “hazardous materials”) shall be managed in such a manner as to minimize the potential for threats to human health and the environment. Hazardous waste may be generated during the course of project construction. The details regarding the management of hazardous waste on site shall be contained in the Hazardous Waste Management Plan.

The onsite management and offsite disposal of non-hazardous solid wastes generated during construction of the Converter Stations shall be governed by the regulations of a solid waste management plan for the project. The onsite management and offsite disposal of hazardous wastes shall be governed by the regulations of hazardous waste management plan for the Project. Waste shall be stockpiled temporarily before disposal off site. The local fire departments and emergency management teams shall be provided with a list of the waste material expected to be generated and stored on site.

All vehicles and construction equipment shall be inspected to ensure that there are no leaking fluids (e.g., oil, hydraulic, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, labeled containers. Any observation of spills, leaking fluids, or improperly stored fluids shall trigger the issuance of a "stop work" notice until the problem is resolved, including the removal of any soil contaminated by vehicle fluids. All applicable regulations governing the storage, transport, use, and disposal of fluids and all reporting requirements for spills shall be enforced.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impact would be less than significant.

Operations Impacts and Mitigation

Impact 5: Maintenance dredging could impact water quality.

Alternative A, C, and D. Maintenance dredging is anticipated to be required every 2 to 3 years. Dredging would be required when approximately 2 feet of sediment builds up in the channels, reducing the channel depth from -10 feet MLLW to -8 feet MLLW (Stahnke, 2007). Dredging volume is difficult to estimate because it is unlikely that the sediment will build up uniformly along the entire length of the dredged channels. If a 2-foot thickness of sediment did accumulate along the entire channel lengths, the maintenance dredge volumes could approach half to three-quarters of the initial dredge volumes.

Alternative B. Maintenance dredging is anticipated to be required every 3 to 5 years.

Mitigation. Same mitigation as in Impact 1.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impact would be less than significant

Impact 6: Wake wash could impact the shoreline and vessels.

Transit of ferries through dredged channels at the Berkeley Marina could create wakes that could potentially damage unprotected shorelines or, in the Berkeley Marina, moored vessels.

Alternative A. The shoreline on either side of the Berkeley Marina is armored with riprap. Significant impacts to the shoreline resulting from ferry wake wash are not anticipated adjacent to the ferry terminal. CHE's wake wash analysis concluded that shoreline erosion, damage to the waterfront, and impacts to biological resources from ferry transits would not likely be significant, but ferry traffic could potentially impact small craft navigation safety near the Berkeley Marina (CHE, 2007). The impact is not anticipated to be adverse.

Alternative B. The shoreline on either side of the pier is armored with riprap. Significant impacts to the shoreline resulting from ferry wake wash are not anticipated adjacent to the ferry terminal.

Alternative C. The outer approach to the Gilman Street ferry terminal site would pass north of Cesar Chavez Park. The shoreline of the park is armored with poured concrete. Shoreline erosion, damage to the waterfront, and impacts to biological resources from ferry transits would not likely be adverse.

Alternative D. The outer approach is south of the Albany Neck and Bulb, which were formed by filling the Bay with construction debris. The shoreline of the peninsula, and especially the southern shoreline, is armored with concrete debris. Albany Beach, consisting of a small beach and foredunes, is located to the north of the Buchanan Street ferry terminal location, between the Albany Neck to the north and Golden Gate Fields to the south. The shoreline near the ferry terminal location is armored with concrete rubble. Impacts are not anticipated to be adverse.

Mitigation. None required.

CEQA Determination. No significant wake wash impacts would occur.

Impact 7: Stormwater runoff from the terminal site and parking could degrade water quality.

Onshore construction activities such as site grading could increase the potential for erosion and uncontrolled runoff of stormwater contaminated with sediments or other pollutants that could impact surface water quality and sedimentation.

Alternative A. Onshore site construction would include the ferry plaza connecting the parking area with the terminal pier and a new parking area in the existing gravel area adjacent to the Eastshore State Park fence line.

Alternative B. Onshore site construction would include a ferry plaza, and new pavement if the existing parking area between Hs Lordships and Skates restaurants requires reconfiguration to provide additional parking and circulation.

Alternative C. Onshore site construction would include a ferry plaza connecting the parking area with the terminal pier, and construction of a new surface parking area to accommodate 388 cars in an area of the Golden Gate Fields facility that is currently used for horse barns.

Alternative D. Onshore site construction would include a ferry plaza, and reconfiguration of the existing parking area for parking and circulation.

Mitigation. To eliminate surface runoff from the new parking areas, either gravel or permeable pavement would be used so that rainwater could permeate into underlying soil.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impact would be less than significant.

Impact 8: Operations in a floodplain constitute hazards to human safety and property.

Areas along the Bay shoreline and drainages leading to the Bay are potential floodplains. Building within a floodplain involves risks to life and property.

Alternatives A through D. None of the ferry terminal alternatives are located within the FEMA 100-year flood zone (URS, 2003.)

CEQA Determination. Floodplain hazards are considered less than significant.

Cumulative Impacts and Mitigation

Alternatives A through D. No cumulative impacts to water resources from growth or from the combined effects of project development in the study area have been identified. Planned mixed use and residential development is located in built up areas removed from the waterfront locations of the ferry terminal alternatives. Additional runoff that would occur as a result of the combined effects of these projects could be accommodated by the existing storm water infrastructure (see Utilities, Section 4.13). As a result, cumulative effects on water resources, particularly the Bay, are not likely.

4.11 GEOLOGY AND SOILS

The following section discusses significance criteria and potential impacts to and from the geologic environment for the proposed project. Geologic hazards considered include surface fault rupture, earthquake ground shaking, liquefaction and lateral spreading, uplift and subsidence, expansive soils, mass wasting, erosion, and tsunamis.

This section also describes mitigation measures proposed by the project proponent that will be implemented to ensure project-related impacts to geologic resources are less than significant. Potential impacts could result from construction and/or operations.

4.11.1 Methodology

Significance criteria were developed and compared with potential impacts identified for each ferry terminal alternative. Mitigation measures were developed to decrease potential impacts to a less-than-significant level.

4.11.2 Significance Criteria

Impacts would be considered significant if they would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving surface fault rupture, earthquake ground shaking, liquefaction, subsidence, uplift, expansive soils, mass wasting, erosion, and tsunami or seiche;

- Expose people or structures to onsite or offsite landslides, lateral spreading, ground subsidence, liquefaction, or collapse because terminals were situated on unstable geologic units or soil, or soil that could become unstable as a result of the project; or

- Prevent future access to geologic features and resources of economic or scientific value.

4.11.3 Geology and Soils

4.11.3.1 No-Action Alternative

The No-Action Alternative would not involve construction of a ferry terminal or operation of a ferry, and therefore would not have any impacts related to geologic resources.

4.11.3.2 Action Alternatives

Construction impacts and Mitigation

No construction impacts associated with the geology or soils under the Action Alternatives have been identified.

Operations Impacts and Mitigation

Impact 1: Seismic shaking could damage facilities and/or injure people.

Alternatives A through D. The San Andreas fault is located approximately 16 miles to the southwest of the sites. It is the major tectonic boundary between the Pacific and North American plates. The Hayward fault, located approximately 4 miles to the northeast, is another major active tectonic feature in the Bay Area. Both the San Andreas and Hayward faults have generated major historical earthquakes and are considered to have a moderate probability of producing another major earthquake within the next 30 years. Seismically-induced strong ground shaking is potentially an adverse geologic hazard expected in the study area.

Mitigation. Terminal facilities shall be designed and constructed at a minimum to "Essential Structure" standards as well as the seismic design requirements for ground shaking specified in the Uniform Building Code for Seismic Zone 4. Additionally, to satisfy the provisions of the 1998 CBC, these facilities shall be designed to withstand ground motions equating to approximately a 500-year return period (10 percent probability of exceedence in 50 years). For design purposes, site-specific ground motions shall be calculated for all project sites.

CEQA Determination. This impact is less than significant.

Impact 2: Liquefaction or lateral spreading could damage facilities and/or injure people.

Alternatives A through D. Liquefaction of soils occurs when loose, cohesionless soils become saturated, temporarily losing shear strength during strong ground shaking. Significant factors that affect soil liquefaction potential are grain-size distribution, relative density, degree of saturation, the initial stresses acting on the soils, and the characteristics of the earthquake, such as the intensity and duration of the ground shaking. As indicated on Figure 3-26, all of the study area along the shoreline in the region of the ferry terminal alternatives is potentially prone to liquefaction (State of California, 2003), an adverse impact.

In addition to liquefaction, other potential hazards in the study area include compaction consolidation (settlement) and seismically-induced settlement. Dissipation of excess pore pressure generated by ground shaking will produce volume changes within the liquefied soil layers, which would be manifested at the ground surface as settlement.

Mitigation. A program of site-specific exploratory borings and accompanying laboratory testing will be required to delineate any potentially liquefiable materials underneath ferry terminal alternative sites. These geotechnical investigations will also be required for consideration prior to foundation design. Potentially liquefiable deposits will either have to be removed or engineered (dewatered or densified) to reduce their liquefaction potential. This has been performed with success within areas of liquefaction risk in the Bay Area. For example, densified fill material in areas of Foster City and Redwood Shores survived the 1989 M_w 6.9 Loma Prieta earthquake without liquefying (Benuska, 1990). The commercial and residential developments situated on these areas of engineered fill suffered no major structural damage during the earthquake.

CEQA Determination. This impact is less than significant.

Impact 3: Subsidence could damage facilities.

Alternatives A through D. Around the margins of San Francisco Bay, settlement commonly occurs in areas of manmade fill underlain by young Bay Mud through consolidation of the Bay Mud, and consequent subsidence of the overlying materials. Areas of the potential sites that are underlain by bedrock and dense fill have a low susceptibility to subsidence. Areas that are underlain by Bay Mud, estuarine sediments, organic rubbish, or thick organic deposits may be moderately to highly susceptible to subsidence. Settlement is discussed under liquefaction, above.

Mitigation. A program of site-specific exploratory borings and accompanying laboratory testing will be required to determine the probability of subsidence of soils underneath ferry terminal alternative sites. These geotechnical investigations will also be required for consideration prior to foundation design.

CEQA Determination. This impact is less than significant.

Impact 4: Expansive soils could lead to structural damage.

Alternatives A through D. Artificial fill underlies the study areas, but the high groundwater table along the margins of the Bay indicates that soils at these localities are permanently saturated. Therefore, there is a very low risk of expansive soil behavior and this is not an adverse impact.

CEQA Determination. No potentially significant impact would occur.

Impact 5: A tsunami or seiche could inundate the terminal site, causing damage to facilities and/or injuring people.

An analysis of hazards related to tsunamis and seiche in the area has been performed (URS, 2003). The ranking of tsunami hazard is based on the exposure of the locality to the open ocean. The project areas are sheltered from potential tsunami waves, and tsunami and seiche hazards are therefore considered low. No adverse impact is expected.

CEQA Determination. No potentially significant impact would occur.

Impact 6: Flooding could inundate the terminal site, causing damage to facilities and/or injuring people.

Alternatives A through D. None of the Alternatives are located within the FEMA 100-year flood zone (URS, 2003).

The ferry terminal alternatives are not anticipated to increase the risk of flooding, erosion, or siltation, nor will it cause changes in absorption rates, drainage patterns, or the rate or amount of surface runoff. The ferry terminal alternative sites do not receive storm runoff from off site and no significant impacts related to flooding are anticipated.

CEQA Determination. No potentially significant impact would occur.

4.11.4 Cumulative Impacts and Mitigation

Impact 7: Cumulative impacts from projects in the study area could be generated on soils.

Alternatives A through D. No other projects have been planned and approved in the area surrounding the ferry terminal alternative sites that could cause a cumulative effect on soils.

CEQA Determination. No potentially significant impact would occur.

4.12 HAZARDOUS MATERIALS

This section presents the potential impacts and mitigation measures that have been identified for ferry terminal hazardous materials associated with construction and operation of the ferry terminal alternatives.

4.12.1 Significance Criteria

The following environmental significance criteria are based on criteria developed in accordance with the requirements of CEQA, NEPA, and all applicable state and federal laws. Impacts would occur if the ferry terminal alternatives were to:

- Create a hazard to the public or the environment through the routine use, generation, transport, or disposal of hazardous materials or wastes;
- Create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials or wastes into the environment; or
- Expose people or the environment to contaminants in soil, groundwater, sediments, or structures slated for demolition.

For the adverse impacts identified, mitigation measures were developed to decrease the potential impacts.

Potential impacts from both construction and operation of the ferry terminal alternatives, as well as the No-Action Alternative, are discussed below.

4.12.2 Hazardous Materials Impacts and Mitigation

4.12.2.1 No-Action Alternative

The No-Action Alternative would not involve construction of a ferry terminal or operation of a ferry at any of the ferry terminal alternative sites, and would therefore not have any impacts related to hazardous materials or wastes.

4.12.2.2 Action Alternatives

Construction Impacts and Mitigation

Impact 1: Use and storage of hazardous materials during construction.

Alternatives A through D. For the construction of all Action Alternatives, there would be the potential for the use and storage of minor amounts of hazardous materials and the generation of small quantities of hazardous waste including, but not limited to, storage of fuels, cleaners, and paints, and generation of waste oil. However, the quantity of these materials is expected to be minimal. No adverse impacts are expected.

CEQA Determination. The impact on the public or the environment through the routine use, generation, transport, or disposal of hazardous materials or wastes associated with construction activities is considered less than significant. The construction contractor would be responsible for the proper storage and disposal of any hazardous materials or wastes in accordance with all

federal, state, and local laws and regulations. This may involve obtaining permits from the local regulatory agency for the storage of hazardous materials and a Waste Generators Identification Number from the state for the disposal of any hazardous wastes generated at the site.

Impact 2: Accidental spills and release of hazardous materials.

Alternatives A through D. Accidental spills or releases of hazardous materials (e.g., fuels and oils) during construction of the proposed ferry terminal (offshore) alternatives and associated parking area (onshore) could potentially create a hazard to the public or the environment. This is considered an adverse impact.

Mitigation. Mitigation measures to address potential releases are presented in Section 4.10, Water Resources.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impact would be less than significant.

Impact 3: Contaminated dredged materials.

Alternatives A through D. The construction of the ferry terminal alternatives will require dredging for the ferry route, which would require a water depth of 10 feet at MLLW. The ferry terminal alternatives would require the dredging of approximately 110,000 to 280,000 cubic yards of sediment, depending on the site alternative. The Final Regional Toxic Hot Spot Cleanup Plan, prepared by the San Francisco Bay Region RWQCB in March 1999, identified sources of sediment contamination and candidate Toxic Hot Spots throughout San Francisco Bay. The report based its findings on historical shoreline industrial activities and the results of the multi-year (and ongoing) RMP, which includes sediment sampling at locations near the Berkeley and Albany sites. The data in this report, recent RMP data, and knowledge of historical activities near the Berkeley and Albany sites, do not provide reason to suspect that contaminated sediments occur in the approach channels to the terminal sites, or that the cost of dredging on a unit cubic yard basis will significantly vary between sites.

The San Francisco DMMO 2007 Annual Report (Draft Report presented at the DMMO Annual Meeting, May 13, 2008) confirmed that routine operational and maintenance dredging from San Francisco Bay channels (not including remediation at identified Toxic Hot Spots) rarely encounter contaminated sediments. The report indicated that in 2007, 99.8 percent of dredged material was Suitable for Aquatic Disposal. The DMMO Agencies include the USACE, U.S. EPA, BCDC, the RWQCB, and California State Lands Commission.

While no known contamination is present at the alternative sites, the sediments to be dredged could be contaminated. If proposed channel bottom sediments are found to be contaminated after pre-dredging testing, an adverse impact could occur if contaminated dredged material were not disposed of properly.

Mitigation. Before dredging can occur in San Francisco Bay, a sediment SAP must be submitted to, and be approved by, the DMMO. Specifically, the USACE "Inland Testing Manual" and the "Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Regions" (DMMO, September 21, 2001) guidelines must be followed to select the appropriate chemical analyses and number of samples. Sediment sampling will identify the sediment quality and sediment use. The results of the SAP are used to determine appropriate disposal alternatives. Based on the results of the analyses, appropriate reuse or disposal options, including beneficial reuse or upland disposal, will be developed to avoid creating adverse impacts. Whenever contaminated materials are to be dredged, negative impacts on water quality shall be minimized through the use of the most appropriate dredge type and dredging techniques (see Section 4.10, Water Resources).

Therefore, pre-dredge sampling and testing will be performed before any dredging associated with the project occurs. Based on available information, it is reasonable to assume that contaminated sediment is not present, and hence, the unit cost of dredging would be similar at all sites.

CEQA Determination. With implementation of the proposed mitigation measure, the potential impact would be less than significant.

Impact 4: Contaminated fill material during grading.

Alternatives A through D. The construction sites of landside facilities, including the parking areas associated with the Action Alternatives, are located on areas of fill. Although there is no known contamination identified in this area, it is possible that fill material used for land filling operations is contaminated. Grading for the development of the parking area is likely to be minimal. However, a net excess of material that requires offsite disposal or reuse may be generated, which would constitute an adverse impact.

Mitigation. If it is determined that grading operations for the construction of landside facilities and parking areas at the ferry terminal alternative sites will generate a net excess of material requiring offsite disposal or reuse, a Soil Management Plan would be developed to address the management of the excess material. The Soil Management Plan would identify engineering controls to be used to mitigate offsite migration of potentially contaminated material via fugitive dust emissions or erosion. Additionally, the Soil Management Plan would specify the nature and frequency of chemical analyses to be conducted on the excess material to ensure there are no adverse impacts from its disposal or reuse.

CEQA Determination. With implementation of the proposed mitigation measure, the potential impact would be less than significant.

Impact 5: Demolition of structures containing lead-based paints and asbestos.

Alternatives A, B, and D. No demolition of existing structures would occur during project construction at these sites, and no adverse impacts would be created.

Alternative C. The parking area for Alternative C would be constructed on a portion of the Golden Gate Fields stable/barn area. Several of these structures would have to be demolished to allow grading for construction of the parking lot. Based on the age of these structures, there is the potential that there is lead-based paint and possibly some asbestos containing materials present. If this material is present and not properly abated prior to demolition, it could potentially expose the public and the environment to these contaminants, an adverse impact.

Mitigation. Prior to any demolition activities of the horse stables/barns that are currently part of Golden Gate Fields, a lead-based paint and asbestos survey of the structures will be conducted. Based on the results of the survey, it will be determined if any lead-based paint or asbestos are present that require abatement prior to demolition of the structures. Any abatement required would be conducted in accordance with all federal, state, and local regulatory requirements by properly licensed abatement contractors.

CEQA Determination. With implementation of the proposed mitigation measure, the potential impact would be less than significant.

Operations Impacts and Mitigation

Impact 6: Use of hazardous materials for ferry operation and maintenance.

Alternatives A through D. With the exception of onsite fueling, the project site would not accommodate hazardous materials. Vessel fueling and maintenance activities could also occur off site. In either case, fueling would be conducted using standard BMPs.

For Alternative A, hazardous materials common to the everyday operation of the Berkeley Marina would be handled in the vicinity. However, the project would not introduce the transport, use, or disposal of additional hazardous materials. Therefore, no adverse impacts due to the handling of hazardous materials are expected and no mitigation is required.

CEQA Determination. The impact on the public or the environment through routine transport, use, or disposal of hazardous materials would be considered less than significant. No mitigation would be required.

Impact 7: Accidental release of fuel into the Bay.

Alternatives A through D. An accidental release of fuel from the ferry could potentially create a hazard to the public or the environment. This is considered an adverse impact. Mitigation measures to address potential releases are presented in Section 4.10, Water Resources.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impact would be less than significant.

Impact 8: Contaminated dredging material from routine dredging.

Alternatives A through D. The approach channel to the ferry terminal will require routine maintenance dredging for the ferry route. Sediments to be dredged could potentially be contaminated. If proposed channel bottom sediments are found to be contaminated after pre-dredging testing, and if contaminated dredged material were not disposed of properly, a potentially significant impact could occur.

Mitigation. As part of the DMMO dredging permit requirements, sediment in the proposed dredging locations must be sampled and analyzed to determine the presence and extent of potential contamination. Based on the results of the analyses, appropriate reuse or disposal options will be developed to reduce potential impacts to a less-than-significant level. Whenever contaminated materials are to be dredged, negative impacts on water quality shall be minimized through the use of the most appropriate dredge type and dredging techniques. These impacts and associated mitigation measures are discussed in detail in Section 4.10, Water Resources.

CEQA Determination. With implementation of the proposed mitigation measures, the potential impact would be less than significant.

Cumulative Impacts and Mitigation

Of the approved developments in the study area, only the Gilman Street playing fields, near Alternative C, has the potential for impacts to hazardous materials. This project may generate hazardous materials from excavation and grading activities. However, there is regulatory oversight from the RWQCB associated with the project, and a Remediation and Risk Management Plan has been developed to address these issues. Therefore, cumulative impacts from multiple projects encountering hazardous materials are not expected.

CEQA Determination. Cumulative effects associated with hazardous materials from other identified development projects are not considered significant.

4.13 UTILITIES AND PUBLIC SERVICES

This section discusses the potential impacts of the ferry terminal alternatives on project area utilities and public services.

4.13.1 Methodology

The analysis in this section focuses on whether the implementation of the proposed project would impact existing utilities (domestic water, sanitary sewer, storm drainage, electricity, gas, and telecommunications) and public services (fire protection, emergency medial transport, police protection, schools, and libraries) within the vicinity of the proposed project site locations.

Public services were analyzed to determine if implementation of the ferry terminal alternatives would require additional public services or result in the deterioration of existing service levels. Public service staffing and resources were also evaluated against the size, complexity, and the

future public service needs of the project. In this regard, the impact analysis combines the discussion of potential short-term construction impacts with long-term requirements of the ferry terminal alternatives for each public service evaluated. Because the sites extend across two jurisdictions that provide most of the public services evaluated, the information for the three Berkeley sites (Alternatives A, B, and C) is typically distinguished from the site located in the City of Albany (Alternative D).

4.13.2 Significance Criteria

In accordance with the requirements of CEQA and NEPA and all applicable state and federal environmental laws, the proposed project would have a potentially adverse effect on the environment if it would result in the following:

- Result in the degradation or relocation of existing utility infrastructure;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effect;
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effect; or
- Result in substantial adverse physical or environmental impacts that affect service ratios, response times, or other performance objectives for any of the public services: fire protection, police protection, emergency transport, schools, or libraries.

4.13.3 Utilities and Public Services Impacts and Mitigation

4.13.3.1 No-Action Alternative

Under the No-Action Alternative, the proposed waterside and landside facility projects detailed in the Proposed Project Alternatives would not be implemented. For this reason, the No-Action Alternative would not result in the need for expanded utility infrastructure or service levels, result in a determination from a utility service provider about capacity for the proposed project, or create the need for an increase of public services. Utility infrastructure and service upgrades and expansion are anticipated to occur within the project study area regardless of whether the proposed project is implemented. Therefore, the ferry terminal alternatives studied in detail would not result in potentially adverse direct or indirect utility impacts.

4.13.3.2 Action Alternatives

Construction Impacts and Mitigation

Impact 1: Construction activities have the potential to adversely impact existing underground utilities.

Water

Alternative A. An existing 12-inch-diameter domestic water line runs north-south along the west side of Marina Boulevard and services the Doubletree Hotel as well as domestic connections and fire hydrants along Spinnaker Way. According to the City of Berkeley, the exact utility depth is unknown and some utility lines have been buried closer to the surface than is standard by industry practice (Neu, 2007). Construction activity that could disrupt this line would include the repaving of an existing parking lot on the west side of Marina Boulevard for use as an ADA parking lot. This could result in construction activities coming into contact with the line, an adverse impact.

Alternative B. An existing 8-inch-diameter domestic waterline runs north-south along the west side of Seawall Drive. Water from this line services Hs Lordships Restaurant and provides water for the fire hydrants located every 700 feet along Seawall Drive. According to the City of Berkeley, the exact utility depth is unknown and some utility lines have been buried closer to the surface than is standard by industry practice (Neu, 2007). Construction activity that could disrupt this line would include the repaving of an existing parking lot on the west side of Seawall Drive for use as an ADA parking lot, and construction of the car and bus drop-off areas. This could result in construction activities coming into contact with the line, a potentially adverse impact.

Alternative C. According to information provided by EBMUD, no water utilities are located at or near the proposed Gilman Street site. Therefore, no potentially adverse construction impacts are anticipated.

Alternative D. According to information provided by EBMUD, no water utilities are located at or near the proposed Buchanan Street site. Therefore, no potentially adverse construction impacts are anticipated.

Mitigation. Prior to the start of construction activities, the project proponent shall consult with public utility providers who have infrastructure in the immediate vicinity of the Berkeley Marina and Berkeley Fishing Pier sites to determine the exact location and depth of utility lines.

CEQA Determination. Alternatives C and D would result in no significant impacts. For Alternatives A and B, implementation of the mitigation measures would reduce potentially significant construction impacts on this public utility to a less-than-significant level.

Sanitary Sewer

Alternative A. An existing 15-inch-diameter PVC line runs north-south underneath the west side of Marin Boulevard and provides sanitary sewer services for Berkeley Marina. According to the City of Berkeley, the exact utility depth is unknown and some utility lines have been buried closer to the surface than is standard by industry practice (Neu, 2007). Furthermore, Berkeley Pumping Station No. 2 is located in an underground vault, and an aboveground generator and control panel is located directly east of the proposed Berkeley Marina site on the west side of Marina Boulevard. Construction activity that could disrupt this line would include the repaving of an existing parking lot on the west side of Marina Boulevard for use as an ADA parking lot. This could result in construction activities coming into contact with the line, an adverse impact.

Alternative B. An existing 10-inch-diameter PVC sanitary sewer line runs north-south down the center of Seawall Drive adjacent to the proposed site. This line currently provides sanitary sewer services to Hs Lordships Restaurant. Because the line runs down the center of Seawall Drive, it does not appear that any construction activity for this site would be impacted. Therefore, no adverse impacts are anticipated from construction activity.

Alternative C. No sanitary sewer utilities exist at or near the proposed Gilman Street site. Therefore, no adverse construction impacts are anticipated.

Alternative D. According to information obtained from Angel Silva from the City of Albany, no storm drainage network is located in the vicinity of this proposed site. Therefore, no adverse construction impacts are anticipated (Silva, 2007).

Mitigation. Prior to the start of construction activities, the project proponent shall consult with public utility providers who have infrastructure in the immediate vicinity of the Berkeley Marina and Berkeley Fishing Pier sites to determine the exact location and depth of utility lines.

CEQA Determination. Alternatives C and D would result in no significant impacts. For Alternatives A and B, implementation of the mitigation measures would reduce potentially significant construction impacts on this public utility to a less-than-significant level.

Storm Drainage

Alternative A. According to information obtained from the City of Berkeley, no storm drainage network is located in the vicinity of this proposed site. Stormwater generally flows toward the Bay or into shallow catch basins, which are eventually piped to an outfall in the Bay. Therefore, no adverse construction impacts are anticipated.

Alternative B. According to information obtained from the City of Berkeley, no storm drainage network is located in the vicinity of this proposed site. Stormwater generally flows toward the Bay or into shallow catch basins, which are eventually piped to an outfall in the Bay. Therefore, no adverse impacts are anticipated from construction activity.

Alternative C. According to information obtained from the City of Berkeley, no storm drainage network is located in the vicinity of this proposed site. Stormwater generally flows toward the Bay or into shallow catch basins, which are eventually piped to an outfall in the Bay. Therefore, no adverse construction impacts are anticipated.

Alternative D. According to information obtained from the City of Albany, no storm drainage network is located in the vicinity of this proposed site. Stormwater generally flows toward the Bay or into shallow catch basins, which are eventually piped to an outfall in the Bay. Therefore, no adverse construction impacts are anticipated.

CEQA Determination. No significant impacts would occur.

Electricity

Alternative A. An existing underground 12-kV electrical line runs north-south along the west side of Marina Boulevard and provides electrical services to the Berkeley Marina and Doubletree Hotel. According to the City of Berkeley, the exact utility depth is unknown and some utility lines have been buried closer to the surface than is standard by industry practice (Neu, 2007). The closest transformer is approximately 400 feet to the south of the proposed site and provides power to Piers F and G at the Berkeley Marina. Construction activity that could disrupt the underground 12-kV electrical line would include the repaving of an existing parking lot on the west side of Marina Boulevard for use as an ADA parking lot. This could result in construction activities coming into contact with the line, an adverse impact.

Alternative B. An existing underground 12-kV electrical line runs north-south along the east side of Seawall Drive, and provides electrical services to the Berkeley Marina and Doubletree Hotel. The closest transformer is located at the south end of Seawall Drive and provides power to Hs Lordships Restaurant. According to the City of Berkeley, the exact utility depth is unknown and some utility lines have been buried closer to the surface than is standard by industry practice (Neu, 2007). Construction activity that could disrupt the underground 12-kV electrical line would include the repaving of the proposed ADA parking lot, located just east of proposed ferry plaza. This could result in construction activities coming into contact with the line, an adverse impact.

Alternative C. No electricity utilities exist at or near the proposed Gilman Street site. Therefore, no adverse construction impacts are anticipated.

Alternative D. No electricity utilities exist at or near the proposed Buchanan Street site. Therefore, no adverse construction impacts are anticipated.

Mitigation. Prior to the start of construction activities, the project proponent shall consult with public utility providers who have infrastructure in the immediate vicinity of the Berkeley Marina and Berkeley Fishing Pier sites to determine the exact location and depth of utility lines.

CEQA Determination. Alternatives C and D would result in no significant impacts. For Alternatives A and B, implementation of the mitigation measures would reduce potentially significant construction impacts on this public utility to a less-than-significant level.

Gas

Alternative A. A gas line is located beneath Marina Boulevard between the sanitary sewer and electricity lines. The line runs north-south and provides gas services to the Berkeley Marina and the Doubletree Hotel. According to the City of Berkeley, the diameter of the pipe and the exact utility depth are unknown, and some utility lines have been buried closer to the surface than is standard by industry practice (Neu, 2007). Construction activities that could disrupt this line would include the repaving of the proposed ADA parking lot, located just east of proposed ferry plaza. This could result in construction activities coming into contact with the line, an adverse impact.

Alternative B. A 2-inch gas line is located beneath Seawall Drive, just east of the 12-kV electricity line. The line runs north-south and provides gas services to the Berkeley Fishing Pier area and Hs Lordships Restaurant. According to the City of Berkeley, the exact utility depth is unknown and some utility lines have been buried closer to the surface than is standard by industry practice (Neu, 2007). Construction activity that could disrupt this line would include repaving of the proposed ADA parking lot, located just east of proposed ferry plaza. This could result in construction activities coming into contact with the line, an adverse impact.

Alternative C. No gas utilities exist at or near the proposed Gilman Street site. Therefore, no potentially adverse construction impacts are anticipated.

Alternative D. No gas utilities exist at or near the proposed Buchanan Street site. Therefore, no potentially adverse construction impacts are anticipated.

Mitigation. Prior to the start of construction activities, the project proponent shall consult with public utility providers who have infrastructure in the immediate vicinity of the Berkeley Marina and Berkeley Fishing Pier sites to determine the exact location and depth of utility lines. Since the Gilman Street and Buchanan Street sites do not have known utilities present in the vicinity of project facilities and construction activities, no mitigations are required for these sites.

CEQA Determination. Alternatives C and D would result in no significant impacts. For Alternatives A and B, implementation of the mitigation measures would reduce potentially significant construction impacts on this public utility to a less-than-significant level.

Telecommunications

Alternative A. An AT&T telephone service pedestal is located at the entrance of Marin Piers F and G, just south of the proposed site. An overhead communications line is located in the former Virginia Street right-of-way, north of Berkeley Meadow Park. This line appears to service the Doubletree Hotel. Since no additional telecommunications utility information is available for the

Berkeley Marina project site area, it is anticipated that little telecommunication infrastructure exists in that area. Therefore, no potentially adverse construction impacts are anticipated.

Alternative B. No information was available from AT&T about telecommunication lines in the vicinity of the Berkeley Fishing Pier Site. Furthermore, a visual reconnaissance of the area did not reveal surface-evident telephone system features. However, it is assumed that because Hs Lordships Restaurant has telephone service, there must be a line located below Seawall Drive. If this is the case, then no potentially adverse impacts would be anticipated because these lines would be too deep to be impacted by construction activities related to proposed parking lot improvements.

Alternative C. No telecommunication utilities exist at or near the proposed Gilman Street site. Therefore, no potentially adverse construction impacts are anticipated.

Alternative D. No telecommunication utilities exist at or near the proposed Buchanan Street site. Therefore, no potentially adverse construction impacts are anticipated.

Mitigation. Prior to the start of construction activities, the project proponent shall consult with public utility providers who have infrastructure in the immediate vicinity of the Berkeley Marina and Berkeley Fishing Pier sites to determine the exact location and depth of utility lines. Because there are no known utilities present in the vicinity of project facilities and construction activities at the Gilman Street and Buchanan Street sites, no mitigations are required for these sites.

CEQA Determination. Implementation of the above mitigation measure would reduce adverse construction impacts to a less-than-significant level for Alternatives A and B. No significant utility impact would occur for Alternatives C and D.

Operations Impacts and Mitigation

Impact 2: Implementation of the ferry terminal alternatives would require enhanced fire protection facilities.

Fire Protection

Alternatives A and B. According to BFD Deputy Chief David Orth, the Berkeley Marina area has basic fire protection infrastructure (Orth, 2007). For example, all floating docks have a fire standpipe system that uses water provided by the EBMUD. These standpipes are only sufficient to reach vessels that are located in marina slips or tied to the dock. The Deputy Chief stated that, in the event that a boat is on fire in the Berkeley Marina but not in a slip, the Harbormaster's boat may be used to extinguish the fire, but has limited capabilities. Furthermore, the BFD has a number of floating pumps that could be used to fight a fire in the Berkeley Marina; however, these too have limited capabilities. According to Deputy Chief Orth, all vessels are required by the USCG to have a fire extinguisher on board and should be used as a first line of protection against fires.

Currently, the Berkeley Marina has limited fire protection infrastructure on site, consisting of fire hydrants, standpipes, and fire extinguishers. The ferry terminal itself must adhere to the California Building and Fire Codes with respect to fire sprinklers and emergency access. Implementation of the Berkeley Marina or Berkeley Fishing Pier ferry terminal alternatives would result in the need for upgraded fire protection facilities at the Berkeley Marina. Therefore, a potentially adverse impact is anticipated.

Alternative C. Currently, the Gilman Street site is serviced by the BFD. Implementation of the ferry terminal alternative at this site is not anticipated to result in a significant impact to the BFD, as the site is easily accessible by existing BFD staff and equipment. It is not anticipated that this alternative would create a hardship at this site for BFD that would require new facilities or more staff. As with the Berkeley Marina and Berkeley Fishing Pier ferry terminal alternative sites, offshore fire fighting capabilities at Gilman Street are limited. Floating pumps and the USCG could be summoned in the event of an offshore incident at this site. Because the Gilman Street ferry terminal alternative is readily accessible by existing roads, standpipes, and fire hydrants (whereas the Berkeley Marina and Berkeley Fishing Pier sites entail more complex infrastructure issues), no adverse impacts to the BFD are anticipated (Orth, 2007).

Alternative D. According to Battalion Chief Brian Crudo of the AFD, fire protection infrastructure in the vicinity of the Buchanan Street site is limited to two fire hydrants. Chief Crudo said it is likely that the project proponent would be required to install a fire hydrant in the vicinity of the ferry terminal (Crudo, 2007). Apart from fire hydrant installation, the AFD stated that they could adequately service the project with existing staff and resources. As with the ferry terminal alternatives in the City of Berkeley, in the event that additional help is needed to respond to an incident, the USCG could be summoned from their station at Yerba Buena Island. The AFD further mentioned that this site would have to adhere to California Building and Fire Codes with respect to fire sprinklers and emergency access for the ferry terminal. Because the Buchanan Street ferry terminal site would be adequately serviced by existing AFD personnel, no adverse impacts to the AFD are anticipated.

Mitigation. For ferry terminal Alternatives A and B, the project proponent shall be required to consult with the BFD regarding acceptable mitigation measures to provide an adequate standard of fire protection at the Berkeley Marina or Berkeley Fishing Pier project alternative site.

CEQA Determination. For Alternatives A and B, Consultation between the project proponent and the BFD on acceptable fire protection mitigation measures at the Berkeley Marina or Berkeley Fishing Pier ferry terminal alternative site would reduce potential impacts to a less-than-significant level.

Emergency Medical Transport

Alternatives A, B, and C. Currently, emergency transport for the Berkeley project sites is provided by the BFD (Orth, 2007). It is not anticipated that implementation of the three ferry terminal alternatives in the City of Berkeley would degrade existing service levels or require

additional staff or emergency transport facilities. BFD firefighters are cross-trained as EMTs and some are cross-trained as paramedics as well. Access to each site is uninhibited. Therefore, existing BFD emergency transport personnel are expected to be able to accommodate implementation of the Berkeley Marina, Berkeley Fishing Pier, or Gilman Street ferry terminal alternatives, and no adverse impacts are anticipated.

Alternative D. According to the AFD, four paramedics are available at any given time to respond to the Buchanan Street site and provide emergency medical transport and service (Crudo, 2007). Implementation of the project is not anticipated to substantially increase the amount of emergency calls to the area. Therefore, existing AFD emergency transport personnel are expected to be able to accommodate the project at the Buchanan Street site. No adverse impacts are anticipated.

Police Protection

Alternatives A, B, and C. Currently, police protection for the Berkeley Marina, Berkeley Fishing Pier, and Gilman Street ferry terminal alternative sites is provided by the BPD. Implementation of the project is not expected to result in adverse impacts to BPD service levels, response times, and service ratio levels. According to the BPD, two incidents have occurred at the Gilman Street site and none at the Berkeley Marina or Berkeley Fishing Pier sites over the last 6 months (City of Berkeley, 2007b). Furthermore, the BPD does not collect developer mitigation fees. Thus, it can be concluded that BPD staff are not "stretched thin" at these sites and that expanded patrols would not be needed to accommodate the project (BDP, 2007). Therefore, no adverse impacts to the BPD are anticipated.

Alternative D. In 2005, Albany experienced 55 violent crimes, 371 property crimes, and 497 thefts (State of California, 2007). These numbers are among the lowest in Alameda County. The Buchanan Street site is located in an area where little development occurs. Thus, the number of calls to this area is quite low. Implementation of the Buchanan Street ferry terminal alternative is not expected to result in the need for expanded police forces, because the current force adequately serves the entire city and maintains a response time of 2 to 4 minutes (Adams, 2007). Therefore, it is anticipated that existing APD staff would be able to accommodate the ferry terminal at the Buchanan Street site and no adverse impacts are anticipated.

Schools

Alternatives A, B, and C. Currently, the BUSD has a capacity for 9,240 students. In 2007, the school district reported a total district enrollment of 8,570 students (see Section 3.13, Utilities and Public Services). Therefore, the district has the capacity to accommodate another 670 students. The Berkeley Marina, Berkeley Fishing Pier, and Gilman Street ferry terminal alternatives are not expected to significantly impact school enrollment, because they would not result in a significant number of new students enrolling in the BUSD. Because the school district can accommodate approximately 670 more students, additional enrollments resulting from the ferry terminal alternatives would not cause potentially adverse impacts to the BUSD.

Alternative D. Currently, the AUSD is approximately 112 students over capacity for the 2007 school year (see Section 3.13, Utilities and Public Services). The Buchanan Street ferry terminal alternative is not expected to significantly impact school enrollment, because this project alternative would not result in a significant number of new students enrolling in the AUSD. However, if this project alternative would result in additional students for AUSD, the impact would be mitigated to a less-than-significant level because the AUSD collects developer mitigation fees. The AUSD collects $2.24 for residential development and $0.36 for commercial development. Under the provisions of CEQA, collection of developer fees is considered adequate mitigation for school impacts (State of California, 2008). Therefore, it is not expected that the project would result in a significant impact to student enrollment within the AUSD, and no potentially adverse impacts to the AUSD are anticipated.

Libraries

Alternatives A, B, and C. Because less-than-significant population growth is expected to occur as a result of the project, there will be an insignificant increase in library usage at the six libraries that operate in the City of Berkeley. No adverse impacts are anticipated.

Alternative D. Because limited population growth is expected to occur as a result of implementation of the Buchanan Street ferry terminal alternative, an insignificant increase in library usage in the City of Albany is anticipated. No adverse impacts are anticipated.

Impact 3: Operation of the ferry terminal facilities and associated parking area could increase utility service demand in the study area.

Alternatives A and B. Operation activities for the proposed project at these sites would require water and electrical services. Water services would be required for the fire sprinkler system. Because no restrooms are planned for the proposed ferry terminal, wastewater service would not be needed. Electrical services would be needed for uses such as terminal and parking lot night lighting, automated ticket machines, change machines, automated teller machines, newspaper vending machines, automatic passenger and bicycle turnstiles, and closed-circuit television, which do not consume large amounts of electricity. The existing water and electricity infrastructure capacity in the area is adequate for operational activities. Because existing utilities do not extend to the immediate vicinity of the proposed project sites, both sites would require connections. These connections would not result in adverse impacts because installation/ expansion activities would occur within established street rights-of-way; the increase in water usage would be minimal and no new treatment facilities would have to be constructed. Bill McGowen of EBMUD stated that there are no specific water entitlement limits for the City of Berkeley, as long as the increase in use is not radically different from EBMUD Master Water Plan forecasts. The proposed project is considered development accounted for under the forecast (McGowen, 2007). Implementation of the proposed project at these sites would not require stormwater infrastructure upgrades, because all areas of impervious surfaces would remain, and no new areas of impervious services would be constructed. Therefore, no potentially adverse operation impacts are anticipated.

Alternative C. Implementation of the proposed project at the Gilman Street site would require the same utilities as the Berkeley Marina and Berkeley Fishing Pier sites. Because the site does not currently have any water or electrical infrastructure in place, expanded infrastructure would be required. The installation of these utilities would not result in an adverse impact because they could be installed south along the Buchanan Street right-of-way and then east along the Gilman Street right-of-way, not impacting any sensitive land uses. The existing capacity of this infrastructure is adequate. No new treatment facilities would have to be constructed, as the increase in water usage would be minimal. Bill McGowen of EBMUD stated that there are no specific water entitlement limits for the City of Berkeley, as long as the increase in use is not radically different from EBMUD Master Water Plan forecasts. The proposed project is considered development accounted for under the forecast (McGowen, 2007). Implementation of the proposed project at this site would not result in the need for new stormwater drainage infrastructure. The proposed main parking lot area for the site would be constructed of gravel or some other pervious material, so that the area of impervious surfaces (and stormwater runoff) would not significantly increase. Therefore, no potentially adverse operation impacts are anticipated.

Alternative D. Implementation of the proposed project at the Buchanan Street site would require the same utilities as the Berkeley Marina, Berkeley Fishing Pier, and Gilman Street sites. Because the site does not currently have any water or electrical infrastructure in place, expanded infrastructure would be required. The installation of these utilities would not result in an adverse impact, because they could be installed, much like the Gilman Street site, south along the Buchanan Street right-of-way and then east along the Gilman Street right-of-way, not impacting any sensitive land uses. The existing capacity of this infrastructure is adequate. No new treatment facilities would have to be constructed, as the increase in water usage would be minimal. Bill McGowen of EBMUD stated that there are no specific water entitlement limits for the City of Albany, as long as the increase in use is not radically different from EBMUD Master Water Plan forecasts. The proposed project is considered development accounted for under the forecast (McGowen, 2007). Implementation of the proposed project at these sites would not require stormwater infrastructure upgrades, because the area of impervious surfaces would not increase. Therefore, no adverse operation impacts are anticipated.

CEQA Determination. No significant utility impacts would occur as a result of project implementation and operation.

Cumulative Impacts and Mitigation

Impact 4: Cumulative Impacts could occur on water supply and wastewater treatment.

Implementation of the cumulative projects would increase demand for wastewater services. Wastewater infrastructure from the cumulative project sites in Albany and Berkeley is connected to the EBMUD regional interceptor line. From there, all wastewater in conveyed to EBMUD's Wastewater Treatment Plant (WWTP). The WWTP has a maximum capacity for 168 million gallons per day (MGD) of wastewater. Currently, the WWTP is operating considerably under

capacity at 80 MGD (EBMUD, 2007). With the WWTP operating significantly under capacity, it is not anticipated that the cumulative projects would result in the need for expansion of this facility. Furthermore, the City of Berkeley implemented a 5-year Capital Improvement Program, providing $137 million for capital improvements between 2002 and 2006. Of this amount, $39 million was devoted solely to upgrading the City's sewer system. Areas that were upgraded included the areas surrounding many of the cumulative project sites (City of Berkeley, 2008a). With the EBMUD WWTP operating well under capacity and the City of Berkeley's Capital Improvement Program, no potentially adverse impacts to wastewater treatment are anticipated.

Alternatives A through D. Area growth in combination with approved development in the study area would increase demand for water services. According to Bill McGowen of EBMUD, any development that exceeds 500 dwelling units or 500,000 square feet of retail floor space would be inconsistent with EBMUD 2020 water forecasts and would require a water assessment (McGowen, 2007). None of the planned development is equivalent in size to 500 dwelling units or 500,000 square feet of retail floor space. The water consumed by these projects would have been included in EBMUD's 2020 water forecasts. In addition, drinking water and restroom facilities are not being provided by the ferry terminal alternatives. Therefore, no cumulative impacts to the local water supply are anticipated.

Impact 5: Cumulative impacts could occur on stormwater systems.

Alternatives A through D. Area growth in combination with approved development in the study area would increase stormwater. However, it is anticipated that the existing capacity of the stormwater system is adequate to accommodate the cumulative projects. Currently, all cumulative projects sites, apart from the proposed ferry terminal sites, have existing stormwater infrastructure. According to the City of Berkeley, the Fiscal Year 2008 budget has allocated $1 million for repairs to the storm drainage system (City of Berkeley, 2008a). Such repairs would consist of replacing and upgrading various catch basins and storm inlets, construction of new valley gutters, and re-grading problematic street sections. Therefore, no cumulative impacts are anticipated for the area's storm drainage system.

Impact 6: Cumulative impacts could occur on electricity, gas, and telecommunications.

Alternatives A through D. Area growth in combination with approved development in the study area is not anticipated to adversely affect the area's electricity, gas, and telecommunications utilities. It is assumed that approved projects have been designed to ensure adequate supply connections are available.

Impact 7: Cumulative impacts could occur on fire protection, police and emergency services.

Alternatives A through D. Area growth in combination with approved development in the study area would be accommodated by existing BFD and AFD staff. According to the BFD, from January 1, 2007, through September 30, 2007, the BFD responded to 8,668 calls (228 calls for fires, 5,709 medical calls) (NFPA, 2007). It is not anticipated that implementation of the ferry terminal alternatives in combination with approved development would result in a

significant increase in fire and medical calls that could not be accommodated by existing BFD staff. In the event that additional fire or medical support is needed, the BFD and AFD would receive support from local jurisdictions through automatic aid agreements. The BPD, APD, and the University of California Police Department, which patrols the University Village project, provide police services within the study area. Minimal criminal activity has been reported in the study area (State of California, 2007), and the planned project development could be accommodated by the existing police services. Therefore, no cumulative impacts to the local fire departments or three police agencies that serve the area are expected.

Impact 8: Cumulative impacts could occur on public facilities, such as schools and libraries.

Alternatives A through D. Area growth in combination with approved development in the study area could increase the number of children attending the BUSD and AUSD. The BUSD is currently 670 under capacity, and it is anticipated that the school district could accommodate additional students from these projects. The AUSD is currently 112 students over capacity. However, developer mitigation fees are collected to offset the impact of new developments on the school district. Under the provisions of CEQA, collection of developer fees is considered adequate mitigation for school impacts (State of California, 2008). In addition, the existing libraries in Berkeley and Albany have the capacity to accommodate growth.

No adverse cumulative impacts on public facilities are anticipated.

4.14 ENERGY

This section discusses the potential impacts of the ferry terminal alternatives on overall energy consumption.

4.14.1 Methodology

A number of methods were used to determine if the ferry terminal alternatives would result in an increase in overall energy consumption or inefficient and wasteful usage of energy during the construction and operational phases of the project. Potential direct and indirect impacts are analyzed and described below.

CONSTRUCTION METHODS

An analysis was performed of the amount of energy consumption that would be required during construction of the ferry terminal at the proposed sites. Construction energy consumption related to transportation of project site materials and construction equipment was analyzed.

OPERATION METHODS

Energy consumption for ferries currently in service on San Francisco Bay was compared to the energy consumption for the vessel (*Spare Vessel)*, which has been described in Section 3.14, Energy, to be used for the project. Several key assumptions were made to determine energy calculations for existing and proposed ferry vessels. These assumptions included: a service

route to the Berkeley shore of 11 minutes at 25 knots, 10 minutes at 10 knots, and 6 minutes and 5 knots; power is proportional to the cube of speed; and the distance to the Berkeley shore is 6.9 nautical miles. Energy calculations for existing and proposed ferry vessels took into account vessel size, speed, engine power, and the maximum of number passengers that could be transported at any given time. Energy consumption for this analysis was calculated in terms of gallons of fuel per passenger trip. Indirect energy consumption for vehicles was also analyzed, as it is often overlooked as a contributing element to energy consumption.

4.14.2 Significance Criteria

The proposed project would have an adverse effect on the environment if it would do any of the following:

- Result in a substantial increase in energy consumption per passenger trip;
- Result in a wasteful, inefficient, or unnecessary consumption of energy; or
- Result in a significant demand on regional energy supply or requirement of substantial additional capacity.

4.14.3 Energy Impacts and Mitigation

4.14.3.1 No-Action Alternative

Under the No-Action Alternative, the proposed waterside and landside facility projects detailed in the Action Alternatives would not be implemented. Fuel and electrical power consumption for ferry terminal-related facilities, including parking areas, would not increase because new facilities would not be built. Therefore, no potentially adverse impacts are anticipated.

4.14.3.2 Action Alternatives

Construction Impacts and Mitigation

DIRECT LANDSIDE ENERGY IMPACTS

Impact 1: Temporary energy consumption increases resulting from project construction.

Construction-related energy consumption would result from project activities and the use of secondary facilities. A secondary facility is defined as any facility that would produce or convey any materials that would be used during the construction of the proposed project. Project activities resulting in energy consumption would include construction of the ferry terminal and its ancillary facilities, and transportation of materials and equipment to and from the work site.

The construction period for the proposed project is estimated at 10 to 14 months. As a result, any energy consumption from construction and transportation of build materials and equipment to and from the work site would be minimal. No adverse impacts are anticipated.

It is assumed that secondary facilities, such as those that would produce or convey construction materials for the proposed project, would use all reasonable energy conservation practices to minimize the costs associated with energy use. As such, it can be assumed that construction-related energy consumption by secondary facilities during the construction of the project would not result in a wasteful, inefficient, and unnecessary usage of energy, nor would it place a significant demand on regional energy suppliers. No adverse impacts are anticipated.

CEQA Determination. No significant energy impacts would result from project construction activities.

Operations Impacts and Mitigation

DIRECT ENERGY IMPACTS

Impact 2: Implementation of the Action Alternatives could result in impacts pertaining to a substantial increase in energy consumed per passenger mile traveled for the proposed ferry service.

Alternatives A through D. According to energy consumption calculations discussed in Section 3.14, Energy, the ferry vessel proposed for use at all four ferry terminal alternatives would result in a slight increase in energy consumption over ferries that are currently in service in San Francisco Bay. The *Spare Vessel* is estimated to consume 0.19 gallon of fuel per passenger trip, while other ferries such as the *Peralta, Encinal,* and *Bay Breeze* currently consume between 0.10 and 0.12 gallon of fuel per passenger trip. Furthermore, the *Spare Vessel* would only operate at 2,820 HP, with a top speed of 25 knots and a maximum capacity of 149 passengers at any give time. The *Peralta, Encinal,* and *Bay Breeze* operate at a range between 2,570 and 2,600 HP, traveling at maximum speeds ranging from 20 to 26 knots, and transporting between 250 and 400 passengers. Thus, existing San Francisco Bay ferries employ (for the most part) larger engines, travel faster, transport more passengers, and consume less fuel than the *Spare Vessel*. However, this is not seen as an adverse impact, because the *Spare Vessel* would consume 0.09 gallon of fuel more per passenger trip, which is not a substantial increase in energy consumed over existing San Francisco Bay ferries. The Gilman and Buchanan Street sites are farther away from the ferry's point of origin than the Berkeley Marina sites (approximately 1 nautical mile). As a result, Alternatives C and D would require more energy consumption for ferry operations, approximately 5 gallons per trip (Culnane, 2008). However, the amount of additional energy required for project operation is not substantial for any alternative site. Furthermore, the energy used would be balanced by the slight reduction in overall vehicle miles traveled by persons using the ferry rather than driving across the Bay Bridge. No adverse impacts are expected from vessel energy consumption.

CEQA Determination. The increase in energy consumed per passenger trip due to implementation of the proposed project is considered less than significant.

DIRECT LANDSIDE ENERGY IMPACTS

Impact 3: Implementation of the Action Alternatives could result in impacts pertaining to a substantial increase in energy consumed by the terminal waterside and landside facilities.

Alternatives A through D. For all four ferry terminal alternatives, the design would essentially be the same. The design would include a ferry plaza that would serve as a gathering area, handicapped parking, bus drop off, car drop off, a pedestrian path link to the Bay Trail, an enclosed pier, ferry parking, a 92-foot gangway, a float where the ferries would dock, and, if needed, a new dock extension. Due to the nature and design of the proposed ferry terminal for all four alternatives, significant energy consumption is not anticipated. The majority of energy consumed by these types of facilities would be in the form of night lighting. Other energy consumption would come from sources such as automated ticket machines, change machines, automated teller machines, newspaper vending machines, automatic passenger and bicycle turnstiles, and closed-circuit television, which do not consume large amounts of energy. The energy consumed during operation of the ferry terminal would not result in a wasteful, inefficient, or unnecessary consumption of energy, nor would it result in a significant demand on regional energy supply or requirement of substantial additional capacity, as current capacity levels are anticipated to accommodate the proposed project. Therefore, no adverse impacts are anticipated.

CEQA Determination. The increase in direct landside energy consumption due to implementation of the proposed project is considered less than significant.

INDIRECT LANDSIDE ENERGY IMPACTS

Impact 4: Implementation of the Action Alternatives could result in impacts pertaining to a substantial increase in energy consumed per passenger mile traveled accessing the terminal sites.

Most of the automobile and bus trips generated by the ferry terminal alternatives are expected to be "primary" trips. In other words, the ferry terminal would be the sole destination for the majority of people who travel there. It is unlikely that the majority of automobile trips to the ferry terminal would be "linked" trips, or stops along the way to another destination. All proposed ferry terminal sites have the capacity for approximately 400 parking stalls. Parking at the proposed sites would result in up to 400 automobiles being taken off the road, and a decrease in regional energy consumption. Because most of automobile trips are "primary" trips to the ferry terminals, and because of the number of automobiles that would be taken off the road as a result of the ferry terminal alternatives, no adverse energy impacts are anticipated.

With respect to bus routes, the Buchanan and Gilman Streets sites are not currently serviced by AC Transit. The Berkeley Marina and Pier sites are directly serviced by AC Transit local line 9. Thus, no new routes would be needed to service the proposed project and no increase in energy consumption by public transit would result. However, minor route changes would occur, because these lines do not directly access the proposed ferry terminal sites. The energy

consumption contributed to these modifications would be negligible. Therefore, no adverse impacts are anticipated.

CEQA Determination. The increase in indirect landside energy consumption due to minor route changes to existing AC Transit line 9 to the Berkeley Marina sites is considered less than significant.

4.14.4 Cumulative Impacts and Mitigation

Impact 5: Cumulative impacts from increased demand on regional energy supplies could occur.

Alternatives A through D. Area growth in combination with approved development in the study area would use energy for construction and operation activities. However, this is not anticipated to be a substantial increase over existing conditions within the region due to the limited growth in the study area and the relative size of the approved development. It is anticipated that each project would be designed in accordance with California Title 24 Energy Saving Standards to reduce energy consumption. The limited energy consumption of the projects relative to the total consumption of the region is not expected to substantially contribute to the cumulative energy demand. In addition, the ferry terminal project is seen as necessary to relieve existing traffic congestion in the San Francisco Bay Area, while saving energy by reducing the number of automobiles on the road. The majority of the approved development projects would be high-density residential mixed use projects that would effectively reduce vehicle trips on local roadways. As a result, no cumulative impacts are anticipated.

CEQA Determination. The project does not substantially contribute to increased energy use due to cumulative regional demand on energy supplies.