CHAPTER 5
CEQA Statutory Sections

The California Environmental Quality Act (CEQA) requires an Environmental Impact Report (EIR) to consider the significant environmental effects of a Project (CEQA Guidelines §15126.2). Chapter 4 considers direct and indirect, short- and long-term effects of the Project. This Chapter considers significant and unavoidable impacts in Section 5.1, significant irreversible environmental effects in Section 5.2, growth-inducing impacts in Section 5.3, cumulative impacts in Section 5.4, and effects found to not be significant in Section 5.5.

5.1 Significant Unavoidable Environmental Impacts

Section 15126.2(b) of the CEQA Guidelines requires an EIR to identify any significant environmental effects of a project that cannot be avoided through feasible mitigation and/or alternatives. As described in Section 4.1, *Air Quality*, there would be two significant unavoidable air quality environmental impacts as an indirect result of the Project (See Impacts 4.1-1b and 4.1-2).

5.2 Significant Irreversible Environmental Effects

Under Section 21100(b)(2)(B) of CEQA, an EIR must identify any significant irreversible effects of the project. Section 15126.2(c) of the CEQA Guidelines describes irreversible environmental changes as follows:

> *Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project.*

Construction and operation of the Project would require use of some non-renewable resources, including diesel and gasoline for construction vehicles and equipment. However, this use would be limited to the approximate 25-week construction period. These temporary construction-related increases would not result in significant use of non-renewable resources and would not commit future generations to similar uses.

The Project would involve the continued use of nonrenewable crude oil supplies by the existing Refinery. At some point in the future, the supply of crude oil available by railcar would presumably become exhausted. This will occur, however, with or without the Project. The Project

would not involve any increase in the use of crude oil by the Refinery. Rather, the Project would merely substitute North American crude oils for other crude oils from around the world.

During Project operations, diesel fuel would be used by trains bringing crude oil to the Refinery and returning empty tank cars to North American source locations for refilling. This Project-related diesel fuel consumption, however, would be offset by the reduced consumption of lower-grade fuels used by marine vessels that currently deliver crude oil to the Refinery. Given that distances to potential crude feedstock sources over the life of the Project for both marine vessel and rail transport are likely to vary and depend on future market forces, it would be speculative to estimate or compare exact fuel usage differences between the two modes of transport. Although exact distances to potential crude feedstocks are not known for either marine vessel or rail transport[1], it is likely that rail transport of North American sourced crude would tend to be much shorter than crude brought from more distant global sources by marine vessels.

As explained in sections 4.2, *Biological Resources*, and 4.7, *Hazards and Hazards Materials*, a release of crude oil from a railcar could potentially affect nearby residents, sensitive habitat, and the quality of surface water and groundwater. The probability of such an occurrence, however, is quite low. In addition, as explained in Section 4.7, *Hazards and Hazardous Materials*, there are a variety of state and federal regulations designed to ensure that any releases are contained and remediated, and any resulting damage is mitigated. Therefore, the risk of irreversible damage from accidental releases is not considered significant.

5.3 Growth-Inducing Impacts

Section 15126.2(d) of the CEQA Guidelines states that an EIR should discuss "the ways in which the Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Growth can be induced in a number of ways, including through the elimination of obstacles to growth, through the stimulation of economic activity within the region, or through precedent-setting action. CEQA requires a discussion of how a project could increase population, employment, or housing in the areas surrounding the project as well as an analysis of the infrastructure and planning changes that would be necessary to implement the project.

The temporary increase in the local labor force of approximately 121 construction workers at its peak over the approximate 25-week construction period would not contribute to any significant increase in the local population as there is a well-established worker base in the area that serves the five Bay Area refineries for projects similar to the Project. Operation of the Project would require approximately 20 new permanent employees at the Refinery. It is possible that these employees would be new residents of the area. However, the potential number of new residents would be insignificant given the total population of the area and the housing vacancy rate.

[1] Currently, vessels carrying crude from Alaska to the Refinery travel 2,000 miles (from the terminus of the TransAlaska pipeline). Vessels carrying crude from South America to the Refinery travel roughly 4,000-miles. Vessels carrying crude from the Middle East to the Refinery travel roughly 8,500 miles. By comparison, a train carrying North American crude oil to the Refinery could travel roughly 1,500 miles to locations in the mid west.

Therefore, construction and operations associated with the Project would not encourage new development or induce population growth and the Project would neither directly nor indirectly induce short-term or long-term population growth.

5.4 Cumulative Impacts

Public Resources Code section 21083(b)(2) states that a significant effect on the environment includes the possible effects of a project "that are individually limited but cumulatively considerable." An impact is "cumulatively considerable" when "the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (*Id*.) "A cumulative impact is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts" (CEQA Guidelines § 15130(a)(1)). The CEQA Guidelines require that:

- Cumulative impacts shall be discussed when they may be significant;
- The discussion may be more general than that for the individual project impacts, but that the discussion should reflect the potential extent, severity, and probability of the impact;
- The cumulative impact analysis may be based on either a list of past, present, and probable future projects or a summary of projections from an adopted General Plan or other adopted planning document; and
- Reasonable options for mitigating or avoiding the project's contribution to significant cumulative impacts shall be discussed, noting that for some cumulative impacts the only feasible mitigation may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis.

This EIR uses a combination of a plan-based approach and a list-based approach to determine whether any significant cumulative impact would occur. From a plan-based perspective, a technical analyst for each resource area considered the Project in light of its consistency or conflict with the assumptions and projections of the *City of Benicia General Plan* and other applicable planning documents identified in Section 5.4.1. From a list-based perspective, Project impacts were analyzed in combination with the impacts of other Valero Benicia Refinery projects, other crude by rail projects in California, and other local refinery and pipeline projects.

The technical analysts for each resource area considered the following: (i) the geographic scope of the cumulative impact area for that resource; (ii) the time frame within which Project-specific impacts could interact with the impacts of other projects; (iii) whether a significant adverse cumulative condition presently exists to which Project impacts could contribute; (iv) the significance of the incremental Project-specific contribution to cumulative conditions; (v) whether the incremental Project-specific impact to an existing adverse cumulative condition is cumulatively considerable; and finally, (vi) whether additional mitigation is available to reduce the Project's cumulatively considerable contribution to an existing cumulative impact. If a resource area has no Project-specific impacts, the Project could not contribute to any existing adverse cumulative impacts.

The analyses of the cumulative impacts for each environmental resource area that was analyzed in Sections 4.1 through 4.11 of this document are presented in Section 5.4.3.

5.4.1 General and Regional Plans Considered in the Cumulative Analysis

To determine the effects of projects that may not be well-defined or are unforeseen, this analysis considered the following planning documents:

- City of Benicia General Plan
- Solano County General Plan
- Solano Congestion Management Program
- City of Benicia 2012 Water System Master Plan
- Bay Conservation and Development Commission Plans
- San Francisco Bay Area Regional Water Quality Control Board (RWQCB) Basin Plan
- Bay Area 2010 Clean Air Plan
- City of Benicia Climate Action Plan

These adopted plans have been prepared and adopted by the City and other local agencies. These plans are comprehensive, long-term visions for physical development within the region. The 1999 *City of Benicia General Plan*, for example, includes specific goals and policies to preserve and enhance existing development and to provide for orderly and appropriate new development. City land use approvals must be consistent with the General Plan.

5.4.2 Specific Projects Considered in the Cumulative Analysis

The cumulative impacts analysis herein considers related projects that may results in impacts similar to those created by the Project. The analysis considers recent projects at the Refinery, specified projects at other refineries in the Bay Area, other crude by rail projects within the State, and certain other projects within the City of Benicia that are unrelated to oil refining or transportation.

5.4.2.1 Other Recent Valero Benicia Refinery Projects

The following projects have been undertaken or permitted within the last five years at the Refinery (See Table 5-1, below, for greater detail):

- NPDES Permit Reissuance, issued 2009
- Maintenance Dredging at Valero Refinery Crude Dock Project, approved 2008
- Valero Improvements Project (VIP), approved 2003

The VIP, approved in 2003, consisted of a number of changes to Refinery process units to be implemented over an extended period. All of the approved components of the VIP project are

constructed and operational except for the hydrogen plant. See 3.3.3, *Recent Projects / Current Status of Refinery*, for more detail about the VIP Project.

5.4.2.2 Other Crude by Rail Projects in California

Table 5-1 includes other crude-by-rail projects that have been undertaken or permitted within the State in the last five years.

5.4.2.3 Other Relevant Local Projects

Table 5-1 includes other relevant projects along the Carquinez Straight that have been undertaken or permitted within the last five years.

5.4.2.4 Other City of Benicia Projects

Table 5-1 includes other relevant projects in the City of Benicia along the Carquinez Straight that have been undertaken or permitted within the last five years.

5.4.3 Areas of Potential Cumulative Impacts

5.4.3.1 Air Quality

In 2009, the BAAQMD identified significance thresholds for emissions that contribute to regional and global impacts. Regional impacts include elevated levels of ozone precursors and other criteria pollutants, as measured within a particular air basin. Global impacts result from the emission of greenhouse gases. Emissions are considered to be "cumulatively considerable" or "cumulatively significant" under the BAAQMD, YSAQMD, SMAQMD, and PCAPCD guidance if, and only if, the emissions exceed the applicable identified significance thresholds (BAAQMD, 2009; YSAQMD, 2007; SMAQMD, 2014; PCAPCD, 2012), also see Section 4.1.3 for more detail on these significance thresholds. This analysis applies the BAAQMD, YSAQMD, SMAQMD, and PCAPCD thresholds based on the evidence relied upon by those agencies in developing them.

Construction

Construction activities would be confined to within the Bay Area Basin. As described in Section 4.1.5, Project construction exhaust emissions would not exceed the BAAQMD regional mass emissions thresholds and Mitigation Measure 4.1-1 would be implemented to ensure that impacts associated with fugitive dust emissions would be reduced to a less-than-significant level. Consequently, construction of the Project facilities would not be considered to make a cumulatively considerable contribution to regional air quality impacts. The cumulative impact would be reduced to a level that would be less than significant.

TABLE 5-1
POTENTIAL PROJECTS FOR CUMULATIVE EFFECTS EVALUATION

Project Name	Location	Description	Status/Schedule	Approximate Distance From Project
Recent Valero Benicia Refinery Projects (2008-2013)				
Maintenance Dredging at Valero Refinery Crude Dock	Valero Benicia Refinery	Periodic maintenance dredging of a maximum of 80,000 cubic yards of sediment per year through 2023	Originally approved in 2008. Permit has been renewed through 2023.	Project location is on the northeast side of the Valero Benicia Refinery
Valero Refining Company - California, Valero Benicia Refinery NPDES Permit Reissuance	Valero Benicia Refinery	National Pollutant Discharge Elimination System (NPDES) permit reissuance. An on-site wastewater treatment plant treats process wastewater and stormwater prior to discharge to Suisun Bay. The refinery also discharges stormwater to Carquinez Strait and Suisun Bay through several additional outfalls. The reissued permit regulates both treated wastewater and stormwater discharges.	NPDES NO. CA0005550: Adopted November 18, 2009,Effective Jan 1, 2010 Expires Dec 31st, 2014 Currently undergoing renewal.	Project location is on the northeast side of the Valero Benicia Refinery
Valero Improvement Project	Valero Benicia Refinery	The project made changes and installed new equipment at the Valero Refinery to: allow the refinery to process lower grade of crude oil and gas oil; allow the refinery to switch between crude and gas oil, as desired; and optimize operations for efficient production. The project included an increase in crude processing capacity, while significantly reducing emissions, which mitigated project-related impacts to avoid detrimental effects on the Community.	Approved in 2003, amended in 2008 then completed construction in 2011 except for the construction of the hydrogen plant. The Refinery currently has sufficient hydrogen to process the wide range crudes it now uses and consequently Valero is in the process of determining whether to implement the VIP-proposed replacement hydrogen plant as it is not essential to refinery operations or to this Project.	Project location is on the northeast side of the Valero Benicia Refinery
Other Crude by Rail Projects in California				
WesPac Pittsburg Energy Infrastructure Project	City of Pittsburg	WesPac Energy-Pittsburg LLC (WesPac) proposes to reactivate the existing oil storage and transfer facilities located at the NRG Energy, Inc. Pittsburg Generating Station. The WesPac Terminal would be designed to receive crude oil and partially refined crude oil from trains, marine vessels, and pipelines, store the oil in existing or new storage tanks, and then transfer oil to nearby refineries. The WesPac Terminal would connect to two third-party common-carrier pipelines, including the KLM (Kettleman-Los Medanos) Pipeline (currently owned and operated by Chevron Pipeline Company) that currently provides crude oil to the Valero Benicia Refinery and other Bay Area refineries. The project would allow for an average throughput of 242,000 barrels of crude oil or partially refined crude oil per day, with a maximum of 375,000 barrels per day. The proposed rail transload facility would be capable of receiving and transloading up to one 104-car unit train per day.	Recirculated Draft EIR in July, 2013. According to the City of Pittsburg website, as of March 2014 the project is undergoing additional review. The City does not currently have a timeframe available for this additional review.	14 miles

TABLE 5-1 (Continued)
POTENTIAL PROJECTS FOR CUMULATIVE EFFECTS EVALUATION

Project Name	Location	Description	Status/Schedule	Approximate Distance From Project
Other Crude by Rail Projects in California (cont.)				
Phillips 66 Company Rail Spur Extension Project	San Luis Obispo County	Phillips 66 is proposing to modify the existing rail spur currently on the southwest side of the Santa Maria Refinery (SMR). The rail spur extension is proposed entirely on the SMR property and would be located east of the Union Pacific Railroad and the existing refinery facilities. The project would include an eastward extension of the existing rail spur by approximately 7,000 feet as well as a railcar unloading facility. Trains would deliver crude oil to the SMR for processing. The unloaded material would be transferred from the proposed unloading facility to existing crude-oil storage tanks via a new on-site above-ground pipeline.	Public review period for Draft EIR ended on January 27, 2014. County will be recirculating the DEIR – no date set.	265 miles
Alon Bakersfield Refinery Crude Flexibility Project	Kern County	This project is a modification of a Precise Development Plan that would allow greater flexibility for the Refinery to utilize a variety of crude oils that can be processed onsite. The project proponent is requesting: 1) expansion of rail, transfer and storage facilities including an addition of up to three boilers; 2) process unit upgrades and/or modifications; 3) repurposing of existing tankage; and 4) relocation and modernization of existing Liquefied Propane Gas (LPG) truck rack and upgrades to sales rack. The rail expansion would consist of the construction of a double rail loop from a new spur connection off of the existing Burlington Northern and Santa Fe Railway (BNSF) and would be fully contained onsite. Most of the proposed process unit changes are minor in scope. The Refinery's 70,000 barrels per day (BPD) maximum crude processing capacity would not be increased.	NOP certified September 2013, to prepare Draft EIR.	270 miles
Relevant Local Projects (refinery related pipelines, infrastructure, or marine oil terminals)				
Chevron Richmond Revised Renewal Project	City of Richmond	This project is a reduced scope of the Hydrogen and Energy Renewal Project Proposed in 2005. In 2008, the City of Richmond certified the EIR and issued permits for the project. In 2010, a court ordered that the EIR be set aside. Chevron has reduced the overall scope of the original project. The Revised Project would complete construction and make operational the Hydrogen Plant Replacement and Hydrogen Purity (sulfur removal) Improvement of the Original Project. The Revised Project would not include the Catalytic Reformer Replacement, Power Plant Replacement, and Other New and Replacement Facilities (storage tanks, control building and central maintenance building) that were part of the original project.	The City is currently preparing a revised EIR.	6.8 miles

TABLE 5-1 (Continued)
POTENTIAL PROJECTS FOR CUMULATIVE EFFECTS EVALUATION

Project Name	Location	Description	Status/Schedule	Approximate Distance From Project
Relevant Local Projects (refinery related pipelines, infrastructure, or marine oil terminals) (cont.)				
Chevron Tank Replacement Project	City of Richmond	The project would replace five existing petroleum storage tanks with five newly constructed tanks, and construct a new firewater tank in its quarry tank field. The five petroleum storage tanks will be field-fabricated within existing refinery tank fields. Total capacity of new petroleum tanks will be 541,000 barrels. Total capacity of petroleum tanks removed from service is 366,000 barrels. The petroleum tanks will be provided with secondary containment in accordance with state and federal law, and will be covered to minimize air emissions. The firewater storage tank will store recycled water from plant operations to increase the fire management capabilities at the refinery.	MND Approved March 2011. Tanks are being permitted and constructed individually: Tank 1 constructed, Tank 2 under construction, Tanks 3-5 to be permitted and constructed.	16.8 miles
Phillips 66 Propane Recovery Project	Contra Costa County	Phillips 66, proposes modify existing facilities at their Rodeo, California Refinery and add new facilities to recover propane and butane from refinery fuel gas (RFG) and then ship it by rail for sale. The Project involves hydrotreating a portion of the RFG and would reduce the amount of sulfur in the fuel gas, reducing the Refinery's sulfur dioxide (SO2) emissions to the atmosphere.	The Draft EIR was published in June 2013, and the Final EIR in November 2013.	7 miles
Shell Crude Tank Replacement Project	City of Martinez	This project would increase crude oil storage capacity at the refinery to facilitate future operations at current production levels despite anticipated changes in the source of crude oil feed stocks with no increases in crude oil throughput at the Refinery. The project would maintain current operation and production levels of California Air Resources Board mandated cleaner-burning gasoline and ultra-low sulfur diesel fuels at the Refinery substituting imported crude oil by vessel for diminishing San Joaquin Valley crude by pipeline.	Approved October, 2011. Complete.	5.6 miles
California State Lands Commission Marine Terminal Lease – for Shell Martinez Refinery	City of Martinez	The California State Lands Commission (CSLC) recently granted the Shell Martinez Refinery a new 30-year lease for its marine terminal operations. The CSLC certified the EIR prepared for the consideration of the new 30-year lease describes the marine terminal operations and evaluates the impacts of the new lease, including evaluation of future vessel traffic impacts. The assumptions and basis for the proposed Project are aligned with the forecasted activity of the marine terminal lease operations.	The new lease was granted by the CSLC on June 23, 2011.	5.6 miles
California State Lands Commission Marine Terminal Lease – for NuStar Selby Marine Terminal	Contra Costa County	The California State Lands Commission (CSLC) recently granted the NuStar Selby Marine Terminal a new 30-year lease for its marine terminal operations. The CSLC certified the EIR prepared for the consideration of the new 30-year lease describes the marine terminal operations and evaluates the impacts of the new lease, including evaluation of future vessel traffic impacts. The assumptions and basis for the proposed Project are aligned with the forecasted activity of the marine terminal lease operations.	The new lease was granted by the CSLC in 2012.	7 miles

TABLE 5-1 (Continued)
POTENTIAL PROJECTS FOR CUMULATIVE EFFECTS EVALUATION

Project Name	Location	Description	Status/Schedule	Approximate Distance From Project
Relevant Local Projects (refinery related pipelines, infrastructure, or marine oil terminals) (cont.)				
Selby Slag Site Remediation	Contra Costa County	The Selby Slag Site is the location of a former smelting facility. Smelting is the process of extracting metals, such as lead or copper, from a mineral or rock through high-temperature melting or fusing. Asarco operated a smelting facility at the Selby Slag Site from 1872 to 1971. During the smelting operations, slag (a waste product from the smelting process containing metals) was produced and used to fill the adjacent tideland areas. Most of the area of the Site was created from this historical filling of tideland areas with slag. Department of Toxics Substances Control (DTSC) is the lead government agency overseeing the investigation and cleanup at the Selby Slag Site. The Selby Group, comprised of Asarco LLC, the California State Lands Commission, and C.S. Land, Inc., has been undertaking investigation and cleanup actions at the Site under the oversight of DTSC.	A CEQA document is currently being prepared by DTSC.	7 miles
Tesoro Amorco Marine Oil Terminal	Contra Costa County	The Tesoro Refining and Marketing Company (Tesoro), a wholly owned subsidiary of Tesoro Petroleum Corporation, leases 16.6 acres of sovereign public land from the CA State Lands Commission for the Tesoro Amorco Marine Oil Terminal (Amorco MOT) (PRC 3453.1). The Applicant is seeking approval from the CSLC for a new 30-year lease. The MOT exists and is currently operating, and no changes to the facilities or operations are proposed; however, issuance of a new 30-year lease will require the preparation of an EIR because, among other potentially significant impacts, there is an inherent risk of spills at any facility where petroleum product is routinely transferred over water.	The CSLC is currently preparing two EIRs for the new leases.	3 miles
Plains All American Pipeline Martinez Marine Terminal 20-year Lease Consideration	City of Martinez	Proposed new 20-year lease of 5.04 acres of California sovereign lands would allow Plains All American Pipeline to continue its marine oil terminal operations for vessel transfers of crude oil and petroleum products. The terminal enables transfers to on-land storage facilities approximately two miles east of the City of Martinez, south shore of Carquinez Strait, and approximately one mile east of the Benicia Bridge.	NOD filed August 2005	3 miles
Air Products Local Area Pipeline Network Project	City of Martinez	Air Products and Chemicals Inc. (Air Products) owns and operates a hydrogen plant located within the Shell Martinez Refinery. In September 2009, a Draft EIR was published describing a local area pipeline network project proposed by Air Products. The proposed pipelines would originate at another existing Air Products hydrogen plant at the Tesoro Golden Eagle Refinery and travel westward about 2.6 miles in an unpopulated area along Waterfront Road, where they would connect with the existing Air Products Hydrogen Plant at the Shell Martinez Refinery. The two pipelines, one for hydrogen and the other for fuel gas, would be installed in the same trench to minimize impacts. The primary objective of this project is to maintain adequate, available, and efficient supply of hydrogen for the two refineries (Tesoro and Shell) by allowing the	The EIR for the project was certified in May 2011 by the County. Construction of the Air Products pipeline is proposed over a 3-month period was scheduled for 2012. This did not occur. The current construction schedule is to be determined.	3 miles

TABLE 5-1 (Continued)
POTENTIAL PROJECTS FOR CUMULATIVE EFFECTS EVALUATION

Project Name	Location	Description	Status/Schedule	Approximate Distance From Project
Relevant Local Projects (refinery related pipelines, infrastructure, or marine oil terminals) (cont.)				
Air Products Local Area Pipeline Network Project (cont.)		transfer of hydrogen and fuel gas (hydrogen plant feed and fuel) and connecting the existing Air Products hydrogen plants at both refineries. The project would provide for hydrogen supply at the Martinez Refinery for the processing of products to meet the cleaner-burning fuel standards. The CTRP does not involve changes to the process units that would affect hydrogen demand.		
Praxair Contra Costa Pipeline Project	Contra Costa County and the Cities of Richmond, Martinez, Hercules, and potential San Pablo	Praxair is proposing to develop an approximately 21.3-mile hydrogen pipeline from the Chevron Richmond Refinery to the Shell Martinez Refinery. This pipeline would include a 1.1-mile lateral pipeline extension to the Phillips66 Refinery in Rodeo, California. The pipeline would transport hydrogen that is produced at the Chevron Refinery and not required for Chevron's own operations. The Praxair Contra Costa Pipeline Project would consist of construction of approximately 13.5 miles of new pipeline and the reuse of approximately 7.8 miles of an existing Chevron pipeline previously used to transport natural gas. The project would also include the construction of approximately 2.2 miles of natural gas pipeline. Although the hydrogen pipeline is proposed to terminate at the Shell Martinez Refinery, Shell currently has no agreement in place with Praxair for future hydrogen supply. As stated previously, the CTRP does not involve changes to the process units that would affect hydrogen demand.	A Draft EIR was released in 2010 and Contra Costa County is currently preparing a Final EIR for the project.	5 to7miles
Other City of Benicia Projects and Projects that Include Benicia Subject to CEQA Review (as of May, 2014)				
Solano County Draft General Plan Update	County of Solano	The proposed project is the 2008 update of the Solano County General Plan.	Adopted August, 2008.	Encompasses City of Benicia and Project location.
Lower Arsenal Mixed Use Specific Plan - Recirculation	City of Benicia	Recirculation of Noise and Global Climate Change, Energy Use and Sustainability Sections. Recirculated the proposed project includes implementation of a Specific Plan for the Lower Arsenal site, which is designated for mixed use in the Benicia General Plan. The Specific Plan covers four distinct zones, each of which exhibits a unique physical character. The Specific Plan would implement a form based code to shape future development on the project site, with primary emphasis on the physical form and character of the new development. After build-out of the Specific Plan, the area would contain approximately 741,865 square feet of mixed uses, 22 residential units, and 6.39 acres of open space. The Specific Plan area currently contains approximately 525,000 square feet of mixed uses.	Draft EIR originally circulated in 2007. Draft EIR recirculated August, 2009. This project is currently on hold and the EIR will be revised again by the City.	Between 1 to 2 miles- Project is not within planning area.

TABLE 5-1 (Continued)
POTENTIAL PROJECTS FOR CUMULATIVE EFFECTS EVALUATION

Project Name	Location	Description	Status/Schedule	Approximate Distance From Project
Other City of Benicia Projects and Projects that Include Benicia Subject to CEQA Review (as of May, 2014) (cont.)				
Housing Element, 2015-2023	City of Benicia	This project updated the Housing Element of the City of Benicia General Plan as required by Government Code Section 65580 - 65589.8. The Housing Element is a comprehensive statement by the City describing the housing needs of Benicia and how the City's plans, policies, programs and regulations facilitate the development, improvement and preservation of housing for all economic segments of the community.	Deadline for adoption / certification is January 31, 2015.	Project is within City limits.
Tannery Bay Trail	City of Benicia	The proposed project is to construct a shoreline public pathway with amenities as part of San Francisco Bay Trail System. The project would include approximately 350 cubic yards of solid fill over a 2,260 sf area; Construction of an 8 foot wide, 275 foot long path way; Construction of approximately 3,199 sf of landscaping area; Construction of approximately 3,310 sf of shoreline protection (rip rap system); Installation of four public benches; A series of concrete walkways from the existing building to the new pathway and decomposed granite (DG) along the west side of the new pathway, adjacent to the new shoreline revetment.	Initial Study/Mitigated Negative Declaration adopted 2013.	2 miles
New Harbor Church	City of Benicia	The proposed project would consist of constructing a new 20,244 sq. ft., multi-use, two-story church at the terminus of Blake Court, east of Rose Drive. Pursuant to a prior agreement with the City in June 2001, the land was dedicated to a church to be selected by the Benicia Council of Churches. New Harbor Community Church was the selected recipient of this land. However, the Church will still needs to get Use Permit approval from the Planning Commission since the location is in the City's Single Family Zone District.	EIR certified in 2001. Project under review and EIR Addendum certification pending.	3 miles
Jefferson Ridge LLC Assisted Living Care Complex	City of Benicia	Project proposes to build a two-building, 273-unit assisted-living and memory-care complex that may be built on a vacant lot on Jefferson Street near Park Road and Adams Street Benicia's industrial port, within the lower arsenal.	Submitted to the City in August 2012, project is currently under review for General Plan/zoning compliance. CEQA documentation TDB.	1 mile-adjacent to the Project.
Water States Agreement for Annual Transfers of a Quality of Solano ID Annual Allotment	Solano County, City of Benicia and City of Fairfield	The Project includes proposed agreements to accomplish annual transfers of a quantity of Solano Irrigation District's (District) annual allotment of Solano Project water to the city of Benicia (Benicia) is the amount of 2,000 acre feet per year and the city of Fairfield (Fairfield) in the amount of 2,000 acre feet a year, for a total of 4,000 acres feet per year. The cities will pay consideration to District for the transfer. If one of the cities does not execute the agreement, the District may proceed with the remaining city. The water quantities transferred will be delivered in Lake Berryessa (Berryessa) and transferred through the Putah South Canal and will be utilized by each city primarily to assure yield through drought periods for the existing city water service area compared to the quantity of water delivered from the State Water Project (SWP) to enhance water quality to city customers within the existing city water service area, to reduce water treatment by each city, and to provide supplies for replacement of reduced sources of SWP water die to SWP operating conditions.	Agreement approved in 2009.	Project is within City limits

Other related projects at the Refinery, including the Maintenance Dredging at Valero Refinery Crude Dock project, and the Refinery NPDES Permit Reissuance project, are ongoing and part of the baseline for the Project. The cumulative projects listed in Table 5-1 would occur more than 1,000 feet away from the Refinery and would not be a concern for cumulative localized impacts based on the prescribed BAAQMD methodology. Therefore, the combined cumulative impact of all construction activities would be less than significant.

Operation

As described in Impacts 4.1-1b and 4.1-2, after mitigations are applied, Project operational emissions generated within the Bay Area Basin would not exceed the BAAQMD regional mass emissions thresholds. Consequently, operation of the Project would not be considered to make a cumulatively considerable contribution to regional cumulative air quality impacts in the Bay Area Basin.

With regard to emissions of the Project generated within the Sacramento Basin, as discussed in Section 4.1.5 under Impact 4.1-2, Project-related emissions in the YSAQMD and SMAQMD would exceed the incremental project significance thresholds for NO_x and NO_x emissions generated in Placer County would exceed the PCAPCD cumulative 10 pounds per day significance threshold. Therefore, implementation of the Project would result in a cumulatively considerable increase of NO_x emissions in YSAQMD, SMAQMD, and PCAPCD, and the associated cumulative impact within the Sacramento Basin would be significant.

Health Risk

As noted above, the project health risk assessment modeling found the Maximum Exposed Individual Residence (MEIR) to be at a residence in Fairfield adjacent to the rail tracks primarily as a result of the increase in train traffic for the Benicia Refinery project. Cumulative risk has been evaluated for sources within 1,000 feet of that location (see below). Similarly, an additional cumulative assessment was performed to evaluate the combined risks at residences near the Refinery from DPM sources from the Project, I-680, and existing rail traffic on the tracks near the Refinery. As part of this cumulative assessment, the health risk assessed for the Valero Improvement Project (VIP) (City of Benicia, 2002) and VIP Amendments (City of Benicia, 2008) were also combined with the above sources to estimate the contribution to risk from existing sources at the Refinery.

Screening-level cumulative risk was evaluated in the vicinity of residences near the Refinery where the maximum risk and $PM_{2.5}$ concentration was modeled. This modeled residence is located to the southwest of the Refinery. The BAAQMD provides a Google Earth tool that displays the screening-level health risks and $PM_{2.5}$ concentrations from freeways and rail sources in each county (BAAQMD, 2014). The results of the near-Refinery residential cumulative risk from the Project, the recent VIP/VIP Amendments Project, the freeway, and rail sources obtained from the BAAQMD Google Earth tool are presented below in Table 5-2.

With respect to cumulative health risk impacts associated with localized air emissions, the VIP, which was essentially completed in 2011, is considered to be a past cumulative project. The only

component of the VIP that has not been constructed is a replacement hydrogen plant. The Refinery has sufficient hydrogen now to process the wide range of crudes that it now uses and Valero is in the process of determining whether or not to replace the hydrogen plant. The Permit-to-Construct the replacement hydrogen plant would expire in December 2014. Since the proposed replacement hydrogen plant would be a replacement project, this element would not likely result in an increase in emissions and would have no cumulative impact.

The VIP proposed a series of modifications and additions to the Refinery, including modification to existing equipment and installation of new refining equipment, such as piping, heat exchangers, instrumentation, catalytic reactors, fractionation equipment, pumps, compressors, furnaces, tanks, and flue gas scrubber. Health risk analyses were conducted for the VIP (City of Benicia, 2002 and 2008) that estimated health risks for all components of this cumulative project. The VIP health risk analysis concluded that the maximum incremental cancer risk at the nearest residential receptor would be 1.47 in a million and a maximum non-residential cancer risk would be 2.38 in a million. The non-cancer chronic hazard was found to be 0.007 for the maximally exposed resident and 0.018 for the maximally exposed worker. It should be noted that predominate wind direction in the vicinity of the Refinery is from the west, towards the east. There are no residences or other sensitive receptors immediately east of the Refinery. This predominant wind direction tends to limit exposure of the residences to the north, east, and south of the Refinery.

Combining the risks of the Project with the existing risks associated with I-160, the UPRR, and the VIP results in a cumulative combined cancer risk of 14.4 in one million to the maximally exposed residential receptor near the Refinery. This value is well below the cumulative threshold of 100 in one million for cancer risk. Combining the $PM_{2.5}$ concentrations of the Project with the existing concentrations associated with I-160, the UPRR, and the VIP results in a cumulative combined $PM_{2.5}$ concentration of 0.029 ug/m^3 to the maximally exposed residential receptor near the Refinery. This value is well below the cumulative threshold of 0.8 ug/m^3. Therefore, the combined risk and $PM_{2.5}$ concentrations would result in a less than significant cumulative impact and the incremental increases in the vicinity of the Refinery that would be associated with the Project would not be cumulatively considerable.

TABLE 5-2
CUMULATIVE HEALTH RISK AT NEAR THE REFINERY

Type of Estimated Health Impact	Source of Contribution to Risk and $PM_{2.5}$ Concentration				Total	Total with ASF*
	Crude by Rail Project	I-160 (at 1,000 feet)	UPRR Tracks (at 1,000 feet)	VIP Project		
Cancer Risk (per million)	0.99	3.47	1.65	2.38	8.49	14.4
$PM_{2.5}$ Annual Concentration (ug/m^3)	0.003	0.024	0.002	0.002	0.029	0.029

* Cancer risk includes the Age Sensitivity Factor (ASF)

SOURCE: ERM, 2014; see Appendix E.6

A screening-level cumulative risk analysis was also evaluated in the vicinity of the MEIR in Fairfield to estimate the combined exposure from the Project locomotives, existing locomotives using these tracks, and stationary sources of TACs within 1,000 feet of the MEIR. The BAAQMD Google Earth tool that displays the screening-level health risks and $PM_{2.5}$ concentrations from TAC sources in each county was used to obtain existing risk and concentrations data for sources in the vicinity of the MEIR (BAAQMD 2014). The stationary sources within 1,000 feet of the MEIR are described below:

- Commercial Business, 744 N. Texas Street;
- Commercial Business, 106 Railroad Avenue;
- Commercial Business, 110 Railroad Avenue;
- Commercial Business, 1350 N. Texas Street;
- Commercial Business, 890 E. Travis Boulevard; and
- Commercial Business, 409 Railroad Avenue, Suite B.

Though conservatively developed, the screening-level risk values can be compared to the modeled health risk and $PM_{2.5}$ concentrations from the locomotives to determine whether cumulative risk may be significant. The values shown in Table 5-3 below represent the modeled health risk with conservative screening risk levels imposed at that MEIR. The combined cumulative risks would be below 100 in one million for cancer and below the 0.8 ug/m^3 $PM_{2.5}$ concentration. Therefore, the incremental increase in risk and $PM_{2.5}$ concentrations that would be associated with the Project would not be cumulatively considerable at the MEIR. The cumulative impact would be less than significant.

TABLE 5-3
CUMULATIVE HEALTH RISK AT THE MAXIMUM EXPOSED INDIVIDUAL RECEPTOR

Type of Estimated Health Impact	Screening-level Cancer Risk per million (Location)	Screening-level PM2.5 Concentration (ug/m^3) (Location)
Maximum Exposed Individual Residential (MEIR) – Fairfield residential receptor	88.1 (Existing risk at 160 feet southeast of train tracks)	0.10 (Existing worst case Conc. at 160 feet southeast of train tracks)
	8.0 (Project incremental risk at 160 feet southeast of train tracks)	0.02 (Project worst case Conc. at 160 feet southeast of train tracks)
	88.0 (Cumulative risk at 160 feet southeast of train tracks)	0.12 (Cumulative worst case Conc. at 160 feet southeast of train tracks)
Significance Threshold	100	0.8 ug/m^3
Significant Impact?	No	No

SOURCE: ERM, 2014; see Appendix E.6

5.4.3.2 Biological Resources

The Project has potential impacts on biological resources in the Project area and along the railroad system between the Refinery and the City of Roseville. None of the impacts are significant in themselves.

As explained in Section 4.2, the Project would increase activity and nighttime lighting along a 0.7-mile (3,839 linear feet) stretch of Sulphur Springs Creek. A significant increase in activity and lighting in this area could potentially cause wildlife to avoid the corridor, travel on roads, and be harmed by traffic. The Project impact would not be significant because the lighting would be directed downward and away from the riparian corridor.

Other past, present, and future projects have and will increase activity and nighttime lighting along the riparian corridor, thus creating a cumulative impact. The Project's contribution to this impact, however, would not be cumulatively considerable. Even with a backdrop of heavy industrialization, the riparian corridor offers safe passage across Interstate 680 for animals moving between grasslands north of Second Street and shoreline marshes south/east of the Interstate. This is not expected to change even if activity and lighting were to increase as a result of projects identified in Table 5-1.

Along the railroad system, a state-wide increase in railcar traffic (frequency and/or duration) could result in a cumulatively considerable impact on biological resources. For example, the noise from a cumulatively significant increase in night traffic could drown out the nocturnal mating calls of marsh birds, or the noise and visual disturbance from a cumulatively significant increase in daytime traffic could discourage use of adjacent marshes by burrowing owls. A review of Table 5-1 suggests that other crude by rail projects in the State (WesPac Pittsburg Energy Infrastructure Project, Phillips 66 Company Rail Spur Extension Project, Alon Bakersfield Refinery Crude Flexibility Project) would increase railcar traffic along transportation systems serving those project areas, which may or may not overlap with the Project. Other relevant local projects (Shell Crude Tank Replacement Project, Shell Martinez Refinery Marine Terminal Lease, NuStar Selby Marine Terminal Lease) have the potential to increase railcar traffic in the future, and these may overlap geographically with the UPRR railroad mainline and spurs that UPRR could potentially use for the Project. The cumulative increase in railcar usage, however, would occur on existing mainline track where baseline usage is already the routine. Thus, the addition of Project-related railcars to the state-wide network would not involve a cumulatively considerable contribution to the impact on biological resources.

Lastly, regarding the cumulative potential for an oil spill during transport of crude oil, a region-wide increase in all types of vessel traffic (frequency and/or duration of ships, railcars, etc.), along with an increased number of conveyance pipelines planned under regional projects such as the Air Products Local Area Pipeline Network Project and the Praxair Contra Costa Pipeline Project, would increase the overall likelihood of a spill in the region. This could occur anywhere along a marine vessel route, a pipeline route, or a rail line route, though aquatic environments such as Suisun Marsh and San Francisco Bay are especially vulnerable locations for a spill. A spill would only occur under circumstances of an upset or accident, and the probability of

occurrence of any single event is small (see Section 4.7, *Hazards and Hazardous Materials*, for additional information); the probability of two or more events occurring at the same time (from the Project and another cumulative project) is even smaller. This potential is even further reduced by the fact that the current Project, and other similar projects, would switch modes of transportation from ship to railcar; thus, there wouldn't be an increase in traffic, just a switch in mode of transport. The switch from ship transport through the aquatic environment to railroad transport through the terrestrial environment may arguably reduce the likelihood for a spill, and/or reduce the environmental impacts resulting from a spill by being easier to contain and clean up in a terrestrial or diked, semi-vegetated marshland.

5.4.3.3 Cultural Resources

The construction and operation of the Project would result in no impacts to cultural resources or to lands designated for such use. Thus, the Project could not contribute to cumulative impacts to cultural resources that could be caused by implementation of other Refinery and non-Refinery projects. There would be no cumulative impacts to cultural resources as a result of the Project.

5.4.3.4 Energy Conservation

The construction and the operation of the Project, in addition to other cumulative Refinery projects and other non-Refinery cumulative development in the Project area, would not result in any cumulative impacts to energy resources. The energy required for the construction and operation of the Project would be a less-than-significant portion of the regional energy supplies, and would not place significant demands on the regional energy infrastructure. The Project does not involve construction of major new energy facilities off-site, or of facilities that would stimulate the Bay Area's economy, resulting in a cumulative increase in energy use. The construction and the operation of the Project, in addition to other cumulative refinery projects and other non-refinery cumulative development, would not result in any known cumulative impacts to energy.

5.4.3.5 Geology and Soils

The San Francisco Bay Area is within a seismically active region with a wide range of geologic and soil conditions. Impacts associated with geology and soils tend to be limited to individual project sites and the areas immediately adjacent. Projects from the cumulative projects table relevant to the cumulative analysis relating to geology and soils (Table 5-1) include the Valero Improvement Project and those projects immediately adjacent to the Project site. The combination of the Project and these projects on site and immediately adjacent constitutes the list of cumulative projects for Geology and Soils.

The Project, combined with the above-referenced cumulative projects, would not result in an increased population in an area subject to seismic risks and hazards. Additionally, any new project, including the Project, would be required to meet building code requirements that address the various seismic and geologic hazards present in the Bay Area region, which would reduce cumulative impacts related to geology, soils, and seismicity. Development projects are required to

meet the most recent geologic and seismic standards. Generally, compliance with applicable building and other codes, as would be required for all present and future cumulative projects, would reduce the potential for cumulative impacts.

Construction and operation of the various Project components, combined with past, present, and other foreseeable improvements within the Refinery property and development in the area, would adhere to current building code and other regulatory requirements and would not therefore result in a cumulatively significant impact related to exposing people or structures to risk related to geologic hazards, soils, and/or seismic conditions. No mitigation is required.

5.4.3.6 Greenhouse Gas Emissions

Both the BAAQMD and the California Air Pollution Control Officers Association (CAPCOA) consider greenhouse gas (GHG) emissions impacts to be exclusively cumulative impacts (BAAQMD, 2012; CAPCOA, 2008); as such, assessment of significance is based on a determination of whether the GHG emissions from a project represent a cumulatively considerable contribution to the global atmosphere. The Project would result in a net increase of 6,726 metric tons carbon dioxide equivalents (CO_2e) per year within the State of California (see Section 4.6.5). Therefore, when compared to the City's significance threshold of 10,000 metric tons CO_2e, the Project's contribution to GHG impacts would not be cumulatively considerable, and there would not be a significant cumulative impact associated with the Project.

5.4.3.7 Hazards and Hazardous Materials

As discussed in Section 4.7.6, routine operations of the Project, potential upsets, or accidents during transport of crude by rail would not result in any significant impacts associated with hazards or hazardous materials due to regulatory measures and the low probability of potential accidents (see Section 4.7, *Hazards and Hazardous Materials*, for additional information). For the Project to make a cumulatively considerable contribution to the impact of hazards, two or more events (from the Project and another cumulative project) would have to occur at the same time and affect the same places. The likelihood of such a cumulative accident event would be even smaller than the estimated low probability of a Project-related accident and spill. The impact of such a cumulative event would be less-than-significant. See also Section 5.4.3.1, *Air Quality*, above for additional discussion of cumulative health risk.

5.4.3.8 Hydrology and Water Quality

The geographic area for the analysis of cumulative hydrology and water quality and water quality impacts is the Lake Herman/Sulphur Springs Creek watershed, particularly the urbanized southern portion of the watershed in the vicinity of the Project, which drains into Suisun Bay. The cumulative analysis considers the relevant past, present, and probable future projects listed in Table 5-1 with regards to the cumulative geographic area.

Several other recent, current, and foreseeable future projects are located within the Refinery site, in the urbanized portion of the watershed, and along the margin of Suisun Bay and Carquinez Straits. The watershed in the vicinity of the Project outside of Refinery property has been

urbanized and no longer reflects historic conditions in terms of stormwater quality, volume, and drainage. The majority of the surfaces within the Refinery, including most locations affected by the Project, are covered with impervious surfaces and as a result, stormwater runoff is generally rapid and surface infiltration rates are very low. Stormwater flows in the portion of the watershed adjacent to the Project are generated as runoff from paved surfaces and drain down gradient into stormwater conveyance systems and can contain pollutants typical of urbanized watersheds. Sulphur Springs Creek in the vicinity of the Project has been channelized to provide flood protection and convey stormflows to Suisun Bay.

Concurrent construction of the Project and other projects in the cumulative geographic area could result in increased erosion of exposed soils during land disturbing activities and subsequent sedimentation, which could have a cumulative effect on the water quality of receiving waters. Also, any inadvertent release of fuels or other hazardous materials during concurrent construction of projects could affect the water quality in the stream channels or storm drains that eventually flow into Suisun Bay and Carquinez Straits. As described under Impact 4.8-1 in Section 4.8.5, the applicant would minimize Project impacts relating to construction water quality by complying with the Valero SWPPP (RWQCB, 2013) for the Refinery property, applicable water quality regulations, and implementing a stormwater management plan employing best management practices (BMPs), and practicing control measures to manage and reduce erosion, stormwater runoff, and sedimentation downstream (Mitigation Measure 4.8-1). Adherence to these requirements would reduce potential cumulative impacts associated with stormwater runoff and water quality associated with construction of the Project.

Operation of the Project would not represent a substantial land use change within the watershed compared to current conditions at the site and in the surrounding area. The Project site is currently paved with impervious surfaces and storm runoff generated at the Project site would be similar to the existing runoff on-site. Stormwater runoff would continue to be managed as required by the Refinery NPDES Permit. The stormwater outfalls are permitted under the Refinery NPDES permit, which sets stormwater outfall discharge limits. The NPDES discharge requirements, established by the RWQCB, are themselves measures based on consideration of cumulative effect. The Project in combination with other projects at neighboring refineries and the non-refinery projects in the geographic area for the analysis of cumulative impacts have effluent discharges that contribute pollutants to Suisun Bay and the Carquinez Straits. Although other projects listed in Table 5-1 that are located along the waterfront could also involve similar activities that could affect water quality in Suisun Bay or Carquinez Straits, the Project's contribution to this cumulative impact would not be cumulatively considerable with compliance with existing regulations.

The Project would not result in adverse effects related to stormwater drainage and erosion, flooding, tsunami inundation, and would therefore not contribute to cumulative impacts related to these topics. Given the measures taken to reduce and avoid hydrologic and water quality impacts related to construction and operation of the Project, the Project would not be expected to make a considerable contribution toward any cumulative water quality or hydrology related impacts and there would be no cumulative impact associated with the Project. No mitigation is required.

5.4.3.9 Land Use and Planning

The construction and operation of the Project, in addition to other Refinery projects and other non-refinery development, would not result in cumulative impacts to land use. Development and its cumulative effects are considered in the *City of Benicia General Plan* (1999). As discussed in Impact 4.9-1, the Project would be consistent with the adopted General Plan and its applicable land use designations and policies adopted for the purpose of avoiding or mitigating environmental effects. The Project would not contribute to cumulative land use changes in the City of Benicia because the Project would not result in any change to existing land use or conflict with adopted plans at the Project site or surrounding area.

Cumulative impacts related to conflicts with BAAQMD and RWQCB regional plans for air quality and water quality are analyzed in Sections 5.4.3.1 and 5.4.3.8, respectively, above. The Project's contribution to those impacts would not be cumulatively considerable. No mitigation is required.

5.4.3.10 Noise

As described above, the VIP was completed in 2011 except for construction and operation of a replacement hydrogen plant. However, the Refinery has sufficient hydrogen now to process the wide range of crudes that it now uses and Valero is in the process of determining whether or not to implement this approved project. If implemented, this hydrogen plant could result in noise levels that could combine with those of the Project to result in a cumulative noise impact. According to the Draft EIR for the VIP, noise producing equipment that would be associated with the alkylation unit modifications and the selective hydrogeneration facilities would produce steady equipment noise levels of less than 30 dBA at the nearest residential receptors (City of Benicia, 2002). When combined with the loudest noise levels that would be associated with the Project (train horn soundings), the hourly L_{eq} associated with the hydrogen plant would not incrementally add to the train horn hourly L_{eq} of approximately 40 dBA, and would not exceed the City's nighttime hourly L_{eq} limit of 50 dBA. The existing average hourly L_{eq} noise levels for day, evening, and nighttime hours at the nearest residences to the Project site range between 51 dBA and 56 dBA, so the combined noise levels should not contribute to an adverse cumulative impact.

Other cumulative projects at the Refinery, including the Maintenance Dredging at Valero Refinery Crude Dock project, and the Refinery NPDES Permit Reissuance project are ongoing and part of the baseline for the Project. The other cumulative projects listed in Table 5-1 would occur more than a mile away from the Refinery and would not be a concern for cumulative noise impacts. There are no other approved or Projects at the Refinery or in the vicinity of the Refinery that would lead to cumulative noise impacts along with the Project. Therefore, the Project's less-than-significant individual noise impacts would not be cumulatively considerable, and would result in a less-than-significant cumulative impact.

5.4.3.11 Transportation and Traffic

A 1.5 percent per year growth rate was applied to existing traffic volumes, which is similar to the 1.6 percent per year rate used in the *Benicia Business Park EIR* for the period between 2006 and 2030. It is noted that according to 2006 and 2013 count data collected at the intersection of Park Road / Bayshore Road, traffic volumes have not increased during the seven-year period, potentially due to the recent economic downturn.

Under cumulative volume conditions, vehicle queues associated with the 50-railcar crossing again would extend back onto the northbound I-680 off-ramp, but not onto the I-680 mainline. Queues also would extend back to the Park Road / Refinery Driveway, but would not reach Industrial Way. Traffic volumes in the evenings and late nights are much lower within the study area compared to the peak traffic periods. During the 9:00 – 10:00 PM hour, the resulting queues during a train crossing would be no longer than five vehicles. Although the proposed 50-railcar train crossing would block Park Road for over 8 minutes, the resulting queues would be contained within the provided intersection storage capacity at Park Road / Bayshore Road during the 9:00 – 10:00 PM hour.

Project train crossings occurring during the 9:00 AM – 7:00 PM period would generate queues on the west side of the tracks that would extend back onto Bayshore Road and affect the operations of the I-680 ramp-terminal intersections, but would not extend back onto the I-680 mainline. Queues on the east side of the tracks would generally be contained within the Park Road segment between the tracks and Industrial Way, affecting access to and from Refinery driveways and the U-Store-It driveway. The segment of Park Road between the at-grade railroad crossing and Industrial Way provides a two-way left-turn lane (TWLTL), and because the great majority of westbound traffic approaching Bayshore Road on Park Road turns left, those drivers would be expected to use the TWLTL as a queue storage lane, and other westbound drivers would use the through lane as a means to turn right into the Refinery (or as a queue storage lane if they intend to go straight on Park Road or to turn right onto Bayshore Road).

If the proposed train crossings occur during the 7:00 PM – 6:00 AM period, resulting queues on the west side and east side of the tracks would not exceed the provided storage capacity, and would not extend back and affect the operations of other study intersections.

The change in average vehicle delay at the Park Road crossing associated with the 8.3-minute duration when the Project's trains could block traffic at that crossing would increase the average vehicle delay in an hour by about 0.8 second, which is less than the one-second threshold of significance when the train crossing currently operates at LOS F. The Project impacts would be less than cumulatively significant.

5.5 Effects Found Not to Be Significant

The environmental effects of the Project are identified and discussed in detail in Chapter 4 and in the Initial Study / Mitigated Negative Declaration, included as Appendix A. All identified environmental effects of the Project would be less than significant, or less than significant after

implementation of the identified mitigation measures. The Initial Study and EIR further conclude that the Project would not have any effects in the following environmental areas:

- Agricultural and Forest Resources
- Mineral Resources

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