DOCKETED	
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Project Title:	Pecho Energy Storage Center
TN #:	240712-10
Document Title:	Pecho Energy Center's Application for Certification - Traffic and Transportation
Description:	N/A
Filer:	Chester Hong
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Submitter Role:	Applicant Consultant
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Docketed Date:	11/23/2021

5.12 Traffic and Transportation

This chapter describes the potential effects of the Pecho Energy Storage Center (PESC) on traffic and transportation. The analysis is organized into sections as follows:

Section 5.12.1 describes the transportation facilities in the vicinity of the project that might be affected by the project. This includes descriptions of roads, public transportation, rail, air, bicycle, and pedestrian facilities.

Section 5.12.2 describes the potential effects of the project on local traffic conditions, and conditions for non-auto modes. This section concentrates on the project's impact during the month during construction when the project will have its greatest impacts on traffic and transportation.

Section 5.12.3 describes the cumulative transportation effects of the project once construction is complete, and the project is in full operation.

Section 5.12.4 describes measures that would mitigate the project's transportation impacts.

Section 5.12.5 describes applicable laws, ordinances, regulations, and standards (LORS).

Section 5.12.6 provides a list of the applicable regulatory agencies and contacts.

Section 5.12-7 discusses traffic and transportation permits required.

Section 5.12.8 lists the references used to prepare this section.

5.12.1 Affected Environment

The Pecho Energy Storage Center PESC will be a 400-megawatt advanced compressed air energy storage facility (A-CAES). The project would have air compression and power generation equipment above ground and caverns below ground where compressed air would be stored. Compression would be maintained using pressure from a 500-acre-foot water reservoir. The project will be connected to the regional power grid in Morro Bay via a 3.8-mile long 230-kilovolt (kV) transmission line.

PESC will be located on a approximately 80-acre site in unincorporated San Luis Obispo County between the city of San Luis Obispo to the east, the city of Morro Bay to the west, and the unincorporated community of Baywood-Los Osos to the south (see ***Figure 5.12-1***). Camp San Luis Obispo, used by the California National Guard, is 4.2 miles to the east, as is Cuesta College, a community college establish on part of Camp San Luis Obispo.

The site is bounded by State Route 1 (SR 1) to the north, Morro Bay State Park to the south, and small private farms to the east and west. Primary access to the site is the corner formed by the south end of San Bernardino Creek Road and the east end of Quintana Road. Additionally, there is a second access point via San Luisito Creek Road, which has an undercrossing of SR 1, and Adobe Road. However, both of these are private, low-capacity farm roads and will not be used for project traffic.

Construction activities are expected to last 51 months, which can be divided into four types of activities, namely:

1) Site clearing and preparation (months 1 through 4)

2) Excavation and lining of shafts (month 5 through month 18)

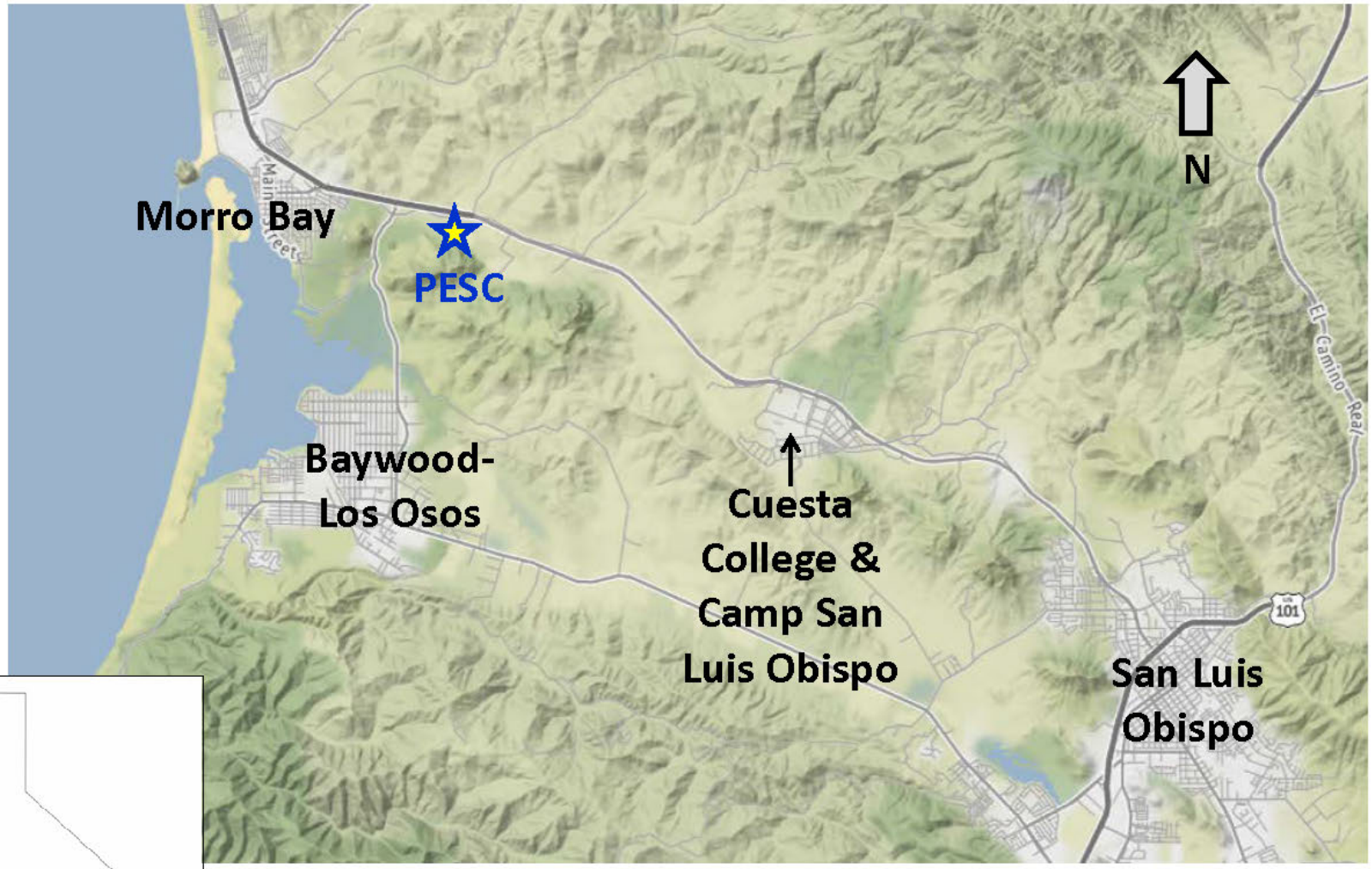

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Figure 5.12-1: Project Location

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3) Construction of surface works (months 13 through 36)

4) Excavation of the caverns (months 19-51)

As will be discussed in a later subsection, the project's peak traffic month will occur in month 15, when trucks delivering construction material for the surface works will overlap with trucks delivering shaft liners and a large labor force will be working on the shafts and surface works simultaneously. All project-related parking areas will be on-site.

5.12.1.1 Existing Regional and Local Transportation Facilities

Figure 5.12-2 shows the major regional transportation facilities. The key facilities for this analysis are presented in the following sections.

State Route 1: State Route 1 (SR 1) is a major north-south highway that runs parallel to the Pacific coastline for 656 miles, from its southern terminus near Dana Point in Orange County to its northern terminus near Leggett in Mendocino County. The section of SR 1 in San Luis Obispo County adjacent to the project is also known as the Cabrillo Highway. From the boundary of the City of San Luis Obispo northward to the county boundary, including the section adjacent to the project site, SR 1 is designated as the San Luis Obispo North Coast Scenic Byway[1], one of the Federal Highway Administration's All-American Roads[2]. This section of roadway is not part of the National Highway Network and is not a designated oversized truck route. Adjacent to and east of the project site SR 1 operates as a 4-lane expressway with turn pockets at intersections, such as those at San Bernardino Creek Road. West of the site the expressway transitions to a 4-lane grade-separated freeway through Morro Bay. It is listed in the county General Plan as a Principal Arterial.

South Bay Boulevard: South Bay Boulevard is a minor arterial with one lane in each direction running in a north-south direction between Los Osos and SR 1 in Morro Bay. South Bay Boulevard's interchange with SR 1 is within the City of Morro Bay. It is listed as a Minor Arterial in the City of Morro Bay's General Plan[3].

Quintana Road: Quintana Road is an east-west major collector in Morro Bay with two travel lanes. It runs parallel to SR 1 and allows access to the residential and commercial areas from the highway**.** It is listed as a local road in the City of Morro Bay's General Plan.

U.S. Route 101: U.S. Route 101 (US 101) is a major north-south highway that runs through the states of California, Oregon, and Washington. US 101 is also known as El Camino Real. U.S. Route 101 at certain points merge with SR 1. US 101 is nearly 1,550 miles long. The northern terminus is in Tumwater Washington, and the southern terminus is in Los Angeles California at the East Los Angeles Interchange. US-101 is listed as a Principal Arterial in the county's General Plan.

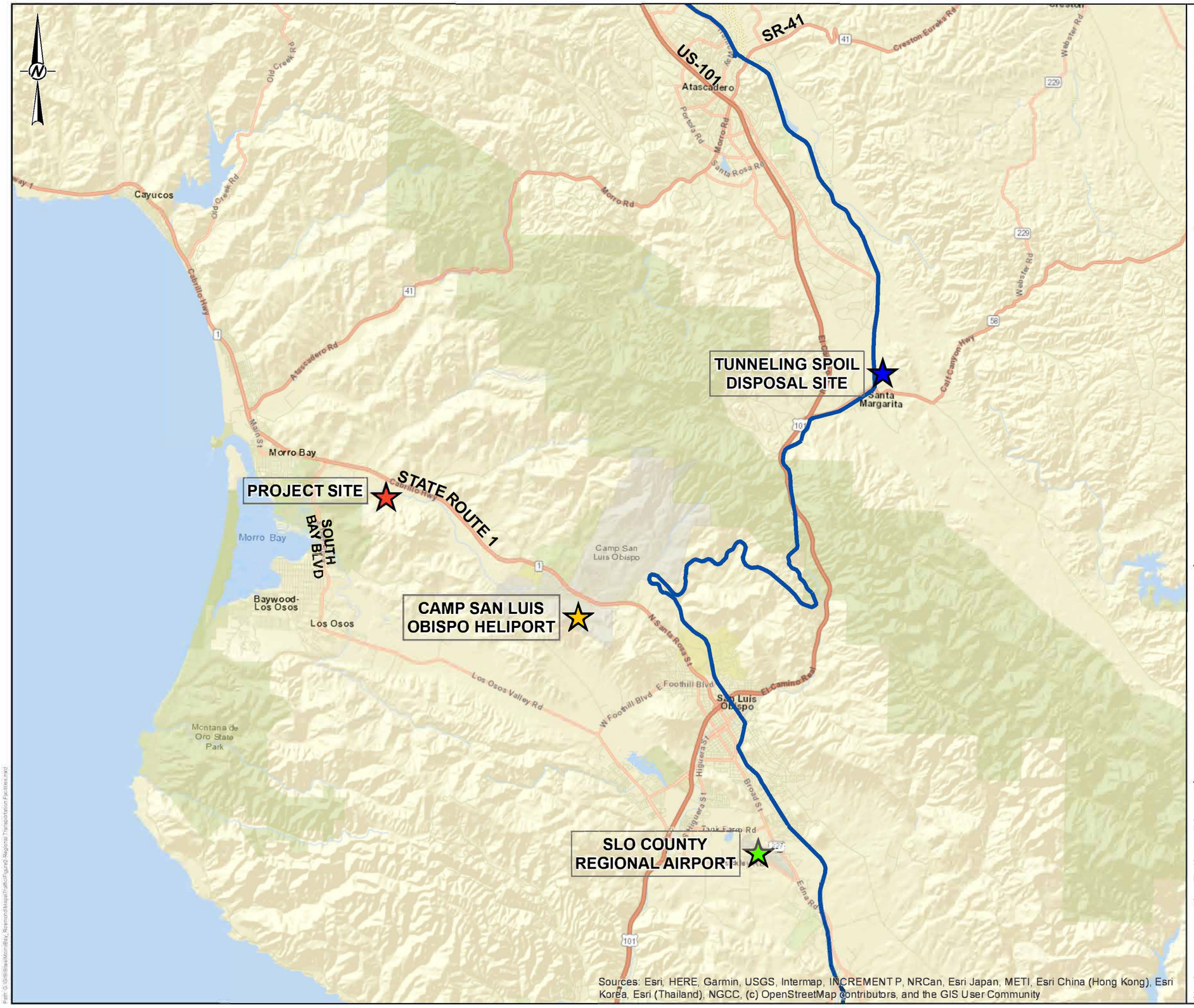
State Route 41: SR 41 is a state highway with a northeast/southwest orientation running 185 miles between SR 1 in Morro Bay to SR 140 in Yosemite National Park. It is a 2-lane rural highway for most

[1] See https://scenicbyways.info/byway/2475.html

[2] See https://www.fhwa.dot.gov/byways/byways/2475

[3] See https://www.morrobayca.gov/DocumentCenter/View/15424/Plan-Morro-Bay-GP-LCP-Final

of its length but turns into a multi-lane freeway for the section passing through the city of Fresno. It is listed in the county General Plan as a Principal Arterial.



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

LEGEND

- CAMP SAN LUIS OBISPO HELIPORT
- PROJECT SITE
- SLO COUNTY REGIONAL
- TUNNELING SPOIL DISPOSAL SITE
- UNION PACIFIC RAILROAD

NOTES

-

0 2 Miles

REFERENCE

COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET

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TITLE
REGIONAL TRANSPORTATION FACILITIES

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YYYY-MM-DD	2021-10-19
PREPARED	MR
DESIGN	MR
REVIEW	JB
APPROVED	RPCE

PROJECT No.	CONTROL	Rev.	FIGURE
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5.12.1.2 Existing Traffic Conditions and Level of Service Analysis

Traffic analyses typically compare Plus Project conditions to Existing Conditions. However, in this case, "pre-project" rather than "existing" volumes may be a more accurate description, for several reasons. The first is that the current COVID-19 pandemic has disrupted traffic patterns to such an extent that traffic counts done under true existing conditions may not be representative of the conditions that will prevail when the project is under construction or in operation. We, therefore, chose to use the most recent available counts that were prepared before the pandemic which, because they are higher than existing volumes, represent a conservative case for this study. Additionally, a wastewater reclamation facility is expected to be constructed on South Bay Boulevard north of SR 1 (see Figure 5.12-1) and open before the start of the construction of PESC. The traffic that is expected to be generated by this facility when in operation was therefore added to the pre-project traffic volumes.

5.12.1.2.1 Existing Roadway Conditions

Traffic conditions on roadways are measured in terms of level of service (LOS), which describe operational conditions within a traffic stream and reflect speed, freedom to maneuver, traffic interruptions, and comfort and convenience. Six LOS are defined for each type of facility, ranging from "A" for the best-operating conditions to "F" for the worst, based on a driver's perceptions of those conditions. The LOS thresholds for each LOS level are provided in *Planning and Preliminary Engineering Applications Guide to the Highway Capacity Manual*[4] and are described in Table 5.12-1.

Table 5.12-1: Level of Service Thresholds for Roadway Segments

Roadway Type	Category	Terrain	LOS A-C	LOS D	LOS E
Freeway (4 lanes)	Urban	Level	57,600	70,000	79,600
	Urban	Rolling	54,800	66,800	76,000
	Rural	Level	48,400	59,200	67,200
	Rural	Rolling	44,000	53,600	60,800
Multi-Lane Highway (4 lanes)	Urban	Level	50,400	62,800	71,600
	Urban	Rolling	47,200	58,400	66,800
	Rural	Level	40,800	50,400	57,600
	Rural	Rolling	36,800	45,600	52,000
2-Lane Highway	Class I	Level	7,300	12,500	24,900
	Class I	Rolling	5,600	11,500	24,100
	Class II	Rolling	7,100	13,100	24,900

The expected paths that project-related traffic may take to and from the project site are shown in ***Figure 5.12-3***. Based on these paths, four intersections were selected for study. In addition, five roadway segments that may be affected by the project were also selected for study, namely:

[4] https://www.nap.edu/download/23632

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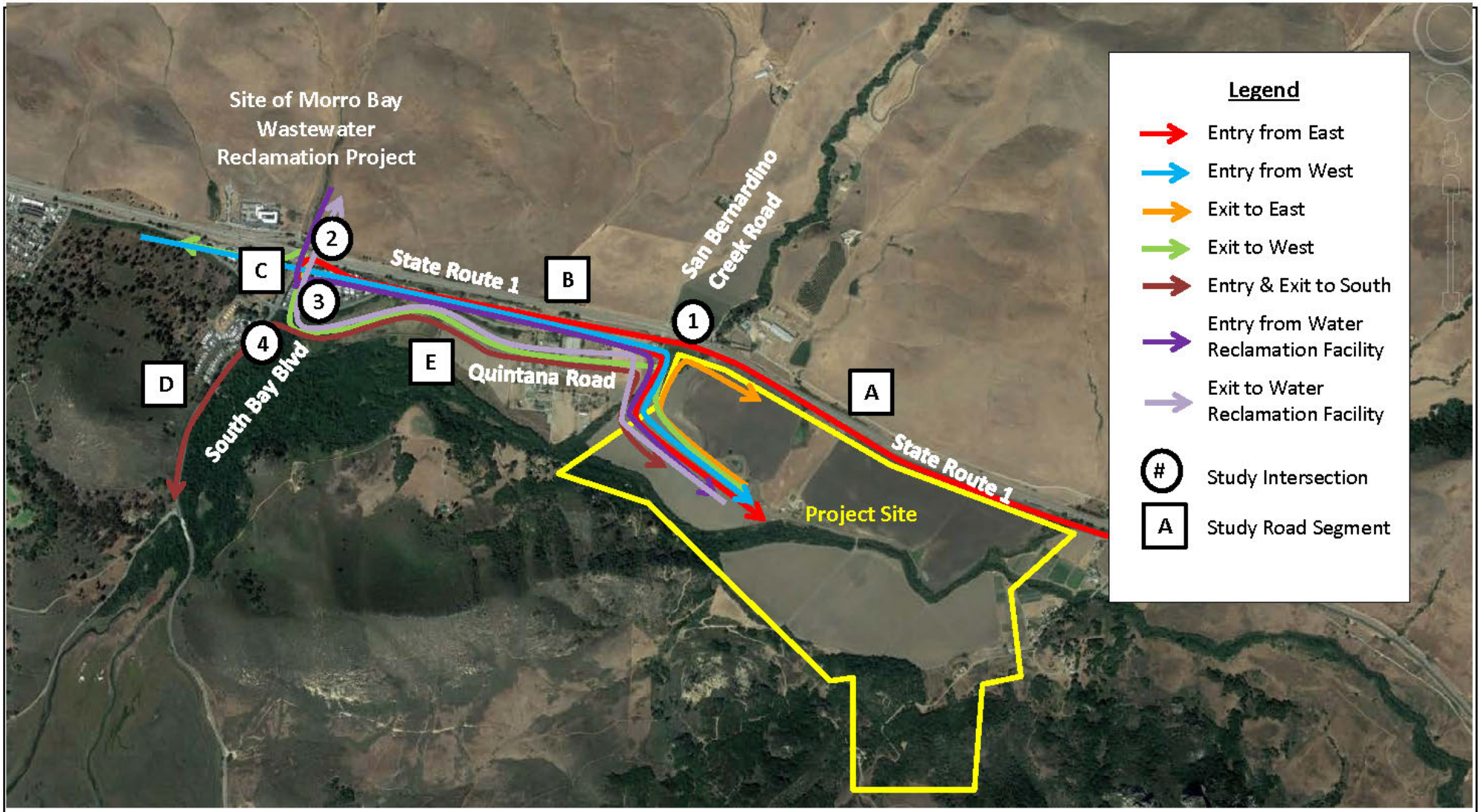

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Figure 5.12-3 Paths to and from Project Site

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A) SR 1 between San Bernardino Creek Road and South Bay Boulevard. This road is under Caltrans' jurisdiction and would be considered a "Multi-Lane Highway, Rural, Level" in the classification system shown in Table 5.12-1.

B) SR 1 between South Bay Boulevard and Morro Bay Boulevard. This road is under Caltrans' jurisdiction and would be considered "Freeway, Rural, Rolling" in the classification system shown in Table 5.12-1.

C) South Bay Boulevard between the SR 1 north/westbound ramps and the SR 1 south/eastbound ramps. This roadway is under the jurisdiction of the City of Morro Bay and would be considered "2-Lane Highway, Class II, Rolling" in the classification system shown in Table 5.12-1.

D) South Bay Boulevard between the SR 1 south/eastbound ramps and Park View Road. This roadway is under the jurisdiction of the City of Morro Bay and would be considered "2-Lane Highway, Class II, Rolling" in the classification system shown in Table 5.12-1.

E) Quintana Road between Intersections 4 and 1. This roadway is under the jurisdiction of the City of Morro Bay at the western end of the segment and the County of San Luis Obispo at the eastern end. It would be considered "2-Lane Highway, Class II, Rolling" in the classification system shown in Table 5.12-1.

Pre-project conditions on these roadways are described in Table 5.12-2 based on their capacity and average daily traffic (ADT). South Bay Boulevard operates at LOS "E", which is worse than the target LOS of "D".

Table 5.12-2: Existing Conditions for Study Roadway Segments

Roadway		Section	ADT	LOS
A	State Route 1	Between South Bay Boulevard and San Bernardino Creek Road	13,400	C or Better
B	State Route 1	Between Morro Bay Boulevard and South Bay Boulevard	26,000	C or Better
C	South Bay Boulevard	Between SR 1 North/ Westbound ramps and SR 1 South/ Eastbound ramps	14,566	**E**
D	South Bay Boulevard	Between SR 1 South/ Eastbound ramps and Park View Road	14,566	**E**
E	Quintana Road	Between South Bay Boulevard and San Bernardino Creek Road	297	C or Better

ADT = average daily traffic flow; LOS = level of service

5.12.1.2.2 Existing Intersection Conditions

Traffic conditions at two-way stop-controlled (TWSC) intersections, such as those in this study, are also described using LOS but instead of the volume to capacity ratio (V/C) the metric used is the average delay for vehicles in the worst-performing approach. The Highway Capacity Manual (HCM) thresholds for intersections are shown in ***Table 5.12-3***.

Table 5.12-3: LOS Thresholds for Intersections

Level of Service	Description	Average Control Delay (seconds/vehicle)	
		Signalized	Unsignalized & Roundabouts
A	Volume-to-capacity ratio is low and either the progression is exceptionally favorable or the cycle length is short. If due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.	≤ 10	≤ 10
B	Volume-to-capacity ratio is low and either the progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.	> 10 to 20	> 10 to 15
C	Progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	> 20 to 35	> 15 to 25
D	Volume-to-capacity ratio is high and either progression is ineffective, or cycle length is long. Most vehicles stop and individual cycle failures are noticeable.	> 35 to 55	> 25 to 35
E	Volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	> 55 to 80	> 35 to 50
F	Volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	> 80	> 50

Note(s):

The description is taken from the TRB 2016 chapter on signalized intersections. For signalized intersections and roundabouts, the LOS is based on the average for all vehicles entering the intersection. For unsignalized intersections, the LOS is based on the delay for the worst-performing movement.

Source: *TRB 2016*

Figure 5.12-4 shows peak hour turning movements at the study intersections under pre-project conditions during the AM and PM timeframe. The derivation of the turning movement volumes shown in ***Figure 5.12-4*** is as follows:

Intersection 1, San Bernardo Creek Road/SR 1: For the north leg of the intersection the data source was traffic counts for San Bernardino Creek Road done in 2016 by San Luis Obispo County[5]. The counts were total volumes only; no turning movements. County counts were also used for the south leg of the intersection, with the most recent counts being the Quintana Road counts from 2012. For

[5] See: https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Transportation/Traffic-Count-Data.pdf

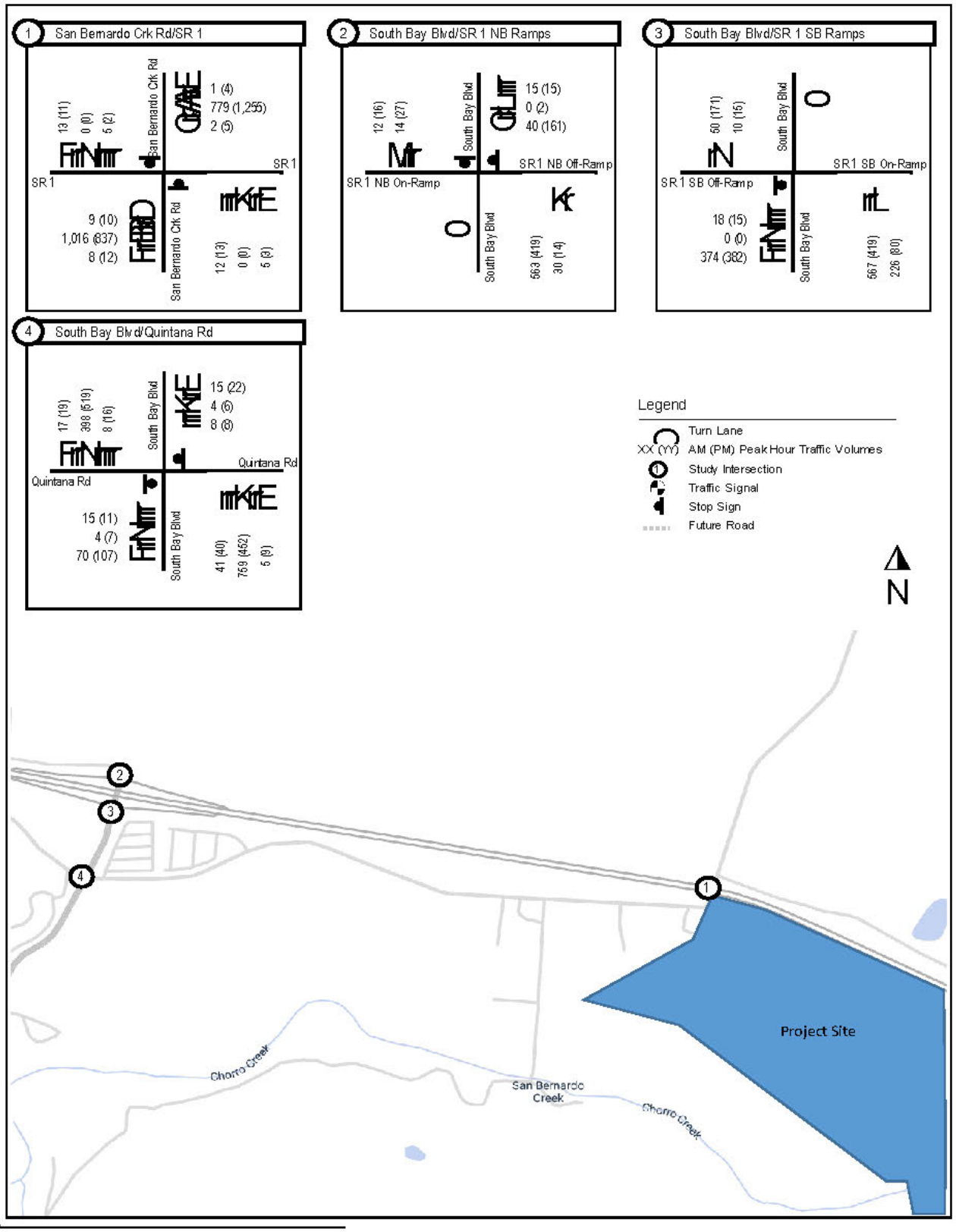

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Figure 5.12-4: Pre-Project Volumes at Study Intersections

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both the north and south legs of the intersection a conservative assumption was made that all side street volumes are exiting in the morning and entering in the evening. The east and west turning movements were assumed to follow the directional split on SR 1, which is predominantly eastbound in the morning and westbound in the evening.

For SR 1 the source was Caltrans' traffic census counter at the South Bay Boulevard Interchange (station 52710) for January 2016.

Intersection 2, South Bay Blvd/SR 1 NB Ramps: The most recent pre-COVID-19 counts for this intersection come from the Draft EIR for the Morro Bay Water Reclamation Facility[6]. The counts were taken in February 2018. This facility is under construction and work is expected to be completed in 2023. Since this project will already be operational when the PESC is under construction, the turning movement volumes include the reclamation project's operational traffic.

Intersection 3, South Bay Blvd/SR 1 SB Ramps: Same as Intersection 2.

Intersection 4, South Bay Blvd/Quintana Road: Same as Intersection 2.

Table 5.12-4 shows the pre-project level of service at the study intersections[7]. In the AM peak hour, Intersections 1 and 4 would not meet the County's LOS standard. In the PM peak hour, all four existing study intersections would meet the LOS standard.

Table 5.12-4: Existing Level of Service at Study Intersections

ID	Intersection Name	Control Type[2]	Target LOS	AM Peak Hour		PM Peak Hour	
				Delay or V/C	LOS[1]	Delay or V/C	LOS
1	San Bernardo Crk Rd/SR 1	TWSC	C	63.8	**F**	89.0	**F**
2	South Bay Blvd/SR 1 NB Ramps	TWSC[3]	C	14.4	B	11.1	B
3	South Bay Blvd/SR 1 SB Ramps	TWSC	C	18.8	C	14.4	B
4	South Bay Blvd/Quintana Road	TWSC	D	85.5	**F**	34.7	D

Note(s):

1) Intersections that operate below the LOS standard are shaded.

2) "TWSC" indicates two-way stop control, meaning that the traffic on the main road is unimpeded while traffic on the side streets is controlled by stop signs.

3) The configuration of this intersection cannot be assessed in Synchro, so SimTraffic was used instead.

LOS = level of service; TWSC = two-way stop-controlled; V/C = volume to capacity ratio

5.12.1.3 Truck Routes – Weight and Load Limitations

The construction of the PESC will involve several different types of cargo that will travel to or from the site by truck. These are:

- **Construction Material:** Large and heavy components for PERC will be transported to the site by truck. These loads are expected to originate primarily from the greater Los Angeles area, including

[6] See: http://www.morrobayca.gov/DocumentCenter/View/11684/WRF-Draft-EIR---All-Chapters-Combined

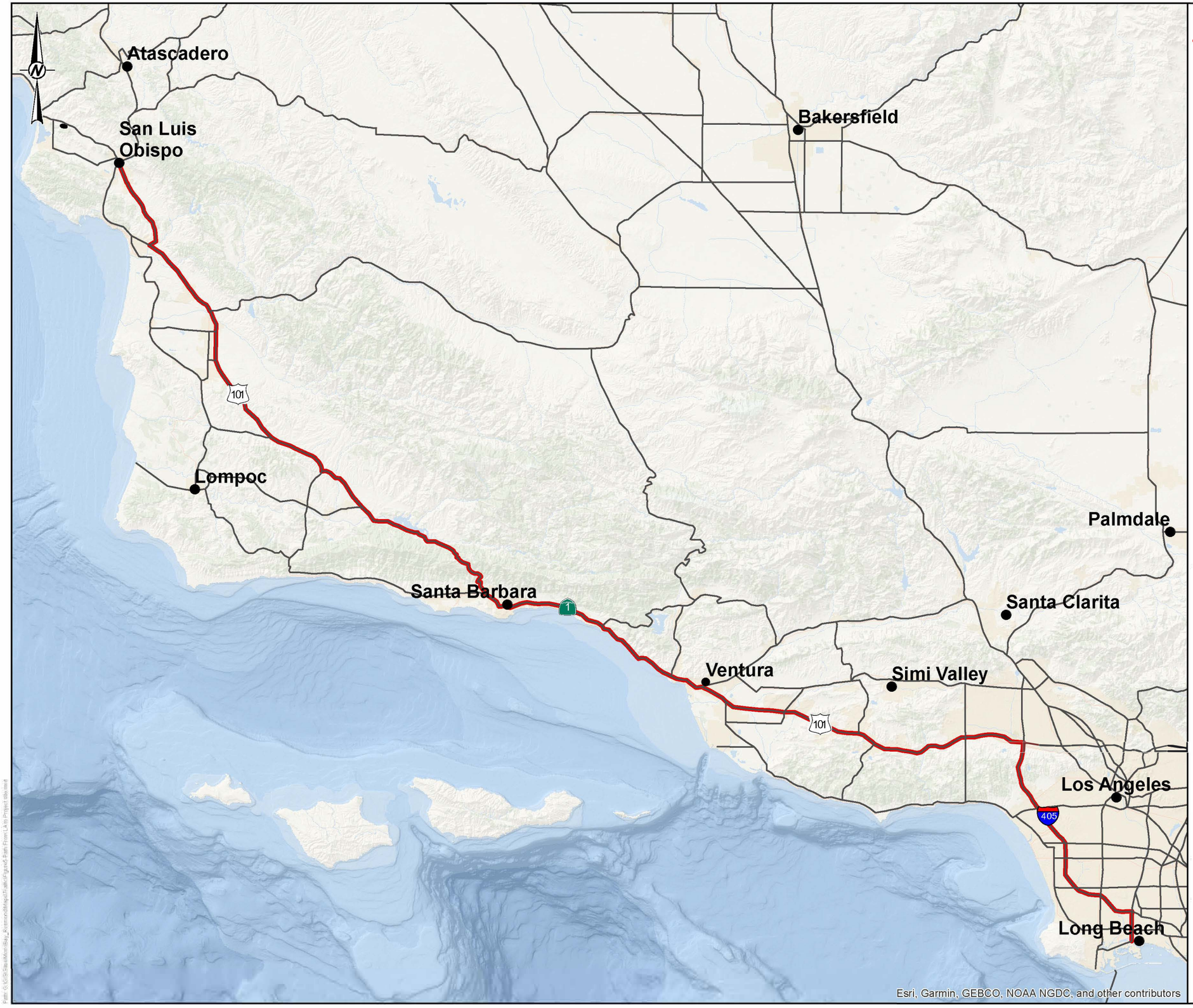
[7] For details of this analysis see the Synchro reports in Appendix 5.12 A.

several shipments that will arrive at the Ports of Los Angeles and Long Beach. The path to be taken by these cargos would be via I-710, I-405, US-101, and then to SR 1 at San Luis Obispo and west to the project site. This path is shown in ***Figure 5.12-5***. A lesser amount is expected to be shipped from the Bay Area, particularly the Port of Oakland. Their route would be I-880 to US-101, and then to SR 1 at San Luis Obispo and west to the project site. This path is shown in ***Figure 5.12-6***. These routes, except for the section of SR 1 between San Luis Obispo and the project site, are Surface Transportation Assistance Act (STAA) "Green" routes[8], meaning that they are designed to accommodate large trucks. SR 1 is a "Blue" route, meaning that STAA trucks may use the route if their origin or destination is on the route, as will be the case for cargos to and from the project site.

- **Non-Potable Water:** The PESC will use large amounts of non-potable water during construction and while filling the reservoir used to maintain pressure on the compressed air in the caverns. It is assumed that half of this water would come from on-site groundwater wells while the rest is expected to come from the City of Morro Bay Water Reclamation Facility, located north of the SR 1/South Bay Boulevard interchange (see ***Figure 5.12-3***). This facility is currently under construction and is expected to be operational by 2023. Water trucks will travel to the PESC project site from the reclamation facility south along South Bay Boulevard and the east on SR 1. On the return trip to the reclamation facility trucks will travel west on Quintana Road and then north on South Bay Boulevard.
- **Tunneling Spoil:** Approximately 1.1 million cubic yards of rock will be excavated to construct the compressed air storage caverns. It is anticipated that half of this rock will be used on-site to construct the containment structure for the reservoir. The other half of the rock will be moved by truck to the Lehigh Hanson quarry in Santa Margarita (see ***Figure 5.12-2***) where it will be converted into aggregate for sale. Trucks carrying the spoil will travel east on SR 1 then north on US-101 and east on SR-58 to the entrance to the quarry. The section of SR-58 from J Street in Santa Margarita to the quarry entrance is a kingpin to rear axle (KPRA) advisory route with a 30-foot maximum KPRA.
- **Transmission Line Construction:** In addition to going to and from the main project site, some project-related vehicles will travel to additional sites along the transmission line between PESC and the PG&E substation in Morro Bay. The alignment of the transmission line is not yet determined (see Figure 5.12-7). Regardless of the selected alignment, construction vehicles are assumed to travel from their origin via SR 1 and exit to the north or south portions of the line. It is assumed that vehicles will use existing service roads to install new transmission line.

California Vehicle Code (CVC) Sections 35550–35559 regulates the use of trucks on state facilities, including SR 1, SR-58, and US 101 (see Section 5.12.5.2). The City of Morro Bay regulates the use of trucks on city roadways. Transportation permits will be obtained for all heavy and oversize loads, as required by each agency.

[8] See https://dot.ca.gov/programs/traffic-operations/legal-truck-access/truck-network-map



LEGEND

PATH FROM PORTS OF LOS ANGELES AND LONG BEACH TO PROJECT SITE

NOTES

-

1:833,122

0 20 Miles

REFERENCE

COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET

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TITLE
PATH FROM LOS ANGELES TO PROJECT SITE

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-08-26
PREPARED	MR
DESIGN	MR
REVIEW	JB
APPROVED	RPCE

PROJECT No.	CONTROL	Rev.	FIGURE
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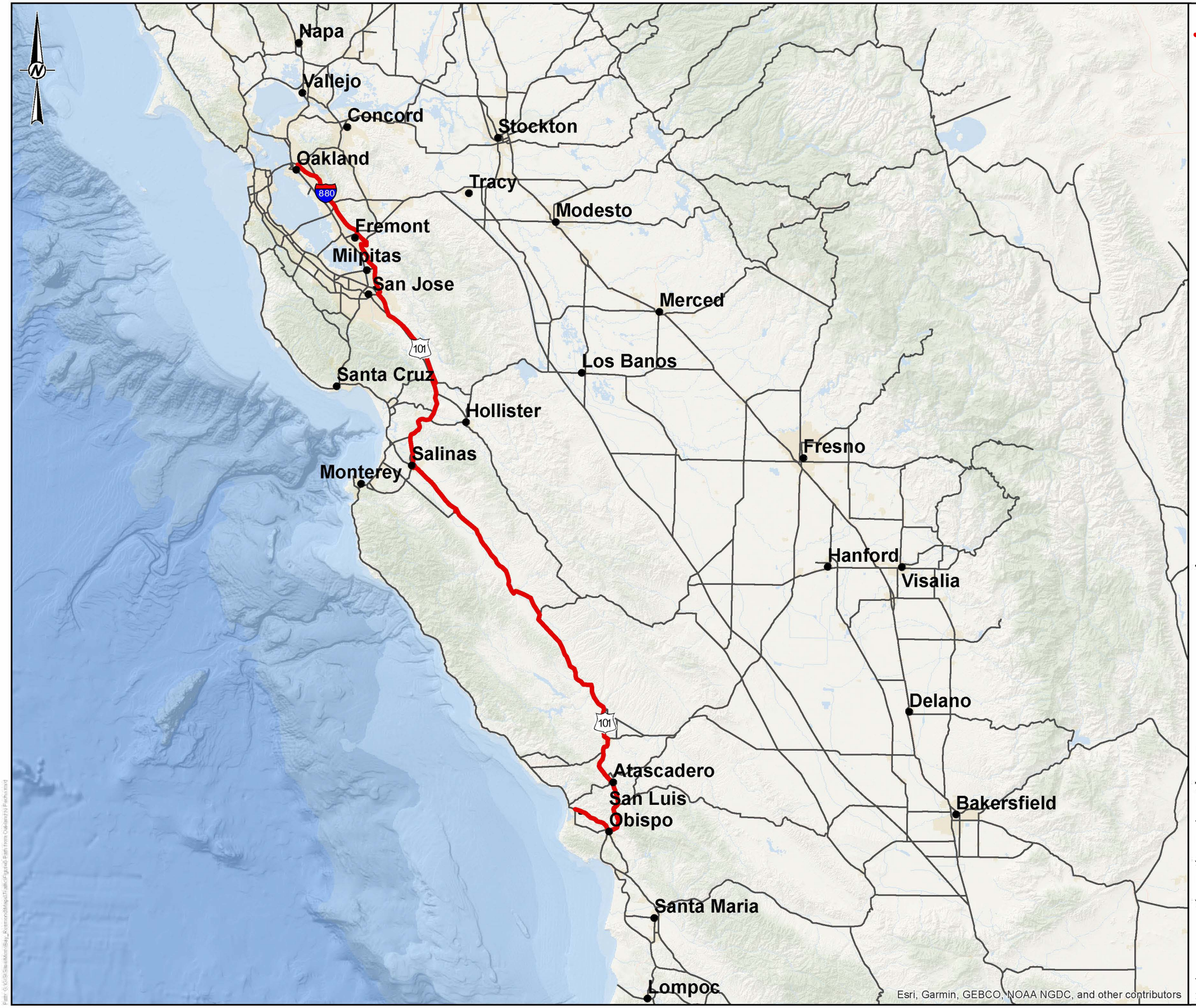

LEGEND

PATH FROM OAKLAND TO PROJECT SITE

NOTES

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1:1,630,000

0 20 Miles

REFERENCE

COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET

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TITLE
PATH FROM OAKLAND TO PROJECT SITE

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YYYY-MM-DD	2021-08-26
PREPARED	MR
DESIGN	MR
REVIEW	JB
APPROVED	RPCE

PROJECT No.	CONTROL	Rev.	FIGURE
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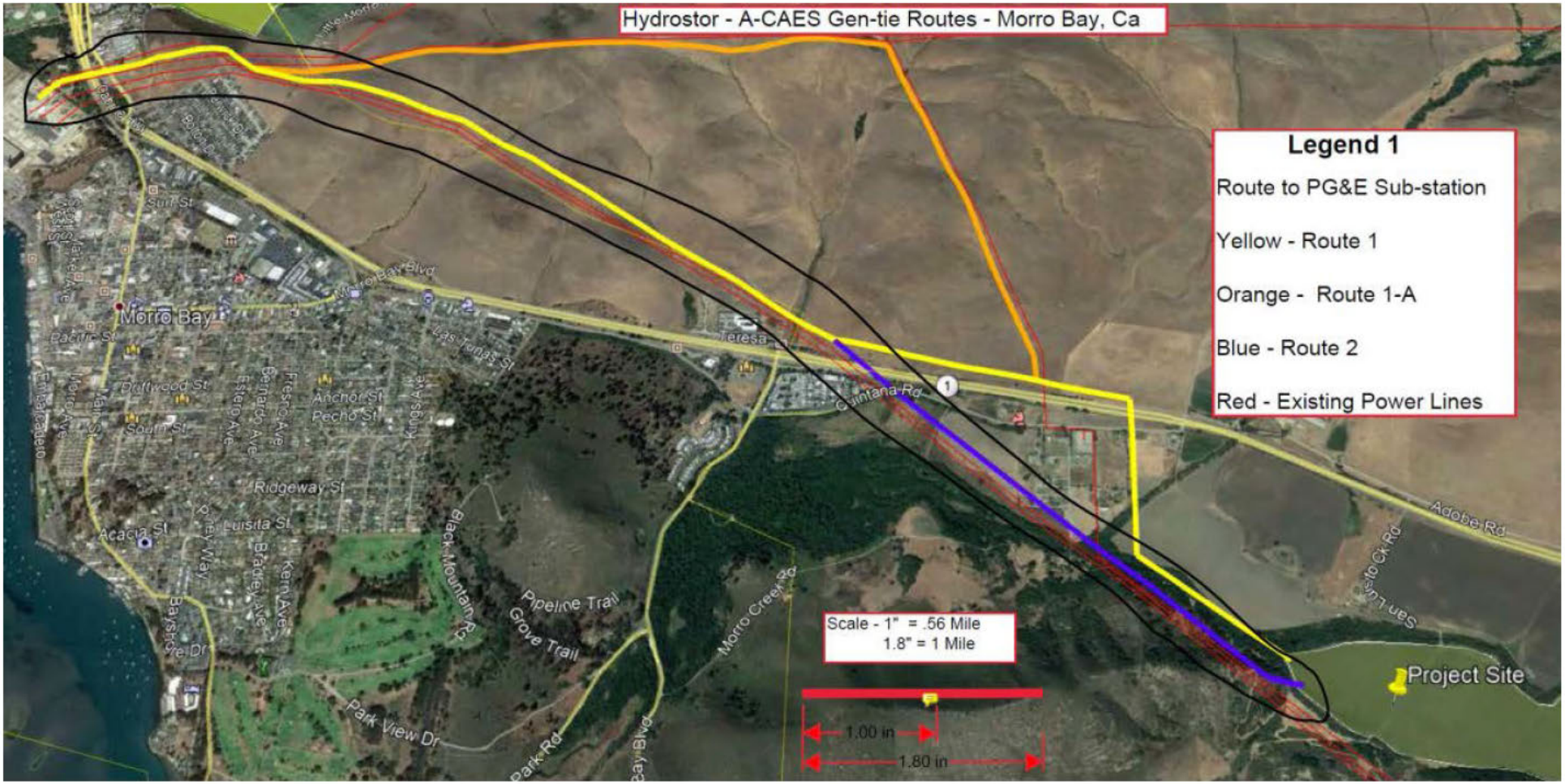

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Figure 5.2-7: Possible Transmission Line Alignments

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5.12.1.4 Other Projects

5.12.1.4.1 Future Plans and Projects

The current Regional Transportation Plan (RTP)[9] adopted by the San Luis Obispo Council of Governments in 2019 was reviewed as part of this study to determine whether there are any projects relevant to project traffic for the PESC. The RTP says of the section of SR 1 from Cuesta College to Yerba Buena Street in Morro Bay, in other words the section serving the project, that the RTP action is "sustain asset". This means that no improvements are planned for this section in the foreseeable future.

The RTP includes a Class 1 separated bikeway that would run parallel to SR 1, called the Chorro Valley Trail, in its unconstrained project list, which covers projects deemed worth planning for but for which no funding is available. Phase 1 of the trail would go from Cal Poly in the city of San Luis Obispo to Cuesta College, while Phase 2 would go from Cuesta College to South Bay Boulevard. A feasibility study[10] was done that identified a possible alignment north of SR 1 through study inersection1 and terminating at study intersection 2[11]. However, the alignment deemed "most feasible" in the study runs south of SR 1 at the outer edge of the Caltrans right of way and then runs along Quintana Road to South Bay Boulevard at study intersection 4. In either case this facility, if constructed, would not be operational until after construction of PESC is completed.

The County of San Luis Obispo's 5-year Capital Projects Plan[12] and the City of Morro Bay's Capital Improvement Program[13]were reviewed for projects that may be relevant to PESC. The only listed project near or relevant to PESC is the Morro Bay Wastewater Reclamation Facility.

5.12.1.5 Pedestrian/Bicycle Facilities

Within the urbanized part of Morro Bay most streets include sidewalks. However, there are no sidewalks or marked pedestrian crosswalks in the vicinity of the project site. This includes all four study intersections, and the study roadway segments of SR 1, Quintana Road, and South Bay Boulevard.

Bicycle facilities are typically categorized into four classes as follows:

- **Class I** facilities are bike paths or trails with an exclusive right-of-way (ROW) for bicycles separate from vehicles.
- **Class II** facilities are bike lanes with an exclusive ROW for bicycles designated by roadway striping and signs.
- **Class III** facilities are bike routes signed for shared travel with motorized vehicles, without any striping. In addition, a shared-lane marking or sharrow is a street marking placed in the center of a travel lane to indicate that a bicyclist may use the full travel lane.
- **Class IV** facilities, also known as cycle tracks or separated bikeways, are bikeway for the exclusive use of bicycles and includes a separation required between the separated bikeway and the through

[9] See https://www.slocog.org/2019RTP

[10] See https://www.dropbox.com/s/8u0t5dy16t7r2i9/Chorro%20Valley%20Trail%20Study%20for%20Web.pdf?dl=0

[11] See https://www.dropbox.com/s/unrcv7393ic324k/CVT%20MostFeasibleAlignmentMaps.pdf?dl=0

[12] See https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/Capital-Improvement-Projects/FY-2021-22/5-Year-Plan.pdf

[13] See https://www.morro-bay.ca.us/238/Project-Status

vehicular traffic. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking

Near the project site, Quintana Road has a Class II bicycle lane on both sides between Main Street and South Bay Boulevard, i.e., the west leg of study intersection 4 (see Figure 5.12-8[14]). The Class II bike lane continues eastward on the north side (only) for another 333 feet.

The entire length of SR 1 in San Luis Obispo County, including the section near the project site, is a Class III bike route. San Luis Obispo County's current bikeways plan[15] includes a Class I bike path that parallels SR 1 between the cities of San Luis Obispo and Morro Bay.

5.12.1.6 Public Transportation

Inter-city transit service in San Luis Obispo County is provided by the Regional Transit Authority (RTA). RTA has one route, Route 12, that passes the project site[16]. Route 12 operates on SR 1 between the cities of San Luis Obispo and Morro Bay, continuing to Los Osos.

The cities of Morro Bay and San Luis Obispo have their own transit services, Morro Bay Transit and SLO Transit respectively, but these do not have any routes that pass near the project or would be affected by it.

5.12.1.7 Rail Traffic

The nearest passenger rail service is approximately 12 miles from the project site (see ***Figure 5.12-2***) at San Luis Obispo station and is serviced by Amtrak Pacific Surfliner and Coast Starlight[17]. Commercial rail services are provided by the Union Pacific Railroad using the same tracks as for passenger rail.

5.12.1.8 Air Traffic

Federal Aviation Administration (FAA) Regulations, 14 Code of Federal Regulations (CFR) Part 77, establish standards for determining obstructions in navigable airspace and set forth requirements for notification of proposed construction. These regulations require FAA notification for construction over 200 feet above ground level. Notification is also required if the obstruction is lower than specified heights and falls within restricted airspace in the approaches to public or military airports and heliports. For airports with runways longer than 3,200 feet, the restricted space extends 20,000 feet (3.3 nautical miles) from the runway. For airports with runways measuring 3,200 feet or less, the restricted space extends 10,000 feet (1.7 nautical miles). For public or military heliports, the restricted space extends 5,000 feet (0.8 nautical mile).

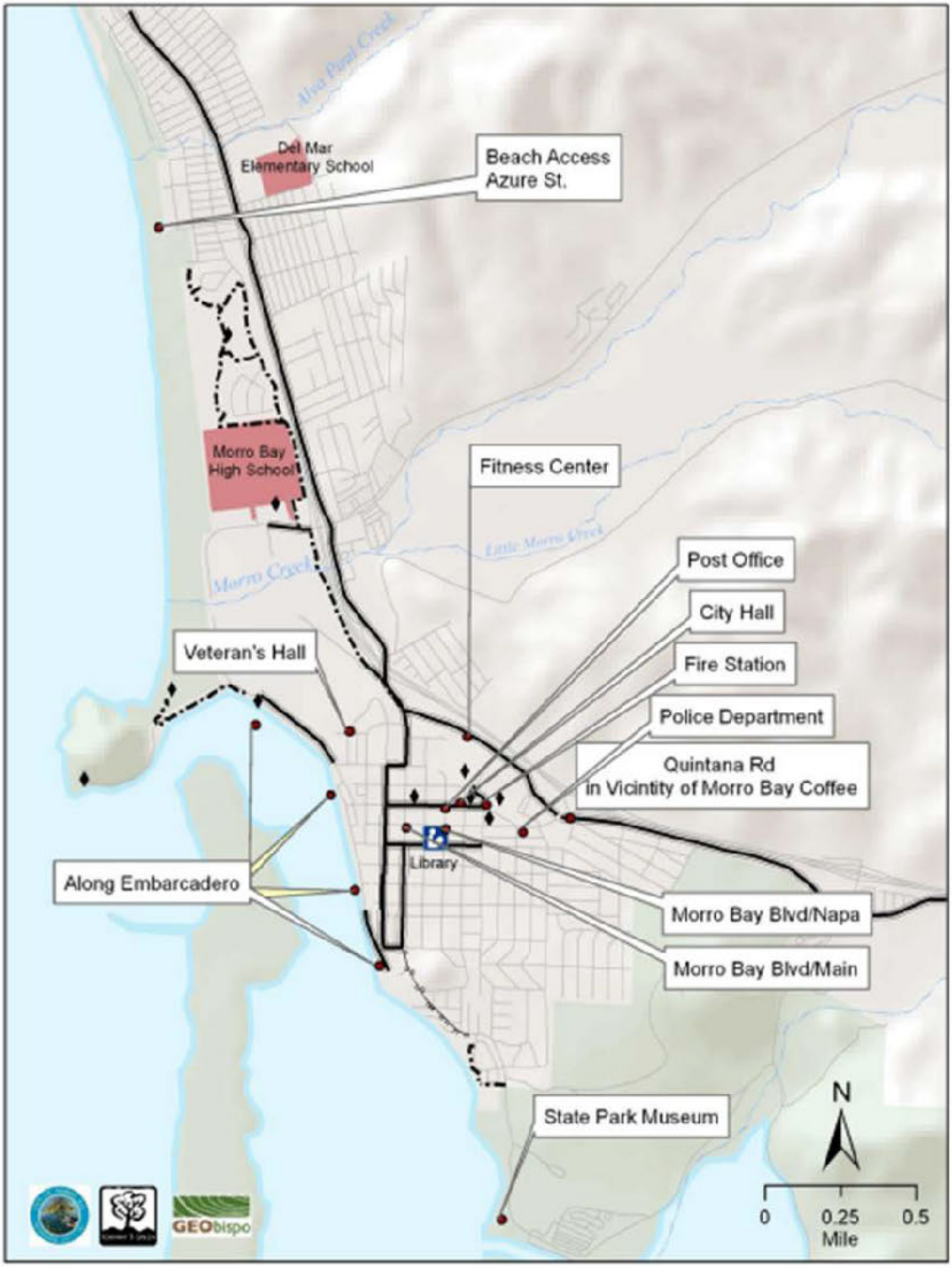
The nearest public airport is the San Luis Obispo County Regional Airport, which is approximately 12 miles from the project site. There is also a heliport at Camp San Luis Obispo 4.5 miles from the site. These are shown in ***Figure 5.12-2***.

[14] Source: *2011 Morro Bay Bicycle & Pedestrian Master Plan*

[15] See *2015/16 County Bikeways Plan*, County of San Luis Obispo, July 2016

[16] Source: http://www.slorta.org/services/fixed-route-buses/

[17] Source: https://visitslo.com/transportation/train-to-san-luis-obispo/



LEGEND

- Existing Class I Bike Path (3.3 mi.)
- Existing Class II Bike Lane (7.1 mi)
- Existing Class II Bike Lane - one side (.02 mi.)
- Existing Class III Bike Route (.38 mi.)
- Proposed Bike Parking (14)
- Existing Bike Parking (9)
- Library

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Figure 5.12-8: Morro Bay Bicycle Master Plan

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5.12.2 Environmental Analysis

This sub-section analyzes the potential effects of the PESC on transportation in the study area. This sub-section concentrates on the construction period when traffic to and from the project site will peak. A later subsection will analyze the effects of the project post-construction or operational phase.

5.12.2.1 Significance Criteria

The significance criteria have been developed using guidance provided in California Environmental Quality Act Appendix G (Title 14, California Code of Regulations [CCR], Section 15000 et seq.) and relevant local policies. Effects of the proposed project on transportation and circulation will be considered significant if the following criteria are met:

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, considering all modes of transportation including mass transit and nonmotorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
- Conflict with an applicable congestion management program, including but not limited to LOS standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways.
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks
- Substantially increase hazards attributable to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Most jurisdictions have adopted policies that set target levels of LOS for road facilities under their control. In this case, the roads in the vicinity of the PESC are under the jurisdiction of three agencies, namely:

- Caltrans, which has a target LOS of C or better
- San Luis Obispo County, which has a target LOS of D at signalized intersections and in urban areas and C in rural areas
- The City of Morro Bay, which has not adopted a LOS target but has used Caltrans' target of C in past studies

Based on these criteria, the following thresholds of significance were used for this project:

- For roadway segments, an impact would occur if the addition of project traffic results in a LOS of E or F and the V/C ratio increases .04 or more over the baseline condition.
- For unsignalized intersections, an impact would occur if the addition of project traffic results in a LOS of E or F and an increased traffic delay of 5 seconds or more (measured as average delay for an all-way stop or worst-movement delay for a side-street-stop intersection).

These thresholds are in line with those used by other agencies. For example, the California High-Speed Rail Authority uses these thresholds for all jurisdictions the project would pass through.

Although this study has been prepared pursuant to CEC's environmental impact analysis framework rather than CEQA, and is therefore not subject to SB-743, it was felt that consideration should be given to the project's possible impact on the State's vehicle-miles of travel (VMT) greenhouse gas reduction goals. The threshold that a project would have a significant VMT impact would be if the VMT/employee is greater than the average VMT/capita for the region it is located in. U.S. Census data for San Luis Obispo County was used to determine the average commute distance for this region. The average employee commute distance was found to be 23.1 miles (see ***Table 5.12-5***), which is therefore the threshold for a significant VMT impact.

Table 5.12-5: Calculation of VMT Significance Threshold

U.S. Census Categories	Assumed Distance	SLO County	
		Percent of Workers%	Calculation of Average VMT
Less than 10 Miles	5.0	41.8	2.1
10 to 24 Miles	17.0	27.7	4.7
25 to 50 Miles	37.5	8.8	3.3
Greater than 50 miles	60.0	21.7	13.0
Total		100.0	23.1

The VMT threshold described above is based on the one-way travel distance, so the calculation of project impacts must also be based on the one-way distance. It does not matter whether the one-way or two-way distance is used, so long as the threshold and significance determination are done the same way.

5.12.2.1.1 Project Specific Impacts

5.12.2.1.2 Construction Traffic Generation

Construction traffic to the PESC has been estimated based on the schedule of construction activities, the number of workers, and the type and number of construction-related vehicles that will be required at each stage of construction. ***Figure 5.12-9*** shows the estimated number of construction trips per weekday for each month in the construction schedule. Truck volumes have been converted into passenger car equivalents (PCEs) using a factor of 2.0, which the HCM suggests is appropriate for heavy trucks on surface streets. The peak month for project-related trip generation occurs in month 34 when the project is expected to generate approximately 1,120 PCE per weekday. shows the construction-related peak-hour traffic during the peak of construction. Table 5.12-6 incorporates the following assumptions:

- 15 percent of workers will be recruited locally and drive alone to the site.
- 85 percent of the workers, particularly those with special skills, will be recruited from areas outside of the county and will reside in hotels during the period when they work on PESC. They will drive to work alone in personal vehicles.
- All workers arrive during the AM peak hour and depart during the PM peak hour

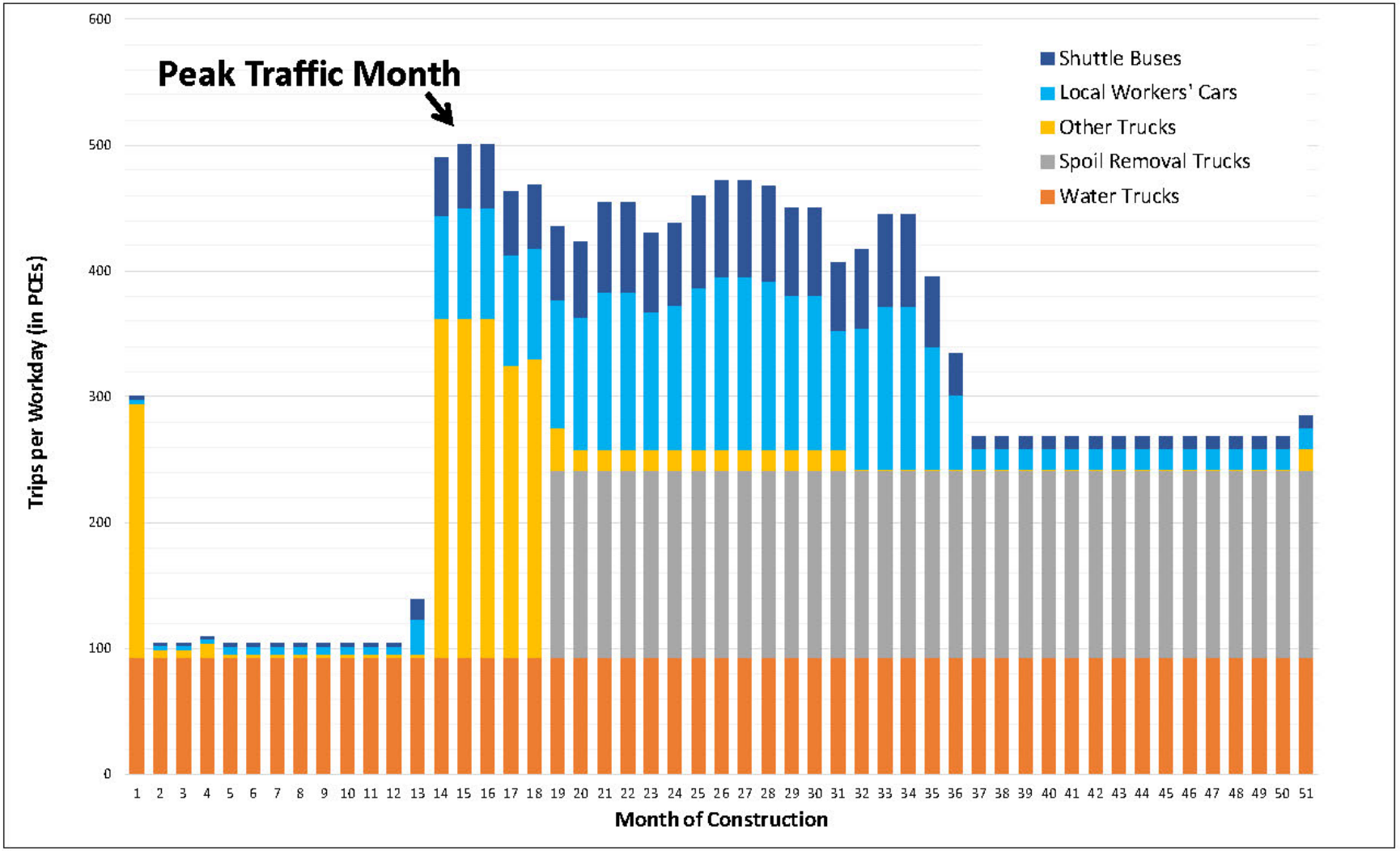

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Figure 5.12-9: Distribution of Locally Recruited Project Workers' Place of Residence

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- 10 percent of the truck trips entering or leaving the site in a day will travel during the AM peak hour and another 10 percent will travel during the PM peak hour. Half of the peak hour truck trips will be entering the site, and the other half will be leaving the site.

These are considered conservative assumptions, given that locally-recruited construction workers may carpool, and truck drivers prefer to avoid periods of heavy traffic when possible.

Table 5.12-6: Project Trip Generation During Peak Construction Month

Vehicle Type	AM Peak Hour		PM Peak Hour		Daily
	Entry	Exit	Entry	Exit	Entry & Exit
Worker Cars	431	0	0	431	861
Trucks (in vehicles)	8	8	8	8	166
Construction Traffic in PCEs	447	16	16	447	1,194

5.12.2.1.3 Construction Traffic Distribution

The distribution of locally-recruited project workers' residential locations was assumed to follow the distribution of residential locations for persons currently employed in Morro Bay. ***Figure 5.12-10*** shows the distribution based on U.S. Census data[18]. The distribution of externally-recruited workers temporarily residing in hotels is shown in Table 5.12-7.

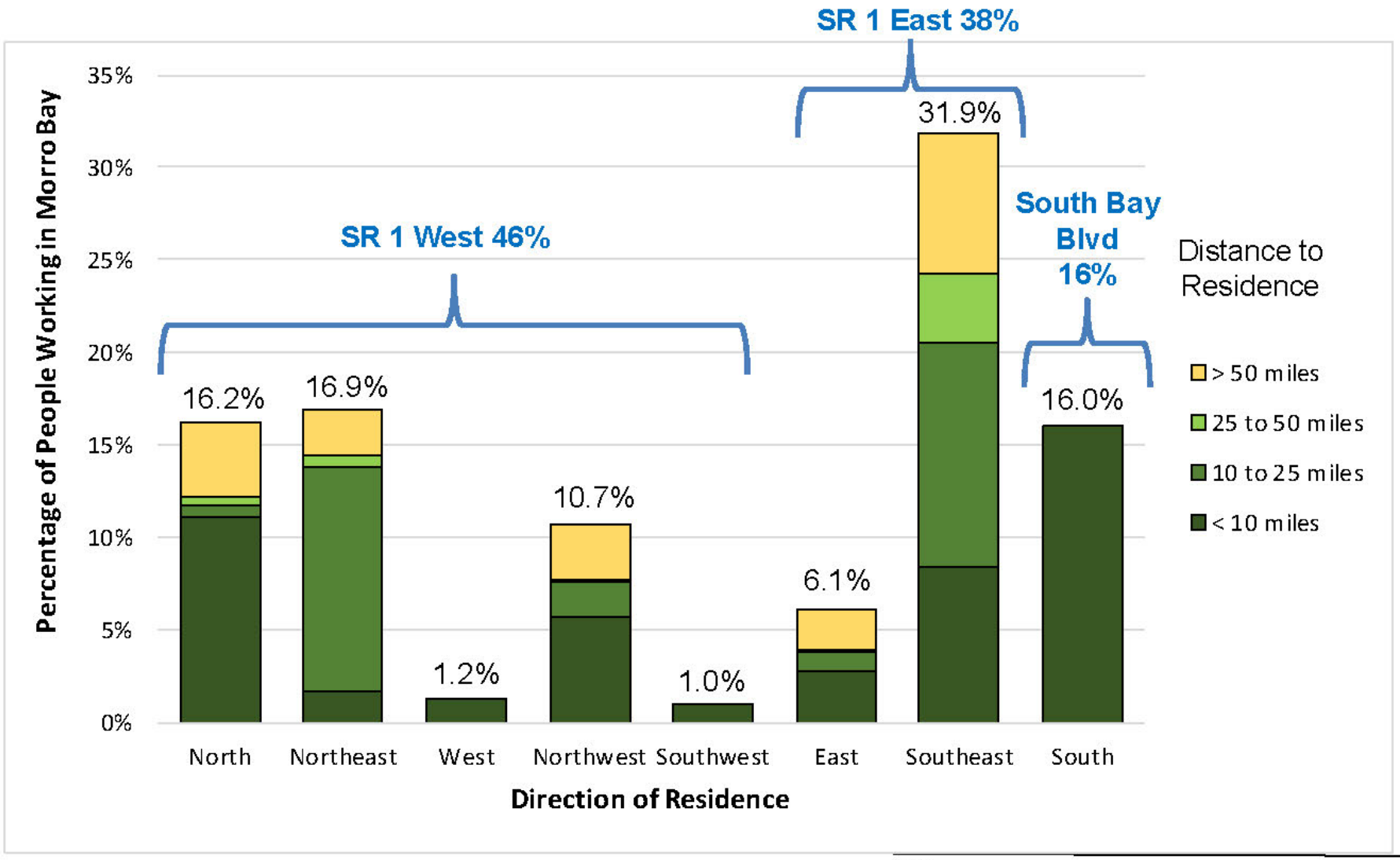
Table 5.12-7: Distribution of Hotels used by Pecho Workers

Route	Place	Hotel Employees	Assumed Distribution of Hotel Accommodations
SR 1 West	Cayucos	58	5%
	Morro Bay	190	17%
	Atascadero	63	6%
SR1 East	San Luis Obispo*	794	69%
S Bay Blvd	Los Osos	30	3%
	TOTAL	1,135	100%

Source: U.S. Economic Census, 2017 NAICS Code 7211 Traveler Accommodation: Number of Employees

* Exact number of employees not reported. Value was estimated using county total and number of employees in all CDP within the County

[18] Note that the Census measures distance and direction from the centroid of the geography in question, in this case the city of Morro Bay, so workers who live in Morro Bay are included in the figure. That explains why, for example, some workers are listed as living to the west. This means "west of the city centroid", not "west of Morro Bay", which would be the Pacific Ocean.



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TITLE **Figure 5.12-10 Distribution of Locally Recruited Project Workers' Place of Residence**

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Table 5.12-8: Conditions for Study Roadway Segments During Peak Construction Month

Roadway		Between	Existing ADT	Capacity (Max ADT for LOS C)	Existing V/C Ratio	Project Trips (PCEs)	Existing Plus Construction ADT	Existing Plus Construction V/C Ratio	Change in V/C Ratio	LOS	Project has Impact?
			(A)	(B)	(C)=(A)/(B)	(D)	(E)=(A)+(D)	(F)=(E)/(B)	(G)=(F)-(C)		
A	State Route 1	Between South Bay Boulevard and San Bernardino Creek Road	13,400	40,800	0.33	658	14,058	0.34	0.02	C or Better	No
B	State Route 1	Between Morro Bay Boulevard and South Bay Boulevard	26,000	44,000	0.59	856	26,856	0.61	0.02	C or Better	No
C	South Bay Boulevard	Between SR 1 North/Westbound ramps and SR 1 South/Eastbound ramps	14,566	5,600	2.60	605	15,171	2.71	**0.11**	**E**	**Yes**
D	South Bay Boulevard	Between SR 1 South/Eastbound ramps and Park View Road	14,566	5,600	2.60	138	14,704	2.63	0.02	**E**	No
E	Quintana Road	Between South Bay Boulevard and San Bernardino Creek Road	297	5,600	0.05	377	674	0.12	0.07	C or Better	No

Based on this distribution, and the routes taken by trucks that are discussed in an earlier section, the distribution of construction traffic would be as follows:

- To/From the West via SR 1: 46% of locally recruited workers driving themselves and 28% workers arriving from hotels. This includes workers living in Morro Bay and Cayucos, as well as workers living or temporarily residing in communities in the northern part of the county whose shortest path to the project site is via SR-41 through Morro Bay. This includes, for example, workers from in Paso Robles, Templeton, and Atascadero. Trucks carrying tunneling spoil from the PESC site to the disposal site will also use this route to go to SR-41 and on to Santa Margarita. This will allow them to bypass both the San Luis Obispo urbanized area and the steep Cuesta Grade portion of US-101.
- To/from the East via SR 1: 100% of the project-related trucks bringing construction material (other than water) to the site. 38% of locally recruited workers driving themselves and 69% workers arriving from hotels would use this route. This includes workers living or temporarily residing in San Luis Obispo as well as the communities in the southern part of the county such as Avila Beach, Pismo Beach, Arroyo Grande, and Oceano.
- To/from the South via South Bay Boulevard: 16% of locally recruited workers driving themselves and 3% workers arriving from hotels. This includes workers living or temporarily residing in Los Osos and Baywood-Los Osos.
- o/from the North via South Bay Boulevard and SR 1: 100% of the trucks taking non-potable water from the wastewater reclamation facility to the project site

5.12.2.1.4 Roadway LOS with Construction Traffic

Traffic conditions on the study roadway segments during peak construction months are described in ***Table 5.12-8***. The project would have a significant impact on the study roadway segment C, the portion of South Bay Boulevard that passes under SR 1 between the north/west and south/east ramps. That is because this roadway segment already operates at LOS E and is the route that would be used by all project traffic coming from the east, all project traffic departing to the west, and all of the water trucks going to and from the wastewater reclamation facility (see ***Figure 5.12-3***).

5.12.2.1.5 Intersection Level of Service with Construction Traffic

Traffic conditions at study intersections during peak construction months are described in ***Table 5.12-9***. The table shows that the project would have significant impacts on all four study intersections:

- Intersection 1: The project would add east-west traffic on SR 1, thus making it more difficult for left-turning or through vehicles from San Bernardino Creek Road to find useable gaps in opposing traffic.
- Intersection 2: The project would significantly increase westbound traffic making a left turn onto South Bay Boulevard. This would conflict with the northbound left-turn movement that predominates at this location in the AM peak hour (see ***Figure 5.12-4***).
- Intersection 3: The same project traffic that turns left at intersection 2 would again turn left at Intersection 3, and again cross the path of the predominant northbound flow of traffic.
- Intersection 4 in the PM Peak Hour: This intersection already operates at LOS F in the AM peak hour and so has limited capacity to accommodate additional traffic. In the PM peak hour, the existing delay

is only very slightly (3/10ths of a second) below the threshold for LOS "E", so the addition of even a small amount of project traffic would be enough to push it to LOS "E".

Table 5.12-9: Conditions at Study Intersections Segments During Peak Construction Month

AM PEAK HOUR

ID	Intersection	Existing		Existing Plus Construction		Does the Project Have a Significant Impact?		
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	LOS E or F?	Increase in Delay (sec/veh)	Project Impact?
1	San Bernardo Crk Rd/SR 1	63.8	**F**	87.8	**F**	**Yes**	**24.0**	**Yes**
2	South Bay Blvd/SR 1 NB Ramp	10.9	B	120.5	**F**	**Yes**	**109.6**	**Yes**
3	South Bay Blvd/SR 1 SB Ramp	18.8	C	143.9	**F**	**Yes**	**125.1**	**Yes**
4	South Bay Blvd/Quintana Rd	85.5	**F**	104.3	**F**	**Yes**	**18.8**	**Yes**

PM PEAK HOUR

ID	Intersection	Existing		Existing Plus Construction		Does the Project Have a Significant Impact?		
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	LOS E or F?	Increase in Delay (sec/veh)	Project Impact?
1	San Bernardo Crk Rd/SR 1	89.0	**F**	205.9	**F**	**Yes**	**116.9**	**Yes**
2	South Bay Blvd/SR 1 NB Ramp	10.0	B	16.5	C	No	6.5	No
3	South Bay Blvd/SR 1 SB Ramp	14.4	B	16.9	C	No	2.5	No
4	South Bay Blvd/Quintana Rd	34.7	D	48.3	**E**	**Yes**	**13.6**	**Yes**

Notes: "EB", "WB", "NB", and ""SB" indicate eastbound, westbound, northbound, and southbound respectively
"L", "R", and "T" indicate left-turn, right-turn, and through movements respectively

5.12.2.1.6 VMT with Construction Traffic

As noted in Section 5.12.2.1.2, it is anticipated that 15 percent of the workers in the construction phase would be recruited locally and the remaining 85 percent would stay in hotels in nearby cities. ***Table 5.12-10*** shows the calculation of VMT/employee for locally-recruited employees, who were assumed to have the same commute characteristics as the average for people working in Morro Bay.

Table 5.12-10: Calculation of Vehicle-Miles Traveled per Employee for Local Workers

U.S. Census Categories	Assumed Distance	Morro Bay	
		Percent of Workers%	Calculation of Average VMT
Less than 10 Miles	5.0	47.6	2.4
10 to 24 Miles	17.0	28.0	4.8
25 to 50 Miles	37.5	4.9	1.8
Greater than 50 miles	60.0	19.5	11.7
Total		100.0	20.7

The information in ***Table 5.12-10*** was combined with the commute distance from the hotels for workers recruited from outside the county to calculate the VMT/employee for the entire construction crew. As can be seen in ***Table 5.12-11***, the average commute distance for workers constructing the PESC will be 7.3. This is well below the threshold of 23.7 VMT/employee, meaning that the project's VMT impacts will be less-than-significant.

Table 5.12-11: Calculation of Vehicle- Miles Traveled per Employee During Construction

Worker Residential Location		Commute Distance	Percent of Workers %	Vehicles per Worker	Calculation of Average VMT
Local Workers		20.7	15	1	3.1
Hotel	Cayucos	8.1	4	1	0.3
	Morro Bay	2.5	14	1	0.4
	Atascadero	11.1	5	1	0.6
	San Luis Obispo	10.6	59	1	6.2
	Los Osos	5.8	3	1	0.1
			100		7.3

Note that the determination of VMT impacts does not include VMT from project trucks. This is because truck VMT is excluded from consideration under SB-743. Per the revised CEQA Guidelines §15064.3(a): "*For the purposes of this section, "vehicle miles traveled" refers to the amount and distance of* ***automobile*** *travel attributable to a project*." (emphasis added)

5.12.2.2 Linear Facility Construction Impacts

Construction of the transmission lines (see ***Figure 5.12-7***) is expected to involve small crews using fewer than 10 cars per day with a small number of trucks delivering construction materials. Access to the tower sites would be via the network of small secondary roads, followed by off-road travel to the individual sites. The exact alignment and location of the transmission towers are not known at this time. Nevertheless, the small number of vehicles involved suggests that the transportation impact would be less than significant.

5.12.2.3 Transport of Hazardous Materials

The construction and operation of PESC is expected to involve transportation of the following hazardous materials (see also Chapter 5.5, Hazardous Materials):

- During Construction: Explosives and detonators used for cavern construction, and oil for mechanized equipment.
- During Operation: Water treatment chemicals, lubricant oil, propane for utilities, and diesel fuel for backup generators.

Division 13, Section 31303 of the California Vehicle Code (CVC) stipulates that the transportation of regulated substances and hazardous materials are required to be carried out via the most direct route, using State or interstate highways whenever possible. In accordance with this policy, for PESC, subject to Caltrans approval, the recommended route for delivery of regulated or hazardous materials is via US-101 and SR 1.

Transporters of hazardous or explosive materials must contact the California Highway Patrol (CHP) and apply for a Hazardous Material Transportation License. Instructions are available in Section 9 of the California Commercial Driver Handbook. The exact route of the hazardous material shipment will not be determined until the shipper contacts CHP and applies for a license.

Standards for the transport of hazardous materials are contained in Title 49 of the Code of Federal Regulations (CFR) and are enforced by the U.S. Department of Transportation. Additionally, the State of California has promulgated rules for hazardous waste transport that can be found in CCR, Title 26. Additional regulations for the transportation of hazardous materials are outlined in the CVC (Sections 2500-505, 12804-804.5, 31300, 3400, and 34500-501). The state agencies with primary responsibility for enforcing federal and state regulations governing the transportation of hazardous wastes are CHP, Caltrans, and the Department of Toxic Substances Control. Transport of hazardous materials associated with the PESC will comply with all applicable requirements.

5.12.2.4 Public Safety

The PESC project is not expected to pose any unusual safety hazard to the public, except for the transportation of hazardous materials, where the transporter will be required to obtain a Hazardous Material Transportation License per CVC Section 32105 and follow proper safety procedures.

There are no schools, daycare centers, retail centers, or other generators of pedestrian traffic near the project site. The only at-grade rail crossing on any of the routes that will be taken by project traffic occurs on SR-58 in Santa Margarita on the route to the tunnel spoil disposal site. That crossing is gated and poses no special hazard.

5.12.2.5 Air Traffic

The project is 4.5 miles from the nearest heliport and more than 12 miles from the nearest airport. The PESC is not expected to have any effect on either facility.

5.12.2.6 Emergency Vehicle Access

Emergency access to PESC will be through the main driveway on San Bernardino Creek Road. The construction and operation of PESC will not involve any road closures and will not affect the operations of emergency vehicles.

5.12.2.7 Parking

The 61-acre project site will allow all project-related parking to be on-site.

5.12.3 Cumulative Effects

Once completed and in operation, the PESC is expected to have a staff of 25 to 50 full-time equivalent workers. The facility will be operated 24 hours per day 365 days per year, meaning that there would be twenty-one, 8-hour shifts per week, with 2-to-3 workers per shift.

Once the initial filling of the reservoir is complete the project is not expected to require further shipments of water as the site will generate sufficient water to fulfill its needs.

5.12.3.1 Traffic Generation during Operations

Table 5.12-12 shows the construction-related peak-hour traffic post-construction when PESC is in full operation. ***Table 5.12-12*** assumes that work will be done in shifts, as shown in the calculation below:

Number of 8-hr shifts per day		3
Number of days per week	X	7
Number of shifts per week		21
Number of PESC employees		50
Number of 8-hr shifts per employee/week	X	5
Total number of person-shifts worked		250
Total number of person-shifts worked		250
Number of shifts per week	/	21
Persons/Shift		12

The analysis was based on the worst-case scenario, which would be if the shift change occurs in the peak hour and the PESC workers drive alone to the site.

Table 5.12-12: Project Trip Generation During Operation

Vehicle Type	AM Peak Hour		PM Peak Hour		Daily
	Entry	Exit	Entry	Exit	Entry & Exit
Worker Cars	12	12	12	12	72

5.12.3.2 Traffic Distribution during Operations

It is expected that PESC workers will live in San Luis Obispo County and that their residential locations will be similar to those of other people employed in Morro Bay. Based on data from the US Census, they would be distributed as shown in ***Figure 5.12-10***. Their trip distribution would therefore be as follows:

- To/From the West via SR 1: 46 percent of workers. This includes workers living in Morro Bay and Cayucos, as well as workers living in communities in the northern part of the county whose shortest path to the project site is via SR-41 through Morro Bay. This includes, for example, workers from Paso Robles, Templeton, and Atascadero.
- To/from the East via SR 1: 38 percent of workers. This includes workers living in San Luis Obispo as well as the communities in the southern part of the county such as Avila Beach, Pismo Beach, Arroyo Grande, and Oceano.
- To/from the South via South Bay Boulevard: 16 percent of workers, including those living in Los Osos and Baywood-Los Osos.

5.12.3.3 Roadway LOS with Traffic During Operations

Traffic conditions on study roadway segments during PESC operations are described in ***Table 5.12-13***. The project would not have a significant impact on any study roadway segment when it is completed and in operation.

5.12.3.4 Intersection LOS with Traffic During Operations

Traffic conditions at study intersections during PESC operations are described in Table 5.12-14. The project would have no significant traffic impacts in the operation phase, due to the small amount of project-related traffic. Note that Table 5.12-14 shows that intersection delay in the AM peak hour in the Plus Project condition would be slightly better than under Existing conditions. This anomalous result appears to be due to the fact that SimTraffic randomizes vehicle arrivals as part of its simulations. This can produce odd results in situations, like this intersection, when there are so few vehicles that even a slight change can make a noticeable difference to the average. The traffic analysis that was done for the wastewater treatment facility had a similar anomalous result at this location.

5.12.3.5 VMT Impacts During Operations

Once PESC has been constructed and is in operations the distribution of workers' residences is expected to be similar to the distribution of residential locations for existing commuters who work in Morro Bay. As was shown in ***Table 5.12-10***, this would result in an average commute distance of 20.7 miles. Since this is less than the regional average of 23.1, the project would have a less-than-significant VMT impact during operations.

Table 5.12-13: Conditions for Study Roadway Segments During Operations

	Roadway	Between	Existing ADT	Capacity (Max ADT for LOS C)	Existing V/C Ratio	Project Trips (PCEs)	Existing Plus Construction ADT	Existing Plus Operation V/C Ratio	Change in V/C Ratio	LOS	Project has Impact?
			(A)	(B)	(C)=(A)/(B)	(D)	(E)=(A)+(D)	(F)=(E)/(B)	(G)=(F)-(C)		
A	State Route 1	Between South Bay Boulevard and San Bernardino Creek Road	13,400	5,600	2	27	13,427	2.40	0.00	C or Better	No
B	State Route 1	Between Morro Bay Boulevard and South Bay Boulevard	26,000	5,600	5	44	26,044	4.65	0.01	C or Better	No
C	South Bay Boulevard	Between SR 1 North/Westbound ramps and SR 1 South/Eastbound ramps	14,566	5,600	3	30	14,596	2.61	0.01	**E**	No
D	South Bay Boulevard	Between SR 1 South/Eastbound ramps and Park View Road	14,566	5,600	3	12	14,578	2.60	0.00	**E**	No
E	Quintana Road	Between South Bay Boulevard and San Bernardino Creek Road	297	5,600	0	28	325	0.06	0.01	C or Better	No

Table 5.12-14: Conditions at Study Intersections Segments During Operations

AM PEAK HOUR

ID	Intersection	Existing		Existing Plus Operation			Does the Project Have a Significant Impact?		
		Delay (sec/veh)	LOS	Delay (sec/veh)	Worst Movement	LOS	LOS E or F?	Increase in Delay (sec/veh)	Project Impact?
1	San Bernardo Crk Rd/SR 1	63.8	**F**	65.7	NBL/NBT	**F**	**Yes**	1.9	No
2	South Bay Blvd/SR 1 NB Ramp	12.2	B	10.1	WBL	B	No	-2.1	No
3	South Bay Blvd/SR 1 SB Ramp	18.8	C	19.0	EBL/EBT	C	No	0.2	No
4	South Bay Blvd/Quintana Rd	85.5	**F**	89.2	EBL/EBT	**F**	**Yes**	3.7	No

PM PEAK HOUR

ID	Intersection	Existing		Existing Plus Construction			Does the Project Have a Significant Impact?		
		Delay (sec/veh)	LOS	Delay (sec/veh)	Worst Movement	LOS	LOS E or F?	Increase in Delay (sec/veh)	Project Impact?
1	San Bernardo Crk Rd/SR 1	89.0	**F**	93.1	SBL/SBT	**F**	**Yes**	4.1	No
2	South Bay Blvd/SR 1 NB Ramp	10.0	B	11.1	WBL	B	No	1.1	No
3	South Bay Blvd/SR 1 SB Ramp	14.4	B	14.5	EBL/EBT	B	No	0.1	No
4	South Bay Blvd/Quintana Rd	34.7	D	36.0	WBL/WBT	**E**	**Yes**	1.3	No

Note(s):
"EB", "WB", "NB", and ""SB" indicate eastbound, westbound, northbound, and southbound respectively
"L", "R", and "T" indicate left-turn, right-turn, and through movements respectively

5.12.4 Mitigation Measures

Project traffic during construction consists of a combination of trucks and worker vehicles (see ***Figure 5.12-9***). Little can be changed about the truck portion, since the materials that they are bringing or removing materials are essential for construction to proceed. The mitigation efforts therefore focused on the automobile traffic from worker arrivals and departures.

As stated earlier, it is expected that 85 percent of the construction labor force will be people with specialized skills who will need to come from outside of San Luis Obispo County and stay in hotels during the stage of construction that uses their skills. The hotel rooms leased in blocks, which would facilitate use of a shuttle bus system to take workers between their hotels and the construction site. After dropping off workers in the morning the buses would then go east towards San Luis Obispo to perform other assignments during the day, and then return to pick up workers for the journey back to their hotels. Assuming that the shuttles carry ten workers per trip, and that 90% of the workers residing at hotels would use the shuttles, which is the maximum extent practicable, the revised traffic during construction would be as shown in Figure 5.12-11. This would be a 47 percent reduction in project-related (see Figure 5.12-12). The revised project trip generation would be as shown in Table 5.12-15.

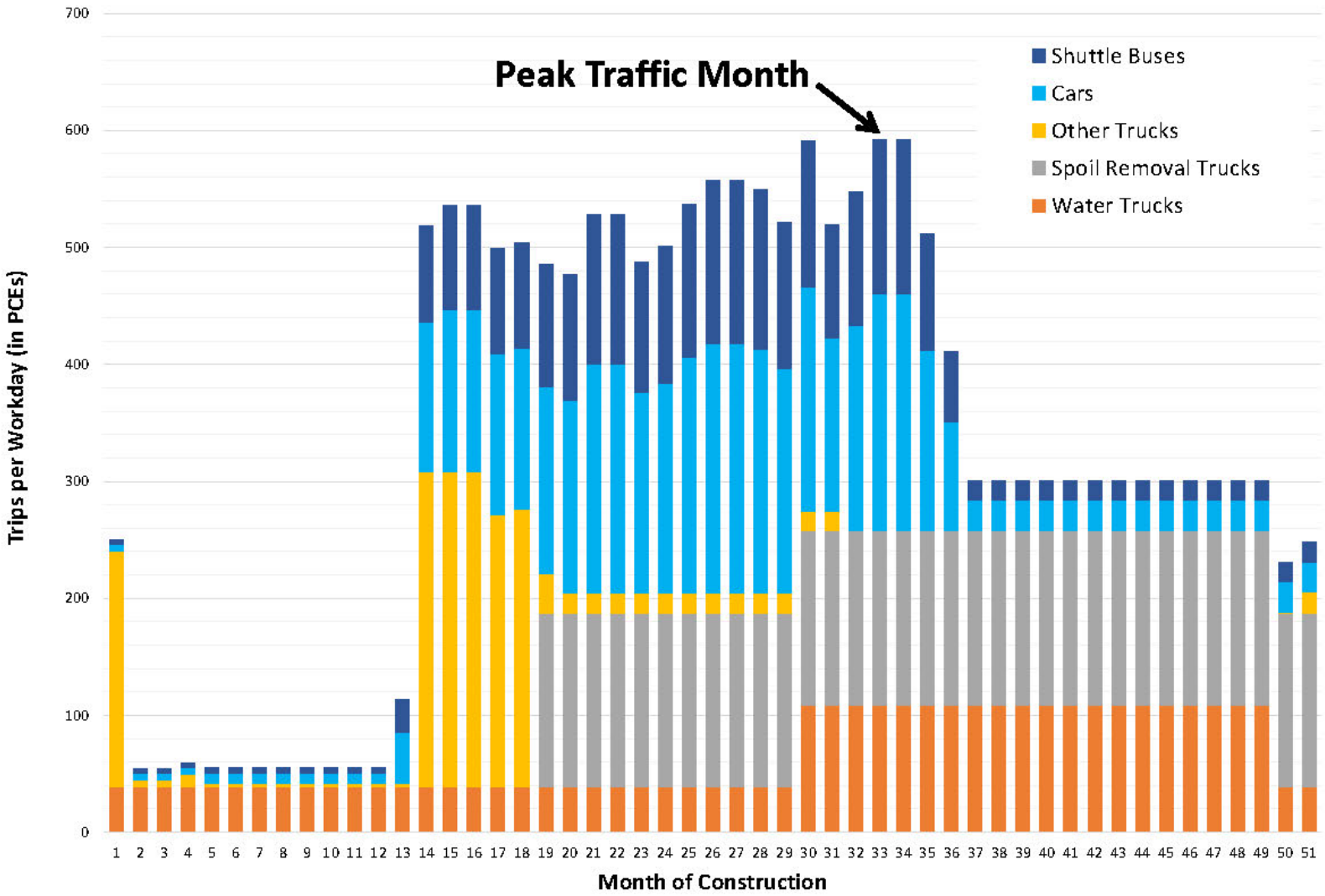
Table 5.12-15: Project Trip Generation During Peak Construction Month with Shuttle Buses

Vehicle Type	AM Peak Hour		PM Peak Hour		Daily
	Entry	Exit	Entry	Exit	Entry & Exit
Local Workers' Cars	65	0	0	65	130
Non-Local Workers' Cars	37	0	0	37	74
Shuttle Buses	33	33	33	33	132
Trucks (in vehicles)	8	8	8	8	166
Construction Traffic in PCEs	151	50	50	151	667

Table 5.12-16 shows the revised intersection LOS if shuttle buses are used as a mitigation measure. The impacts at Intersections 2 and 3 would be reduced to less-than-significant. The impact at Intersection 1 would still be significant but would be reduced by 78 percent in the AM peak hour[19]. The impact at Intersection 4 would also remain significant but would be reduced by 81 percent in the AM peak hour and 40 percent in the PM peak hour. A signal warrant analysis was performed to determine if the situation could be further improved by installing temporary or permanent traffic signals at Intersections 1 and 4. As can be seen in Figure 5.12-13 and Figure 5.12-14, the minor-street volumes are too low to justify the delay that would be imposed on the major street if a signal were to be installed. In the case of Intersection 1, only 2 vehicles/hour would be making the southbound left turn that has the long delay, they would have the option of making a right turn and then performing a safe U-turn under SR 1 at the South Bay Boulevard interchange. In the case of Intersection 4, of the 16 vehicles in the affected west-bound left-turn movement, 8 would be the project's own exiting vehicles.

[19] As measured by the reduction in the increase in delay caused by the project.

Table 5.12-17 shows what the project's impacts on roadways would be if shuttle buses are used as a mitigation measure. The project's impact on road segment C would continue to be significant but would be reduced by 23 percent, as measured by the change in V/C ratio.



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TITLE

Figure 5.12-11: Construction Traffic by Month with Shuttle Buses

PROJECT No.

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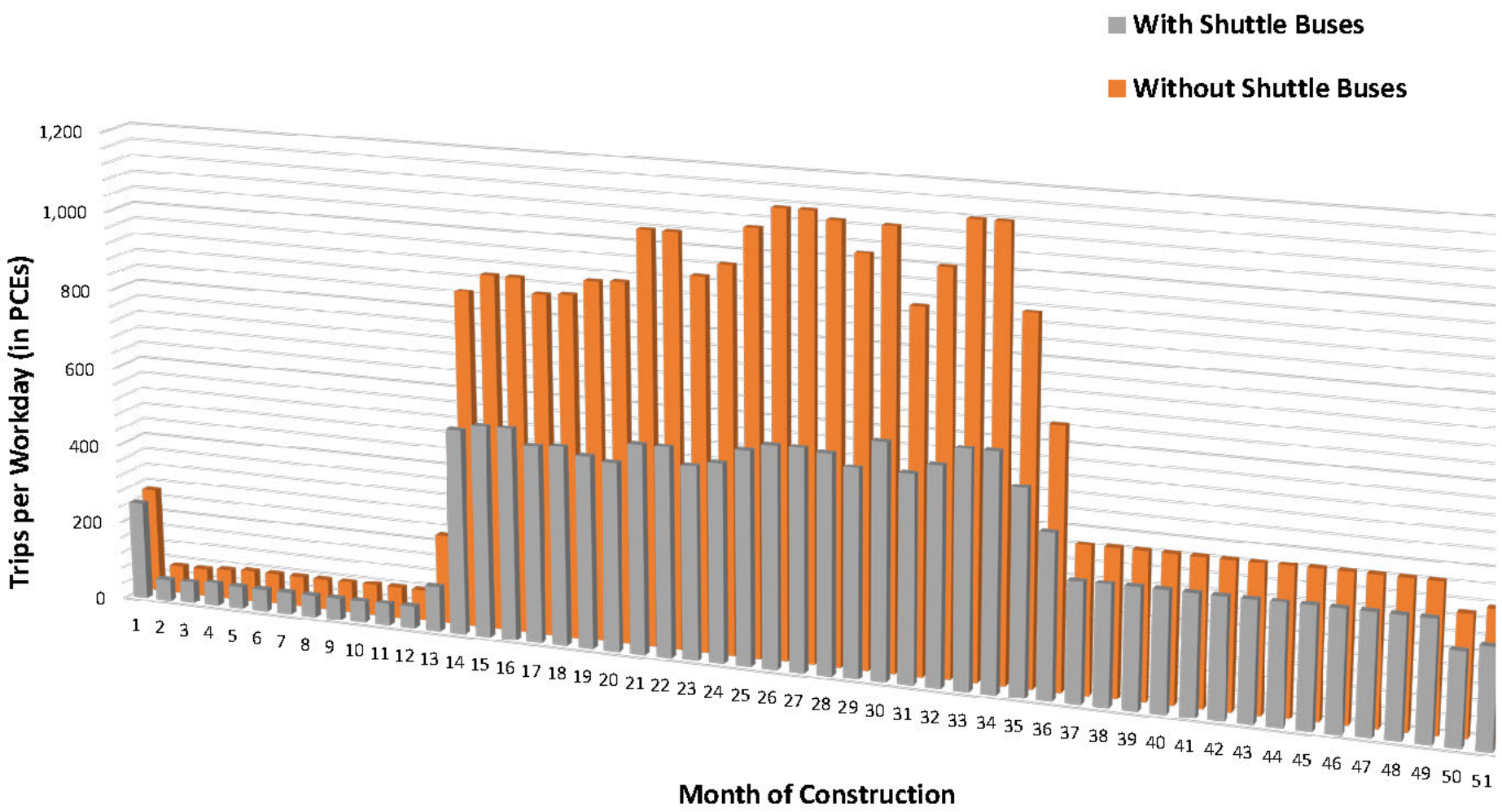

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TITLE Figure 5.12-12: Construction Traffic by Month with and without Shuttle Buses

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Table 5.12-16: Conditions at Study Intersections Segments During Peak Construction Month with Shuttle Buses

AM PEAK HOUR

ID	Intersection	Existing		Existing Plus Construction		Does the Project Have a Significant Impact?			Percent Reduction in Project-Caused Delay
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	LOS E or F?	Increase in Delay (sec/veh)	Project Impact?	
1	San Bernardo Crk Rd/SR 1	63.8	**F**	69.0	**F**	**Yes**	**5.2**	**Yes**	**-78%**
2	South Bay Blvd/SR 1 NB Ramp	12.2	B	14.9	B	No	2.7	No	-98%
3	South Bay Blvd/SR 1 SB Ramp	18.8	C	27.7	D	No	**8.9**	No	-93%
4	South Bay Blvd/Quintana Rd	85.5	**F**	104.3	**F**	**Yes**	**18.8**	**Yes**	**0%**

PM PEAK HOUR

ID	Intersection	Existing		Existing Plus Construction		Does the Project Have a Significant Impact?			Percent Reduction in Project-Caused Delay
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	LOS E or F?	Increase in Delay (sec/veh)	Project Impact?	
1	San Bernardo Crk Rd/SR 1	89.0	**F**	111.3	**F**	**Yes**	**22.3**	**Yes**	**-81%**
2	South Bay Blvd/SR 1 NB Ramp	10.0	B	12.4	B	No	2.4	No	-63%
3	South Bay Blvd/SR 1 SB Ramp	14.4	B	17.0	C	No	2.6	No	4%
4	South Bay Blvd/Quintana Rd	34.7	D	42.8	**E**	**Yes**	**8.1**	**Yes**	**-40%**

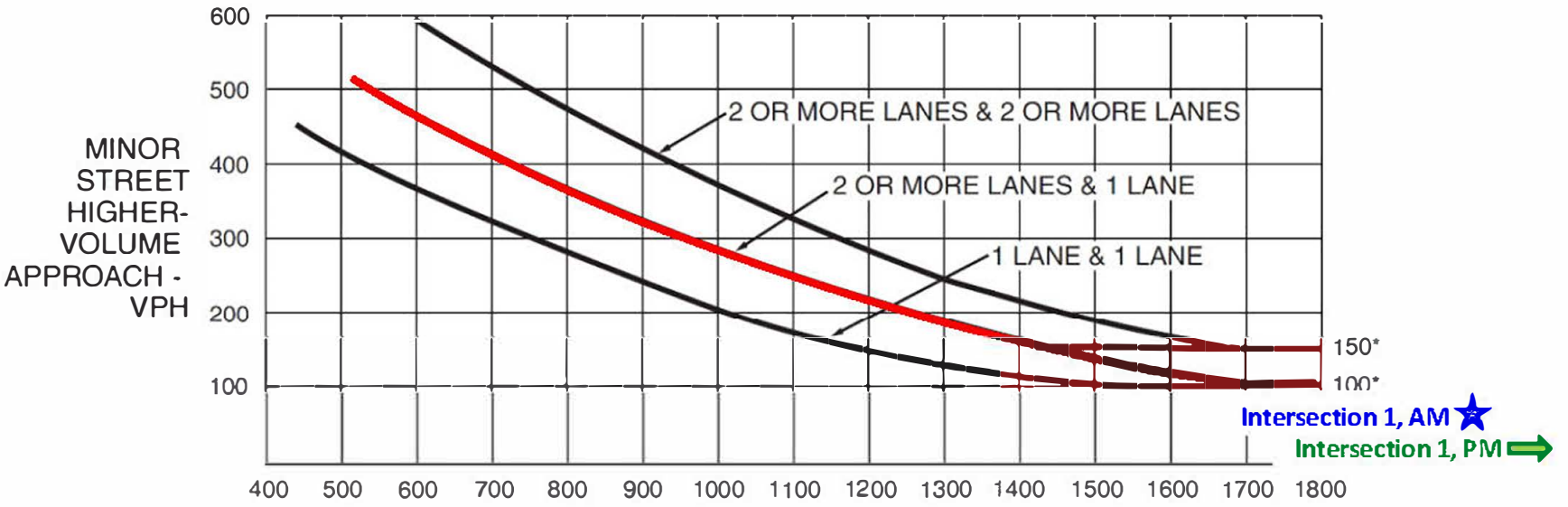
Notes: "EB", "WB", "NB", and ""SB" indicate eastbound, westbound, northbound, and southbound respectively

"L", "R", and "T" indicate left-turn, right-turn, and through movements respectively

Table 5.12-17: Conditions on Study Roadway Segments During Peak Construction Month with Shuttle Buses

Roadway		Between	Existing ADT	Capacity (Max ADT for LOS C)	Existing V/C Ratio	Project Trips (PCEs)	Existing Plus Construction ADT	Existing Plus Construction V/C Ratio	Change in V/C Ratio	LOS	Project has Impact?
			(A)	(B)	(C)=(A)/(B)	(D)	(E)=(A)+(D)	(F)=(E)/(B)	(G)=(F)-(C)		
A	State Route 1	Between South Bay Boulevard and San Bernardino Creek Road	13,400	40,800	0.33	625	14,025	0.34	0.02	C or Better	No
B	State Route 1	Between Morro Bay Boulevard and South Bay Boulevard	26,000	44,000	0.59	700	26,700	0.61	0.02	C or Better	No
C	South Bay Boulevard	Between SR 1 North/Westbound ramps and SR 1 South/Eastbound ramps	14,566	5,600	2.60	466	15,032	2.68	**0.08**	**E**	**Yes**
D	South Bay Boulevard	Between SR 1 South/Eastbound ramps and Park View Road	14,566	5,600	2.60	25	14,591	2.61	0.00	**E**	No
E	Quintana Road	Between South Bay Boulevard and San Bernardino Creek Road	297	5,600	0.05	141	438	0.08	0.03	C or Better	No

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: California Manual of Uniform Traffic Control Devices, 2014 Edition
https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/ca-mutcd/rev6/camutcd2014-part4-rev6.pdf

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TITLE **Figure 5.12-13 Signal Warrant Analysis for Intersection #1**

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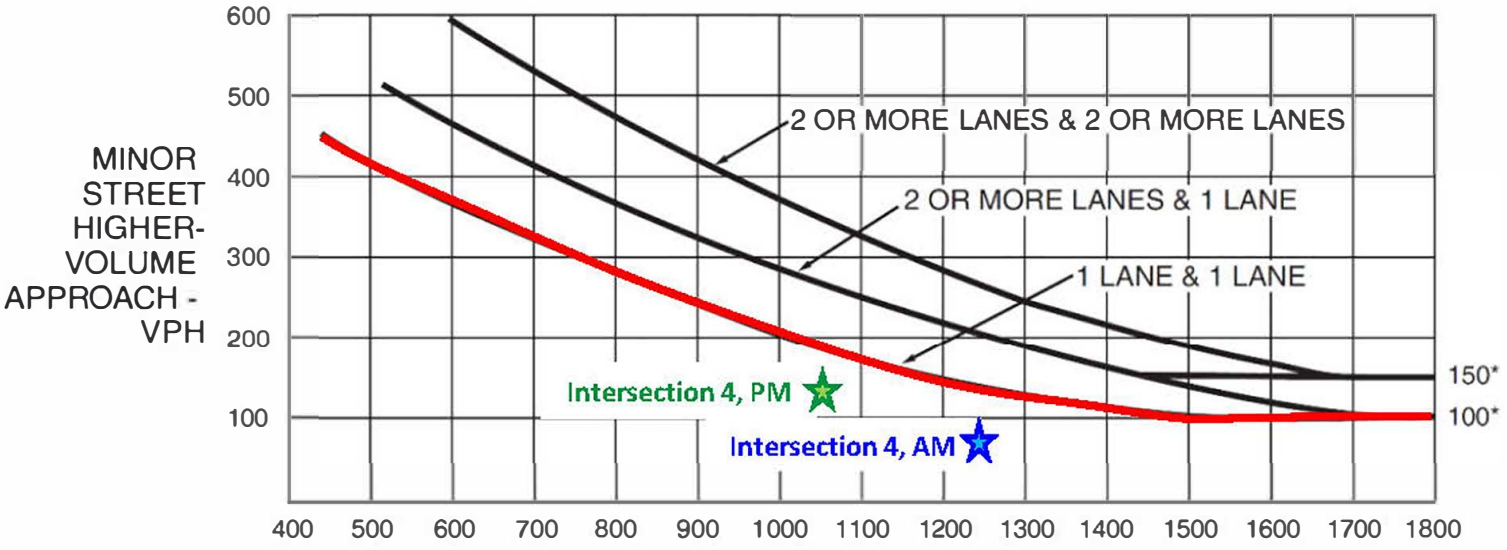
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: California Manual of Uniform Traffic Control Devices, 2014 Edition
https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/ca-mutcd/rev6/camutcd2014-part4-rev6.pdf

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TITLE **Figure 5.12-14 Signal Warrant Analysis for Intersection #4**

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The use of shuttle buses would also reduce the project's (already less-than-significant) VMT impact. As can be seen in Table 5.12-18, The average VMT/employee would be 0.66, which is much less than the regional average of 23.1 VMT/employee.

Table 5.12-18: Average VMT/Employee During Construction with Shuttle Buses

Worker Residential Location		Commute Distance	Percent of Workers	Vehicles per Worker	Calculation of Average VMT
Local Workers		20.7	15.0%	1.0	3.10
Hotel - Car	Cayucos	8.1	0.4%	1.0	0.03
	Morro Bay	2.5	1.4%	1.0	0.04
	Atascadero	11.1	0.5%	1.0	0.06
	San Luis Obispo	10.6	5.9%	1.0	0.62
	Los Osos	5.8	0.3%	1.0	0.01
Hotel - Shuttle	Cayucos	8.1	3.8%	0.1	0.03
	Morro Bay	2.5	13.0%	0.1	0.03
	Atascadero	11.1	4.6%	0.1	0.05
	San Luis Obispo	10.6	52.8%	0.1	0.56
	Los Osos	5.8	2.3%	0.1	0.01
			100.0%		0.66

5.12.5 Laws, Ordinances, Regulations, and Standards

5.12.5.1 Federal LORS

- Title 49 CFR 171–177 governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.
- Title 49 CFR 350-399 and Appendices A-G, Federal Motor Carrier Safety Regulations, address safety considerations for the transport of goods, materials, and substances over public highways.
- Title 49 CFR 397.9, the Hazardous Materials Transportation Act of 1974, directs the U.S. Department of Transportation to establish criteria and regulations for the safe transportation of hazardous materials.
- Title 14 CFR 77.9 requires an applicant to notify the FAA of the construction of structures exceeding 200 feet AGL or exceeding defined imaginary surfaces within 20,000 feet of the nearest point of the nearest runway of an airport with at least one runway longer than 3,200 feet or within 10,000 feet of the nearest point of the nearest runway of an airport with the longest runway no more than 3,200 feet.

5.12.5.2 State LORS

- Title 14 CFR 77.13 through 77.23 outline the criteria used by the FAA to determine whether an obstruction would create an air navigation conflict, when applicable.

- CVC Sections 13369, 15275, and 15278 address the licensing of drivers and classifications of licenses required to operate particular types of vehicles. In addition, certificates permitting the operation of vehicles transporting hazardous materials are addressed.
- CVC Sections 25160 et seq. address the safe transport of hazardous materials.
- CVC Sections 2500–2505 authorize the issuance of licenses by the Commissioner of the CHP to transport hazardous materials, including explosives.
- CVC Sections 31300 et seq. regulate the highway transportation of hazardous materials, routes used, and restrictions. CVC Section 31303 requires hazardous materials to be transported on state or interstate highways that offer the shortest overall transit time possible.
- CVC Sections 31600–31620 regulate the transportation of explosive materials.
- CVC Sections 32000–32053 regulate the licensing of carriers of hazardous materials and include noticing requirements.
- CVC Sections 32100–32109 establish special requirements for the transportation of substances presenting inhalation hazards and poisonous gases. CVC Section 32105 requires shippers of inhalation hazards or explosive materials to contact the CHP and apply for a Hazardous Material Transportation License. Upon receiving this license, the shipper will obtain a handbook specifying approved routes.
- CVC Sections 34000–34121 establish special requirements for transporting flammable and combustible liquids over public roads and highways.
- CVC Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5–7, 34506, 34507.5, and 34510–11 regulate the safe operation of vehicles, including those used to transport hazardous materials.
- California S&HC, Sections 660, 670, 1450, 1460 et seq. 1470, and 1480 regulate right-of-way encroachment and granting of permits for encroachments on state and county roads.
- S&HC Sections 117 and 660–711 and CVC Sections 35780 et seq. require permits to transport oversized loads on county roads. S&HC Sections 117 and 660 to 711 require permits for any construction, maintenance, or repair involving encroachment on state highway rights-of-way.
- CVC Section 35780 requires approval for a permit to transport oversized or excessive loads over state highways.
- Caltrans weight and load limitations for state highways apply to all state and local roadways. The weight and load limitations are specified in CVC Sections 35550 to 35559. The following provisions from the CVC apply to all roadways and are therefore applicable to the Project:
  - General Provisions
    - The gross weight imposed upon the highway by the wheels on any axle of a vehicle shall not exceed 20,000 pounds; and the gross weight upon any one wheel, or wheels, supporting one end of an axle, and resting upon the roadway, shall not exceed 10,500 pounds.

- The maximum wheel load is the lesser of the load limit established by the tire manufacturer, or a load of 620 pounds per lateral inch of tire width, as determined by the manufacturer's rated tire width.

Vehicles with Trailers or Semi-trailers:

- The gross weight imposed upon the highway by the wheels on any one axle of a vehicle shall not exceed 18,000 pounds; and the gross weight upon any one wheel, or wheels, supporting one end of an axle and resting upon the roadway, shall not exceed 9,500 pounds, except that the gross weight imposed upon the highway by the wheels on any front steering axle of a motor vehicle shall not exceed 12,500 pounds.
- California State Planning Law, Government Code Section 65302, requires each city and county to adopt a General Plan, consisting of seven mandatory elements, to guide its physical development. Section 65302(b) requires that a circulation element be one of the mandatory elements.

5.12.5.3 Local LORS

This section reviews compliance with all relevant local LORS without regard to their applicability as a matter of law. These LORS include the following:

- The County of San Luis Obispo requires a permit before operating any oversized/overweight vehicles within the city. The project will comply with the transportation permit requirements by obtaining the permit from the Public Works Department before operating any oversized vehicles within the unincorporated parts of the county.

5.12.6 Agencies and Agency Contacts

Table 5.12-19 lists the agency contacts related to traffic and transportation.

Table 5.12-19: Agency Contacts for Traffic and Transportation

Issue	Agency	Contact
Transportation Permit for Oversized Loads	Caltrans	Caltrans Transportation Permits Issuance Branch 1823 14th Street Sacramento, CA 95814-7119 (916) 322-4958 http://www.dot.ca.gov/hq/traffops/permits/
Hazardous Material Transportation License	California Highway Patrol	Hazardous Material Licensing P.O. Box 942898 Sacramento, CA 942898-0001 (916) 843-3400 Email form available at: http://www.chp.ca.gov/prog/email.cgi
Transportation Permit for Oversized or Overweight Loads	Los Angeles County	Los Angeles County Department of Public Works Transportation Permitting Desk 900 South Fremont Avenue, 8th Floor Alhambra, CA 91803 (626) 458-3126

Transportation Permit	San Luis Obispo County	San Luis Obispo County Department of Public Works County Government Center 1055 Monterey Street, San Louis Obispo, CA 93408 (805) 781-5252 Email form available at: https://www.slocounty.ca.gov/Departments/Public-Works/Services/Transportation-Permits.aspx
Safety Permits	Federal Motor Carrier Safety Administration	California Division Office 1325 J St. Suite 1540 Sacramento, CA 95814-2941 (916) 930-2760

5.12.7 Permits and Permit Schedule

Table 5.12-20 lists the permits related to traffic and transportation and the permit schedule. The vehicles used to transport heavy equipment and construction materials will require transportation permits when they exceed the size, weight, width, or length thresholds outlined in Section 35780 of the CVC, Sections 117 and 660-711 of the California Streets and Highways Code (S&HC), and Sections 1411.1 to 1411.6 of the CCRs. Affected vehicles will be required to obtain transportation permits from Caltrans and San Luis Obispo County, or any other affected agency. Transport route arrangements would be required with Caltrans and CHP officials for permitting and escort, as applicable. Transportation of hazardous materials to and from the PESC will be conducted in accordance with CVC Section 31303.

Table 5.12-20: Permits and Permit Schedule for Traffic and Transportation

Permit	Agency Contact	Schedule
Single/annual-trip transportation permit for oversized loads and oversized vehicles	Permit Officer on Duty Caltrans, Transportation Permits Issuance Branch (916) 322-1297	Obtain when necessary, 2-hour processing time (single trip) to 2 weeks (annual trip).
Hazardous Material Transportation License	California Highway Patrol Hazardous Material Licensing Program (916) 327-5039	Obtain when necessary, approximately 2-week processing time.
Single/annual transportation permit for oversize and overweight loads through San Luis Obispo County	San Luis Obispo County Public Works (805) 781-5252 https://www.slocounty.ca.gov/Departments/Public-Works/Services/Transportation-Permits.aspx	Obtain when necessary, Submit applications by 3:00 PM the prior working day.

5.12.8 References

California Department of Transportation (Caltrans). California Truck Network Maps. Available at: https://dot.ca.gov/programs/traffic-operations/legal-truck-access/truck-network-map. Accessed August 19, 2021.

City of Morro Bay. Department of Public Works. Engineering Division. Capital Projects. Project Status. Available at: https://www.morro-bay.ca.us/238/Project-Status. Accessed August 19, 2021.

City of Morrow Bay. Draft Environmental Impact Report, Morro Bay Water Reclamation Facility. March 2018

City of Morrow Bay. Plan Morro Bay. May 2021. Available at: https://www.morrobayca.gov/DocumentCenter/View/15424/Plan-Morro-Bay-GP-LCP-Final . Accessed October 22, 2021.

County of San Luis Obispo. General Plan. Available at: https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Plans-and-Elements/Elements.aspx . Accessed October 22, 2021.

County of San Luis Obispo. Infrastructure and Facilities Five Year Capital Improvement Plan FY 2021-22 through FY 2025-26. Available at: https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/Capital-Improvement-Projects/FY-2021-22/5-Year-Plan.pdf. Accessed August 19, 2021.

Environmental Science Associates (ESA). March 2018. Morro Bay Water Reclamation Facility Draft Environmental Impact Report. Prepared for City of Morro Bay, CA.

Federal Highway Administration. America's Byways. Route 1 – San Luis Obispo North Coast Byway. Available at: https://www.fhwa.dot.gov/byways/byways/2475. Accessed August 19, 2021.

JBG Consulting. February 28, 2012. 2011 Morro Bay Bicycle & Pedestrian Master Plan. Prepared for City of Morro Bay Public Services Department. Available at: https://ca-morrobay.civicplus.com/DocumentCenter/View/1420/Bicycle-and-Pedestrian-Plan-Adopted-22812. Accessed August 19, 2021.

Rincon Consultants, Inc. August 2014. Chorro Valley Trail Study. Prepared for San Luis Obispo Council of Governments (SLOCOG). Available at: https://www.dropbox.com/s/8u0t5dy16t7r2i9/Chorro%20Valley%20Trail%20Study%20for%20Web.pdf. Accessed August 19, 2021.

Rincon Consultants, Inc. August 2014. Chorro Valley Trail Study Design Guidelines. Prepared for San Luis Obispo Council of Governments (SLOCOG). Available at: https://www.dropbox.com/s/unrcv7393ic324k/CVT%20MostFeasibleAlignmentMaps.pdf. Accessed August 19, 2021.

San Luis Obispo Council of Governments (SLOCOG). June 5, 2019. 2019 RTP Regional Transportation Plan Connecting Communities. Available at: https://www.slocog.org/2019RTP. Accessed August 19, 2021.

San Luis Obispo County Department of Public Works. July 6, 2016. 2015/16 San Luis Obispo County Bikeways Plan. Available at: https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Committees-Programs/Bicycle-Advisory-Committee/Plans-Documents/2016-Bikeways-Plan.pdf. Accessed August 19, 2021.

San Luis Obispo County Traffic Counts. Available at: https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Transportation/Traffic-Count-Data.pdf. Accessed July 22, 2021.

San Luis Obispo Regional Transit Authority. Services. Fixed Route Buses. Available at: http://www.slorta.org/services/fixed-route-buses/. Accessed August 19, 2021.

Scenicbyways.info. America's Scenic Byways Route 1 – San Luis Obispo North Coast Byway. Available at: https://scenicbyways.info/byway/2475.html. Accessed August 19, 2021.

Transportation Research Board (TRB). 2016. Highway Capacity Manual 6th Edition A Guide for Multimodal Mobility Analysis. National Academy of Sciences. Chapters 19-22.

U.S. Census data. Available at: https://onthemap.ces.census.gov/ . Accessed August 3, 2021.

Visit San Luis Obispo. Transportation. Train to San Luis Obispo. Available at: https://visitslo.com/transportation/train-to-san-luis-obispo/. Accessed August 19, 2021.