

Chapter 18 Navigation, Transportation, and Traffic

18.1 Introduction

This chapter describes the environmental setting, methods of analysis, and impact analysis for navigation, transportation, and traffic that would potentially be affected by effects of the construction and operation of the Project. Navigation includes any transportation mode along bodies of water related to shipping/deliveries, commuting, and watercraft or sportfishing activities. Transportation is the general term used for the movement of goods or people via vehicles, trucks, buses, light rail, heavy rail, aircraft, bicycles, or walking paths (sidewalks or other pedestrian facilities). Traffic is a focused evaluation on the effects of vehicles (passenger cars, trucks, and buses) on the existing and future roadway networks.

The study area for navigation, transportation, and traffic consists of the local study area (i.e., Project inundation area and construction footprint of the associated facilities) and regional study area (i.e., trip origins from surrounding population centers).

Existing airports (Moller Airport, Colusa County Airport, Gunnersfield Ranch Airport, Antelope Valley Ranch Airport, Willows–Glenn County Airport, Williams Soaring Center, and Richter Aviation) are not located within 9,000 feet (the typical distance to the end of a conical surface for building height restrictions) of any Project facility sites. Therefore, Project construction and operations would not affect air traffic patterns. For this reason, airports and air traffic patterns are not discussed further in this chapter.

Tables 18-1a and 18-1b summarize the CEQA determinations and NEPA conclusions for construction and operations impacts, respectively, for the alternatives evaluated in the impact analysis.

Table 18-1a. Summary of Construction Impacts and Mitigation Measures for Navigation, Transportation, and Traffic

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact TRA-3: Substantial increase in hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact TRA-4: Result in inadequate emergency access			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact TRA-5: Substantially affect school bus travel			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact NAV-1: Substantially impair recreational and commercial navigation during construction and operations			
No Project	NI/NE	-	NI/NE
Alternative 1	NI/NE	-	NI/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	NI/NE	-	NI/NE

Notes:

NI = CEQA no impact

LTS = CEQA less-than-significant impact

NE = NEPA no effect or no adverse effect

Table 18-1b. Summary of Operations Impacts and Mitigation Measures for Navigation, Transportation, and Traffic

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact TRA-2: Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)			
No Project	NI/NE	-	NI/NE
Alternative 1	NI/NE	-	NI/NE
Alternative 2	NI/NE	-	NI/NE
Alternative 3	NI/NE	-	NI/NE
Impact TRA-3: Substantial increase in hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact TRA-4: Result in inadequate emergency access			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE
Impact TRA-5: Substantially affect school bus travel			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	SU/SA	No feasible mitigation measures identified	SU/SA
Alternative 3	LTS/NE	-	LTS/NE
Impact NAV-1: Substantially impair recreational and commercial navigation during construction and operations			
No Project	NI/NE	-	NI/NE
Alternative 1	NI/NE	-	NI/NE
Alternative 2	NI/NE	-	NI/NE
Alternative 3	NI/NE	-	NI/NE

Notes:

NI = CEQA no impact

LTS = CEQA less-than-significant impact

SU = CEQA significant and unavoidable

NE = NEPA no effect or no adverse effect

SA = NEPA substantial adverse effect

18.2 Environmental Setting

The environmental setting for transportation, traffic, and navigation is organized into the following areas:

- The local setting for all impacts other than vehicle miles traveled (VMT)
- Projected vehicle trip origins for impacts related to change in VMT
- Locations on the Sacramento River where construction would take place and could potentially interfere with navigation on the Sacramento River.

18.2.1. Project Access Roads

The local study area for the transportation and traffic analysis consists of roadways and highways providing access to the Project site facilities within Colusa, Glenn, and Yolo Counties. Project access roadways for the Sites Reservoir and other related facilities in the vicinity of the reservoir extend west from Interstate (I-) 5 through the reservoir construction area and permanent inundation area within the counties of Colusa and Glenn. Access roadways for the Dunnigan Pipeline are within Yolo County to the south.

Table 18-2 is a summary of the roads that are expected to be used to access the Project facilities during construction and operations. The access roadways are a combination of existing roadways and roadways that are assumed to be constructed as part of the Project. The majority of the roadways assumed to be constructed as part of the Project are internal to the Project sites and would provide direct access to different Project facilities.

A map of the Project access routes to the reservoir is provided in Figure 2-35 in Chapter 2, *Project Description and Alternatives*, and roads are summarized in Table 2-4 and Section 2.5.1.7, *New and Existing Roadways*.

Table 18-2. Sites Reservoir Project Access Roads

Roadways and Highways		Jurisdiction	Existing Roadway?	Roadway Uses for Project			Designated Transit/Bicycle/Bus/Pedestrian?	
				Recreational	Maintenance	Construction		
Site's External Access Roadways	Reservoir and Facilities in the Vicinity of the Reservoir	I-5 north of Glenn-Colusa county line	Caltrans/ Colusa Co	Existing	x	x	x	No
		I-5 from SR 20 to Glenn-Colusa county line	Caltrans/ Colusa Co	Existing	x	x	x	No
		Road 68 west of I-5	Glenn Co	Existing	x	x	x	No
		Road D north of Glenn-Colusa county line	Glenn Co	Existing	x	x	x	No
		Road 69 from Road D to end of paved road	Glenn Co	Existing	x	x	x	No
		Delevan Road west of I-5	Colusa Co	Existing	x	x	x	No
		McDermott Road north of Maxwell Sites Road	Glenn Co/ Colusa Co	Existing	x	x	x	No
		Maxwell Sites Road east of McDermott Road	Colusa Co	Existing	x	x	x	CCTA Transit Route, Class III Bicycle
		Maxwell Sites Road/McDermott Road to Sites Lodoga Road	Colusa Co	Existing	x	x	x	CCTA Transit Route, Class III Bicycle
		Huffmaster Road	Colusa Co	Existing	x	x	x	No
		Sites Lodoga Road (to be realigned with bridge [Alts. 1 and 3] or realigned without bridge [Alt. 2])	Colusa Co	Existing	x	x	x	CCTA Transit Route, Class III Bicycle
Dunnigan Pipeline		I-5 at Colusa-Yolo county line	Caltrans/ Yolo Co	Existing	-	-	x	No
		County Road 99W south of County Road 8	Yolo Co	Existing	-	-	x	No

	Roadways and Highways	Jurisdiction	Existing Roadway?	Roadway Uses for Project			Designated Transit/Bicycle/Bus/Pedestrian?	
				Recreational	Maintenance	Construction		
	County Road 8	Yolo Co	Existing	-	-	x	No	
	County Road 90B	Yolo Co	Existing	-	-	x	No	
Site's Internal Access Roadway	Reservoir and Facilities in the Vicinity of the Reservoir	North Road (Access Road - Road 69)	Colusa Co	New	-	x	x	-
		Saddle Dam Road - North	Colusa Co	New	-	x	x	-
		Saddle Dam Road - South	Colusa Co	New	-	x	x	-
		Day-Use Boat Ramp	Colusa Co	New	x	x	x	-
		Peninsula Hills Recreation Area	Colusa Co	New	x	x	x	-
		Access Road A, B, and C	Colusa Co	New	-	x	x	-
		Stone Corral Creek Recreation Area/Sites Dam Road	Colusa Co	New	-	x	x	-
		Comm Road South	Colusa Co	Existing	-	x	x	-

Source: Colusa County Local Transportation Commission 2018, County of Glenn 2020a

Notes:

Caltrans = California Department of Transportation

CCTA= Colusa County Transit Agency

Co = County

I-5 = Interstate 5

SR = State Route

Table 18-3 is a description of the existing study area roadways.

I-5 is a major north–south, four-lane freeway that extends approximately 7 miles in Yolo County (near the Dunnigan Pipeline alignment), 35 miles in Colusa County, 29 miles through Glenn County, and 25 miles through Tehama County (from county line to Red Bluff). Daily traffic volumes on I-5 average approximately 31,200 vehicles per day in Yolo County (near the Dunnigan Pipeline alignment), 26,600 vehicles per day in Colusa County, 24,000 vehicles per day in Glenn County, and 41,800 vehicles per day in Tehama County (near the RBPP). The capacity for this freeway is estimated at 79,200 vehicles per day.

18.2.1.1. Yolo County

County Road 99W is a north–south, two-lane rural minor collector that extends 2.5 miles from County Road 10 to County Road 8 (near the Dunnigan Pipeline alignment). The county road is paved with narrow unpaved shoulders in both directions and includes some turning pockets to access private property or major crossroads. The capacity for this roadway is estimated at 11,200 vehicles per day.

County Road 8 is an east–west, two-lane rural local road that extends 0.5 mile from County Road 90B to County Road 99W (near the Dunnigan Pipeline alignment). The county road is paved with some sidewalks on the east side of the I-5 interchange. The I-5 interchange is a spread diamond configuration with an overcrossing and with ramps serving both directions of I-5. The capacity for this road is estimated at 5,500 vehicles per day.

County Road 90B is a north–south, two-lane rural local road that extends 0.6 mile south of County Road 8 (near the Dunnigan Pipeline alignment) west of the I-5 interchange with County Road 8. County Road 90B converts to a dirt/gravel road south of Bird Creek. The capacity for this road is estimated at 5,500 vehicles per day.

18.2.1.2. Colusa County

Sites Lodoga Road, in its existing alignment and configuration, is generally an east–west, two-lane rural minor arterial that begins in the community of Sites and extends 14 miles west to Lodoga. The road is paved with unpaved shoulders and enters a winding mountainous area near the Project site. The road has occasional unpaved emergency pullout areas. Daily traffic volumes on Sites Lodoga Road average approximately 500 vehicles per day, and the capacity is estimated at 15,500 vehicles per day.

Huffmaster Road, in its existing alignment and configuration, is a north–south rural local road that begins in the Sites community and extends south through a mountainous area and connects to the community of Leesville. Huffmaster Road is an unpaved dirt/gravel road that provides access to rural private properties and valley fields before entering the mountains to the west. The capacity for this road is estimated at 5,500 vehicles per day.

Maxwell Sites Road, in its existing alignment and configuration, is an east–west, two-lane rural minor arterial that begins in the community of Maxwell as Oak Street and extends 9 miles west to the community of Sites. Maxwell Sites Road is paved and provides residential access in the community of Maxwell. West of Maxwell, the road continues as paved with no shoulders and then enters a winding mountainous area. Daily traffic volumes on Maxwell Sites Road average

approximately 1,050 vehicles per day, and the capacity is estimated at 15,500 vehicles per day in the section outside of Maxwell.

McDermott Road (County Road F in Glenn County) is a north–south, two-lane rural local road that extends 9 miles between Maxwell Sites Road and Road 68 (in Glenn County). McDermott Road is paved with no shoulders until it intersects Dirks Road (north of Delevan Road). North of Dirk Roads, McDermott Road converts to an unpaved dirt/gravel road until it intersects Road 68 as a 1,500-foot paved section. Daily traffic volumes on McDermott Road average approximately 400 vehicles per day, and the capacity is estimated at 5,500 vehicles per day.

Delevan Road is an east–west, two-lane rural local road that extends 2 miles between I-5 and McDermott Road. Delevan Road is paved with narrow shoulders between I-5 and east of Sutton Road. Delevan Road connects with I-5 as a spread diamond interchange with an overcrossing and with ramps serving both directions of I-5, then continues east to 4 Mile Road. Daily traffic volumes on McDermott Road average approximately 560 vehicles per day, and the capacity is estimated at 5,500 vehicles per day.

18.2.1.3. Glenn County

Road 69 is an east–west, two-lane rural local road that extends 2.5 miles between Road D and the TC Canal, where the pavement ends. Daily traffic volumes on Road 69 average approximately 25 vehicles per day, and the capacity is estimated at 5,500 vehicles per day.

Road D is a north–south, two-lane rural local road that extends 1.5 miles between the Glenn-Colusa county line (at Glenn Road) and Road 68. Road D is paved with no shoulders throughout the study limits. Daily traffic volumes on Road D average approximately 481 vehicles per day, and the capacity is estimated at 5,500 vehicles per day.

Road 68 is an east–west, two-lane rural minor collector that extends 3 miles from I-5 to Road D. Road D is generally paved with narrow shoulders. The I-5 interchange is a spread diamond configuration with an overcrossing and with ramps serving both directions of I-5. Daily traffic volumes on Road 68 average approximately 230 vehicles per day, and the capacity is estimated at 11,200 vehicles per day.

Table 18-3. Existing Conditions Average Daily Traffic

Roadways and Highways		Year 2019 Average Daily Traffic	# of Lanes	Roadway Classification	Maximum Daily Volume Threshold (LOS E)	
Site's External Access Roadway	Reservoir and Facilities in the Vicinity of the Reservoir	I-5 north of Glenn-Colusa county line	24,000	4	Interstate	79,200
		I-5 from SR 20 to Glenn-Colusa county line	26,566	4	Interstate	79,200
		Road 68 west of I-5	230	2	Rural Minor Collector	11,200
		Road D north of Glenn-Colusa county line	481	2	Rural Local Road	5,500
		Road 69 from Road D to end of paved road	25	2	Rural Local Road	5,500
		Delevan Road west of I-5	559	2	Rural Local Road	5,500
		McDermott Road north of Maxwell Sites Road	407	2	Rural Local Road	5,500
		Maxwell Sites Road east of McDermott Road	1,617	2	Rural Minor Arterial	15,500
		Maxwell Sites Road/McDermott Road to Sites Lodoga Road	468	2	Rural Minor Arterial	15,500
		Huffmaster Road	No Data	2	Rural Local Road	5,500
	Sites Lodoga Road	468	2	Rural Minor Arterial	15,500	
	Dunnigan Pipeline	I-5 at Colusa-Yolo county line	31,164	4	Interstate	79,200
		County Road 99W south of County Road 8	No Data	2	Rural Minor Collector	11,200
		County Road 8	No Data	2	Rural Local Road	5,500
County Road 90B		No Data	2	Rural Local Road	5,500	

Source: Colusa County Local Transportation Commission 2018; County of Glenn 2020a, 2020b

Notes:

I-5 = Interstate 5

LOS = level of service

SR = State Route

18.2.2. Roadway Classification and Roadway Capacity

Major roadways within the local study area were identified. Roadway networks are similar across all counties, and roadway classifications are generally similarly described in the associated general and transportation plans.

Glenn County has the most recently developed plan—their regional transportation plan (RTP) adopted in October 2020 (County of Glenn 2020a)—and the most comprehensive information related to roadway classifications and capacities. The capacities outlined in the Glenn County RTP are derived from maximum peak-hour flows in the *Highway Capacity Manual 2010* (HCM) (Transportation Research Board 2010) and listed by roadway classifications from the Federal Highway Administration. The guidance from Glenn County is more applicable to describing the existing conditions and ultimately informing the impact analysis than the guidance from other counties in the study area because:

- Colusa County roadway classifications and maximum daily volume thresholds are from an older version of the HCM, and the maximum daily volume thresholds from Colusa County are higher and less conservative than the volumes tabulated in the Glenn County RTP.
- Yolo County guidance documents do not include assessments of daily volume thresholds and are more focused on intersection operations and volume-to-capacity ratios. The three study area roadways in Yolo County are located in rural areas where intersection analysis is not applicable.

Roadway classifications using Glenn County’s RTP identified in the local study area for local roads are summarized in Table 18-4.

Table 18-4. Roadway Classifications

Roadway Classification	Description
Interstate	Officially designated by the Secretary of Transportation; provides limited access, divided highways to connect traffic between major urban areas.
Urban Principal Arterial	Serves traffic passing through urban areas by serving as an extension of a Rural Principal Arterial or a Rural Minor Arterial with potentially significant increases in traffic within the urban area.
Urban Minor Arterial	Serves traffic passing through urban areas by serving as an extension of Rural Minor Arterials into urban areas, until volumes significantly increase, or as an extension of Rural Major Collectors that extend through urban areas without significant increase in traffic.
Urban Minor Collector	Provides local access to adjoining property with trip lengths to roads with higher classifications of 0.25 mile or less. There is virtually no through traffic.
Rural Principal Arterial	Interstate highway or roadway connecting a principal arterial with cities of 50,000 population or greater, or two or more cities with 50,000 population or greater.
Rural Minor Arterial	Integrated inter-county road connecting major communities (3,000 to

Roadway Classification	Description
	50,000 people) or principal/minor arterials with adequate spacing from other arterials and equal mix of through and local traffic.
Rural Major Collector	Primarily intra-county travel serving smaller communities and countywide trip generators, such as consolidated schools, freeway interchanges, major shipping terminals, major recreational facilities, and concentrations of commercial/industrial activity.
Rural Minor Collector	Carries traffic from residential subdivisions/settlements, farms, logging operations, and other local area trip generators to higher classification roads.
Rural Local Road	Access to adjoining property, primarily residences, farms, or resource extraction operations.

Source: Federal Highway Administration 2017, County of Glenn 2020a

Level of service (LOS) is a qualitative assessment of the quantitative effects of such factors as traffic volume, roadway geometries, speed, delay, and maneuverability on roadway and intersection operations. LOS acts as an indicator of roadway performance, assisting in determining when roadway capacity needs to be improved, using a scale of A through F. LOS A through C are generally viewed as acceptable, although some jurisdictions allow for LOS D and E. Roadway traffic flow characteristics, as described in the Glenn County RTP (County of Glenn 2020a), for different LOS are described in Table 18-5.

Table 18-5. Roadway Segment Level of Service Characteristics

Level of Service	Traffic Flow Characteristics
A	Represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
B	Stable flow, but the presence of others in the traffic stream begins to be noticeable.
C	Stable flow but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interaction with others in the traffic stream.
D	Represents high density, but stable flow.
E	Represents operating conditions at or near the capacity level.
F	Represents forced or a breakdown in traffic flow.

Source: Transportation Research Board 2010, County of Glenn 2020a

Table 18-6 is a summary of the existing conditions LOS based on the roadway classification and roadway capacities described in Tables 18-3 and 18-4. Most of the study roadways operate at LOS A or LOS B.

Table 18-6. Existing Roadway Segment Level of Service

Roadways and Highways		Year 2019 ADT	# of Lanes	Roadway Classification	Maximum Daily Volume Threshold (LOS E)	Year 2019 LOS	
Site's External Access Roadway	Reservoir and Facilities in the Vicinity of the Reservoir	I-5 north of Glenn-Colusa county line	24,000	4	Interstate	79,200	A
		I-5 from SR 20 to Glenn-Colusa county line	26,566	4	Interstate	79,200	B
		Road 68 west of I-5	230	2	Rural Minor Collector	11,200	A
		Road D north of Glenn-Colusa county line	481	2	Rural Local Road	5,500	A
		Road 69 from Road D to end of paved road	25	2	Rural Local Road	5,500	A
		Delevan Road west of I-5	559	2	Rural Local Road	5,500	A
		McDermott Road north of Maxwell Sites Road	407	2	Rural Local Road	5,500	A
		Maxwell Sites Road east of McDermott Road	1,617	2	Rural Minor Arterial	15,500	B
		Maxwell Sites Road/McDermott Road to Sites Lodoga Road	468	2	Rural Minor Arterial	15,500	A
		Huffmaster Road	No Data	2	Rural Local Road	5,500	No Data
	Sites Lodoga Road realignment, including bridge	468	2	Rural Minor Arterial	15,500	A	
	Dunnigan Pipeline	I-5 at Colusa-Yolo county line	31,164	4	Interstate	79,200	B
		County Road 99W south of County Road 8	No Data	2	Rural Minor Collector	11,200	No Data
		County Road 8	No Data	2	Rural Local Road	5,500	No Data
County Road 90B		No Data	2	Rural Local Road	5,500	No Data	

Source: Colusa County Local Transportation Commission 2018; County of Glenn 2020a, 2020b

Notes:

ADT = average daily traffic

I-5 = Interstate 5

LOS = level of service

SR = State Route

18.2.3. Regional Study Area

The regional setting was defined using the regional recreational sources listed in Table 18-7. This regional setting defines the appropriate study area for VMT analysis. VMT analysis was conducted over a larger area defined by the roadway segments identified in Section 18.2.1, *Project Access Roads*. Water-dependent or water-enhanced recreation resources located outside of the local study area were considered for the regional study area.

Figure 18-1 is an illustration of the recreation areas identified in the regional study area and summarized in Table 18-7.

Table 18-7. Existing Recreation Areas in the Regional Study Area

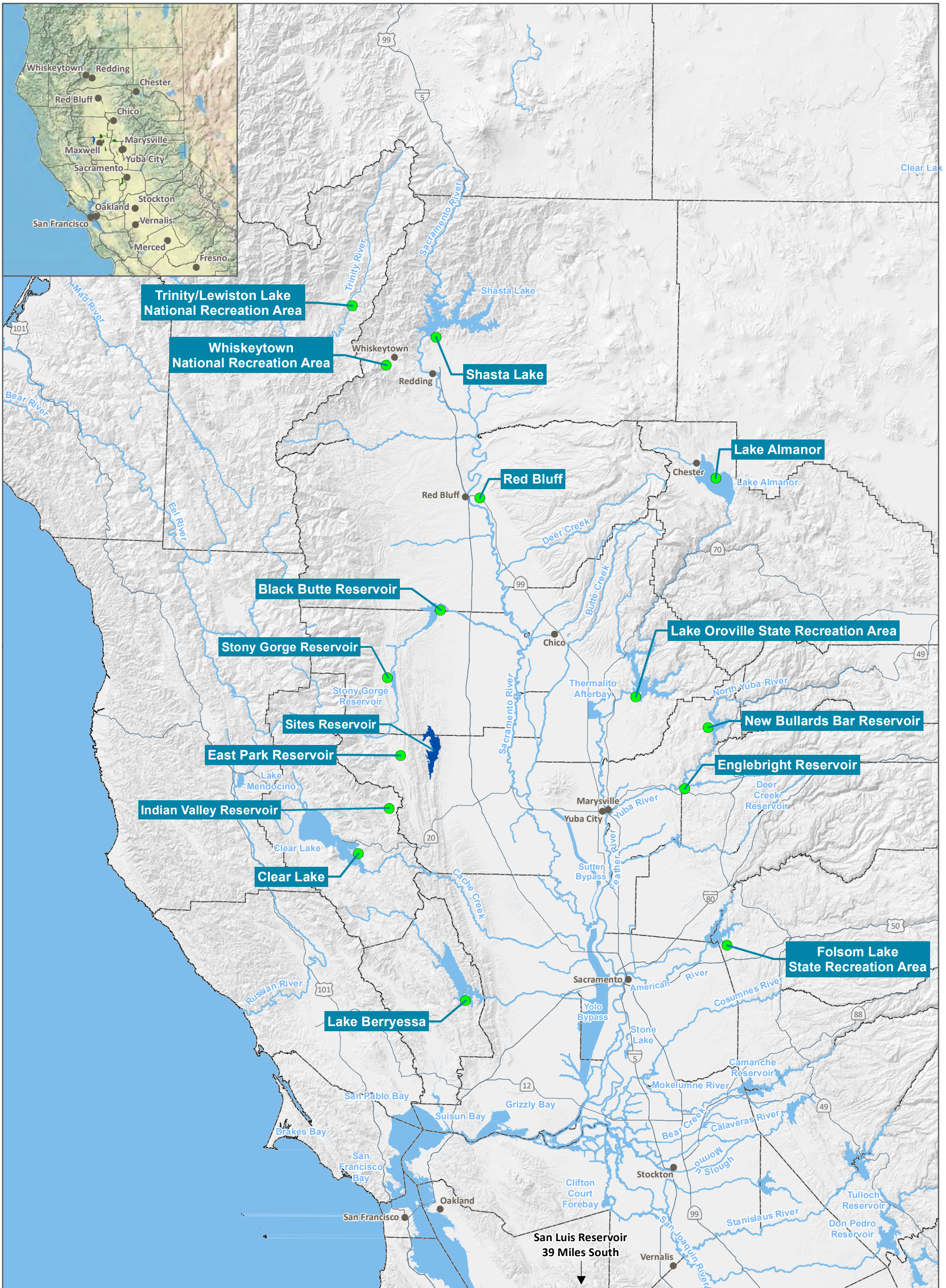
Recreation Area	Location Relative to Study Area	County(ies)	Recreational Use (visitor days) ¹
Shasta Lake, Keswick Reservoir (Shasta Unit ²)	98 miles north	Shasta	2,330,000
Trinity and Lewiston Lakes (Trinity Unit ¹)	104 miles north	Trinity	425,000
Whiskeytown Lake (Whiskeytown Unit ¹)	90 miles north	Shasta	843,800
Lake Almanor	90 miles northeast	Plumas	244,000
Red Bluff	58 miles north	Tehama	65,000
Black Butte Reservoir	35 miles north	Tehama, Glenn	220,000
Lake Oroville State Recreation Area	47 miles east	Butte	1,200,000
Stony Gorge Reservoir	22 miles north	Glenn	50,000
New Bullards Bar Reservoir	64 miles east	Yuba	104,000
East Park Reservoir	9 miles west	Colusa	53,000
Englebright Reservoir	57 miles east	Yuba	105,000
Inland Valley Reservoir	20 miles southwest	Lake	50,000
Clear Lake	30 miles southwest	Lake	1,000,000
Folsom Lake State Recreation Area, Lake Natoma	78 miles southeast	Sacramento	1,000,000
Lake Berryessa	57 miles south	Napa	1,400,000

Source: Guthrie et al. 1995; Rischbieter 2000; Dirksen and Dirksen 2003; Stienstra 2004; California Department of Water Resources 2007, 2008, 2012; Dean’s AnglerNet.com 2011; FishersNet.com 2011; Fishsniffer.com 2011; U.S. Forest Service 2011; National Park Service 2016; Unsinn pers. comm.

Notes:

¹ Recreational use reported is approximate and represents an average of the most recent 3 years of available data or a single year when only 1 year of data was available. Defined as a visit by one person for part or all of 1 day.

² Unit of the Whiskeytown-Shasta-Trinity National Recreation Area.



0 20 40
MILES

DATA SOURCES: CPAD Holdings - Calands.org, 2013; Waters, NHD, 2018

LEGEND

- Regional Recreation Areas
- Wildlife Area
- City
- County
- Rivers
- Water Body

DISCLAIMER: This exhibit is preliminary and is subject to change.

FIGURE 18-1
RESERVOIRS AND OTHER
RECREATION NEAR THE
STUDY AREA

MAP DATE: 6/25/2021

The regional urban population areas (as defined by the U.S. Census Bureau) listed in Table 18-8 were identified as the likely origins of the estimated recreational trips expected at the Project site that would displace from the existing recreation areas listed in Table 18-7 (from south to north). Figure 18-2 shows the relative locations of these population centers in the regional study area.

Table 18-8. Regional Urban Populations Likely to Make Recreational Trips to Sites Reservoir

Population Center	Associated Urban Areas	Estimated Population¹
Modesto	Modesto, Turlock	458,100
Stockton	Stockton, Lodi, Tracy, Manteca	610,500
Bay Area	San Francisco, Oakland, San Jose, Concord, Vallejo, Antioch, Napa	6,088,300
Sacramento	Sacramento	1,723,600
Davis	Davis, Woodland	128,300
Santa Rosa	Santa Rosa, Petaluma	372,300
Yuba	Yuba City	116,700
Chico	Chico	98,200
Redding	Redding	117,700

Source: U.S. Census Bureau 2020

Notes:

¹Population estimates are derived from the Geography Division’s TIGERweb application as a summary of local urban areas and urban clusters; population counts were used for comparison purposes to determine the relative differences between the population centers selected.

A separate Project area population center was identified from a combination of the communities (not urban areas defined in the U.S. Census Bureau) near the Project site. This population center includes the Arbuckle, Williams, Colusa, Willows, Orland, Corning, Los Molinos, and Red Bluff urban clusters, with an estimated population of 62,000. Maxwell, Delevan, Sites, and Lodoga are not identified in the database as urban clusters due to their low population and therefore are not included in the population centers listed in Table 18-8.

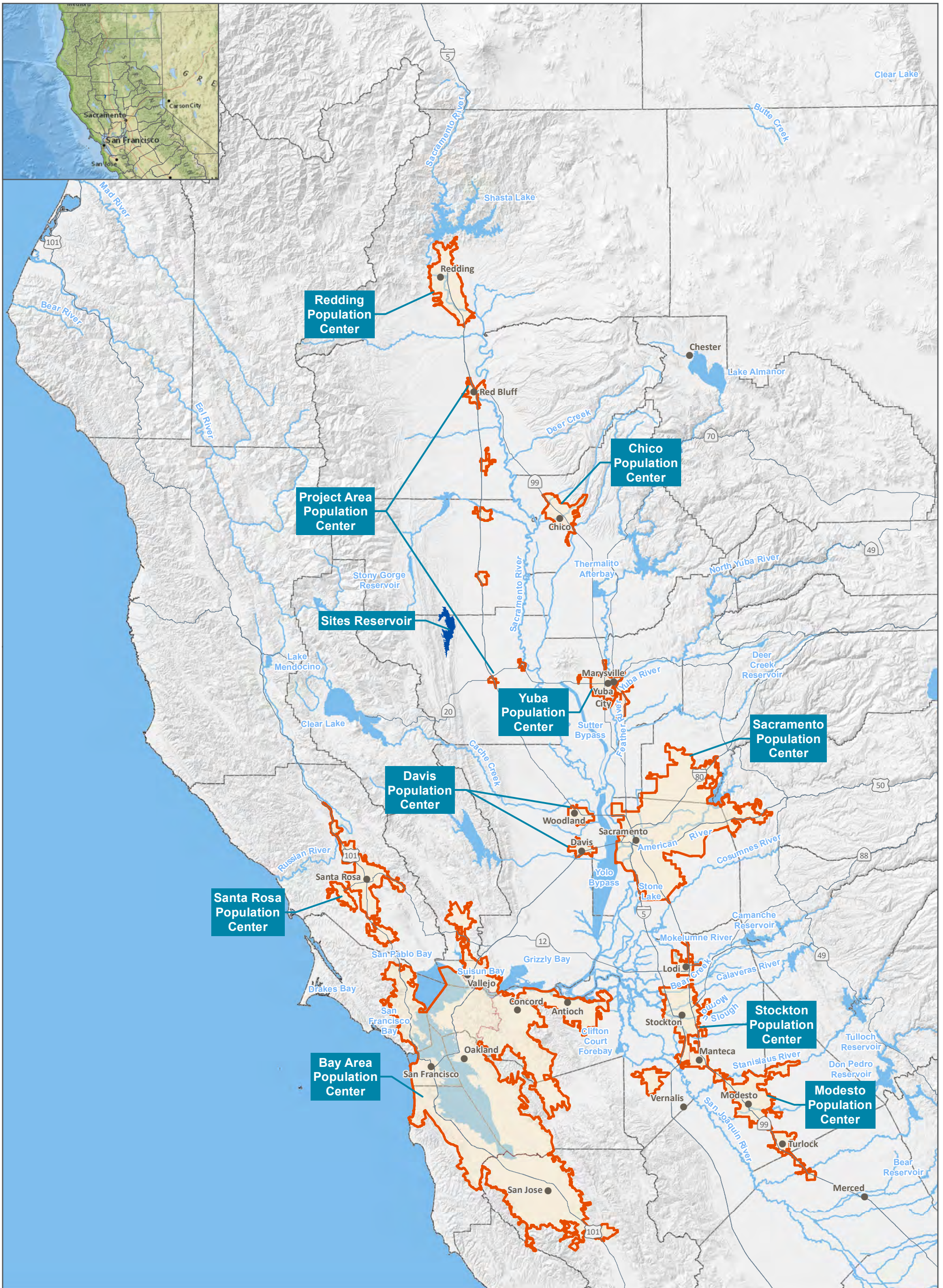
18.2.4. Modes of Transportation Other Than Private Vehicles

18.2.4.1. Transit System

Colusa County

Public transportation within Colusa County is provided by the Colusa County Transit Agency through a public paratransit service. The service is offered on a dial-a-ride basis with fixed timed routes to eight locations, including Arbuckle, Colusa, Grimes, Maxwell, Princeton, Sites, Stonyford, and Williams, operating Monday through Friday between the hours of 7:00 a.m. and 5:00 p.m.

As indicated in Table 18-2, based on the Colusa County General Plan (Colusa County 2012) and RTP (Colusa County Local Transportation Commission 2018), Maxwell Sites Road and Sites Lodoga Road within Colusa County are designated as transit routes.



DATA SOURCES: California Protection Areas Database 2013, U.S. Geological Survey 2018

LEGEND

- City
- County
- Rivers
- Water Body
- Urban Population Centers

DISCLAIMER: This exhibit is preliminary and is subject to change.

FIGURE 18-2
POPULATION CENTERS
NEAR THE STUDY AREA

MAP DATE: 3/25/2021

Glenn County

The Glenn Transit Service is the public transit operator for Glenn County, administered by the Glenn County Department of Public Works. It offers four types of public transportation services.

- Glenn Ride is the only general fixed-route inter-city transit service in the county, connecting Willows, Artois, Orland, and Hamilton City, as well as Chico in Butte County. Seven trips are provided on weekdays, and three trips are provided on Saturday. No service is provided on Sundays.
- Glenn Transport (dial-a-ride) is available to senior residents who meet eligibility requirements and are unable to use the Glenn Ride bus system. Services are restricted to a 1.5-mile radius of the City Halls of Orland and Willows, the Leisure Mobile Home Park, the Willows-Glenn Mobile Home Park, and the Huggins/Cannell Drives area. The service operates Tuesdays and Fridays from 10:00 a.m. to 4:00 p.m.
- Volunteer Medical Transport provides transportation service to medical appointments for Glenn County residents who are unable to use Glenn Ride and do not have personal mode of transportation. Volunteers use their personal vehicles to transport patients.
- Tehama Rural Area Express (TRAX) provides service to the community of Orland as a connection for Tehama County residents to connect to the Glenn Ride service and vice versa.

As indicated in Table 18-2, based on the Glenn County General Plan (County of Glenn 2020b) and RTP (County of Glenn 2020a), none of the Project access roadways within Glenn County are designated as transit routes.

Tehama County

Public transportation within Colusa County is provided by the Tehama County Transit Agency Board through multiple services. These services include:

- TRAX has a service area that includes the incorporated cities of Corning, Red Bluff, and Tehama, as well as the unincorporated communities along Highway 99E and Highway 99W. TRAX offers eight service routes that provide local connections in the major cities and includes Glenn/Tehama Connect, which is a north–south route that connects communities in Tehama County to the Glenn County transit service in Orland. Glenn/Tehama Connect serves Red Bluff, Proberta, Tehama, Richfield, Corning, and Rolling Hills Casino.
- ParaTRAX is a demand response (dial-a-ride) program that provides a curb-to-curb service to certified individuals with disabilities and seniors. ParaTRAX operates Monday through Saturday. Many seniors 65 and older choose to use their senior passes and ride ParaTRAX for free.
- Medical Transportation Service (METS) is a transportation program that uses volunteer drivers to transport eligible residents to and from medical appointments. METS transports clients within Tehama County and to Shasta, Glenn, and Butte Counties.

Based on the Tehama County General Plan (Tehama County 2007) and RTP (Tehama County Transportation Commission 2019), South Main Street, near the RBPP within Tehama County, is designated as a transit route.

Yolo County

Transit services and routes in Yolo County were not investigated in detail due to the Dunnigan Pipeline being located primarily in agricultural areas.

18.2.4.2. School Bus Routes

Public school districts in the counties where the Project would be constructed and operated provide school bus services. School bus routes are adjusted and change frequently depending on enrollment and location of school age children in these districts. In the vicinity of the Project site, Maxwell Unified School District serves an area of 387 square miles (Maxwell School District 2019). The district consists of three schools and serves approximately 327 students (Maxwell School District 2019). The community of Lodoga is served by the Maxwell Unified School District, and there is a school bus route between Lodoga and Maxwell along Sites Lodoga Road and Maxwell Sites Road.

18.2.4.3. Bicycle and Pedestrian Routes

Colusa County

Colusa County has a bicycle master plan (adopted December 2012), which allows regional connections for bicycle travel between and within communities (Colusa County Local Transportation Commission 2018). The plan includes several roadways with bicycle lanes (identified by class), including two of the Project access roadways. Maxwell Sites Road and Sites Lodoga Road within Colusa County are designated as having Class III bicycle lanes. None of the Project access roadways have sidewalks.

Glenn County

Currently active transportation infrastructure in Glenn County is limited. Based on the General Plan (County of Glenn 2020b), there are two short segments of Class II bicycle lanes in Glenn County: one along State Route (SR) 162 west of I-5 in Willows and one on SR 32 in Orland east of Papst Avenue. Therefore, none of the Project access roadways within Glenn County are designated as bicycle routes. None of the Project access roadways were identified to have pedestrian facilities.

Tehama County

Currently active transportation infrastructure in Tehama County is limited. The County is preparing an active transportation plan. The plan identifies a comprehensive network of sidewalks, crosswalks, and curb ramps located in the downtown area of Red Bluff. However, the existing bikeway network is limited, with one route along a major corridor and three additional routes through neighborhoods and parks. Proposed routes would greatly increase connectivity when constructed. Near the RBPP, there is a bicycle route at Shasta College–Tehama Campus.

Yolo County

An adopted 2013 *County of Yolo Bicycle Transportation Plan* (Yolo County Transportation Advisory Committee 2013) identifies County Road 99W as a planned bicycle route that would include a Class II bicycle facility with 4-foot-wide bicycle lanes along a widened section of the existing roadway. The planned bicycle route is classified as low priority and has not been constructed. On the western side of County Road 99W, there is an existing private pedestrian pathway that connects the Ritchie Bros. Auctioneers property on both sides of Bird Creek via a pedestrian bridge.

18.2.4.4. Rail Traffic System

The West Valley Line of the California Northern Railroad (CFNR) is located east of the community of Sites and operates between Davis and Tehama, California. This railroad line is also located near the Dunnigan Pipeline crossing at County Road 99W. The major commodities carried by CFNR include tomato products, olives, rice, cheese, frozen foods, beer, wine, and wheat, as well as stone, petroleum products, and chemicals. The CFNR does not provide passenger service.

18.2.5. Navigation

The study area for navigation includes areas near existing or new Project facilities along the navigable waters of the Sacramento River. The RBPP is an existing facility adjacent to the Sacramento River near Red Bluff. The Sacramento River discharge for Alternative 2 would be constructed approximately 4,500 feet north of the existing Reclamation District 108 Rough and Ready Pumping Plant. The Sacramento River supports some commercial navigation, but this is limited to the lower Sacramento River (south of the Sacramento River discharge for Alternative 2), specifically the Sacramento Deep Water Ship Channel in Contra Costa, Solano, Sacramento, and Yolo Counties. Near the Project facilities, marine traffic is recreational and limited to motorized and nonmotorized watercraft for the purposes of fishing, boating, and additional recreational activities.

18.3 Methods of Analysis

This section describes the qualitative and quantitative methods used to evaluate construction and operations impacts of the Project on transportation and traffic in the regional and local study areas. Evaluations of each alternative are based on relative comparisons between the existing environmental setting discussed in Section 18.2, *Environmental Setting*, and the anticipated construction and operations activities to determine the potential effects. The significance or magnitude of impacts are determined by comparing post-Project (construction and operations) changed conditions to impact thresholds.

The following subsections detail how construction and operations are evaluated for each alternative and how assumptions are identified for each method.

The Authority will implement the following BMPs, which are described in Appendix 2D, *Best Management Practices, Management Plans, and Technical Studies*. These BMPs, which are based on regulations and industry and discipline standards, are considered part of the Project and

are incorporated into the analysis of potential construction and operations impacts on navigation, transportation, and traffic.

- BMP-1, Conformance with Applicable Design Standards and Building Codes, describes how roads and bridges would be designed to meet national, state, and county standards, which are established to maintain safety and reduce hazards. In addition, the bridge would be designed to meet California Department of Transportation (Caltrans) Seismic Design Criteria, including its no collapse criteria. The bridge's earthen fill prisms would be designed to meet Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications, Caltrans Seismic Design Criteria, and Caltrans California Amendments to the AASHTO LRFD Bridge Design Specifications. This would minimize roadway hazards due to geometric design or incompatibility of roadway usage.
- BMP-16, Development and Implementation of a Construction Equipment, Truck, and Traffic Management Plan (TMP), specifies that the Authority will develop one or more TMPs to govern construction traffic during construction. As part of a TMP, the specific haul and access routes will be identified with all contractors when multiple facility sites are under construction concurrently so that Project-generated construction traffic would be dispersed to the extent practicable and necessary. The TMP would prohibit construction traffic in the community of Maxwell. The Authority would develop the TMP(s) in coordination with the applicable jurisdictions, including local agencies for local roads, transit providers, and rail operators, where applicable. Construction notification procedures would be provided for Colusa, Glenn, Tehama, and Yolo Counties' services as needed (i.e., police, public works, fire departments). Construction traffic would be routed through lower-volume roads and reduce or eliminate the temporary increase in vehicular demand on higher-volume roadways. The TMP would also allow construction to occur while maintaining all roadways open to traffic and therefore reducing the potential for closures.
- BMP-32, Notification of Construction Activities in Waterways, requires posting notices regarding construction in waterways at nearby marinas and public boat launch ramps that include maintenance locations, timing, and requirements (e.g., speed limits, no-wake zones, or detours).

18.3.1 Vehicle Trip Impacts

The CEQA statute now provides: “[A]utomobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment pursuant to [CEQA] . . .” Cal. Pub. Res. Code Section 21099(b)(2). However, the current guidelines still require an analysis of “conflicts with a program, plan, ordinance or policy addressing the circulation system. . . .” Based on a review of local policies and the most current programs, plans, ordinances, or policies addressing the circulation systems identified in the local study area, LOS is still used to identify system performance (Appendix 4A, *Regulatory Requirements*; Section 18.2.2, *Roadway Classification and Roadway Capacity*; and Table 18-5). In light of the continued relevance of LOS metrics to local planning, the Authority undertook an analysis of LOS metrics for inclusion in this document to be transparent and informative.

The LOS analysis under Impact TRA-1 discusses whether construction or operations would create greater congestion that could require roadway improvements. Specifically, since the potential Project effects on all the identified transportation elements in the local plans and programs are dependent on the effects of temporary and permanent increases of traffic, the roadway capacities and LOS evaluations were conducted to determine impacts. Roadway capacity evaluations focused on determining whether temporary or permanent increases of traffic would increase traffic to a level that would degrade the roadways to levels unacceptable based on the county thresholds and, in turn, have impacts on local transit, roadway, bicycle, and pedestrian facilities described in Section 18.2.4, *Modes of Transportation Other Than Private Vehicles*.

Roadway traffic flow characteristics, as described in the Glenn County RTP (County of Glenn 2020a) for different LOS, are described in Table 18-5. Table 18-9 is a summary of the LOS thresholds as identified by Glenn County based on ADT for each roadway classification. Both Glenn County and Colusa County use LOS to assess the performance of their street and highway systems and the capacity of roadways. Glenn County information was used (as described in Section 18.2.2, *Roadway Classification and Roadway Capacity*, and Tables 18-4, 18-5, and 18-6) to maintain a consistent assessment of all study area roadway segments. The definitions and maximum daily volumes from the Glenn County RTP (County of Glenn 2020a) are the best methodology to determine significance thresholds for impacts in the local study area.

Table 18-9. Roadway Segment Level of Service Thresholds

Roadway Classification	# of Lanes	A	B	C	D	E
Major Freeway (Interstate)	4	<25,400	<41,600	<58,400	<71,000	<79,200
Class I Highway	2	<1,200	<3,700	<7,600	<13,600	<21,000
Class II Highway	2	<1,700	<4,100	<8,200	<16,600	<21,200
Rural Principal Arterial	2	<2,600	<5,900	<10,300	<16,900	<20,200
Rural Minor Arterial	2	<1,200	<3,300	<6,400	<11,000	<15,500
Urban Arterial	4	<18,000	<21,000	<24,000	<27,000	<30,000
Urban Arterial	2	<9,000	<10,500	<12,000	<13,500	<15,000
Urban Major Collector	2	<7,620	<8,890	<10,160	<11,430	<12,700
Urban Minor Collector	2	<4,800	<5,600	<6,400	<7,200	<8,000
Rural Major Collector	2	<1,300	<3,900	<7,500	<12,600	<16,900
Rural Minor Collector	2	<1,000	<3,000	<5,500	<8,750	<11,200
Urban Local Road	–	<2,700	<3,150	<3,600	<4,050	<4,500
Rural Local Road	–	<600	<2,000	<3,500	<4,900	<5,500

Source: Federal Highway Administration 2017, County of Glenn 2020a

18.3.1.1. Construction

To assess transportation effects during construction, an evaluation of two types of trips to and from the different areas within the Project site was conducted:

- Construction worker trips to and from the reservoir and conveyance facilities

- Estimated offsite haul trips

The data generated by project engineers for Appendix 2C, *Construction Means, Methods, and Assumptions*, were reviewed and processed to determine the construction activities that would produce the peak construction trips on a typical day. The latest construction activity schedule was also reviewed to determine the year (four consecutive quarters) with the most concurrent activities. A typical day trip was defined as a recurring trip that would be generated off site (outside the local study area), access the different Project construction sites via the local and access roads, and then return to a location off site. One-time delivery and pickup trips were not considered in the construction trip estimates. The construction trip estimates were assumed to be the same for Alternatives 1 and 3; a separate review and estimate was completed for Alternative 2 based on the data generated for that alternative. For the Dunnigan Pipeline/Sacramento River discharge roadways, the construction trips were added to the circulation system, regardless of the planned schedule, as a conservative approach to evaluate a full construction scenario.

At the peak of construction, projected to occur in 2027, current estimates are that 1,552 to 1,657 construction personnel would be working on the Project. Between 820 and 847 of these personnel would be involved with reservoir facilities, and between 732 and 810 would be working on conveyance facilities, depending on the alternative. Construction workers would likely commute to construction sites from local population centers, including Maxwell, Willows, Orland, Williams, and Colusa, and from other northern California counties when specialty trades or skillsets are not available regionally.

There are a variety of potential existing offsite commercial borrow and aggregate sources; however, the selection of borrow sites will be made by the contractor and in consultation with the engineering team prior to construction. As described in Section 18.3, *Methods of Analysis*, part of the TMP includes the contractor identifying specific haul routes when multiple facility sites are under construction concurrently to disperse Project-generated construction traffic. Travel patterns for trucks to and from potential offsite borrow locations were assumed to generate along the I-5 study segments and then were distributed along the planned construction routes to reach the various construction sites for reservoir and conveyance facilities.

Daily construction traffic would consist of trucks hauling equipment and materials to and from the work sites as well as daily arrival and departure of construction workers. Construction traffic on local roadways would include dump trucks, bottom-dump trucks, concrete trucks, flatbed trucks for delivering construction equipment and permanent Project equipment, pickups, water trucks, equipment maintenance vehicles, and other delivery trucks. At the peak of construction in 2027, current estimates project between 701 and 978 daily haul trips for conveyance facilities, and approximately 1,760 daily offsite haul trips for reservoir facilities. Additional construction haul trips would occur within the reservoir inundation area on new internal construction access roads. These internal trips were not factored into the evaluation of the external roadways.

An assessment of the construction traffic impacts is provided in Section 18.4, *Impact Analysis and Mitigation Measures*. That assessment compares construction traffic volumes to roadway capacity. A VMT analysis was not conducted for construction traffic, because a qualitative assessment indicated that there would not be construction VMT impacts. While construction workers and associated trips would add VMT, they are effectively replacing other trips. In other

words, the construction workers and businesses serving the Project would otherwise be making trips to other projects, which could be even longer (i.e., more VMT).

Primary construction access and roadway improvements to accommodate construction traffic are provided in Section 2.5.1.7, *New and Existing Roadways*, and Table 2-8 in Chapter 2, *Project Description and Alternatives*. Mitigation Measure GHG-1.1: Achieve Net-Zero Emissions Through a GHG Reduction Plan, includes construction and other onsite measures, such as consideration to develop a Project-specific ride share program to encourage carpools and shuttle vans to reduce vehicular travel associated with construction workers. The estimated number of daily trips was added to the baseline conditions for planned construction routes to understand potential changes to the LOS and verify that the identified study roadway segments would not reach unacceptable LOS thresholds as identified in Table 18-9.

18.3.1.2. Operations

Section 15064.3 of the CEQA Guidelines implements CEQA Section 21099 (described above) and provides for the use of VMT to evaluate the transportation impacts of projects.

VMT is addressed at a regional level because the purpose of using VMT to measure transportation impacts is to assess the extent to which a project (or, as here, Alternatives 1, 2, and 3) would reduce or increase regional travel (and thus regional greenhouse gas emissions) as a result of permanent operations. Permanent operations of Sites Reservoir consist of workers assigned to Project facilities, maintenance of the Project facilities, and recreational visits. A methodology specific to the Project operations was developed in coordination with Glenn and Colusa Counties. Major interstates and highways were used for the predicted routes and distances for staff. Recreational trips were based on shortest routes between the identified population centers (shown on Figure 18-2 and listed in Section 18.2.3, *Regional Study Area*) and the existing/partially displaced destinations (shown on Figure 18-1 and listed in Section 18.2.3, *Regional Study Area*).

The main source for changes in VMT for the Project operations is the new recreational activity related to visits to Stone Corral Creek Recreation Area, Peninsula Hills Recreation Area, and the day-use boat ramp and parking. An evaluation of recreational visitors to the Sites Reservoir recreation areas was conducted. It is estimated that approximately 187,000 recreational visitors per year would visit the Sites Reservoir and its recreation areas for all or part of a day (Sites Project Authority 2017). The number of visitors per day would fluctuate, resulting in varying levels of use during the recreational season; however, it is anticipated that 70% of recreational use would be during the primary recreational season (i.e., May 1 through September 20), with approximately 98,000 total visitors on weekends and holidays during this period. With an average of 2.6 persons per vehicle, this would result in an increase of 37,693 total trips, or approximately 820 round trips per day, during weekends and holidays during the recreational season.

The estimated recreational visitors to Sites Reservoir were assumed to originate from the major population centers described in Section 18.2.3, *Regional Study Area*. From the total trips destined for Sites Reservoir, 95% were assumed to be permanently relocated trips from the other regional recreation areas. Five percent of the trips destined for the Sites Reservoir recreation

areas were assumed to be new recreational trips from residents within 25 miles (25 miles was used because that is the mean distance of Sites from surrounding smaller cities.) Those trips to and from the Project area would otherwise not be traveling to other regional recreation areas.

The next step was to determine the origin of the relocated trips to Sites Reservoir, representing 95% of the travel. To do so, a customized gravity model was developed based on a multi-factor approach to account for the most current recreational data among the regional recreation areas, the population of regional population centers, and the trip distance ratios between the existing trips and the potential new trips to Sites Reservoir (Jacobs 2021). A gravity model is a common approach used in transportation planning to assign trips from one traffic analysis zone to another traffic analysis zone by accounting for different regional and local factors that are combined to generate an attraction of trips compared to other surrounding traffic analysis zone (Jacobs 2021). The gravity model approach was applied to capture regional shifts in travel patterns exclusive to the recreational demand of Sites Reservoir based on a defined set of gravity factors (Jacobs 2021). The gravity model resulted in a trip matrix that distributed the estimated 1,640 daily one-way trips from each of the population centers (Jacobs 2021). Table 18-10 is a summary of the displaced trips and the population center origin determined using the gravity model.

Once the origins of the trips to Sites Reservoir were determined, the next step included the routing of the incoming and outgoing trips along the study roadway segments to determine the resulting ADT and change in VMT for each alternative based on the origins. The majority of the recreational trips were assumed to enter the local study area via northbound or southbound I-5 and use Maxwell Sites Road to enter the Project area.

Table 18-10. Sites Reservoir Recreational Trip Origins

Population Center	Estimated Daily One-Way Trips to Sites Reservoir (vehicles per day)
Bay Area	898
Chico	22
Davis	28
Modesto	63
Redding	20
Sacramento	322
Santa Rosa	61
Stockton	94
Yuba	29
Project Area	103
Total	1,640

Source: Jacobs 2021

The second type of trip that was assessed for operation of the Project was for employees charged with the operation and maintenance of supporting facilities to the dam operations. As described in Section 2.5.2.3, *Facility Operations and Maintenance*, maintenance activities for all alternatives would generally include debris removal, vegetation control, rodent control, erosion control and protection, routine inspections, painting, cleaning, repairs, and other routine tasks to

maintain the facilities in accordance with design standards after construction and commissioning. Compared to the recreational trips that the Project would generate, the operations and maintenance trips would have a minor effect. Operations and periodic maintenance activities under Alternatives 1, 2, and 3 are estimated to require 30 operation and maintenance employees. Workers would likely be from local populations and would not require relocation to the area. This is conservatively estimated to produce 60 daily one-way trips.

The resulting number of daily one-way trips estimated for the Project operations related to recreational uses and support/maintenance facilities for Sites Reservoir (all alternatives) is 1,700 trips per day.

In addition to the local roads that would be improved for construction purposes and then remain local access roads, a number of other public roads would be relocated or developed to accommodate reservoir facilities. Operational trips to the Project site would be from Sites Lodoga Road (including the South Road under Alternative 2), realigned Huffmaster Road, Stone Corral Road, Peninsula Road, the day-use boat ramp, and North Road.

18.3.2. Other Modes of Transportation

18.3.2.1. Bicycle and Pedestrian Routes

Bicycle and pedestrian facilities, including bicycle routes/trails and recreational trails, were considered in the analysis as part of the Impact TRA-1 analysis but not assessed individually in detail because there are none near Project facility sites. The bicycle and pedestrian facilities identified in Section 18.3.2.1, *Bicycle and Pedestrian Routes*, are part of a broader transportation system along routes used to access Project facilities that includes vehicular roadways, transit routes, and bicycle and pedestrian facilities. The bicycle and pedestrian elements of these roadways would remain, and the accessibility and capacity of the system for nonmotorized users would remain the same with the Project.

18.3.2.2. School Bus Routes

A qualitative analysis was undertaken to identify potential impacts for Impact TRA-5. Access to existing schools in the Maxwell Unified School District was assessed to evaluate effects on bus routes and potential changes in transit time for students riding school buses. The analysis was focused on a review of the design features and planned construction strategies to determine if the school buses from Lodoga to Maxwell would be affected as a result of the Project. A qualitative assessment was used to evaluate changes in school bus travel. The Maxwell Unified School District policies were reviewed to identify if standards or policies existed related to school bus travel times or durations. The policies indicate that the Superintendent or designee shall design transportation routes and stops to promote maximum efficiency in the use of buses (Maxwell Unified School District 2016). No quantitative guidelines or requirements for school bus travel time are identified in the policies.

18.3.3. Geometric Design Hazards and Emergency Access

A qualitative analysis was done to identify potential impacts for Impact TRA-3. The analysis was focused on a review of the roadway geometric design approach and construction means and methods to determine if a potential design hazard or an incompatible use would be introduced to

the study area. Construction access roads would be designed and constructed to provide the necessary roadway improvements specific to the movement of construction equipment and transport of materials (Appendix 2C, *Construction Means, Methods, and Assumptions*). Design standards for construction access roads are typically less stringent than those for permanent roads. Roadways that would be used for construction access and local access would be designed to achieve the compatibility objectives for both uses and prioritize needs for local traffic use and safety. Roads used solely for construction access would be designed with two 12-foot-wide gravel lanes and new shoulders of up to 2 feet. Incorporating 2-foot-wide shoulders allows for the safe passing of oncoming construction traffic with local vehicular and agricultural equipment traffic. The existing roads (Road 68, Road D, Road 69, Delevan Road, and McDermott Road) have nonstandard geometry and have inadequate roadbed structural sections needed to accommodate the large, heavy vehicles that would be used to transport construction equipment and materials. These roads would be improved prior to the start of construction so that they would be compatible with the needs of construction traffic.

Some new or realigned roads would be designed based on the service needs and existing planning-level mapping to establish corridor widths and alignments. Existing parcel boundaries would influence roadway alignments to minimize the parcel acquisition acreage. These design constraints, along with the topographic conditions, warrant the need for sharp curves along these alignments.

A qualitative analysis identifies potential impacts related to emergency access. Access is generally defined as a means of approaching or entering a location. The analysis reviews the road design features and planned construction strategies to determine if inadequate emergency access would result from the Project construction and operations.

18.3.4. Navigation

Navigation analyses were based on a review of the potential for facilities to interfere or in some way modify existing navigation on the Sacramento River near facility footprints. The review focused on the RBPP and Sacramento River discharge (Alternative 2) locations because they are the only facilities that could potentially result in impacts on navigation along navigable waters. Project engineers developed data regarding the number and types of equipment that would be required to construct, operate, and maintain Project facilities; these data are included in Appendix 2C, *Construction Means, Methods, and Assumptions*.

18.3.5. Transportation Topics Eliminated from Further Analysis

None of the identified rail facilities are located near the Project facility sites; Project construction and operations would not affect rail traffic patterns. For the Union Pacific Railroad siphon improvements in Willows, the new barrel would be installed using a bore-and-jack procedure. It is anticipated that coordination and planning with the railroad owners would be required for work within and adjacent to the railroad right-of-way. Construction restrictions may be required by the railroad owners to minimize interference with regular railroad operations. At the Dunnigan Pipeline construction, the tunneled crossings at I-5, County Road 99W, and the railroad would be 250 to 300 feet and would require 12.5-foot diameter casings. Construction means and methods, such as bore-and-jack and tunneling procedures that would eliminate the need for railroad service interruptions, would avoid impacts on the CFNR line for the installation

of the tunnel crossings (Appendix 2C, *Construction Means, Methods, and Assumptions*). For this reason, rail traffic patterns are not discussed in this analysis.

At the RBPP in Tehama County, construction access for 6 daily one-way construction trips for Alternatives 1, 2, and 3 are via I-5, South Main Street, and Altube Avenue in the City of Red Bluff. The operation and maintenance of the RBPP would not require additional trips beyond the existing operations of current pumps located at the site. The effects of the construction and operations on the transportation facilities (e.g., roads, bikeways, transit) located nearby is negligible, and the RBPP and Tehama County are not discussed further in this chapter.

At the GCID head gate structure site in Glenn County, 10 daily one-way construction trips would access roadways via I-5, SR 32, 6th Avenue, and Cutler Avenue at and near the City of Orland. The operations and maintenance trips are not expected to exceed existing baseline operations and maintenance trips; therefore, no additional daily traffic is expected. The effects of the construction and operations on the transportation facilities located nearby (e.g., roads, bikeways, transit) are negligible and are not analyzed further in this chapter.

At the GCID Main Canal siphon sites in Glenn County, construction access roadways for all alternatives are via I-5, SR 162, County Road P, County Road 48, Highway 99 West, and Road 53 in the City of Willows. Construction of the Walker Creek siphon would produce 26 daily one-way construction trips, Willow Creek siphon would produce 22 daily one-way trips, and the railroad siphon would produce 12 daily one-way trips. Based on the latest construction schedule, the Walker Creek siphon and the Willow Creek siphon construction sites would not have concurrent peak construction timeframes. The sum of the maximum concurrent construction trips is 38 daily one-way trips from the Walker Creek siphon and railroad siphon at SR 162 (between I-5 and Tehama Street), and then the 38 daily trips are expected to distribute via three different routes east of Tehama Street. SR 162 (between I-5 and Tehama Street) is classified as a four-lane urban arterial with an LOS E threshold of 30,000 vehicles per day. The estimated 38 daily one-way trips amount to less than 0.2% of the available capacity in this roadway segment, and therefore the temporary increase in traffic volumes during construction would not result in negative effects on traffic operations. The operations and maintenance trips are not expected to be reoccurring; therefore, no additional daily traffic is expected. The effects of the construction and operations on the transportation facilities located nearby (e.g., roads, bikeways, transit) are considered negligible and are not analyzed further in this chapter.

18.3.6. Thresholds of Significance

An impact on transportation and traffic would be considered significant if the Project would:

- Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
- Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b).
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.

In addition, an impact on the following systems would be considered significant if the Project would:

- Substantially affect school bus travel.
- Substantially impair recreational and commercial navigation during construction and operations.

18.4 Impact Analysis and Mitigation Measures

Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities

No Project

No change to the existing circulation system would occur under the No Project Alternative because no additional projects or programs are proposed in the Project vicinity that would have a substantive effect on the analysis of the existing circulation system. The study area is generally rural in nature.

Significance Determination

No conflicts with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities would occur under the No Project Alternative because the Project would not be constructed or operated. Glenn and Colusa Counties would continue to plan for their local and regional transportation systems. Therefore, no impact/no effect on the circulation system would occur.

Alternatives 1 and 3

Construction

Alternatives 1 and 3 were projected to generate up to 4,120 daily trips during peak construction at all reservoir and conveyance facilities (including the RBPP and the Dunnigan Pipeline). These total trips include employees driving to and from the Project site on a typical day of construction and the different types of offsite construction haul trips necessary to construct the Project facilities. Table 18-11 is a summary of the daily trips estimated on a typical day of peak construction for all facilities. Table 18-12 is a summary of the roadway capacity assessments and resulting LOS in the study roadway segments with construction traffic added.

Table 18-11. Alternatives 1 and 3 Estimated Construction Daily Trips

Type	Facility	Employees (trips per day)	Truck Hauls (trips per day)
Project Conveyance	Dunnigan Pipeline	146	154
	Funks PGP	66	68
	TRR East PGP	68	70
	Funks/TRR East Pipelines	274	308
	Funks Reservoir	80	42

Type	Facility	Employees (trips per day)	Truck Hauls (trips per day)
	TRR East	48	12
	PG&E/WAPA Substations	16	12
	PG&E/WAPA Transmission Lines	82	6
	GCID Canal Improvements	28	25
Project Reservoir Facilities	Golden Gate Dam	0	330
	Sites Dam	0	330
	Saddle Dams 1, 2, 6, 8A, and 8B	0	330
	Saddle Dam 3	0	330
	Saddle Dam 5	0	330
	Owners and Engineers (staff)	88	0
	Golden Gate and Sites Dams (staff)	230	0
	Saddle Dams (staff)	188	0
	I/O Facilities (staff)	139	0
	Roadway Packages	202	112
Total		1,657	2,463

Notes:

I/O = inlet/outlet

PG&E = Pacific Gas and Electric Company

PGP = pumping generating plant

TRR = Terminal Regulating Reservoir

WAPA = Western Area Power Administration

Table 18-12. Alternatives 1 and 3 Roadway Levels of Service during Construction

Roadways and Highways		Year 2019 ADT	Year 2019 LOS	Reservoir Construction Trips Added	Conveyance Construction Trips Added	ADT with Peak Construction Trips	Peak Construction LOS	
Site's External Access Roadway	Reservoir and Facilities in the vicinity of the Reservoir	I-5 north of Glenn-Colusa county line	24,000	A	1,586	633	26,219	B
		I-5 from SR 20 to Glenn-Colusa county line	26,566	B	1,119	538	28,222	B
		Road 68 west of I-5	230	A	1,306	16	1,551	B
		Road D north of Glenn-Colusa county line	481	A	1,306	0	1,787	B
		Road 69 from Road D to end of paved road	25	A	1,306	0	1,331	B
		Delevan Road west of I-5	559	A	768	795	2,122	C
		McDermott Road north of Maxwell Sites Road	407	A	735	398	1,540	B
		Maxwell Sites Road east of McDermott Road	1,617	B	540*	357*	2,514	B
		Maxwell Sites Road/McDermott Road to Sites Lodoga Road	468	A	1,275	606	2,349	B
		Huffmaster Road	No Data	–	47	0	–	–
	Sites Lodoga Road realignment, including bridge	468	A	1,229	606	2,303	B	
	Dunnigan Pipeline	I-5 at Colusa-Yolo county line	31,164	B	49	340	31,553	B
		County Road 99W south of County Road 8	No Data	–	–	–	–	–
		County Road 8	No Data	–	–	–	–	–
County Road 90B		No Data	–	–	–	–	–	

Source: Colusa County Local Transportation Commission 2018; County of Glenn 2020a, 2020b

Notes:

* Construction trips added on Maxwell Sites Road between I-5 and McDermott Road are assumed to be a portion of the employees in their personal vehicles using the shortest path to get to the Project construction sites from I-5. All construction truck traffic, including offsite haul trips and deliveries, are assumed to travel around the City of Maxwell per the construction routes.

ADT = average daily traffic

I-5 = Interstate 5

LOS = level of service

SR = State Route

As summarized in Table 18-12, all study roadway segments are projected to operate at LOS C or better during the peak construction period. The bolded cells in Table 18-12 represent study roadway segments that would have an LOS change with the increased construction traffic. In all cases, the LOS changes from LOS A to LOS B or LOS C. The projected LOS operations during construction all result in acceptable conditions per the latest programs, plans, ordinances, and policies. These conditions during construction would not result in negative effects on the existing circulation system, including transit, roadway, bicycle, and pedestrian facilities.

At Huffmaster Road, although data were not available to report existing or construction LOS, the increase during the peak construction period would be 47 vehicles per day. This is a negligible change in daily traffic conditions.

For Alternatives 1 and 3, construction access to the construction easements for the Dunnigan Pipeline would be via County Road 8, County Road 99W (to the east), and County Road 90B (to the west). Although existing traffic data are not readily available at these locations, a total increase of 300 vehicles per day is estimated during peak construction. Construction traffic is likely to split to both directions of I-5, but, for a conservative assessment, it was assumed that all 300 trips would use the same roads. For a rural local road like County Road 90B, 300 trips are 6% of the threshold value for LOS E. Since roads like County Road 90B are operating at far less than 94% of capacity, the temporary increase in traffic volumes during construction would not result in negative effects on traffic operations.

BMP-16 would be implemented prior to (if applicable) and during construction activities. The implementation of construction equipment, truck, and traffic TMPs would ensure traffic stays on appropriately designated routes and avoids non-designated roads. In addition, Mitigation Measure GHG-1.1: Achieve Net-Zero Emissions Through a GHG Reduction Plan includes consideration of construction and other onsite measures to reduce greenhouse gas emissions. This would include a Project-specific ride-share program to encourage carpools and shuttle vans in efforts to reduce daily construction traffic and overall emissions during construction.

Operations

Alternatives 1 and 3 were projected to generate up to 1,700 daily operational trips that include recreation area visits and the operation and maintenance of facilities (including the Dunnigan Pipeline). Table 18-13 is a summary of the daily trips estimated on a peak recreational season and the typical day of operation and maintenance of all facilities under Alternatives 1 and 3. Table 18-13 includes a summary of the roadway capacity assessments and resulting LOS for roadway segments with the operational traffic added. The operation of Alternatives 1 and 3 would be the same because the differences in water deliveries would not affect transportation and because both alternatives would have the same effect on traffic.

As summarized in Table 18-13, most study area roadway segments are projected to operate at LOS C or better during the peak recreational season and assuming typical operation and maintenance of all supporting facilities. The bolded cells in Table 18-13 represent study area roadway segments that would experience an LOS change with the increase of traffic under Alternatives 1 and 3. In all cases, the LOS changes are from LOS A to LOS B. The projected LOS operations during the peak recreational season and typical operations and maintenance all

result in acceptable conditions per the latest programs, plans, ordinances, and policies. These conditions would not have any negative effects on the existing circulation system, including transit, roadway, bicycle, and pedestrian facilities.

At Huffmaster Road, County Road 8, County Road 99W, and County Road 90B, although data were not available to report existing or operations LOS in Table 18-13, negligible increases in daily traffic are estimated and would not be causes for negative effects on transit, roadway, bicycle, and pedestrian facilities.

Although typical operations would result in acceptable LOS, the Authority will work with Colusa County to implement traffic-calming measures within Maxwell. As described in Chapter 2, *Project Description and Alternatives*, and Appendix 2D as part of the Recreation Management Plan (Section 2D.8), improvements could include lighted pedestrian crossings and stop signs.

Table 18-13. Alternatives 1 and 3 Roadway Level of Service during Peak Recreation, Operations, and Maintenance

Roadways and Highways		Year 2019 ADT	Year 2019 LOS	Recreational Trips Added	O&M Trips Added	ADT with Recreation and O&M	Recreation and O&M LOS	
Site's External Access Roadway	Reservoir and Facilities in the Vicinity of the Reservoir	I-5 north of Glenn-Colusa county line	24,000	A	58	28	24,086	A
		I-5 from SR 20 to Glenn-Colusa county line	26,566	B	1,463	30	28,059	B
		Road 68 west of I-5	230	A	0	4	234	A
		Road D north of Glenn-Colusa county line	481	A	0	4	485	A
		Road 69 from Road D to end of paved road	25	A	0	4	29	A
		Delevan Road west of I-5	559	A	6	2	567	A
		McDermott Road north of Maxwell Sites Road	407	A	6	0	413	A
		Maxwell Sites Road east of McDermott Road	1,617	B	1,576	52	3,245	B
		Maxwell Sites Road/McDermott Road to Sites Lodoga Road	468	A	1,640	52	2,160	B
		Huffmaster Road	No Data	-	0	0	-	-
	Sites Lodoga Road realignment, including bridge	468	A	1,640	0	2,108	B	
	Dunnigan Pipeline	I-5 at Colusa-Yolo county line	31,164	B	1,405	6	32,575	B
		County Road 99W south of County Road 8	No Data	-	0	2	-	-
		County Road 8	No Data	-	0	0	-	-
County Road 90B		No Data	-	0	0	-	-	

Source: Colusa County Local Transportation Commission 2018; County of Glenn 2020a, 2020b

Notes:

- ADT = average daily traffic
- I-5 = Interstate 5
- LOS = level of service
- O&M = operations and maintenance
- SR = State Route

CEQA Significance Determination and Mitigation Measures

During the construction of Alternative 1 or 3, there would be a temporary increase in traffic on the local roads. An analysis of LOS was performed due to the continued relevance of LOS metrics to local planning. The increase in traffic is not anticipated to result in degraded roadway operations, as summarized in Table 18-12. The largest change in LOS is expected at Delevan Road, west of I-5, which is estimated to change from LOS A to LOS C with the added construction traffic. LOS C is considered acceptable traffic operations per the latest local programs, plans, ordinances, and policies. Furthermore, BMP-16 would be implemented during construction activities and will develop and implement TMPs to help control and reduce potential transportation impacts. Construction and operations/maintenance impacts of Alternative 1 or 3 would not conflict with programs, plans, ordinances, or policies addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities, and would be less than significant.

During the operation and maintenance of Alternative 1 or 3, there would be a permanent increase in traffic on most of the local road segments. The increase in traffic is not anticipated to degrade roadway operations, as summarized in Table 18-13. The largest change in LOS is expected at Maxwell Sites Road, west of McDermott Road, which is estimated to change from LOS A to LOS B with the added operations and maintenance traffic. LOS B is considered acceptable traffic operations per the latest local programs, plans, ordinances, and policies. Furthermore, the Authority will work with the County of Colusa to identify and implement traffic-calming improvements within Maxwell as discussed in Chapter 2, *Project Description and Alternatives*, and as part of the Recreation Management Plan (Section 2D.8). Therefore, operations and maintenance impacts on the circulation system and the potential for conflicts with programs, plans, ordinances, or policies addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, would be less than significant.

NEPA Conclusion

Construction and operation effects on the circulation system would be the same as described above for CEQA. Construction and operations of Alternative 1 or 3 would not result in degraded roadway conditions as compared to the No Project Alternative. During the construction of Alternative 1 or 3, there would be a temporary increase in traffic on the local roads, but the increase in traffic is not anticipated to result in degraded roadway operations, as summarized in Table 18-12. Furthermore, BMP-16 will be implemented during construction activities and will develop and implement TMPs to help control and reduce potential transportation effects. During the operation and maintenance of Alternative 1 or 3, there would be a permanent increase in traffic on most of the local road segments, but the increase in traffic is not anticipated to degrade roadway operations, as summarized in Table 18-13. Furthermore, the Authority will work with the County of Colusa to identify and implement traffic-calming improvements within Maxwell as discussed in Chapter 2, *Project Description and Alternatives*, and as part of the Recreation Management Plan (Section 2D.8). Construction and operations under Alternative 1 or 3 would have no adverse effect on the study area circulation system or conflict with programs, plans, ordinances, or policies addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Alternative 2

There are minor differences between Alternative 1 or 3 and Alternative 2 with respect to potential impacts on transportation and traffic related to conflicts with programs, plans, ordinances, or policies addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Construction

Similar to Alternatives 1 and 3, there would be a temporary increase in traffic on the local study area roads under Alternative 2 (Table 18-14). The increase in traffic is not anticipated to result in degraded roadway operations, as summarized in Table 18-15. The biggest LOS change estimated during construction of Alternative 2 is from LOS A to C. LOS C is still considered acceptable traffic operations per the latest local programs, plans, ordinances, and policies.

Alternative 2 is projected to generate up to 4,293 daily trips during peak construction at all reservoir and conveyance facilities (including the RBPP and the Dunnigan Pipeline/Sacramento River discharge). These total trips include employees driving to and from the Project area on a typical day of construction and the different types of offsite construction haul trips necessary to construct the Project facilities. Table 18-14 is a summary of the daily trips estimated on a typical day of peak construction for all facilities. Table 18-15 is a summary of the roadway capacity assessments and resulting LOS in the study roadway segments with construction traffic added.

Table 18-14. Alternative 2 Estimated Construction Daily Trips

Type	Facility	Employees (trips per day)	Truck Hauls (trips per day)
Project Conveyance Facilities	Dunnigan Pipeline	228	280
	RBPP	2	4
	Funks PGP	66	68
	TRR West PGP	68	70
	Funks/TRR West Pipelines	188	216
	Funks Reservoir	80	42
	TRR West	12	256
	PG&E/WAPA Substations	16	12
	PG&E/WAPA Transmission Lines	44	6
	GCID Canal Improvements	28	25
Project Reservoir Facilities	Golden Gate Dam	0	330
	Sites Dam	0	330
	Saddle Dams 1, 2, 6, 8A, and 8B	0	330
	Saddle Dam 3	0	330
	Saddle Dam 5	0	330
	Owners and Engineers (staff)	88	0
	Golden Gate and Sites Dams (staff)	212	0
	Saddle Dams (staff)	188	0
I/O Facilities (staff)	116	0	

Type	Facility	Employees (trips per day)	Truck Hauls (trips per day)
	Roadway Packages	216	112
	Total	1,552	2,741

Notes:
I/O = inlet/outlet
PG&E = Pacific Gas and Electric Company
PGP = pumping generating plant
RBPP = Red Bluff Pumping Plant
TRR = Terminal Regulating Reservoir
WAPA = Western Area Power Administration

Table 18-15. Alternative 2 Roadway Level of Service during Construction

Roadways and Highways		Year 2019 ADT	Year 2019 LOS	Reservoir Construction Trips Added	Conveyance Construction Trips Added	ADT with Peak Construction Trips	Peak Construction LOS	
Site's External Access Roadway	Reservoir and Facilities in the Vicinity of the Reservoir	I-5 north of Glenn-Colusa county line	24,000	A	1,575	647	26,222	B
		I-5 from SR 20 to Glenn-Colusa county line	26,566	B	1,103	516	28,185	B
		Road 68 west of I-5	230	A	1,304	16	1,549	B
		Road D north of Glenn-Colusa county line	481	A	1,304	0	1,785	B
		Road 69 from Road D to end of paved road	25	A	1,304	0	1,329	B
		Delevan Road west of I-5	559	A	766	857	2,182	C
		McDermott Road north of Maxwell Sites Road	407	A	735	369	1,511	B
		Maxwell Sites Road east of McDermott Road	1,617	B	520*	286*	2,423	B
		Maxwell Sites Road/McDermott Road to Sites Lodoga Road	468	A	1,255	496	2,219	B
		Huffmaster Road	No Data	–	48	0	–	–
	Sites Lodoga Road realignment, including bridge	468	A	1,207	496	2,171	B	
	Dunnigan Pipeline	I-5 at Colusa-Yolo county line	31,164	B	48	542	31,754	B
		County Road 99W south of County Road 8	No Data	–	–	–	–	–
		County Road 8	No Data	–	–	–	–	–
County Road 90B		No Data	–	–	–	–	–	

Source: Colusa County Local Transportation Commission 2018; County of Glenn 2020a, 2020b

Notes:

* Construction daily trips added on Maxwell Sites Road between I-5 and McDermott Road are assumed to be a portion of the employees in their personal vehicles using the shortest path to get to the Project construction sites from I-5. All construction truck traffic, including offsite haul trips and deliveries, are assumed to travel around the City of Maxwell per the construction routes.

ADT = average daily traffic

I-5 = Interstate 5

LOS = level of service

SR = State Route

As summarized in Table 18-15, all study roadway segments are projected to operate at LOS C or better during the peak construction period. The bolded cells in Table 18-15 represent study area roadway segments that would have an LOS change with the increased construction traffic. In all cases, the LOS changes from LOS A to LOS B or LOS C. The projected LOS operations during construction all result in acceptable conditions per the latest programs, plans, ordinances, and policies. These conditions during construction should not result in negative effects on the existing circulation system, including transit, roadway, bicycle, and pedestrian facilities.

At Huffmaster Road, although data were not available to report an existing or construction LOS, the increase during the peak construction period is 48 vehicles per day. This is a negligible change in daily traffic conditions.

For Alternative 2, construction access routes to the construction easements for the Dunnigan Pipeline would be composed of three destinations as follows:

- Access to the west end of the pipeline alignment (west of the CBD) would be via the same routes and roads identified for Alternatives 1 and 3 (County Road 8, County Road 99W, and County Road 90B).
- Access from the north to the central and eastern portions of the pipeline alignment (east of the CBD) would be via I-5, County Line Road, and SR 45.
- Access from the south to the central and eastern portions of the pipeline alignment (east of the CBD) would be via I-5, Road 13, Road 99E, Road 108, Road 98A, and SR 45.

Although existing traffic data are not readily available at these locations, a total increase of 508 vehicles per day is estimated during peak construction. Construction traffic is likely to split along the multiple routes. As a conservative approach, it was assumed that 50% of the trips were assigned along the same route (total of 254 one-way trips per day). For rural local roads (with lowest daily capacity), such as County Road 90B, Road 99E, Road 108, and Road 98A, 254 trips are about 5% of the daily threshold value for LOS E. Since these roads are operating at far less than 95% of capacity, the temporary increase in traffic volumes during construction would not result in negative effects on traffic operations. SR 45 is the main highway in this rural area that runs parallel to the Sacramento River and connects towns such as Knights Landing and Grimes. Current volumes are 900 vehicles per day, which is far less than the available capacity of 21,000 vehicles per day for a two-lane highway. An additional 254 daily trips during construction would not result in negative effects on traffic operations.

The same BMP for Alternatives 1 and 3 would be implemented for Alternative 2 prior to and during construction activities. The TMPs developed and implemented for BMP-16 will ensure traffic stays on appropriately designated routes and avoids non-designated roads.

Operations

There are no major differences related to operations and maintenance trips for Alternative 2 compared to Alternatives 1 and 3. The results presented in Table 18-13 also apply to Alternative 2. Similar to Alternatives 1 and 3, there would be a permanent increase in traffic on the local roads identified in the environmental setting for Alternative 2. The increase in traffic is not

anticipated to result in degraded roadway operations, as summarized in Table 18-13. The biggest estimated LOS change during operation and maintenance of Alternative 2 is from LOS A to LOS C. LOS C is still considered acceptable traffic operations per the latest local programs, plans, ordinances, and policies.

CEQA Significance Determination and Mitigation Measures

Construction and operation of Alternative 2 would not substantially affect LOS on study area roadways or conflict with programs, plans, ordinances, or policies addressing the circulation system (Tables 18-13 and 18-15). Furthermore, the TMPs would be implemented during construction activities, which would route construction trips through lower-volume roads and reduce or eliminate the temporary increase in vehicular demand on higher-volume roadways. Impacts on transportation and traffic related to conflicts with programs, plans, ordinances, or policies addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, under construction and operating conditions for Alternative 2 would be less than significant.

NEPA Conclusion

Construction and operation effects on the circulation system would be the same as described above for CEQA. Construction and operation of Alternative 2 would not substantially affect LOS on study area roadways or conflict with programs, plans, ordinances, or policies addressing the circulation system (Tables 18-13 and 18-15) as compared to the No Project Alternative. Furthermore, the TMPs would be implemented during construction activities, which would route construction trips through lower-volume roads and reduce or eliminate the temporary increase in vehicular demand on higher-volume roadways. Construction and operations and maintenance activities under Alternative 2 would have no adverse effect on the circulation system or conflict with programs, plans, ordinances, or policies addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Impact TRA-2: Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)

The Project is not a typical residential, office, or retail project for which the Office of Planning and Research (OPR) Technical Advisory (Governor’s Office of Planning and Research 2018) recommends specific VMT significance thresholds. The goal of Senate Bill 743, the CEQA portions of which are codified at Public Resources Code Section 21099, is to encourage siting of land use projects to minimize VMT. Consistent with this goal, CEQA Guidelines Section 15064.3(b)(1) state that land use projects “that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.” Accordingly, for this Project, VMT for Project operations is analyzed on a “comparative VMT” basis.

As noted in Section 18.3.1.1 *Construction*, quantitative VMT analysis for construction was not conducted. The OPR Technical Advisory does not recommend VMT analysis or thresholds for vehicle trips during construction, but CEQA Guidelines Section 15064.3 states that, for many projects, “a qualitative analysis of construction traffic may be appropriate.” Project construction

would be temporary and would minimize VMT by including Mitigation Measure GHG-1.1 to promote ride-sharing strategies, including carpooling and shuttle vans.

No Project

No change in VMT would occur under the No Project Alternative outside of the background growth for this area because the Project would not be operated. The opportunity to reduce regional VMT by providing a new recreational destination would not be realized.

Significance Determination

No increase or decrease in existing VMT is expected with the No Project Alternative outside of the background growth for this area because the Project would not be operated. Therefore, no impact/no effect on VMT would occur.

Alternatives 1 and 3

The methods of analysis described in Section 18.3, *Methods of Analysis*, for operations were applied to Alternatives 1 and 3 to address changes in VMT. The VMT assessments focused on calculating the overall net change in regional VMT due to the displaced trips from other regional recreation areas and the added trips due to the operation and maintenance of the recreation areas and the reservoir support facilities for Alternatives 1 and 3. The maintenance activities associated with Alternatives 1 and 3 would be the same because the differences in water deliveries between these two alternatives would not result in changes to VMT.

Alternatives 1 and 3 were estimated to generate up to 1,700 daily trips for recreation areas and the operation and maintenance of all supporting facilities (including the Dunnigan Pipeline).

Table 18-16 is a summary of the daily trips entering the local study area from different regional population centers. Table 18-17 is a summary of the daily relocated trips from the different regional recreation areas. Table 18-18 is a summary of how daily VMT from population centers could change when recreational trips to Sites Reservoir occur versus other potential recreation locations. Table 18-18 also includes the estimated daily VMT increase due to newly generated trips to the recreation areas in Sites Reservoir (not displaced from other regional recreation areas) and daily VMT increase due to operations and maintenance trips. Details on the gravity model methodology utilized to determine the estimates for Tables 18-16 to 18-18 are provided in Section 18.3.1.2, *Operations*.

Table 18-16. Sites Reservoir Estimated Recreational Daily Trips from Population Centers

Regional Population Center	Estimated Daily One-Way Trips to Sites Reservoir (vehicles per day)	% Trips Added to Local Study Area
Bay Area	898	54%
Chico	22	1%
Davis	28	2%
Modesto	63	4%
Redding	20	1%

Regional Population Center	Estimated Daily One-Way Trips to Sites Reservoir (vehicles per day)	% Trips Added to Local Study Area
Sacramento	322	20%
Santa Rosa	61	4%
Stockton	94	6%
Yuba	29	2%
Project Area <i>(includes new recreational trips)</i>	103	6%
Total	1,640	100%

Source: Jacobs 2021

Table 18-17. Daily Trips Relocated to Sites Reservoir from Other Recreation Locations

Regional Recreation Area	Estimated Daily One-Way Trips to Sites Reservoir (vehicles per day)	% Trips Added to Local Study Area
Black Butte	38	2%
Clear Lake	171	10%
East Park	9	<1%
Englebright	18	1%
Folsom Lake	171	10%
Indian Valley	9	1%
Lake Almanor	42	3%
Lake Berryessa	240	15%
Lake Oroville	205	13%
New Bullards Bar	18	1%
Red Bluff	11	1%
Shasta Lake	399	24%
Stony Gorge	9	<1%
Trinity/Lewiston	73	4%
Whiskeytown	145	9%
<i>New Trips (from within 25 miles)</i>	82	5%
Total	1,640	100%

Source: Jacobs 2021

Table 18-18. Alternatives 1 and 3 Daily Vehicle Miles Traveled Change

Regional Population Center	Daily VMT Change (all recreation areas, in vehicle-miles)
Bay Area	-29,628
Chico	-545
Davis	-1,205
Modesto	-1,945
Redding	+275
Sacramento	-10,463
Santa Rosa	-2,686
Stockton	-3,079
Yuba	-1,277
Project Area	-1,169
<i>VMT reduction due to redistributed recreational trips</i>	<i>-51,722</i>
<i>VMT increase due to new recreational trips within 25 miles</i>	<i>+2,050</i>
<i>VMT increase due to O&M trips within 25 miles</i>	<i>+1,500</i>
<i>Net Change in Daily VMT</i>	<i>-48,172</i>

Source: Jacobs 2021

Notes:

O&M = operations and maintenance

VMT = vehicle miles traveled

As summarized in Table 18-18, a total net reduction of 48,172 vehicle-miles per day is estimated during operation and maintenance of Alternatives 1 and 3. The increase in VMT on local roads near the recreation areas and the reservoir facilities is more than offset by the regional redistribution of trips. The largest reductions in VMT are from residents of the Bay Area and Sacramento who would choose Sites Reservoir as their destination. Those new trips to Sites Reservoir would replace some of those to popular destinations north and east of Sites Reservoir, such as Shasta Lake and Lake Oroville. Because there is a net decrease in VMT, the Project does not conflict with and is not inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) under Alternative 1 or 3.

CEQA Significance Determination and Mitigation Measures

Operation of Alternative 1 or 3 would change certain travel patterns in the regional study area. A large portion of the recreational visitors expected at Sites Reservoir during the peak recreational season are visitors who would redirect trips from their existing recreational destinations because of the appeal of a new recreational opportunity that may have unique or better features and/or may be closer than an alternative. There would be an offset between the VMT reduction due to the changed recreational trips and the VMT increase expected from new trips generated to the recreation areas and the reservoir supporting facilities for operations and maintenance. The VMT recreational reduction is substantially greater than the VMT operations and maintenance increase. Therefore, no impact on transportation and traffic related to conflicts or inconsistencies with CEQA Guidelines Section 15064.3, Subdivision (b) from operation and maintenance of

Alternative 1 or 3 would occur. Instead, either Alternative 1 or 3 would foster the goal of Senate Bill 743 to reduce VMT in California.

NEPA Conclusion

Although the NEPA guidelines do not reference VMT, similar conclusions can be drawn for potential transportation and traffic effects related to operation of Alternatives 1 and 3 as described above under the CEQA determination. Operation of Alternative 1 or 3 would change certain travel patterns in the regional study area as compared to the No Project Alternative. A large portion of the recreational visitors expected at Sites Reservoir during the peak recreational season are visitors who would redirect trips from their existing recreational destinations. There would be an offset between the VMT reduction due to the changed recreational trips and the VMT increase expected from new trips generated to the recreation areas and the reservoir supporting facilities for operations and maintenance. The VMT recreational reduction is substantially greater than the VMT operations and maintenance increase. Federal policy, like Senate Bill 743, encourages reductions in greenhouse gas emissions through a variety of means. As such, effects would not occur.

Alternative 2

There are minor differences between Alternative 1 or 3 and Alternative 2 with respect to potential VMT changes. The first difference is an increase in the length of existing trips between Maxwell and Lodoga due to the realignment of Sites Lodoga Road, Maxwell Sites Road, and Huffmaster Road around the southern portion of the reservoir. Because no change is anticipated in the number of these trips among the various alternatives, this increased trip length for Alternative 2 means that VMT from these trips would increase compared to Alternatives 1 and 3. Similarly, the second difference is that a portion of the recreation, operations, and maintenance trips destined for the Project's Peninsula Hills Recreation Area and the day-use boat ramp and parking area, on the west side of Sites Reservoir, would use the realigned roads and then travel eastbound on Sites Lodoga Road to reach those destinations.

For the trips between Maxwell and Lodoga, a difference of 14 miles was calculated between the existing route and the South Road route. A conservative assumption was made that all existing 468 trips per day would travel that additional distance to reach Lodoga. This increase in trip distance would result in an additional 6,552 daily vehicle-miles compared to Alternatives 1 and 3.

For the operations and maintenance trips, it was assumed that 25% of the trips would use the realigned roads to reach the recreational and facility destinations west of Sites Reservoir. Trips using the realigned road would travel an additional 31 miles compared to the trips under Alternatives 1 and 3 using the newly constructed bridge over Sites Reservoir. For recreational trips, it was assumed that the additional trip distance to reach the western recreation areas was not as attractive, and 25% of the recreational trips would use the realigned roads. Overall, this increase in trip distance would result in an additional 13,175 daily vehicle-miles compared to Alternatives 1 and 3 for operations and maintenance.

Trip origins (from population centers and from regional recreation areas) summarized in Tables 18-16 and 18-17 would be the same for Alternative 2. Table 18-19 is a summary of the daily

VMT change from the trips that would be making trips to other recreation areas that would change their destination to Sites Reservoir recreation areas because of the appeal of a new recreational opportunity that may have unique or better features and/or may be closer. Table 18-19 also includes the estimated daily VMT increase due to newly generated trips to the recreation areas in Sites Reservoir (not displaced from other regional recreation areas) and daily VMT increase due to operations and maintenance trips. This table also includes the VMT increases due to the realignments of Sites Lodoga Road, Maxwell Sites Road, Huffmaster Road, and the new South Road.

Table 18-19. Alternative 2 Daily Vehicle Miles Traveled Change

Regional Population Center	Daily VMT Change (all recreation areas, in vehicle-miles)
Bay Area	-29,628
Chico	-545
Davis	-1,205
Modesto	-1,945
Redding	+275
Sacramento	-10,463
Santa Rosa	-2,686
Stockton	-3,079
Yuba	-1,277
Project Area	-1,169
<i>VMT reduction due to redistributed recreational trips</i>	<i>-51,722</i>
<i>VMT increase due to new recreational trips within 25 miles</i>	<i>+2,050</i>
<i>VMT increase due to O&M trips within 25 miles</i>	<i>+1,500</i>
<i>VMT increase for existing trips between Maxwell and Lodoga using realigned roads</i>	<i>+6,552</i>
<i>VMT increase due to recreational trips using realigned roads</i>	<i>+12,710</i>
<i>VMT increase due to O&M trips using realigned roads</i>	<i>+465</i>
Net Change in Daily VMT	-28,445

Source: Jacobs 2021

Notes:

O&M = operations and maintenance

VMT = vehicle miles traveled

As summarized in Table 18-19, a total net reduction of 28,445 vehicle-miles per day is estimated for the operation and maintenance of Alternative 2. The increase in VMT on local roads near the recreation areas and the reservoir facilities is more than offset by the regional redistribution of trips. The net decrease in VMT does not conflict with and is not inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b).

CEQA Significance Determination and Mitigation Measures

Operation of Alternative 2 would change certain travel patterns in the regional study area. A large portion of the recreational visitors that are expected at Sites Reservoir during the peak

recreational season are visitors who would redirect trips from their existing recreational destinations from other regional recreation areas. This results in a net VMT reduction even when increases in VMT are considered related to trips associated with Alternative 2 operations and maintenance. Therefore, no impact on transportation and traffic related to conflicts or inconsistencies with CEQA Guidelines Section 15064.3, Subdivision (b) from the operation and maintenance of Alternative 2 would occur. Instead, either Alternative 1 or 3 would foster the goal of Senate Bill 743 to reduce VMT in California.

NEPA Conclusion

Although the NEPA guidelines do not reference VMT, similar conclusions can be drawn for potential transportation and traffic effects related to operation of Alternative 2 as described above under the CEQA determination. Operation of Alternative 2 would change certain travel patterns in the regional study area as compared to the No Project Alternative. A large portion of the recreational visitors that are expected at Sites Reservoir during the peak recreational season are visitors who would redirect trips from their existing recreational destinations from other regional recreation areas. This results in a net VMT reduction even when increases in VMT are considered related to trips associated with Alternative 2 operations and maintenance. Federal policy, like Senate Bill 743, encourages reductions in greenhouse gas emissions through a variety of means. As such, effects would not occur.

Impact TRA-3: Substantial increase in hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)

No Project

No change to roadway hazards would occur under the No Project Alternative because no additional projects or programs are proposed in the Project vicinity that would affect roadway hazards.

Significance Determination

An increase in roadway hazards is not expected with the No Project Alternative because the Project would not be constructed or operated and therefore hazards associated with geometric design features would not occur. There would be no impact/no effect.

Alternatives 1 and 3

Construction and Operations

Geometric design features are proposed during construction to accommodate construction traffic accessing the Project site. Some features would remain as part of the operation of Alternatives 1 and 3. Additional geometric design features are proposed for the existing roadway realignments and new access roads to Project facilities.

The following road intersections are listed as planned to be widened to accommodate truck turning: Road 68/Road D, Road D/Road 69, McDermott Road/Road 68, Delevan Road/McDermott Road, and Maxwell Sites Road/McDermott Road (Section 2.5.1.7, *New and Existing Roadways*). Widening would require adding shoulders to the roadway approaches to the intersections and widening the intersections with 30-foot to 40-foot curve return radii at the

intersection corners. The realignment of Maxwell Sites Road, Sites Lodoga Road, and Huffmaster Road would each include sharp curves as geometric design features due to the topographic conditions near the Project site.

In all cases of road modifications for construction and operations, BMP-1 would be implemented, including conforming the design and construction of these roadways with applicable design standards and building codes and ensuring compatible uses. With implementation of the BMP-1 during construction of Alternatives 1 and 3, the Authority would ensure that the standards, guidelines, and codes would be included as minimum standards in the construction specifications. These standards, guidelines, and codes establish minimum design criteria and construction requirements for bridges, access roads, and other facilities and would be followed by the project engineers, where applicable, in the design of Project facilities. The project engineers would follow the standards, guidelines, and code requirements that are legally mandated and the most current applicable version at the time of implementation (Section 18.2.1, *Project Access Roads*). In addition to the roadway design considerations that would be followed, it is standard engineering practice to follow the Manual for Uniform Traffic Control Devices (MUTCD) in the design of the appropriate signing, pavement delineations, and traffic control devices that would be needed to provide advisory warnings, regulatory directions, and supplemental guidance to drivers traveling through all the roadway alignments (California Department of Transportation 2021). Thus, a substantial increase in hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) would not occur or result in incompatible uses.

CEQA Significance Determination and Mitigation Measures

The design of roadways in Alternatives 1 and 3 would incorporate BMP-1 and standard engineering design practices. These would reduce the potential hazards related to sharp curves and grade changes due to the topographic conditions near the Project area. The standards, guidelines, and codes (the most current applicable version at the time of implementation), which establish minimum design criteria and construction requirements for bridges, access roads, and other facilities, would be followed by the project engineers, where applicable, in the design of Project facilities. Construction and operation of the roads under Alternative 1 or 3 would result in a less-than-significant impact.

NEPA Conclusion

Construction and operation effects on roadway hazards would be the same as described above for CEQA. Road modifications for construction and operations of Alternatives 1 and 3 would occur as compared to the No Project Alternative. The design of roadways in Alternatives 1 and 3 would incorporate BMP-1 and standard engineering design practices reducing the potential hazards related to sharp curves and grade changes due to the topographic conditions near the Project area. The standards, guidelines, and codes (the most current applicable version at the time of implementation), which establish minimum design criteria and construction requirements for bridges, access roads, and other facilities, would be followed by the project engineers, where applicable, in the design of Project facilities. Construction and operation of the roads under Alternative 1 or 3 would result in no adverse effect.

Alternative 2

Construction and Operations

Alternative 2 is similar to Alternatives 1 and 3 with respect to the potential substantial increases in hazards due to geometric design features. The main difference is slight modifications to the realignments of Sites Lodoga Road, Maxwell Sites Road, and Huffmaster Road when compared to Alternatives 1 and 3, and the South Road. The South Road includes more sharp curves compared to those roads under Alternatives 1 and 3 and cuts through mountainous terrain until it joins the existing portion of Sites Lodoga Road on the west side of Sites Reservoir. The construction approach and design methodology are the same for Alternative 1 or 3 and Alternative 2. Roadways that would be used for construction access and local access would be designed to achieve the objectives for both uses, prioritize needs for local traffic use and safety, and ensure compatible uses. For Alternative 2, the design of South Road would follow the design considerations that are based on current AASHTO and county-adopted standards.

In addition to roadway design considerations that would be followed, it is standard engineering practice to follow the MUTCD in the design of the appropriate signing, pavement delineations, and traffic control devices that would be needed to provide advisory warnings, regulatory directions, and supplemental guidance to drivers traveling through all the roadway alignments. With the construction and operation of the South Road for Alternative 2, more traffic control elements would be necessary to meet the required standards. Thus, a substantial increase in hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) would not occur or result in incompatible uses.

CEQA Significance Determination and Mitigation Measures

The design of roadways in Alternative 2 would incorporate BMP-1 and standard engineering design practices. These practices would reduce the potential hazards related to sharp curves and grade changes due to the topographic conditions near the Project area, particularly with respect to the South Road. The standards, guidelines, and codes (the most current applicable version at the time of implementation), which establish minimum design criteria and construction requirements for bridges, access roads, and other facilities, would be followed by the project engineers, where applicable, in the design of Project facilities. Construction and operation of the roads under Alternative 2 would result in a less-than-significant impact.

NEPA Conclusion

Construction and operation effects on roadway hazards would be the same as described above for CEQA. Road modifications for construction and operations of Alternative 2 would occur as compared to the No Project Alternative. The design of roadways in Alternative 2 would incorporate BMP-1 and standard engineering design practices reducing the potential hazards related to sharp curves and grade changes due to the topographic conditions near the Project area, particularly with respect to the South Road. The standards, guidelines, and codes (the most current applicable version at the time of implementation), which establish minimum design criteria and construction requirements for bridges, access roads, and other facilities, would be followed by the project engineers, where applicable, in the design of Project facilities. Construction and operation of the roads under Alternative 2 would result in no adverse effect.

Impact TRA-4: Result in inadequate emergency access***No Project***

No change to emergency access would occur under the No Project Alternative because no additional projects or programs are proposed in the Project vicinity that would affect emergency access.

Significance Determination

Effects on emergency access are not expected with the No Project Alternative because the Project would not be constructed or operated and therefore emergency access would not be affected. Therefore, no impact/no effect on emergency access would occur.

Alternatives 1 and 3***Construction***

Construction of Alternative 1 or 3 is anticipated to span 6 years. During construction of temporary roads and road realignments, the existing roads would remain open and accessible to emergency vehicles at all times. If construction traffic is concentrated in one roadway segment over a short period of time, emergency vehicles and first responders have the right-of-way and would bypass any potential construction congestion, as lanes would remain open per the TMPs for BMP-16. In addition, a temporary shoofly would allow through access on the existing Sites Lodoga Road. Traffic would generally increase in the study area due to construction activities on the construction and haul roads identified in Table 18-2. As described in Impact TRA-1, roadway operations would remain acceptable during construction regardless of the increase in construction traffic. BMP-16 would be implemented during construction, allowing appropriate signage and communication and coordination with emergency responders per the TMPs. Emergency access to the community of Lodoga would remain uninterrupted because there are stations located to the west of Lodoga (e.g., Stonyford Fire Department, Bear Valley-Indian Fire Department, and Colusa Sheriff's Department in Stonyford). As such, emergency vehicles traveling eastbound into the community of Lodoga would not require the use of temporary access roads. Once the permanent realigned roads are completed, traffic would be shifted to the new alignments, and adequate emergency access would be maintained.

Operations

Alternatives 1 and 3 would result in a permanent increase in traffic volumes along some of the study area roadways. Alternatives 1 and 3 would have the same effect on roadway traffic because the differences in water deliveries between these alternatives would not affect Project facilities, including proposed roadways. As identified under Impacts TRA-1 and TRA-2, roadway operations would remain acceptable during the operation and maintenance of Alternatives 1 and 3. Emergency vehicles needing to reach Lodoga (to the west of Sites Reservoir) from the east would have access via the realigned Sites Lodoga Road and the bridge. The change in distance between the existing route and the Alternatives 1 and 3 route is approximately 5 miles, calculated from McDermott Road to the end of Sites Lodoga Road. Emergency access from the west to the community of Lodoga would remain unaltered as described above under construction conditions.

Adequate emergency access to recreational facilities and the reservoir supporting facilities would be provided via existing, improved, or newly constructed maintenance access roads.

CEQA Significance Determination and Mitigation Measures

Construction and operation of Alternative 1 or 3 would not result in inadequate emergency access. Roads or lanes would be open during the construction period, and, as identified in Impact TRA-1, road capacity would not be exceeded during construction. Furthermore, implementation of construction BMP-16 will require coordination with emergency responders as needed. Adequate emergency access would remain available during construction and operation, as it currently is under existing conditions, from west to the east on Sites Lodoga Road to the community of Lodoga. During operations and maintenance of Alternative 1 or 3, the increases in traffic volumes are under the capacity of all roadways in the local study area, as identified in Impacts TRA-1 and TRA-2. Construction and operation of Alternative 1 or 3 would result in a less-than-significant impact on emergency access.

NEPA Conclusion

Construction and operation effects on emergency access would be the same as described above for CEQA. Construction and operation of Alternative 1 or 3 would not result in inadequate emergency access as compared to the No Project Alternative. Roads or lanes would be open during the construction period, and, as identified in Impact TRA-1, road capacity would not be exceeded during construction. Furthermore, implementation of construction BMP-16 will require coordination with emergency responders as needed. During operations and maintenance of Alternative 1 or 3, the increases in traffic volumes are under the capacity of all roadways in the local study area, as identified in Impacts TRA-1 and TRA-2. Construction and operations of Alternatives 1 and 3 would result in no adverse effect on emergency access.

Alternative 2

Construction

Construction of Alternative 2 is estimated to span the same time as Alternatives 1 and 3. Alternative 2 would require the construction of the realigned Sites Lodoga Road, Maxwell Lodoga Road, and Huffmaster Road and the construction of the South Road. Construction means, methods, and sequencing would be similar to Alternatives 1 and 3, although some locations would be different. During construction of the temporary roads and road realignments, the existing roads would remain open and accessible to emergency vehicles at all times. If construction traffic is heavily concentrated in one segment over a short period of time, emergency vehicles and first responders have right-of-way and would bypass any potential construction congestion, as lanes would remain open. As indicated for Impact TRA-1, roadway capacities during construction would remain acceptable for Alternative 2, regardless of the increase in construction traffic. Implementation of BMP-16 during construction will include the use of signage to alert motorists and bicyclists and communication and coordination with emergency responders. Emergency access from the west to the community of Lodoga would remain available during construction as described above for Alternatives 1 and 3. Once the permanent realigned roads are completed, traffic would be shifted to the new alignments, and adequate emergency access would be maintained.

Operations

Operations and maintenance activities for Alternative 2 would be similar to Alternatives 1 and 3. The main difference related to emergency access is the realignment of the Sites Lodoga Road, which would result in a longer route around the south side of Sites Reservoir compared to existing conditions and Alternatives 1 and 3. The realignment would result in a travel route that is approximately 14 miles longer in Alternative 2 compared to the existing travel route between Maxwell and Lodoga. Adequate emergency access would be provided via newly paved roads around the reservoir. Local emergency vehicles traveling from east to west may have to plan for increases in travel time. Adequate emergency access from the west to the community of Lodoga would remain available during operation as described above for Alternatives 1 and 3. As identified in Impacts TRA-1 and TRA-2, roadway capacities and conditions would remain acceptable for Alternative 2. Adequate emergency access to recreational facilities and the reservoir supporting facilities would be provided via existing, improved, or newly constructed maintenance access roads.

CEQA Significance Determination and Mitigation Measures

Under Alternative 2, construction and operations impacts would be similar to those described above for Alternative 1 or 3. Roadway capacities and conditions would allow for adequate emergency access, even with operation of the South Road (Impacts TRA-1 and TRA-2). Implementation of BMP-16 will require coordination with emergency responders as needed. Adequate emergency access would remain available during construction and operation, as it currently is under existing conditions, from west to the east on Sites Lodoga Road to the community of Lodoga. Construction and operation of Alternative 2 would result in a less-than-significant impact on emergency access.

NEPA Conclusion

Construction and operation effects on emergency access would be the same as described above for CEQA. Construction and operation of Alternative 2 would not result in inadequate emergency access as compared to the No Project Alternative. Under Alternative 2, construction and operations effects would be similar to those described above for Alternative 1 or 3. Construction and operation of Alternative 2 would result in no adverse effect on emergency access.

Impact TRA-5: Substantially affect school bus travel***No Project***

No change to school bus routes would occur under the No Project Alternative because no additional projects or programs are proposed in the Project vicinity that would affect school bus travel.

Significance Determination

Effects on school bus routes are not expected with the No Project Alternative outside of the background growth for this area because the Project would not be constructed or operated. Therefore, no impact/no effect on school bus travel would occur.

Alternatives 1 and 3

Construction

Construction of the Sites Dam and Sites Reservoir would require the demolition and removal of the western portion of Maxwell Sites Road and the segment of Sites Lodoga Road that crosses Antelope Valley. The realigned Sites Lodoga Road would cross the reservoir via the bridge that would be constructed and operational prior to the portions of the existing roads being removed. Therefore, school bus routes between Lodoga and Maxwell would continue to use the existing roads during construction. Traffic conditions would remain acceptable during construction (Impact TRA-1). To maximize safety, the TMP would include coordination with local schools to provide construction notifications, including the identified haul routes.

Operations

Traffic conditions on school bus routes would remain acceptable during operations (Impacts TRA-1 and TRA-2). The realignment of the Sites Lodoga Road and the bridge would result in a slightly longer route when compared to existing conditions. The realignment and bridge would result in a travel route that is approximately 5 miles longer in Alternatives 1 and 3 compared to the existing travel route and time (for general traffic, it currently takes approximately 30 minutes to get from Maxwell to Lodoga) between Maxwell and Lodoga. At an average travel speed of 40 to 50 mph, the travel time increase would be 6 to 8 minutes. Adequate access is provided via newly paved roads, and the moderate increase in travel time would not substantially affect school bus travel.

CEQA Significance Determination and Mitigation Measures

Based on qualitative analysis to verify that adequate school bus travel is maintained for Maxwell Unified School District throughout construction and during permanent operations, Alternative 1 or 3 would result in a less-than-significant impact.

NEPA Conclusion

Construction and operation effects on school bus routes would be the same as described above for CEQA. During construction of Alternatives 1 and 3, school bus routes between Lodoga and Maxwell would continue to use the existing roads as compared to the No Project Alternative. During operation of Alternatives 1 and 3, adequate access would be provided via newly paved roads, and the moderate increase in travel time would not substantially affect school bus travel as compared to the No Project Alternative. Construction and permanent operation of Alternative 1 or 3 would result in no adverse effect on school bus travel.

Alternative 2

Construction

Access to the west side of the Sites Reservoir, including to Lodoga, from the east side and the southern portion of the reservoir during the construction of South Road would be through the existing routes. The realignment of Sites Lodoga Road, Maxwell Sites Road, and Huffmaster Road would be completed prior to the demolition and removal of the affected segment of Huffmaster Road. Maintaining access routes within and across Antelope Valley would allow the

current school bus routes to continue during Alternative 2 construction. Impact TRA-1 identifies that traffic conditions would remain acceptable during construction.

Operations

The realignment of the Sites Lodoga Road would result in a longer route around the south side of Sites Reservoir compared to existing conditions and Alternatives 1 and 3. This would have a substantial effect on school bus travel provided by the Maxwell Unified School District because of the substantial increase in the road length compared to the existing Sites Lodoga Road, as well as the increase in curves and elevation as compared to the existing road and the bridge under Alternatives 1 and 3. The realignments would result in a travel route that is approximately 14 miles longer in Alternative 2 compared to the existing travel route between Maxwell and Lodoga. At an average travel speed of 30 to 40 mph, the travel time increase would be 21 to 34 minutes. The travel time for general traffic between Maxwell and Lodoga is currently 30 minutes, and school bus travel times may be slightly longer. Travel time on the new route would be approximately 60 minutes, which would substantially affect school bus travel.

CEQA Significance Determination and Mitigation Measures

During construction, school bus travel would be maintained for Maxwell Unified School District as a result of the use of temporary construction roads and the use of existing roads that would remain open during construction. Construction impacts would be less-than-significant. Operations would result in longer travel time, which would substantially affect school bus travel. One potential measure to lessen this impact would be to shorten the length of the South Road; however, that is already presented in Alternatives 1 and 3 as the bridge crossing the Sites Reservoir. Another potential measure that was considered was the use of a ferry service that would connect both sides of Sites Reservoir to avoid the travel along the South Road for students and other users. However, it was determined that the reservoir is not expected to maintain a consistent water level year-round. Due to unforeseeable fluctuating water levels, the potential mitigation was considered unfeasible. There are no feasible mitigation measures and operation impacts would be significant and unavoidable.

NEPA Conclusion

Construction and operation effects on school bus routes would be the same as described above for CEQA. During construction of Alternative 2, school bus travel would be maintained for Maxwell Unified School District as a result of the use of temporary construction roads and the use of existing roads that would remain open during construction as compared to the No Project Alternative. Operation of Alternative 2 would result in longer travel time, which would substantially affect school bus travel as compared to the No Project Alternative. Construction of Alternative 2 would result in no adverse effect on school bus travel; operational effects would be substantially adverse.

Impact NAV-1: Substantially impair recreational and commercial navigation during construction and operations***No Project***

No change to existing navigation conditions on navigable waterways would occur under the No Project Alternative because no Project facilities would affect or require changes to the existing navigation conditions on navigable waterways, as Project facilities would not be constructed or operated.

Significance Determination

A conflict with navigation along the navigable waterways is not expected with the No Project Alternative because the Project would not be constructed or operated. Therefore, no impact/no effect on the navigation along the navigable waterways would occur.

Alternatives 1 and 3

Alternatives 1 and 3 would be constructed and operated along the Sacramento River at the RBPP and the GCID Main Canal head gate. Construction activities would occur within the footprint of the RBPP or within the footprint of the GCID Main Canal and would not affect the navigational channel of the Sacramento River. The alignment for the Dunnigan Pipeline under Alternatives 1 and 3 is not along any navigable waters. The pipeline begins at the TC Canal intake, and conveyance of the estimated flow of 1,000 cubic feet per second would be gravity-based to the CBD, where an energy dissipation facility would be constructed.

CEQA Significance Determination and Mitigation Measures

No impact would occur because construction, operation, and maintenance activities under Alternative 1 or 3 would not occur within a navigable waterway.

NEPA Conclusion

Construction, operation, and maintenance effects on navigation conditions on navigable waterways would be the same as described above for CEQA and would not occur within a navigable waterway under Alternatives 1 or 3. Construction, operation, and maintenance of Alternative 1 or 3 would result in no adverse effect on navigable waterways.

Alternative 2

No impacts would occur on the Sacramento River at the RBPP or GCID Main Canal head gate, as described above for Alternatives 1 and 3. Under Alternative 2, the Dunnigan Pipeline would extend 10 miles, pass through the levee, and discharge into the Sacramento River at approximately River Mile 100.8 (Figure 2-40). For the construction of the Dunnigan Pipeline, all the construction activities would be done away from any navigable waters, with the exception of the Sacramento River discharge. A coffer dam would be erected to allow for the construction of the Sacramento River discharge from the river side. The temporary construction easement, which includes the coffer dam, is expected to encroach approximately 30 to 35 feet into the navigable portion of the Sacramento River as compared to the approximate 255 feet of available width. Therefore, construction activities on the Sacramento River would not be expected to result in any

marine traffic interruptions. Furthermore, implementation of BMP-32 will require posting information regarding maintenance activities and associated measures (e.g., reduced speed limits, detours) at nearby marinas and public launch ramps. Staging areas and access roads are located away from the navigable channel and are not expected to result in marine traffic interruptions. Under operating conditions, water would be discharged at the Sacramento River; this water would flow down a discharge apron and into the Sacramento River. Given that energy dissipators would be on the end of each pipe to slow the water released, this discharge would not affect navigation.

CEQA Significance Determination and Mitigation Measures

Impacts would be less than significant because construction activities under Alternative 2 would occur with minor encroachment to a navigable waterway but would not affect navigation. Operation and maintenance activities would not affect navigation and impacts would not occur.

NEPA Conclusion

Construction and operation effects on navigation conditions on navigable waterways would be the same as described above for CEQA. Construction activities under Alternative 2 would occur with minor encroachment to a navigable waterway but would not affect navigation as compared to the No Project Alternative. Operation and maintenance would not occur in navigable waterways. Construction, operation, and maintenance of Alternative 2 would result in no adverse effect on navigable waterways.

18.5 References

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