

## 4.16 Traffic/Circulation

This section evaluates the potential impacts of the Moosa 100K Alternative on traffic and circulation. This evaluation includes an assessment of the direct, indirect, short-term, long-term and cumulative effects of the Moosa 100K Alternative on roadway and intersection traffic congestion. The evaluation is based on the traffic impact analysis prepared by Linscott, Law, & Greenspan Engineers (LLG, 2007), which is included as Appendix G to this EIR/EIS.

### 4.16.1 Affected Environment

#### 4.16.1.1 Environmental Setting

The Moosa Canyon project site is located in a relatively unpopulated area 3.5 miles northwest of Valley Center in San Diego County. The site is approximately 15 miles north of the City of Escondido and four miles east of Interstate 15 (I-15). The following is a brief description of the existing roadway system in the Moosa Canyon project area.

#### Regional and Local Roadways

**Valley Center Road** is classified as a Prime Arterial in the County of San Diego Circulation Element within the project vicinity. Valley Center Road is currently constructed as a two-lane undivided north-south roadway, providing one lane of travel in each direction except where this road has been widened or is in the process of being widened to four lanes. This is described below in more detail.

Phase 1 of the Valley Center Road CIP has been completed. This consisted of widening and reconstructing 2.0 miles of Valley Center Road from approximately 2,700 feet (0.5 miles) south of the Escondido City limit to one mile south of Banbury Drive in Valley Center. This portion of Valley Center Road was reconstructed to modified major road standards (4-lane divided road with bike lanes). Phase 2 is currently under construction and will reconstruct Valley Center Road to four lanes from Banbury Drive northward to Cole Grade Road. Phase 2 is estimated to be completed in 2008. No bus stops or bike lanes are provided and curbside parking is prohibited along both sides of the roadway. Valley Center Road is part of the County's bicycle network system.

**Lilac Road** is classified as a Rural Light Collector in the County of San Diego Circulation Element within the project vicinity. Currently, Lilac Road is constructed as a two-lane undivided north-south roadway. No bus stops or bike lanes are provided, and curbside parking is prohibited along both sides of the roadway. Lilac Road is part of the County's bicycle network system.

**Betsworth Road** is an unclassified two-lane undivided street that travels west from Lilac Road and would terminate at the Moosa 100K site. Access to the project site would be via Betsworth Road only.

**Old Castle Road** is classified as a Collector Road in the County of San Diego Circulation Element within the project vicinity. Old Castle Road is currently constructed as a two-lane undivided east-west facility with a general curb-to-curb width ranging from 30 to 40 feet and shoulders ranging from 0 to 6 feet. Bike lanes are provided, and curbside parking is prohibited along both sides of the roadway. Old Castle Road is part of the County's bicycle network system. Traffic calming measures are also in place on Old Castle Road.

**Old Highway 395** is classified as a Collector Road in the County of San Diego Circulation Element within the project vicinity. Old Highway 395 is currently constructed as a two-lane undivided north-south facility, providing one lane of travel in each direction. No bus stops are provided, and bike lanes are striped along both sides of the road with curbside parking prohibited. Old Highway 395 is part of the County's bicycle network system.

**Champagne Boulevard** is classified as a Collector Road in the County of San Diego Circulation Element within the project vicinity. Champagne Boulevard is currently constructed as a two-lane, undivided north-south facility with a curb-to-curb width of 45 feet and 2-foot-wide shoulders. No bus stops are provided, and bike lanes are striped along both sides of the road with curbside parking prohibited. Champagne Boulevard is part of the County's bicycle network system.

**Gopher Canyon Road** is classified as a Collector Road in the County of San Diego Circulation Element within the project vicinity. Gopher Canyon Road is currently constructed as a two-lane undivided east-west facility with a curb-to-curb width of 24 feet with 6-foot-wide shoulders. Bike lanes are provided, and curbside parking is prohibited along both sides of the roadway. Gopher Canyon Road is part of the County's bicycle network system.

## **Existing Facilities Included in the Traffic Analysis Study Area**

The following intersections and segments were selected for inclusion in the traffic analysis study area for the Moosa 100K Alternative based on the anticipated volume of project traffic, the distribution patterns of project traffic, and known locations of traffic operation difficulty.

### *Intersections*

- Valley Center Road/Lilac Road
- Lilac Road/Betsworth Road
- Old Castle Road/Lilac Road
- Champagne Boulevard/Old Castle Road
- Old Highway 395/Gopher Canyon Road
- I-15 Northbound Ramps/Gopher Canyon Road
- I-15 Southbound Ramps/Gopher Canyon Road
- Old Highway 395/Circle R Drive

### *Segments*

- Valley Center Road
  - South of Lilac Road
- Old Castle Road

- East of Champagne Boulevard
- West of Lilac Road
- Betsworth Road
  - South of Lilac Road
- Champagne Boulevard
  - Between Old Castle Road and Gopher Canyon Road

## Traffic Analysis Scenarios

Peak construction is anticipated to occur in Year 2010. Based on the SANDAG North County Model and the historical count data, an average growth rate of two percent per year was determined. Therefore, a growth factor of eight percent (approximately two percent per year for four years) was applied to the existing counts to represent Year 2010 without project conditions. Quantitative analyses of AM and PM peak hour conditions have been conducted for the following scenarios shown in Table 4.16-1.

**Table 4.16-1. Description of Traffic Analysis Scenarios**

Scenario	Description of Scenario
<b>Existing Conditions</b>	
Existing	Existing conditions in the study area without any additional development.
<b>Baseline Conditions</b>	
Baseline: Year 2010 without Moosa 100K Construction Traffic	Existing conditions plus 8% growth factor.
Baseline Plus Moosa 100K Construction Traffic	Baseline conditions plus traffic associated with Moosa 100K construction.

Source: LLG, 2007

## Existing Traffic Volumes

### *Peak Hour Intersection Turning Movement Volumes*

Manual peak hour intersection counts were conducted in June, August, and November 2006. Counts were conducted during both AM (7:00-9:00) and PM (4:00-6:00) peak periods. Appendix A of the traffic impact analysis report (Appendix G to this EIR/EIS) contains the manual count sheets.

### *Daily Segment Volumes*

Bi-directional daily traffic counts were conducted in June, August, and November 2006. Table 4.16-2 shows the most recent available average daily traffic (ADT) volumes for the study area street segments.

**Table 4.16-2. Existing Street Segment Traffic Volumes: Moosa 100K Alternative**

Street Segment	ADT
<b>Valley Center Road</b>	
South of Lilac Road	22,690
<b>Old Castle Road</b>	
East of Champagne Boulevard	8,920
West of Lilac Road	8,060
<b>Betsworth Road</b>	
South of Lilac Road	1,350

Source: Counts commissioned by LLG in 2007.

## Methodology for Analysis of Existing Traffic Conditions

Field reconnaissance was undertaken to ascertain the traffic control characteristics of each of the study area intersections and segments. Determination of roadway operating conditions is based on comparison of known or projected traffic volumes during peak hours to roadway capacity. Level of service (LOS) is the term used to denote the different operating conditions that occur on a given intersection or street segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis, taking into account factors such as roadway geometries, traffic signal phasing, speed, travel delay, freedom to maneuver, and safety. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS designation is reported differently for signalized and unsignalized intersections, as well as for street segments.

Peak construction is not anticipated to occur until Year 2010. Therefore, to account for the growth in area traffic between Year 2006 and Year 2010, a growth factor of eight percent (approximately two percent growth per year for four years) was added to existing traffic counts to represent Year 2010 conditions.

### *Intersection Analysis*

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined using the methodology found in Chapter 16 of the *2000 Highway Capacity Manual* (HCM), with the assistance of the *Traffix v. 7.5* computer software. The delay values (represented in seconds) were characterized with a corresponding intersection LOS.

Unsignalized intersections were analyzed under AM and PM peak hour conditions. For these intersections, the average vehicle delay and LOS were determined based upon the procedures found in Chapter 17 of the HCM, with the assistance of the *Traffix v. 7.5* computer software. Table 4.16-3 shows LOS criteria for unsignalized intersections.

**Table 4.16-3. Level of Service – Unsignalized Intersections: Moosa 100K Alternative**

Level of Service (LOS)	Total Delay Per Vehicle (seconds)	Description of Condition
A	≤ 10	Free flow, no delays
B	> 10 and ≤ 15	Stable flow, little delay
C	> 15 and ≤ 25	Stable flow, moderate delay
D	> 25 and ≤ 35	Unstable flow, long delay
E	> 35 and ≤ 50	Unstable flow, severe delay
F	> 50	Forced flow and gridlock

Source: Highway Capacity Manual, Transportation Research Board, Special Report No. 209, Washington, D.C., 2000.

### *ILV Operations Analysis*

Caltrans prefers that state-owned intersections be analyzed using Intersecting Lane Vehicles (ILV) methodology as described in Chapter 400, Topic 406 of the *Department Highway Design Manual*. The ILV methodology is based on the concept that the capacity of intersecting lanes of traffic is 1,500 vehicles per hour (hr). For the typical state highway/local street interchange there is usually a critical intersection of a ramp with a cross road that establishes the capacity of the interchange. Listed below are the values of ILV/hr for various traffic flow conditions.

- **UNDER - ILV/hr < 1200** – Stable flow with slight, but acceptable delay. Occasional signal loading may develop. Free mid-block operations.
- **NEAR - ILV/hr 1200 – 1500** – Description: Unstable flow with considerable delays possible. Some vehicles occasionally wait two or more cycles to pass through the intersection. Continuous backup occurs at some approaches.
- **OVER - ILV/hr > 1500** – Description: Stop and go operation with severe delay and heavy congestion.<sup>1</sup> Traffic volume is limited by maximum discharge rates of each phase. Continuous backup in varying degrees occurs on all approaches. Where downstream capacity is restrictive, mainline congestion can impede orderly discharge through the intersection.

### *Street Segment Analysis*

Street segment analysis is based on the comparison of average daily trips (ADT) to the County of San Diego’s Roadway Classification, Level of Service, and ADT Table (Appendix G to this EIR/EIS). This table provides segment capacities for different street classifications based on traffic volumes and roadway characteristics.

<sup>1</sup> The amount of congestion depends on how much the ILV/hr value exceeds 1500. Observed flow rates will normally not exceed 1500 ILV/hr, and the excess will be delayed in a queue.

## Analysis Results for Existing Traffic Conditions

### Peak Hour Intersection LOS

Table 4.16-4 summarizes the existing intersections level of service for the Moosa 100K study area. As shown in Table 4.16-4, except for the following, all intersections are calculated to currently operate at LOS D or better during both the AM and PM peak hours:

- Champagne Boulevard/Old Castle Road (minor street movements operate at LOS E in the AM peak hour and LOS F during the PM peak hour);
- I-15 Northbound Ramps/Gopher Canyon Road (minor street movements operate at LOS E during the AM peak hour and LOS F during the PM peak hour)
- I-15 Southbound Ramps/Gopher Canyon Road (minor street movements operate at LOS F during both AM and PM peak hour)

**Table 4.16-4. Existing Intersection Operations: Moosa 100K Alternative**

Intersection	Control Type	Peak Hour	Existing	
			Delay <sup>(1)</sup>	LOS <sup>(2)</sup>
Valley Center Road/Lilac Road	Signal	AM	24.5	C
		PM	32.8	C
Lilac Road/Betsworth Road	TWSC (NB)	AM	9.6	A
		PM	8.5	A
Old Castle Road/Lilac Road	TWSC (SB)	AM	7.3	A
		PM	6.9	A
Champagne Boulevard/Old Castle Road	TWSC (WBL)	AM	35.7	E
		PM	80.1	F
Old Hwy 395/Gopher Canyon Road	Signal	AM	23.3	C
		PM	23.3	C
I-15 NB Ramps/Gopher Canyon Road	TWSC (NBTL)	AM	35.7	E
		PM	>100	F
I-15 SB Ramps/Gopher Canyon Road	TWSC (SBTL)	AM	>100	F
		PM	>100	F
Old Hwy 395/Circle R Drive	TWSC (WB)	AM	8.2	A
		PM	8.2	A

<sup>(1)</sup> Average delay expressed in seconds per vehicle.

<sup>(2)</sup> Level of Service.

<sup>(3)</sup> TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

<sup>(4)</sup> NB=Northbound; SB=Southbound; WB=Westbound  
WBL=Westbound Left-turn; NBTL=Northbound Thru-left turn; SBTL=Southbound Thru-left turn.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

### *ILV Operations Analysis*

There are no local streets in the Moosa 100K study area that have a critical intersection with an interchange ramp owned or operated by Caltrans. Therefore, the ILV methodology does not apply to the Moosa 100K Alternative. For background information on the ILV methodology, please refer to Section 3.16.1.1 of this EIR/EIS.

### *Daily Street Segment LOS*

Table 4.16-5 summarizes the existing street segment operations level of service for the Moosa 100K Alternative. As shown in Table 4.16-5, except the 2-lane Valley Center Road (south of Lilac Road) segment, all segments are calculated to currently operate at LOS D or better.

**Table 4.16-5. Existing Street Segment Operations: Moosa 100K Alternative**

Street Segment	Capacity (LOS E) <sup>(1)</sup>	ADT <sup>(2)</sup>	V/C <sup>(3)</sup>	LOS <sup>(4)</sup>
<b>Valley Center Road</b>				
South of Lilac Road	16,200	22,690	1.40	F
<b>Old Castle Road</b>				
East of Champagne Boulevard	16,200	8,920	0.55	D
West of Lilac Road	16,200	8,060	0.50	D
<b>Betsworth Road</b>				
South of Lilac Road	16,200	1,350	0.08	A

<sup>(1)</sup> Capacities based on County of San Diego Roadway Classification Table.

<sup>(2)</sup> Average Daily Traffic Volumes.

<sup>(3)</sup> Volume Capacity Ratio

<sup>(4)</sup> Level of service.

Source: Counts commissioned by LLG in 2007.

### **4.16.1.2 Regulatory Setting**

Caltrans is responsible for enhancement and maintenance of state highways and interstate freeways. Any construction within state right-of-way requires an encroachment permit from Caltrans. Caltrans also provides review and comment of project proposals affecting facilities in their jurisdiction, such as I-15 Southbound Ramps at Gopher Canyon Road for the Moosa 100K Alternative.

### **4.16.2 Project Design Features**

General Conditions and Standard Specifications that will be included in the project construction documents to reduce traffic/circulation impacts associated with construction of the Proposed Action are summarized in Section 1.9.8 (Introduction, Traffic/Circulation) of this EIR/EIS. Refer to Section 3.16.2 (Traffic/Circulation for the Proposed Action) for a list of project design features that also apply to the Moosa 100K Alternative.

## 4.16.3 Direct and Indirect Effects

### 4.16.3.1 Thresholds of Significance

The standards of significance in this analysis are based upon the current practice of the appropriate regulatory agencies. Thresholds used to evaluate potential traffic/circulation impacts are based on applicable criteria in State CEQA Guidelines (CCR §§15000-15387), Appendix G; and the San Diego Traffic Engineers' Council (SANTEC) Guidelines. A significant traffic/circulation impact would occur if the Moosa 100K Alternative would:

1. Significantly worsen congestion at any intersection that is currently operating, or is projected to operate at, LOS E or F, by adding two seconds or more to the delays experienced by motorists at intersections.
2. Cause any roadway segment to be reduced to LOS E or F, or increase the volume-to-capacity ratio by 0.02 or more at any roadway segment currently operating at LOS E or F.
3. Result in delays in emergency vehicle response times or require emergency vehicles to use alternate routes during emergency situations.
4. Result in construction activities within or adjacent to roadway rights-of-way, thereby creating increased risk of motor vehicle accidents and/or pedestrian injury.

### 4.16.3.2 Impact Analysis

#### Methodology

This traffic analysis for the Moosa 100K Alternative is based on a Year 2010 peak construction period. Once the reservoir is fully operational, routine maintenance and operation of the reservoir, and recreational use at the site, is expected to generate minimal traffic volumes. Operational and maintenance activities would include monitoring reservoir levels and outlet and spillway discharges, monitoring dam instrumentation, maintaining appropriate records, and maintaining mechanical and electrical equipment according to the equipment manufacturers' requirements. All of these activities would result in negligible worker trips to the reservoir. Recreation at the Moosa 100K Alternative would consist of developing a new marina to take advantage of the reservoir.

The ESP EIR/EIS addressed the operational traffic of a new recreational facility as part of the Moosa/Hodges Alternative that would include a marina, trails, and picnic areas, which would provide more facilities than would be included at the Moosa 100K Alternative. The ESP EIR/EIS assessed the operational impact of traffic from this recreational area by determining the trip generation for the conceptual 28-acre park area using SANDAG rates for a regional park (i.e., 20 trips/acre). The resultant trip generation was 560 average daily trips (16 trips during the AM peak period and 34 trips during PM peak period). Routine maintenance and operation

activities at the dam and reservoir, and use of the marina and reservoir, would result in a negligible increase in traffic at build-out. Therefore, operational traffic volumes were not evaluated for the Moosa 100K Alternative.

Analysis of the “Baseline-plus-Moosa 100K Alternative Construction Traffic” scenarios consists of estimating the construction traffic associated with the Moosa 100K Alternative and assigning that traffic to the study area circulation network. To account for cumulative traffic volumes during the Moosa 100K Alternative peak construction period, a growth rate of eight percent was added to the existing traffic. The resultant AM and PM peak hour traffic volumes are used to determine operating conditions. The resultant conditions are compared to baseline conditions in accordance with the above thresholds of significance to determine the significance of the Moosa 100K Alternative traffic impacts.

### ***Construction Traffic Trip Generation***

Table 4.16-6 summarizes the calculated number of average daily traffic trips during the peak construction period for the Moosa 100K Alternative. Construction traffic would include trucks bringing equipment (e.g., bulldozers, cranes, etc.), cement, fly ash, and aggregate to the Moosa 100K site, as well as construction crew traffic.

**Table 4.16-6. Construction Traffic Generation: Moosa 100K Alternative**

Use	Trucks Trips	Total ADT in PCE <sup>(1)</sup>	AM Peak Hour					PM Peak Hour				
			% of ADT	In:Out		Volume		% of ADT	In:Out		Volume	
				Split	In	Out	Split		In	Out		
Trucks/Equipment Only	552	1104	10%	80%	20%	88	22	10%	30%	70%	33	77
Employee Traffic Only	1,404	1,404	30%	80%	20%	337	84	30%	30%	70%	126	295
<b>Total</b>	<b>1,956</b>	<b>2,508</b>				<b>425</b>	<b>106</b>				<b>159</b>	<b>372</b>

<sup>(1)</sup> PCE = Passenger Car Equivalent; ADT = Average Daily Traffic Volumes

The trip generation for the trucks was based on the estimated construction equipment schedule prepared for the project (see Appendix E of the traffic impact analysis report in Appendix G to this EIR/EIS). The trip generation for construction employees was based on the estimated manpower for the project by each construction phase for the project and associated trip generation values. Simultaneous construction phase’s traffic volumes were combined and the construction phase with the highest total traffic was determined and analyzed.

A Passenger Car Equivalent (PCE) factor was applied to the generated truck trips. PCE is defined as the number of passenger cars that are displaced by a single heavy vehicle of a particular type under the prevailing traffic conditions. Heavy vehicles have a greater traffic impact than passenger cars because: (1) they are larger than passenger cars, and therefore, occupy more roadway space; and (2) their performance characteristics are generally inferior to passenger cars, leading to the formation of downstream gaps in the traffic stream (especially on

upgrades) which cannot always be effectively filled by normal passing maneuvers. Based on the elevation changes in the vicinity of the project site, a PCE of 2.0 was applied to each truck trip.

### ***Construction Traffic Trip Distribution/Assignment***

The Moosa 100K Alternative project-generated traffic was distributed to the circulation system based on several factors such as potential truck routes, population centers (for construction employee trips), and the proximity of material providers (Appendix G to this EIR/EIS).

### ***Future Baseline Conditions (Year 2010 without Moosa 100K Construction Traffic)***

Except the following intersections, all Year 2010 without Moosa 100K Alternative intersections are calculated to operate at LOS D or better during both the AM and PM peak hours:

- Champagne Boulevard/Old Castle Road (minor street movements operate at LOS F during both AM and PM peak hour);
- I-15 Northbound Ramps/Gopher Canyon Road (minor street movements operate at LOS F during both AM and PM peak hour); and
- I-15 Southbound Ramps/Gopher Canyon Road (minor street movements operate at LOS F during both AM and PM peak hour).

All Year 2010 without Moosa 100K Alternative street segment operations are calculated to operate at LOS D or better, except the Valley Center Road (south of Lilac Road) segment. Future intersection operations are presented in Table 4.16-7. Future intersection street segment operations are presented in Table 4.16-8.

## **Analysis**

***Threshold 1: Significantly worsen congestion at any intersection that is currently operating, or is projected to operate at, LOS E or F, by adding two seconds or more to the delays experienced by motorists at intersections***

As shown in Table 4.16-7, except for the following, all intersections are calculated to operate at LOS D or better during both the AM and PM peak hours:

- Lilac Road/Betsworth Road (LOS F during PM peak hour);
- Champagne Boulevard/Old Castle Road (LOS F during both AM and PM peak hours); and
- I-15 Northbound and Southbound Ramps at Gopher Canyon Road (LOS F during both AM and PM peak hours).

**Table 4.16-7. Intersection Operations: Moosa 100K Alternative**

Intersection <sup>(3)</sup>	Peak Period	Existing		Year 2010 Without Moosa 100K		Year 2010 + Moosa 100K		Delay Δ <sup>(4)</sup>	Critical Move Trips	Significant Impact
		Delay <sup>(1)</sup>	LOS <sup>(2)</sup>	Delay	LOS	Delay	LOS			
		Valley Center Road/Lilac Road [Signalized]	AM	24.5	C	27.8	C			
	PM	32.8	C	43.0	D	55.0	D	12.0	N/A	No
Lilac Road/Betsworth Road [TWSC-NB]	AM	9.6	A	9.8	A	17.5	C	7.7		No
	PM	8.5	A	8.6	A	>100	F	>10	228	Yes
Old Castle Road/Lilac Road [TWSC-SB]	AM	7.3	A	7.4	A	9.3	A	1.9	N/A	No
	PM	6.9	A	6.9	A	7.3	A	0.4	N/A	No
Champagne Boulevard/Old Castle Road [TWSC-WBL]	AM	35.7	E	50.0	F	>100	F	>10	1	No
	PM	80.1	F	>100	F	>100	F	>10	3	No
Old Hwy 395/Gopher Canyon Road [Signalized]	AM	23.3	C	24.0	C	24.4	C	0.4	N/A	No
	PM	23.3	C	24.1	C	27.0	C	2.9	N/A	No
I-15 NB Ramps/Gopher Canyon Road [TWSC-NBTL]	AM	35.7	E	50.1	F	66	F	15.9	0	No
	PM	>100	F	>100	F	>100	F	>10	0	No
I-15 SB Ramps/Gopher Canyon Road [TWSC-SBTL]	AM	>100	F	>100	F	>100	F	>10	25	Yes
	PM	>100	F	>100	F	>100	F	>10	10	Yes
Old Hwy 395/Circle R Drive [TWSC-WB]	AM	8.2	A	8.3	A	8.4	A	0.1	N/A	No
	PM	8.2	A	8.4	A	8.4	A	0.0	N/A	No

<sup>(1)</sup> Average delay expressed in seconds per vehicle.

<sup>(2)</sup> LOS=Level of Service.

<sup>(3)</sup> TWSC= Two-Way Stop Controlled intersection. Minor street left turn delay is reported. WBL=Westbound Left-turn; EB=Eastbound; WB=Westbound; SB=Southbound

<sup>(4)</sup> Delay in seconds

Shading indicates significant impacts.

Source: LLG, 2007

Construction-related traffic from the Moosa 100K Alternative would substantially increase delays at the above facilities, which are projected to operate at LOS A or F in Year 2010 without Moosa 100K traffic. However, construction-related traffic from the Moosa 100K Alternative would not add to the critical movements at the Champagne Boulevard/Old Castle Road intersection and the I-15 northbound ramps at Gopher Canyon Road. Therefore, the construction-related traffic congestion impacts at the Lilac Road/Betsworth Road intersection and the I-15 southbound ramps at Gopher Canyon Road would be significant, and the construction-related traffic congestion impacts at the Champagne Boulevard/Old Castle Road intersection and the I-15 northbound ramps at Gopher Canyon Road would be less than significant.

*Construction-related traffic from the Moosa 100K Alternative would significantly degrade the Lilac Road/Betsworth Road Intersection (Impact M/TC 1) and significantly worsen the I-15 Southbound Ramps/Gopher Canyon Road intersection (Impact M/TC 2). Therefore, construction impacts of the Moosa 100K Alternative would be significant.*

Construction-related traffic from the Moosa 100K Alternative would not add to the critical movements at the Champagne Boulevard/Old Castle Road intersection and the I-15 Northbound Ramps at Gopher Canyon Road. Therefore, impacts of the Moosa 100K Alternative would be less than significant.

**Threshold 2: Cause any roadway segment to be reduced to LOS E or F, or increase the volume-to-capacity ratio by 0.02 or more at any roadway segment currently operating at LOS E or F**

As shown in Table 4.16-8, except for the following, all street segments are projected to operate at LOS D or better with the addition of construction traffic from the Moosa 100K Alternative construction:

- Valley Center Road (south of Lilac Road) segment
- Old Castle Road (east of Champagne Boulevard) segment

Construction-related traffic from the Moosa 100K Alternative would cause the Valley Center Road (south of Lilac Road) segment (**Impact M/TC 3**) and the Old Castle Road (east of Champagne Boulevard) segment (**Impact M/TC 4**) to increase the volume-to-capacity ratio by more than 0.02. Therefore, construction impacts of the Moosa 100K Alternative would be significant.

**Table 4.16-8. Street Segment Operations: Moosa 100K Alternative**

Segment	Capacity LOS E <sup>(1)</sup>	Existing			Year 2010 Without Moosa 100K			Year 2010 + Moosa 100K Traffic		
		ADT <sup>(2)</sup>	V/C <sup>(3)</sup>	LOS <sup>(4)</sup>	ADT	V/C	LOS	ADT	V/C	LOS
<b>Valley Center Road</b>										
South of Lilac Road	16,200	22,690	1.40	F	24,510	1.51	F	25,207	1.56	F
<b>Old Castle Road</b>										
East of Champagne Boulevard	16,200	8,920	0.55	D	9,630	0.59	D	11,148	0.69	E
West of Lilac Road	16,200	8,060	0.50	D	8,700	0.54	D	10,260	0.63	D
<b>Betsworth Road</b>										
South of Lilac Road	16,200	1,350	0.08	A	1,460	0.09	A	3,968	0.24	B

<sup>(1)</sup> Capacities based on County of San Diego Roadway Classification Table.

<sup>(2)</sup> Average Daily Traffic Volumes.

<sup>(3)</sup> Volume Capacity Ratio

<sup>(4)</sup> Level of service

Shading indicates significant impacts.

Source: LLG, 2007

***Threshold 3: Result in delays in emergency vehicle response times or require emergency vehicles to use alternate routes during emergency situations***

The addition of Moosa 100K Alternative construction traffic along Champagne Boulevard/Old Castle Road, and the I-15 Northbound and Southbound Ramps at Gopher Canyon Road could, at times, decrease travel speeds below posted limits on these segments. This, in turn, could result in slight delays in coincident emergency vehicle response times. However, as indicated in Section 3.14 (Public Services), all vehicles on the road are required to yield to approaching emergency response vehicles when they are operating sirens and/or flashing emergency lights. Any decreases in travel speeds on vicinity roadways resulting from slow-moving construction traffic associated with the Moosa 100K Alternative would not cause a delay in emergency vehicle response times. Therefore, impacts would be less than significant.

*Construction-related traffic associated with the Moosa 100K Alternative would not result in delays in emergency vehicle response times, or require emergency vehicles to use alternate routes during emergency situations. Therefore, impacts of the Moosa 100K Alternative would be less than significant.*

***Threshold 4: Result in construction activities within or adjacent to roadway rights-of-way, thereby creating increased risk of motor vehicle accidents and/or pedestrian injury***

Construction traffic, such as heavy trucks entering and leaving the dam construction zone, could create an on-site safety hazard with other vehicles, bicycles, and pedestrians, if the public were allowed access through this area. However, the roads and areas surrounding the Moosa 100K Alternative construction site would be closed to the public during construction to temporarily restrict all public access through the dam construction zone as a way to ensure public safety. Therefore, impacts would be less than significant.

*The Moosa 100K Alternative would not contribute truck traffic during construction that could result in a potential increased risk of accidents along roadways. Therefore, construction impacts of the Moosa 100K Alternative would be less than significant.*

### **4.16.3.3 Mitigation Measures**

The significant construction-related traffic congestion impacts at the Lilac Road/Betsworth Road intersection in the PM peak period (***Impact M/TC 1***), and at the I-15 Southbound Ramps/Gopher Canyon Road intersection in the AM and PM peak periods (***Impact M/TC 2***) could be avoided by prohibiting haul trucks and construction vehicles from accessing the construction site during the AM and PM peak hours. However, this is not a feasible mitigation measure because hauling, materials deliveries and construction employee access must occur on a continuous basis to support the 24 hours per day/seven days a week operation associated with pipeline tunnel construction.

Alternatively, the significant construction-related traffic congestion impacts at these two intersections could be mitigated by installing a traffic signal at each intersection. Although the

projected construction traffic associated with the Moosa 100K Alternative would not result in significant impacts at the I-15 Northbound Ramps/Gopher Canyon Road, Caltrans requires that these ramps also be signalized as a condition of approval of the Encroachment Permit for the traffic signal improvements at the southbound ramps. However, this measure is not considered practicable given that this significant traffic impact from the Moosa 100K Alternative would only occur during the construction period, and the Moosa 100K Alternative would not have any impact at these intersections after completion of construction. There are no other feasible measures to mitigate this impact. Therefore, the construction-related traffic congestion impacts at these intersections would be significant and unmitigable.

The planned widening of Valley Center Road to four lanes could mitigate the significant impact of temporary construction-related traffic in the road segment of Valley Center Road south of Lilac Road. However, Valley Center Road is a County of San Diego facility and, therefore, it is not within the jurisdiction of the Water Authority. Therefore, this impact would remain significant and unmitigable.

To reduce the significant temporary construction-related traffic impact at Old Castle Road east of Champagne Boulevard road segment, the intersection at Champagne Boulevard/Old Castle Road could be signalized to provide additional capacity. However, as discussed above, this measure is not considered practicable. There are no other feasible measures to mitigate this impact. Therefore, the construction-related traffic congestion impacts along these segments would be significant and unmitigable.

#### **4.16.3.4 Residual Impacts after Mitigation**

The significant impacts at the intersections of Lilac Road and Betsworth Road, the I-15 Southbound Ramps and Gopher Canyon Road, and the street segment of Old Castle Road (east of Champagne Boulevard) could be mitigated to a level of less than significant with the installation of traffic signals. However, installation of traffic signals at the impacted intersections and roadways would provide a long-term solution to a short-term, construction-related impact, and, therefore, would not be practical for the Water Authority to implement. Additionally, due to the proposed 20- to 24-hour construction schedule for the tunneling operations only (see Section 2.3.2 of this EIR/EIS), limiting construction-related traffic to the project site during the AM and PM peak hours would not be a practical solution for the Water Authority to implement, as such restrictions would substantially interfere with the construction schedule. Also, widening Valley Center Road is not in the jurisdiction of the Water Authority to accomplish. Therefore, impacts due to construction-related traffic congestion at Lilac Road/Betsworth Road (**Impact M/TC 1**), the I-15 Southbound Ramps/Gopher Canyon Road (**Impact M/TC 2**), and the street segments of Valley Center Road (south of Lilac Road) (**Impact M/TC 3**) and Old Castle Road (east of Champagne Boulevard) (**Impact M/TC 4**) would remain significant and unmitigable. These impacts would cease upon completion of construction. A Statement of Overriding Considerations would be necessary for approval of the Moosa 100K Alternative.

## 4.16.4 Cumulative Effects

### 4.16.4.1 Other CIP Projects

As described in Section 4.2 (Cumulative Projects for the Moosa 100K Alternative) of this EIR/EIS, it was determined that Hubbard Hill Flow Regulatory Structure, North County Distribution Pipeline Flow Regulatory Structure, and Second Crossover Pipeline are the only CIP projects with the potential for cumulative impacts when combined with the Moosa 100K Alternative. The PEIR for the Regional Water Facilities Master Plan concluded that construction activities associated with the proposed water infrastructure facilities would contribute to an overall increase in traffic volumes on the existing and planned roadway networks on a localized and temporary basis only, because most Water Authority facilities are unmanned and operated from a central office in Escondido. Following construction, the projects would not contribute to cumulative regional traffic and transportation impacts associated with other projects in the region. As there would be no long-term cumulative impact due to the Moosa 100K Alternative when combined with traffic and circulation impacts associated with the CIP projects listed above, cumulative impacts would be less than significant. The above conclusions are incorporated into the cumulative analyses in Section 4.16.4.2 below.

### 4.16.4.2 Other Planned Projects with CIP Projects

This section evaluates the cumulative impacts on traffic and circulation of the Moosa 100K Alternative when considered in conjunction with the other planned projects listed in Table 4.2-1, and incorporates the cumulative impacts on traffic and circulation associated with the CIP projects listed above. The following cumulative analysis on traffic and circulation addresses each of the four significance thresholds listed in Section 4.16.3 above.

***Cumulative Threshold 1: Significantly worsen congestion at any intersection that is currently operating, or is projected to operate at, LOS E or F, by adding two seconds or more to the delays experienced by motorists at intersections***

Construction of the Moosa 100K Alternative would contribute construction traffic to the intersections of Lilac Road/Betsworth Road (***Impact M/TC 1***) and the I-15 Southbound Ramps/Gopher Canyon Road (***Impact M/TC 2***), which are projected to operate at LOS E or F. The cumulative projects in the vicinity of the Moosa 100K Alternative listed in Table 4.2-1 (assumed to be under construction and/or operation concurrent with the Moosa 100K Alternative), could contribute traffic that would result in a decrease in level of service below the established standard. Therefore, the construction-related cumulative traffic impacts associated with Moosa 100K Alternative would be significant and unmitigable during construction, but would cease upon completion of construction.

***Cumulative Threshold 2: Cause any roadway segment to be reduced to LOS E or F, or increase the volume-to-capacity ratio by 0.02 or more at any roadway segment currently operating at LOS E or F***

Construction of the Moosa 100K Alternative would contribute construction traffic to the street segment of Valley Center Road (south of Lilac Road) (***Impact M/TC 3***) and Old Castle Road (east of Champagne Boulevard) (***Impact M/TC 4***) such that the volume-to-capacity ratio is increased by more than 0.02. The cumulative projects in the vicinity of the Moosa 100K Alternative listed in Table 4.2-1 (assumed to be under construction and/or operation concurrent with the Moosa 100K Alternative), could potentially contribute traffic that would result in the volume-to-capacity ratio is increased by more than 0.02. Therefore, the construction-related cumulative traffic impacts associated with the Moosa 100K Alternative would be significant and unmitigable during construction, but would cease upon completion of construction.

***Cumulative Threshold 3: Result in delays in emergency vehicle response times or require emergency vehicles to use alternate routes during emergency situations***

Construction and implementation of the Moosa 100K Alternative would not diminish or disrupt emergency services. The cumulative projects in the vicinity of the Moosa 100K Alternative listed in Table 4.2-1 (assumed to be under construction and/or operation concurrent with the Moosa 100K Alternative), would be required to ensure that design and implementation would not diminish or disrupt emergency services and traffic associated with those projects would also be required to yield to approaching emergency vehicles with their emergency lights flashing and sirens operating. Therefore, the cumulative impacts of diminished emergency services from the Moosa 100K Alternative would be less than significant.

***Cumulative Threshold 4: Result in construction activities within or adjacent to roadway rights-of-way, thereby creating increased risk of motor vehicle accidents and/or pedestrian injury***

Construction of the Moosa 100K Alternative would not contribute truck traffic that could result in a potential increased risk of accidents along roadways. The cumulative projects in the vicinity of the Moosa 100K Alternative listed in Table 4.2-1 (assumed to be under construction and/or operation concurrent with the Moosa 100K Alternative); however, these projects either would not cause increased risks or would be required to comply with mitigation measures or regulations intended to avoid or mitigate significant impacts of increased risks. Therefore, the cumulative impacts of potential risk of accidents from the Moosa 100K Alternative would be less than significant.

*Construction-related traffic associated with the Moosa 100K Alternative would cause the level of service to exceed established standards at the intersections of Lilac Road/Betsworth Road (***Impact M/TC 1***), the I-15 Southbound Ramps/Gopher Canyon Road (***Impact M/TC 2***), and the street segments of Valley Center Road (south of Lilac Road (***Impact M/TC 3***) and Old Castle Road (east of Champagne Boulevard) (***Impact M/TC 4***). These impacts were determined to be*

*unmitigable. Therefore, the construction-related cumulative traffic impacts of the Moosa 100K Alternative, when combined with traffic impacts from concurrent construction and/or operation of the CIP and other planned cumulative projects listed in Table 4.2-1, would be significant for the duration of construction (Impacts M/TC 1C, M/TC 2C, M/TC 3C and M/TC 4C). No feasible mitigation measures are available to reduce cumulative construction traffic impacts of the Moosa 100K Alternative to below a level of significance. However, these cumulative impacts would cease upon completion of construction. A Statement of Overriding Considerations would be necessary for approval of the Moosa 100K Alternative.*

*Construction and implementation of the Moosa 100K Alternative would not disrupt emergency services or contribute to truck traffic that would result in risk to increased accidents. Therefore, cumulative impacts due to the Moosa 100K Alternative for these activities would be less than significant.*

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