

SECTION 4.7

TRANSPORTATION AND CIRCULATION

4.7 TRANSPORTATION AND CIRCULATION

This section discusses trip generation and access that would occur in association with construction, operation and decommissioning of the Campo Verde Battery Energy Storage System. A Traffic Impact Study (TIS) was previously prepared for the Campo Verde Solar Project EIR in 2012 in support of CUP 11-0007. At the time the TIS was prepared, the Battery Energy Storage System was not envisioned as part of the CUP. Based on consultation with the County of Imperial Public Works Department, a *Trip Generation Analysis for Campo Verde Solar Battery Energy System* was prepared for the amendment to CUP-11-0007 by LOS Engineering, Inc. (LOS 2016a). After review of the Trip Generation Analysis by the County of Imperial Public Works Department, it was determined that a TIS is not required for the proposed amendment to the CUP (Olmedo 2016). However, upon further reflection, the *Campo Verde Battery Storage System County of Imperial (South of I-8 and West of Drew Road) Draft Traffic Impact Analysis (TIA)* (LOS 2016b) was prepared to ensure that the Project was fully analyzed to eliminate any future uncertainty regarding the impacts of the proposed Project on area roadways. The Trip Generation Analysis and TIS and appendices are provided on the attached CD of Technical Appendices as **Appendix G** of this SEIR.

4.7.1 REGULATORY FRAMEWORK

A. STATE

California Department of Transportation

The State of California Department of Transportation (Caltrans) is responsible for the design, construction, maintenance, and operation of the California State Highway System. Caltrans is also responsible for portions of the Interstate Highway System within the state's boundaries. Caltrans has jurisdiction over state highway right-of-way and has the authority to issue permits for work and encroachments (temporary or permanent) in these areas. Likewise, Caltrans is involved in the review of traffic control plans, stoppage of traffic for placement of aerial lines, and installation or removal of overhead conductors crossing a highway. The proposed Project does not include any components that would span or encroach into Caltrans facilities.

B. LOCAL

Imperial County General Plan Circulation and Scenic Highways Element

The Circulation and Scenic Highways Element is included as part of the Imperial County General Plan pursuant to requirements of law and policies of federal, state, and regional agencies. The purpose of the Element is to provide a comprehensive document which contains the latest information about the transportation needs of the County and the various modes available to meet these needs and to facilitate regional transportation coordination. This Element is also intended to provide a plan to accommodate a pattern of concentrated and coordinated growth providing both regional and local linkage systems between unique communities and the County's neighboring metropolitan regions. Additionally, the purpose of this Element is to provide a means of protecting and enhancing scenic resources within both rural and urban scenic highway corridors.

Table 4.7-1 analyzes the consistency of the proposed project with the applicable policies relating to land use in the County of Imperial General Plan. While this SEIR analyzes the Project's consistency with the General Plan pursuant to CEQA Guidelines Section 151250, the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

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TABLE 4.7-1
IMPERIAL COUNTY GENERAL PLAN CONSISTENCY ANALYSIS

General Plan Policies	Consistent with General Plan?	Analysis
Circulation and Scenic Highways Element		
Safe, Convenient, and Efficient Transportation System		
<p>Objective 1.2 Require a traffic analysis for any new development which may have a significant impact on County roads. A traffic analysis may not be necessary in every situation, such as when the size or location of the project will not have a significant impact upon and generate only a small amount of traffic. Also, certain types of projects, due to the trip generation characteristics, may add virtually no traffic during peak periods. These types of projects may be exempt from the traffic analysis requirements. Whether a particular project qualifies for any exemption will be determined by the Department of Public Works Road Commissioner.</p>	<p>Yes</p>	<p>A TIA was prepared for the proposed project by LOS Engineering, Inc. The analysis examined a worst-case scenario during the height of construction to provide a conservative estimate of impacts. Therefore, the proposed Project is consistent with this objective.</p>

4.7.2 ENVIRONMENTAL SETTING

A. EXISTING STREET SYSTEM

Information contained in this section is summarized from the *Campo Verde Battery Storage System County of Imperial (South of I-8 and West of Drew Road) Draft Traffic Impact Analysis* (LOS 2016b) (LOS 2016b). This document is provided on the attached CD of Technical Appendices as **Appendix G** of this SEIR.

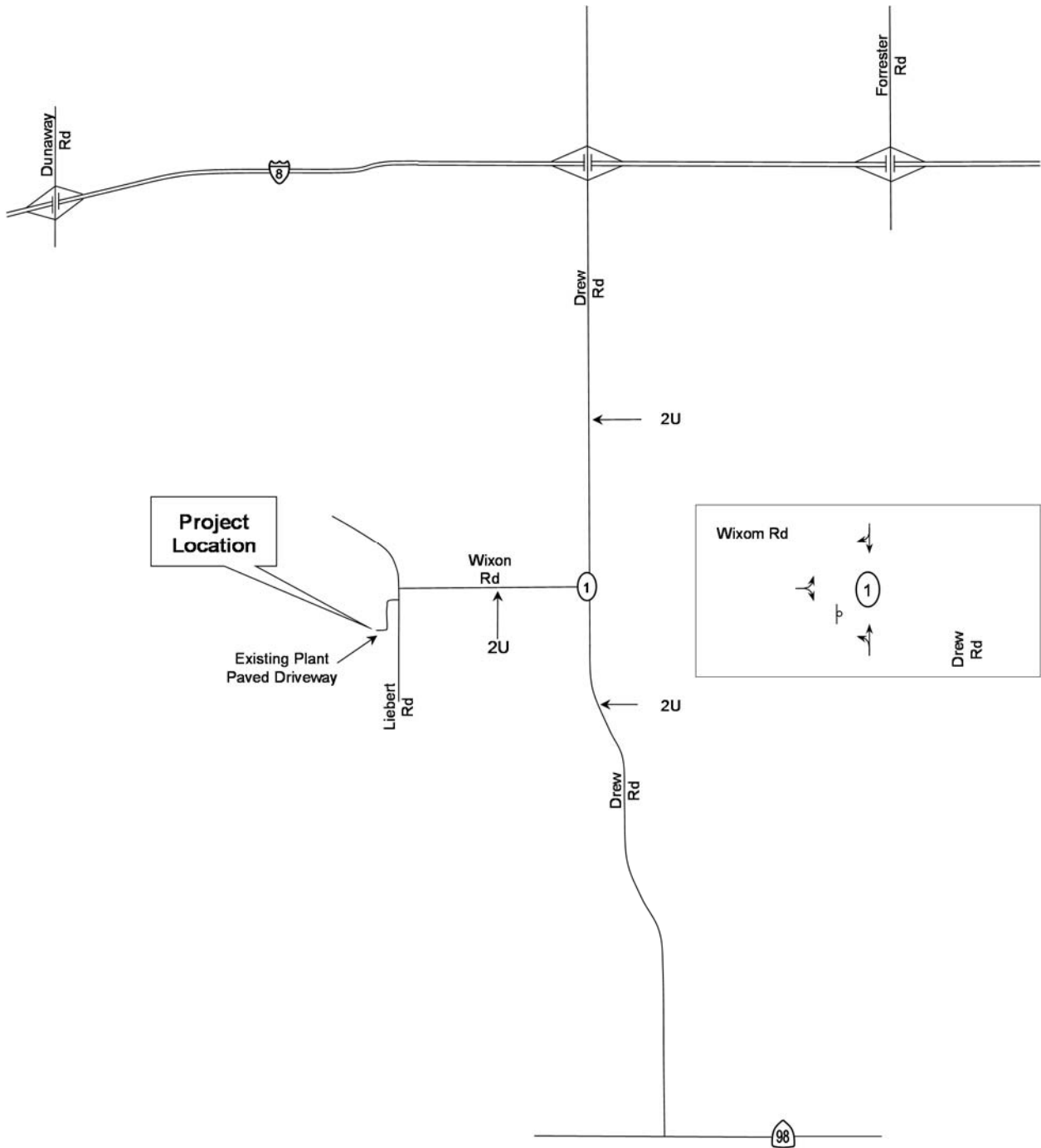
The existing roadway system and classifications are described below. These are based on the Imperial County Planning & Development Services Department *Circulation and Scenic Highways Element*, January 29, 2008 – excerpts included in Appendix C of **Appendix G** of this SEIR.

Drew Road (S29) between I-8 and SR-98 has a year 2003 classification of Prime Arterial in the Imperial County *Circulation and Scenic Highways Element*. This paved roadway is currently constructed as a paved 2-lane un-divided roadway.

Wixom Road between Liebert Road and Drew Road has a year 2003 classification of Minor Collector in the Imperial County *Circulation and Scenic Highways Element*. This roadway is currently constructed as a paved 2-lane un-divided roadway.

The existing roadway conditions are shown in **Figure 4.7-1**.

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LEGEND

- ⊘ Stop Sign
- ↑ Through Lane
- ↘ Right Turn Lane
- ⊕ Combination Left-Through-Right Lane
- ⊖ Combination Right-Through
- ⊗ Combination Left-Right Lane
- 2U Two Lane Undivided Roadway
- ↙ Left Turn Lane
- ⊕ Combination Left-Through



No Scale

Source: LOS 2016b.

**FIGURE 4.7-1
EXISTING YEAR 2016 ROADWAY CONDITIONS**

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B. EXISTING TRAFFIC VOLUMES AND LOS ANALYSES

Existing AM and PM peak hour intersection volumes (with count dates) were collected for this study at the following intersections:

- 1) Drew Road/Wixom Road (Wednesday 8/31/2016)

Daily traffic volumes (with count dates) were obtained or collected for the following roadway segments:

- 1) Drew Road from Diehl Road to Wixom Road (Wednesday 8/31/2016)
- 2) Drew Road from Wixom Road to Lyons Road (Wednesday 8/31/2016)
- 3) Wixom Road from Liebert Road to Drew Road (Wednesday 8/31/2016)

Existing AM, PM, and daily volumes are shown on **Figure 4.7-2** with count data included in Appendix D of **Appendix G** of this SEIR. The weekday intersection and segment LOS are shown in **Table 4.7-2** and **Table 4.7-3**. Intersections LOS calculations are included in Appendix E of **Appendix G** of this SEIR.

**TABLE 4.7-2
EXISTING YEAR 2016 INTERSECTION LOS**

Intersection & (Control) ¹	Movement	Peak Hour	Existing 2016	
			Delay ²	LOS ²
1) Drew Road at Wixom Road (U)	EB LR	AM	8.7	A
	EB LR	PM	8.6	A

Source: LOS 2016b.

Notes: 1) Intersection Control – (s) Signalized; (U) Unsignalized. 2) Delay – HCM Average Control Delay in seconds 3) LOS: Level of Services.

**TABLE 4.7-3
EXISTING YEAR 2016 SEGMENT LOS**

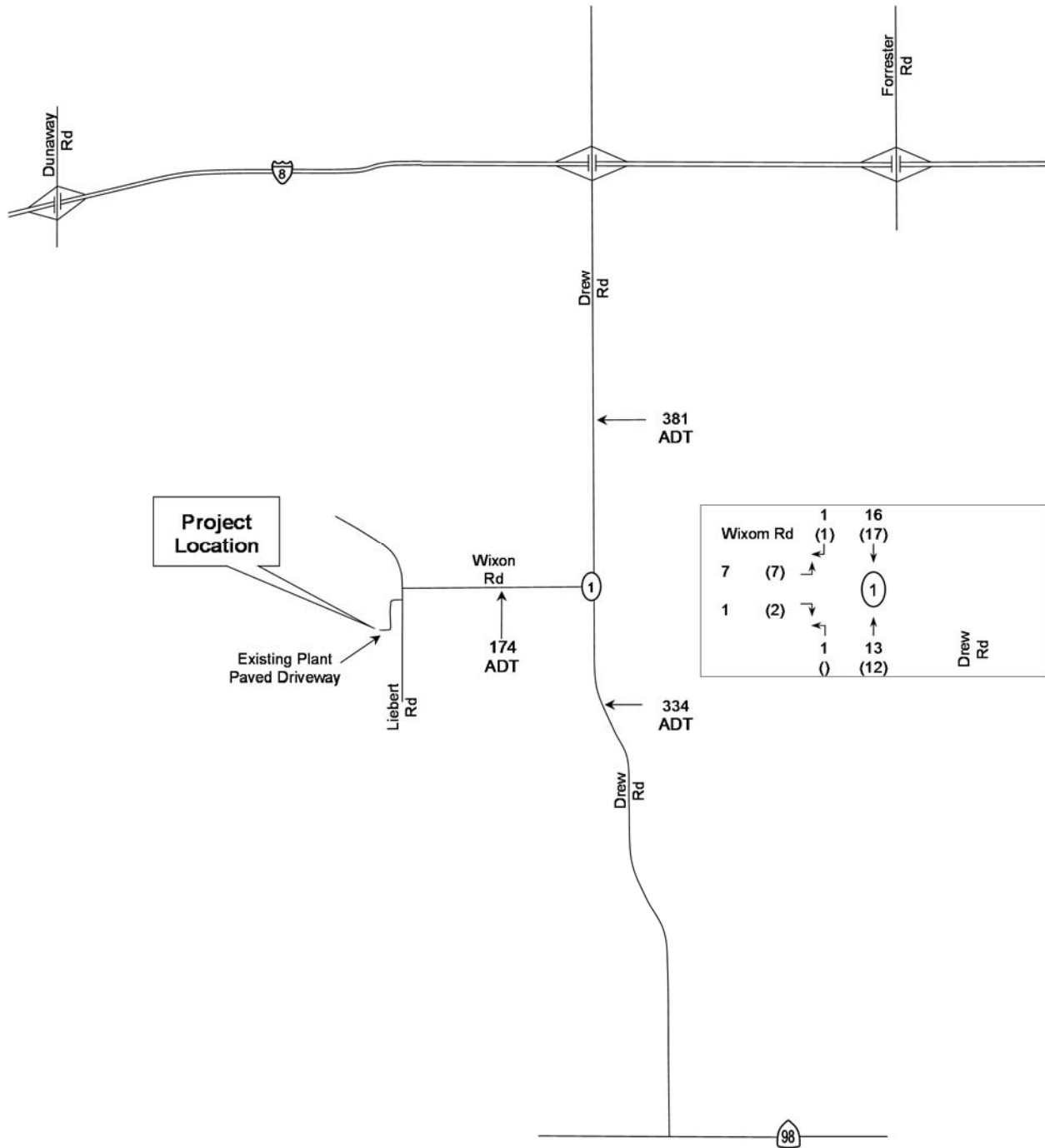
Segment	Classification (as built)	Existing 2016				
		Daily Volume	# of Lanes	LOS C Capacity	V/C	LOS
Drew Road						
North of Wixom Road	Prime Arterial (2U)	381	2	7,100	0.05	A
South of Wixom Road	Prime Arterial (2U)	334	2	7,100	0.05	A
Wixom Road						
From Liebert Road to Drew Road	Minor Collector (2U)	174	2	7,100	0.02	A

Source: LOS 2016b.

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element 2U=2lane undivided roadway. Daily volume is a 24-hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio.

Under existing Year 2016 conditions, the study intersection and roadway segments were calculated to operate at LOS A (LOS 2016b, p. 10).

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Wixon Rd	1	16	
	(1)	(17)	
7	(7)	↙	↘
1	(2)	↘	↙
	1	13	
	()	(12)	

Drew Rd

LEGEND

- XX AM peak hour volumes at intersections
- (YY) PM peak hour volumes at intersections
- Z,ZZZ ADT volumes shown along segments
- (#) Intersection Reference Number to LOS Tables
- Existing Roads
- () Represents 0 PM volume



No Scale

Source: LOS 2016b.

FIGURE 4.7-2
EXISTING YEAR 2016 VOLUMES

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4.7.3 IMPACTS AND MITIGATION MEASURES

A. STANDARDS OF SIGNIFICANCE

The CEQA significance criteria listed below were used to determine if the proposed Project would result in impacts to transportation and circulation. These criteria are the same as the significance criteria for Transportation/Traffic listed in the CEQA Environmental Checklist, Appendix G of the 2016 CEQA Guidelines. Under CEQA, the proposed Project would have a significant impact on transportation and circulation if it would:

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

The significance criteria for traffic impacts are based on the Imperial County Planning & Development Services Department level of service standard as outlined on page 55 of the Circulation and Scenic Highways Element dated January 29, 2008, which states “The County’s goal for an acceptable traffic service standard on an ADT basis and during AM and PM peak periods for all County-Maintained Roads shall be LOS C for all street segment links and intersections.” An excerpt from the Circulation and Scenic Highways Element is included in Appendix B of **Appendix G** of this SEIR. The current practice of determining direct or cumulative impacts is defined by the significance criteria outlined in **Table 4.7-4**, which was obtained from several EIRs for projects located in Imperial County. Copies of traffic significance criteria from other EIRs are included in **Appendix G** of this SEIR.

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**TABLE 4.7-4
SIGNIFICANCE CRITERIA**

Existing	Existing + Project	Existing + Project + Cumulative Projects	Impact Type
Intersections			
LOS C or better	LOS C or better	LOS C or better	None
LOS C or better	LOS D or worse	NA	Direct
LOS D	LOS D and adds 2.0 seconds or more of delay	LOS D or worse	Cumulative
LOS D	LOS E or F	NA	Direct
LOS E	LOS F	NA	Direct
LOS F	LOS F and delay increases by \geq 10.0 seconds	LOS F	Direct
Any LOS	Project does not degrade LOS and adds < 2.0 seconds of delay	Any LOS	None
Any LOS	Project does not degrade LOS but adds 2.0 to 9.9 seconds of delay	LOS E or worse	Cumulative
Segments			
LOS C or better	LOS C or better	LOS C or better	None
LOS C or better	LOS C or better and $v/c > 0.02$	LOS D or worse	Cumulative
LOS C or better	LOS D or worse	NA	Direct (1)
LOS D	LOS D and $v/c > 0.02$	LOS D or worse	Cumulative
LOS D	LOS E or F	NA	Direct
LOS E	LOS F	NA	Direct
LOS F	LOS F and v/c increases by >0.09	LOS F	Direct
Any LOS	LOS E or worse & v/c 0.02 to 0.09	LOS E or worse	Cumulative
Any LOS	LOS E or worse and $v/c < 0.02$	Any LOS	None

Source: LOS 2016b.

Notes: LOS: Level of Service. (1) Exception: post-project segment operation is LOS D and intersections along segment are LOS D or better resulting in no significant impact. NA: Not Applicable.

B. ISSUES SCOPED OUT

Note that three CEQA significance criteria were scoped out as part of the CEQA Appendix G Environmental Checklist. Criterion “c” was eliminated from further analysis because the proposed Project would not result in changes to existing air traffic patterns through an increase in traffic levels or change in location. Criterion “f” was eliminated because the proposed Project would not conflict with any adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities because the Project site is located in a rural portion of the County with no such facilities in the area.

C. METHODOLOGY

The TIA was examined one intersection and three roadway segments in the vicinity of the proposed Project site. The determination of which intersection and roadways to analyze, which scenarios to analyze, and the methods required for analysis are based on criteria specific to each area as described below:

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Study Area Criteria

The County of Imperial Department of Public Works *Traffic Study and Report Policy* dated March 12, 2007, revised June 29, 2007 and approved by the Board of Supervisors of the County of Imperial on August 7, 2007 states on page 14 “The study area for the project will be expected to encompass an adequate surrounding area to ensure that all impacts are identified to a sufficient extent that any mitigation measures, regardless of importance are shown, e.g. stop signs, yield signs, etc.” The study area was based on the anticipated construction route where the Project-related traffic would concentrate as it approached Drew Road at Wixom Road. Therefore, the study area included the intersection of Drew Road/Wixom Road (un-signalized) along with the following three roadway segments:

- Drew Road from Diehl Road to Wixon Road
- Drew Road from Wixom Road to Lyons Road
- Wixom Road from Liebert Road to Drew Road

Scenario Criteria

The number of scenarios to be analyzed is based on the methodology outlined in the County of Imperial Department of Public Works *Traffic Study and Report Policy* dated March 12, 2007, revised June 29, 2007 and approved by the Board of Supervisors of the County of Imperial on August 7, 2007. Excerpts from the *Traffic Study and Report Policy* showing the scenario criteria are included in Appendix A of Appendix G of this SEIR. Based on the aforementioned methodology source, the following scenarios were analyzed:

- Existing Year 2016 Conditions
- Existing Year 2016 + Project (Phase 1) Conditions
- Existing Year 2016 + Project (Phase 1) + Cumulative Conditions
- Near-Term Year 2018
- Near-Term Year 2018 + Project (Phase 2) Conditions
- Near-Term Year 2018 + Project (Phase 2) + Cumulative Conditions
- Decommissioning Year 2038 + Project Conditions

Traffic Analysis Criteria

The traffic analysis prepared for this Project employed the *2000 Highway Capacity Manual* (HCM) operations analysis using Level of Service (LOS) evaluation criteria. The operating conditions of the study intersection was measured using the HCM LOS designations ranging from A through F. LOS A represents the best operating condition and LOS F denotes the worst operating condition. The individual LOS criteria for each roadway component are described below.

Intersections

The study intersection was analyzed using the **operational analysis** method outlined in the 2000 HCM. This process defines LOS in terms of **average control delay** (measured in seconds) per vehicle. Intersection LOS was calculated using the Synchro 8.0 (Trafficware Ltd.) computer software program. The HCM LOS for the range of delay by seconds for un-signalized intersections is shown in **Table 4.7-5**.

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**TABLE 4.7-5
UN-SIGNALIZED INTERSECTION LEVEL OF SERVICE (HCM 2000)**

Level of Service	Un-Signalized Average Control Delay (seconds/vehicle)
A	0-10
B	> 10-15
C	> 15-25
D	> 25-35
E	> 35-50
F	> 50

Source: Highway Capacity Manual 2000 in LOS 2016b.

Roadway Segments

The roadway segments were analyzed based on the functional classification of the roadway using the Imperial County Standard Street Classification capacity lookup table (copy included in **Appendix G** of this SEIR.). **Table 4.7-6** summarizes the roadway segment capacity and LOS standards used to analyze roadway segments.

**TABLE 4.7-6
ROADWAY SEGMENT DAILY CAPACITY AND LOS (IMPERIAL COUNTY)**

Circulation Element Road Classification	Cross Section	LOS A	LOS B	LOS C	LOS D	LOS E
Expressway	154/210	<30,000	<42,000	<60,000	<70,000	<80,000
Prime Arterial	106/136	<22,200	<37,000	<44,600	<50,000	<57,000
Minor Arterial	82/102	<14,800	<24,700	<29,600	<33,400	<37,000
Major Collector (Collector)	64/84	<13,700	<22,800	<27,400	<30,800	<34,200
Minor Collector (Local Collector)	40/70	<1,900	<4,100	<7,100	<10,900	<16,200
Local County (Residential)	40/60	*	*	<1,500	*	*
Local County (Residential Cul-de-Sac or Loop Street)	40/60	*	*	<200	*	*
Major Industrial Collector – (Industrial)	76/96	<5,000	<10,000	<14,000	<17,000	<20,000
Industrial Local	44/64	<2,500	<5,000	<7,000	<8,500	<10,000

Source: Imperial County Department of Planning & Development Services Circulation and Scenic Highways Element January 29, 2008. In LOS 2016b.
 Notes: *Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

Project Operations and Maintenance Trip Generation

The operations and maintenance of the Battery Energy Storage Facility will be monitored by six existing operators currently on-site as part of the existing Campo Verde Battery Energy Storage System operations. No additional full-time staff are proposed as part of the Battery Energy Storage System; however, technicians will be brought in if necessary, thus there is no anticipated new trip generation for Project operations. Therefore, this traffic analysis is based on the higher and temporary construction traffic generation.

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Construction Trip Distribution and Assignment

The trip distribution is based on the proximity to I-8 and SR-98, anticipated delivery of equipment, and construction workforce origination (**Figure 4.7-3**). The assignment of Phase 1 construction traffic is shown in **Figure 4.7-4** while Phase 2 construction traffic is shown in **Figure 4.7-5**.

Near Term 2018 Conditions

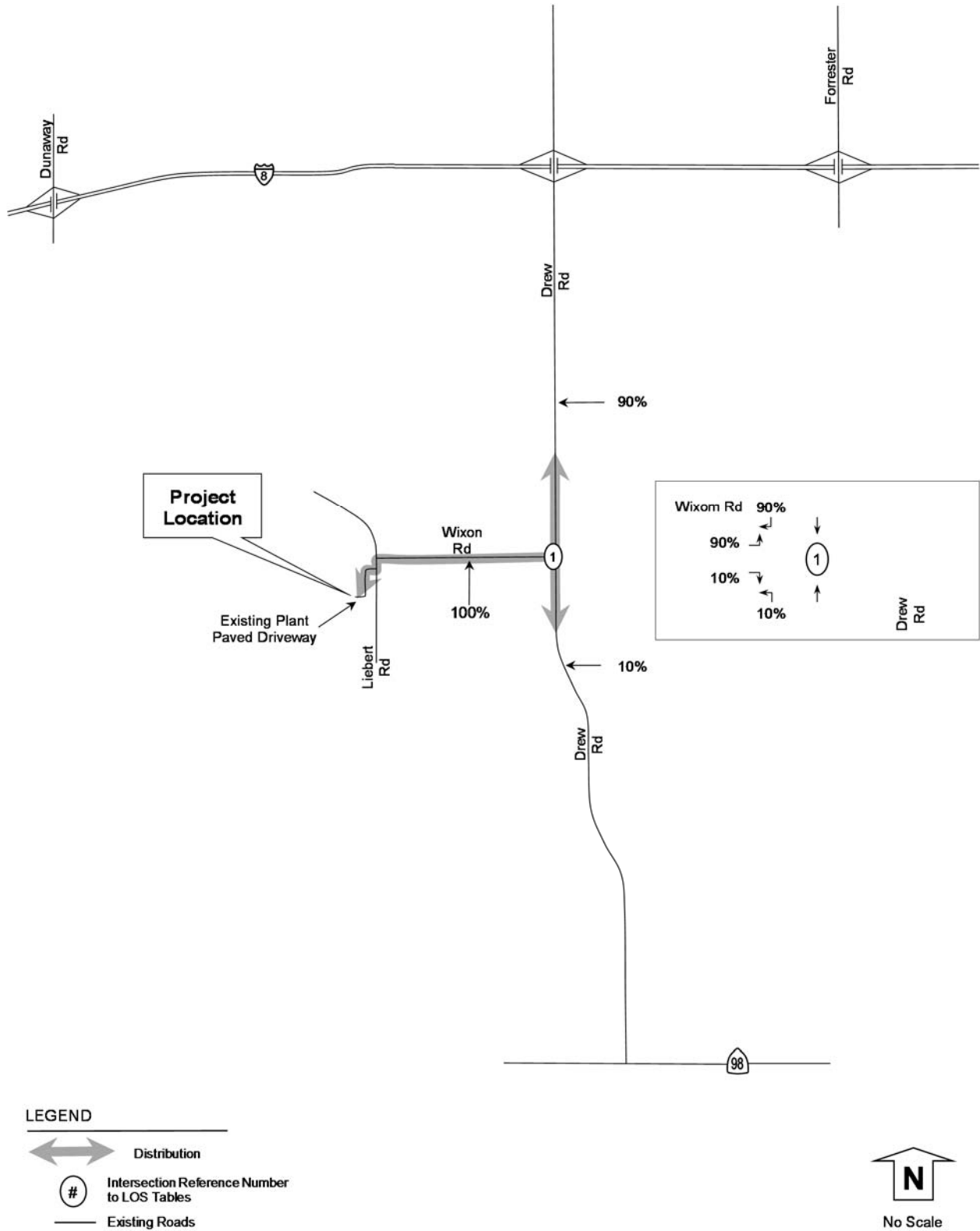
This section documents near-term Year 2018 conditions when Phase 2 of construction activities are anticipated to begin. The Year 2018 background volumes are based on increasing the existing Year 2016 volumes by an annual growth rate. Determination of the annual growth rate was based on guidelines defined in the County of Imperial Department of Public Works *Traffic Study and Report Policy* dated March 12, 2007, revised June 29, 2007 and approved by the Board of Supervisors of the County of Imperial on August 7, 2007. This document indicates that traffic projections should be based on demonstrated growth as detailed in the General Plan. The following growth rate options were reviewed:

- 1) The Land Use Element of the general plan indicates that the Population Research Unit of the California Department of Finance (DOF) estimates the annual change in population. Using the DOF revised July 1, 2006 population estimate of 168,979 and the projected population of Imperial County in 2030 of 283,693, an annual growth rate of approximately 2.2 percent was formulated
- 2) The Southern California Association of Governments (SCAG) Community Development Division's 2004 *Regional Transportation Plan Socio-Economic Forecast Report*, dated June 2004, states that the population of Imperial County is projected to grow at an annual rate of 2.8 percent. The SCAG April 2012 RTP describes a growth rate of about 1.0% forecasted between 2010 and 2035.
- 3) The U.S. Census Bureau population data from year 2000 to year 2010 were used for the local cities/residential communities within Imperial County. The U.S. Census Bureau reported a population growth of 27,162 people over a 10-year period (population of 109,588 per the 2000 census and population of 136,750 per the 2010 census). Over this 10-year period, the annual growth rate was approximately 2.0%.

For the purpose of this TIS, an older (SCAG 2004 study) and more conservative growth rate of **2.8 percent** was selected for the annual population growth to account for possible near term growth rate accelerations. The growth factor support data are included in Appendix I of **Appendix G** of this SEIR.

Year 2018 volumes were factored up from Year 2016 volumes through the application of a 5.6% growth rate and are shown in **Figure 4.7-7**. Intersection and segment LOS are shown in **Table 4.7-11** and **Table 4.7-12**. Intersection LOS calculations are included in Appendix J of **Appendix G** of this SEIR.

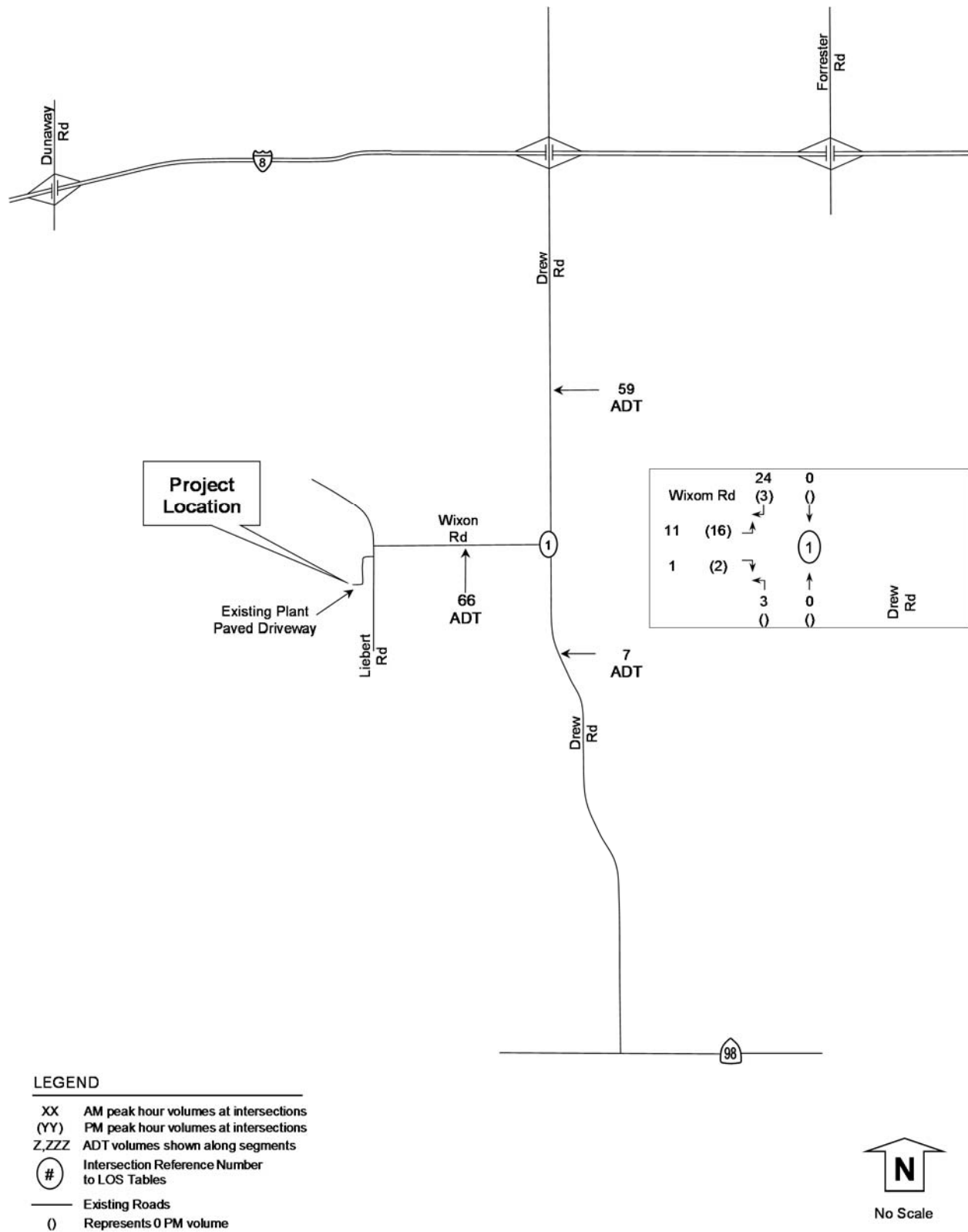
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Source: LOS 2016b.

FIGURE 4.7-3
PROJECT CONSTRUCTION TRIP DISTRIBUTION

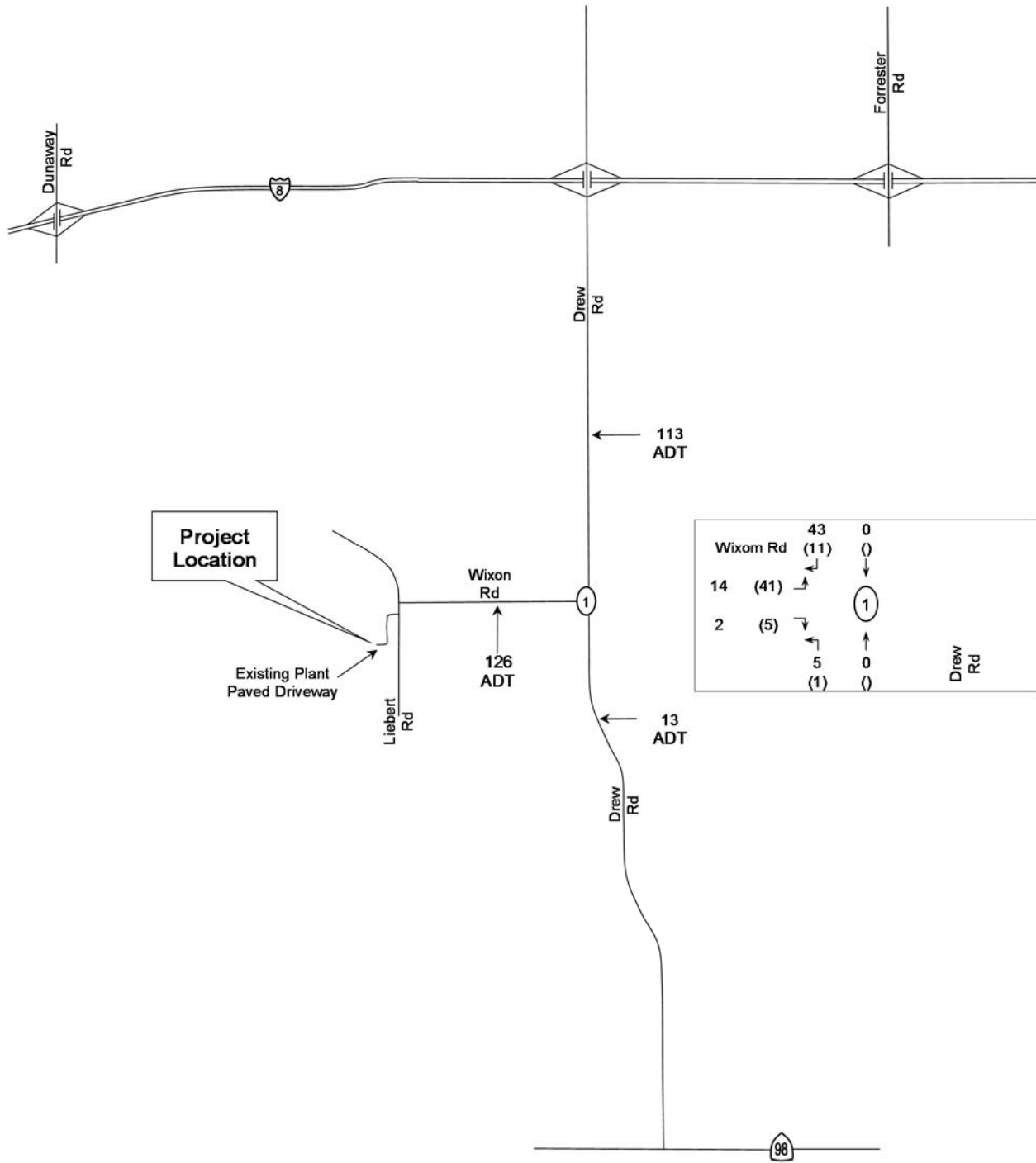
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Source: LOS 2016b.

**FIGURE 4.7-4
PHASE 1 TRIP ASSIGNMENT**

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LEGEND

- XX AM peak hour volumes at intersections
- (YY) PM peak hour volumes at intersections
- Z,ZZZ ADT volumes shown along segments
- ① Intersection Reference Number to LOS Tables
- Existing Roads
- () Represents 0 PM volume



No Scale

Source: LOS 2016b.

**FIGURE 4.7-5
PHASE 2 TRIP ASSIGNMENT**

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D. PROJECT IMPACTS AND MITIGATION MEASURES

Impacts to Intersection and Roadway Segment LOS (Year 2016 Plus Project)

Impact 4.7.1 Implementation of the proposed Project would add Phase 1 construction traffic to existing traffic volumes on the study area intersection and roadways. The one intersection and three roadway segments are currently operating at LOS A and would remain unchanged with the addition of Phase 1 construction trip generation. Therefore, impacts to LOS in Year 2016 are considered **less than significant**.

Phase 1 Construction Trip Generation

Phase 1 construction is proposed to start in late 2016 and will occur over a period of approximately 66 days to install the foundations and connect the components to the existing controls system and project substation. Approximately 12 workers will be on site for 6 to 8 weeks generally from sunrise to 2:30 PM. In addition to the construction workers, three technicians will work an additional 3 to 6 weeks to commission and debug the system integration. Work hours for three technicians will be approximately from 8 PM to 5 AM to avoid interference with the facility when solar power is being generated. Phase 1 deliveries will occur throughout the construction period; however, peak deliveries are anticipated to occur in Week 3 with approximately 4 truck deliveries in the morning and 1 truck delivery in the afternoon. A water truck is anticipated to deliver water with an average of less than one truck per day; however, to be conservative one daily water truck is included in the trip generation. For trip generation purposes, truck trips are converted to a Passenger Car Equivalent (PCE) by multiplying each truck by a factor of 3 due to size and speed constraints. As shown in **Table 4.7-7**, for Phase 1 the peak construction traffic is calculated at 66 ADT with 39 morning peak hour trips (27 inbound and 12 outbound) and 21 afternoon peak hour trips (3 inbound and 18 outbound).

**TABLE 4.7-7
PHASE 1 PROJECT TRIP GENERATION (PASSENGER CAR EQUIVALENT)**

Phase 1 Construction Related Traffic	Daily Vehicles	ADT with PCE ²	Morning Peak		Afternoon Peak	
			In	Out	In	Out
Daytime Construction Workers (12 with no PCE) ¹	12	24	12	0	0	12
Nighttime Technicians 8 pm to 5 a.m. (3 with no PCE) ¹	3	6	0	0	0	0
Equipment Deliveries and Construction Trucks (with PCE of 3) ²	5	30	12	12	3	3
Water Truck (with PCE of 3) ²	1	6	3	0	0	3
Phase 2 Total Traffic During Peak Construction	21	66	27	12	3	18

Source: LOS 2016b.

ADT: Average Daily Trips. PCE: Passenger Car Equivalent factor of 3 applied to delivery and water trucks to provide an equivalent number of passenger cars. 2) Number of construction workers and construction trucks provided by Applicant. 2) PCD factor of 3 applied to each truck.

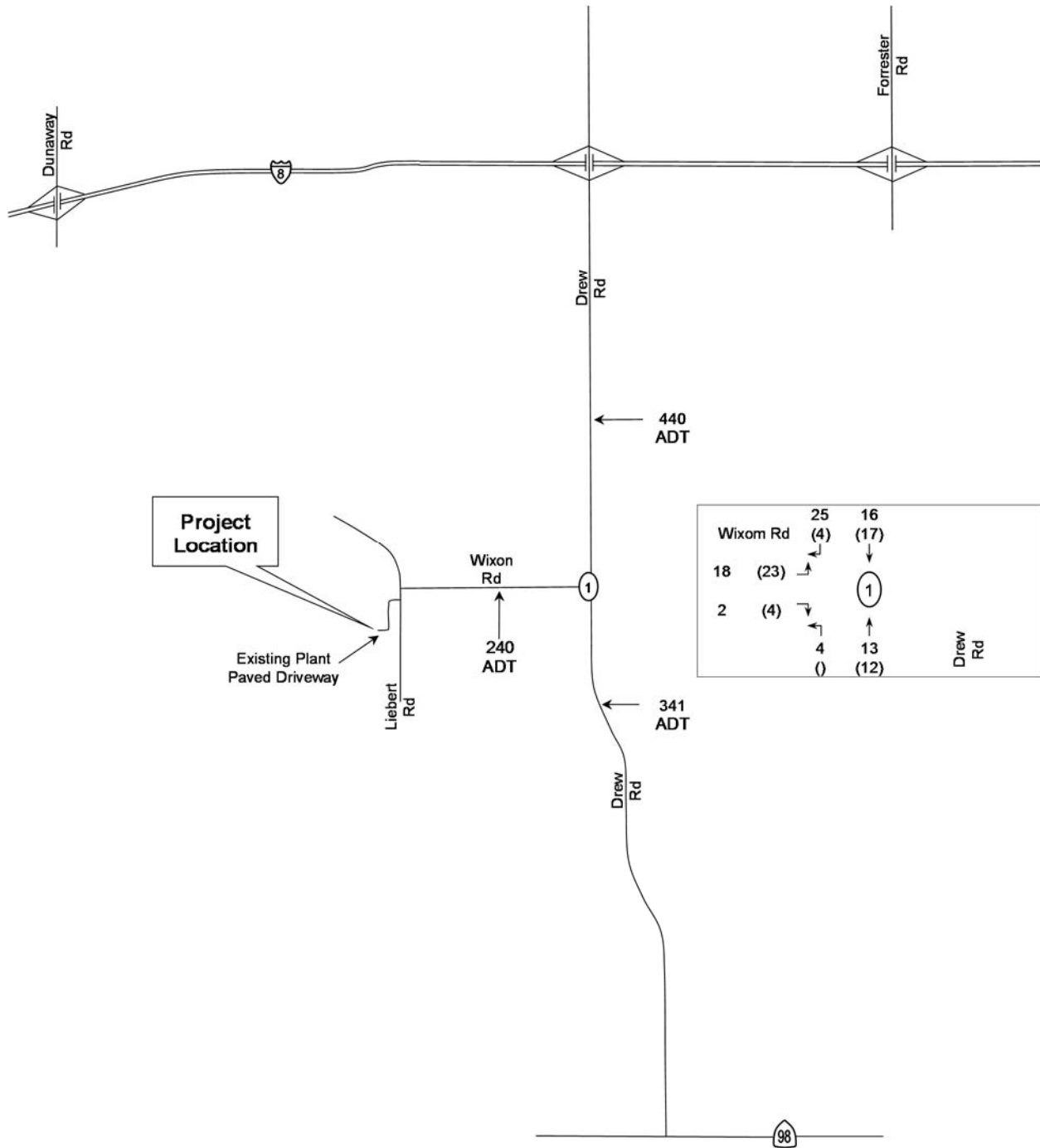
The construction is anticipated to occur Monday through Friday; however, if extra work days are required, they would occur on Saturdays.

Existing 2016 Plus Project (Phase 1)

Phase 1 traffic was added to existing Year 2016 traffic. The Existing Plus Project (Phase 1) volumes are shown in **Figure 4.7-6**. Intersection and segment LOS are shown in **Table 4.7-8** and **Table 4.7-9**. Intersection LOS calculations are included in Appendix F of **Appendix G** of this SEIR.

As shown in **Table 4.7-8**, the unsignalized intersection of Drew Road at Wixom Road currently operates at LOS A in both the AM and PM peak hour. With the addition of Phase 1 construction traffic, the intersection would continue to operate at LOS A in both the AM and PM peak hours.

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Project Location

Existing Plant Paved Driveway

LEGEND

- XX AM peak hour volumes at intersections
- (YY) PM peak hour volumes at intersections
- Z,ZZZ ADT volumes shown along segments
- ① Intersection Reference Number to LOS Tables
- Existing Roads
- () Represents 0 PM volume



No Scale

Source: LOS 2016b.

**FIGURE 4.7-6
EXISTING YEAR 2016 PLUS PROJECT (PHASE 1) VOLUMES**

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**TABLE 4.7-8
EXISTING YEAR 2016 PLUS PROJECT (PHASE 1) INTERSECTION LOS**

Intersection & (Control) ¹	Movement	Peak Hour	Existing 2016		Existing 2016 + Project (Phase 1)			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Significant ⁵
1) Drew Road at Wixom Road (U)	EB LR	AM	8.7	A	8.8	A	0.1	None
	EB LR	PM	8.6	A	8.7	A	0.1	None

Source: LOS 2016b.

1) Intersection Control – (S) Signalized (U) Unsignalized. 2) Delay – HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Impact type (none, direct or cumulative).

**TABLE 4.7-9
EXISTING YEAR 2016 PLUS PROJECT (PHASE 1) SEGMENT LOS**

Segment	Classification (as built)	Existing 2016				Project Daily Volume	Existing 2016 + Project (Phase 1)					
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Change in V/C	Direct Impact?
Drew Road North of Wixom Road	Prime Arterial (2U)	381	7,100	0.054	A	59	440	7,100	0.062	A	0.008	No
Drew Road South of Wixom Road		334	7,100	0.047	A	7	341	7,100	0.048	A	0.001	No
Wixom Road From Liebert Road to Drew Road	Minor Collector (2U)	174	7,100	0.025	A	66	240	7,100	0.034	A	0.009	No

Source: LOS 2016b.

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element 2U = 2 land undivided roadway. Daily volume is a 24-hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Direct Impact? = identifies if a project impact is calculated (yes or no).

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Table 4.7-9 shows that the existing LOS along Drew Road both north and south of Wixom Road is currently operating at LOS A. Likewise, the segment of Wixom Road from Liebert Road to Drew Road is currently operating at LOS A. With the addition of Phase 1 construction traffic both segments along Drew Road and the segment along Wixom Road would continue to operate at LOS A with no direct impact as a result of the additional traffic. Therefore, less than significant impacts to study intersections and roadways would occur in association with Existing Year 2016 Plus Project (Phase 1) traffic.

Mitigation Measures

None required.

Significance After Mitigation

Not Applicable.

Impacts to Intersection and Roadway Segment LOS (Year 2018 Conditions)

Impact 4.7.2 Implementation of the proposed Project would add Phase 2 construction traffic to existing traffic volumes on the study area intersection and roadways. The one intersection and three roadway segments are currently operating at LOS A and would remain unchanged with the addition of Phase 2 construction trip generation. Therefore, impacts to LOS in Year 2018 are considered **less than significant**.

Project Phase 2 Construction Trip Generation

Phase 2 construction is estimated to begin in Year 2018 and will occur over a period of approximately 160 days. Phase 2 construction will include site preparation; civil and foundation work (conduit, equipment pads, concrete foundations); building works (form and pour slab) framing, sheathing, roofing, mechanical, lighting and electrical, fire suppression); data support installation; batteries (install battery racks, install batteries in racks); electrical works (pull and test cable, set and test equipment, point of interconnection work); certificate of occupancy; and commissioning. Approximately 30 workers will be on site generally from sunrise to 2:30 PM. In addition to the construction workers, three technicians will work an additional 3 to 6 weeks to commission and debug the system integration. Work hours for three technicians will be approximately from 8 PM to 5 AM to avoid interference with the facility when solar power is being generated. Phase 2 deliveries will occur throughout the construction period; however, peak deliveries are anticipated to occur in Month 3 with approximately 5 truck deliveries in the morning and 4 truck deliveries in the afternoon. A water truck is anticipated to deliver water with an average of less than one truck per day; therefore, to be conservative one daily water truck is included in the trip generation. For trip generation purposes, truck trips are converted to a PCE by multiplying each truck by a factor of 3 due to size and speed constraints. **Table 4.7-10** shows the peak construction traffic for Phase 2 calculated at 126 ADT with 63 morning peak hour trips (48 inbound and 15 outbound) and 57 afternoon peak hour trips (12 inbound and 45 outbound).

4.7 TRANSPORTATION AND CIRCULATION

**TABLE 4.7-10
PHASE 2 PROJECT TRIP GENERATION (PASSENGER CAR EQUIVALENT)**

Phase 2 Construction Related Traffic	Daily Vehicles	ADT with PCE ²	Morning Peak		Afternoon Peak	
			In	Out	In	Out
Daytime Construction Workers (12 with no PCE) ¹	30	60	30	0	0	30
Nighttime Technicians 8 pm to 5 a.m. (3 with no PCE) ¹	3	6	0	0	0	0
Equipment Deliveries and Construction Trucks (with PCE of 3) ²	9	54	15	15	12	12
Water Truck (with PCE of 3) ²	1	6	3	0	0	3
Phase 2 Total Traffic During Peak Construction	43	126	48	15	12	45

Source: LOS 2016b.

ADT: Average Daily Trips. PCE: Passenger Car Equivalent factor of 3 applied to delivery and water trucks to provide an equivalent number of passenger cars. 2) Number of construction workers and construction trucks provided by Applicant. 2) PCD factor of 3 applied to each truck.

Existing Year 2018 Plus Project (Phase 2)

Phase 2 construction activities are assumed to begin in Year 2018. The Year 2018 background volumes are formulated by increasing the existing Year 2016 volumes by an annual growth rate. The Year 2018 volumes were factored up from Year 2016 volumes through the application of a 5.6% growth rate and are shown in **Figure 4.7-7**. Intersection and segment LOS are shown in **Tables 4.7-11** and **4.7-12**. Intersection LOS calculations are included in Appendix J of **Appendix G** of this SEIR.

As shown in **Table 4.7-11**, the unsignalized intersection of Drew Road at Wixom Road is projected to operate at LOS A in both the AM and PM peak hour in Year 2018.

**TABLE 4.7-11
NEAR-TERM YEAR 2018 INTERSECTION LOS**

Intersection & (Control) ¹	Movement	Peak Hour	Existing 2018	
			Delay ²	LOS ³
1) Drew Road at Wixom Road (U)	EB LR	AM	8.7	A
	EB LR	PM	8.6	A

Source: LOS 2016b.

1) Intersection Control – (S) Signalized (U) Unsignalized. 2) Delay – HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Impact type (none, direct or cumulative).

Table 4.7-12 shows that the LOS along Drew Road both north and south of Wixom Road is projected to operate at LOS A in Year 2018. Likewise, the segment of Wixom Road from Liebert Road to Drew Road is also projected to operate at LOS A.

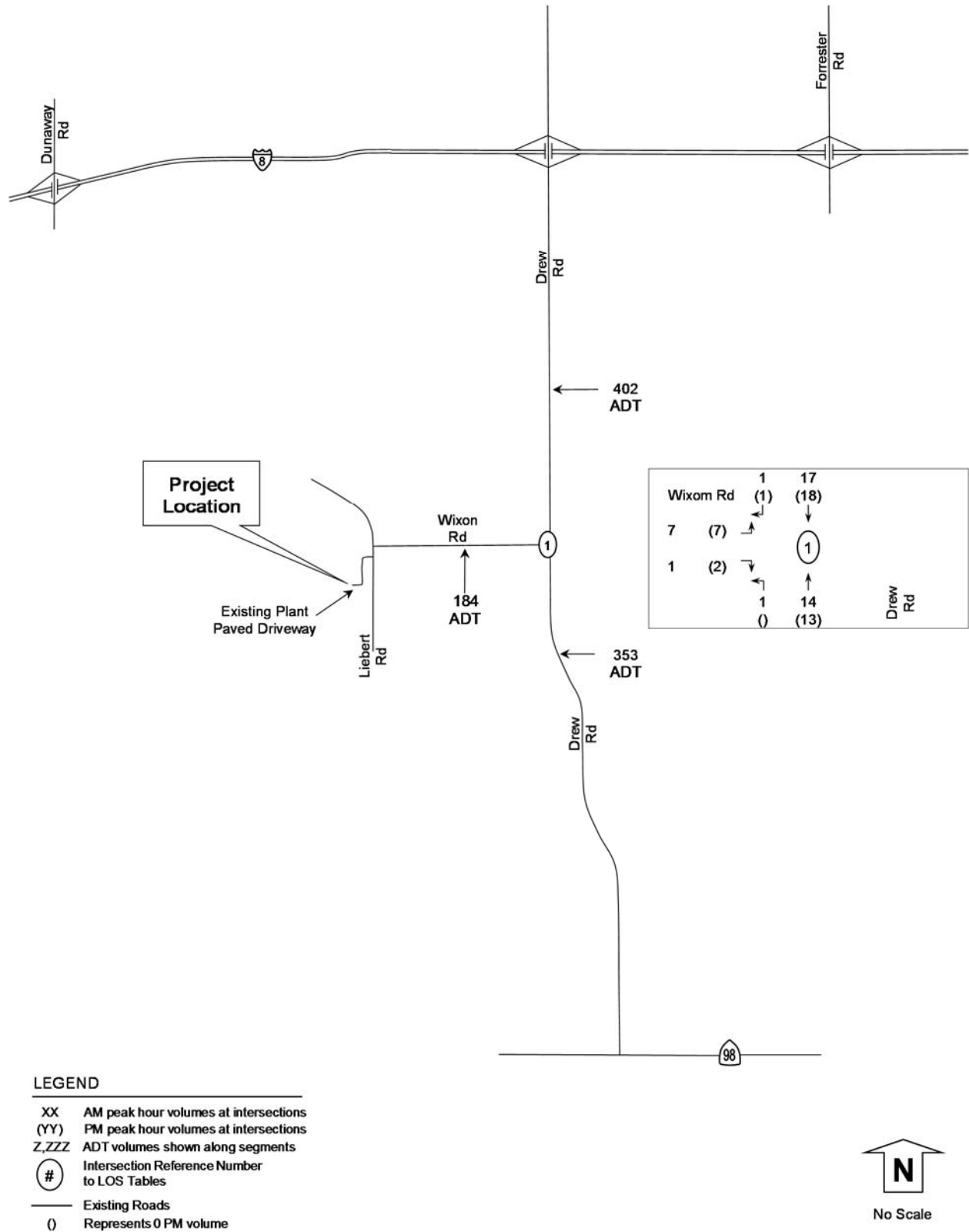
**TABLE 4.7-12
NEAR-TERM YEAR 2018 SEGMENT LOS**

Segment	Classification (as built)	Daily Volume	# of Lanes	LOS C Capacity	V/C	LOS
Drew Road	North of Wixom Road	402	2	7,100	0.06	A
	South of Wixom Road	353	2	7,100	0.05	A
Wixom Road From Liebert Road to Drew Road	Minor Collector (2U)	184	2	7,100	0.03	A

Source: LOS 2016b.

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element 2U = 2 land undivided roadway. Daily volume is a 24-hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio.

4.7 TRANSPORTATION AND CIRCULATION



Source: LOS 2016b.

FIGURE 4.7-7
NEAR-TERM YEAR 2018 VOLUMES

4.7 TRANSPORTATION AND CIRCULATION

Figure 4.7-8 shows the addition of Phase 2 construction traffic to near-term Year 2018 traffic. **Table 4.7-13** and **Table 4.7-14** show Year 2018 intersection and segment LOS plus Phase 2 traffic. Intersection LOS calculations are included in Appendix K of **Appendix G** of this SEIR.

As shown in **Table 4.7-13**, the unsignalized intersection of Drew Road at Wixom Road is projected to operate at LOS A in both the AM and PM in Year 2018. With the addition of Phase 2 construction traffic, the intersection would continue to operate at LOS A. Likewise, as shown in **Table 4.7-14**, the roadway segment along Drew Road both north and south of Wixom Road is projected to operate at LOS A in Year 2018 both without and with Phase 2 construction traffic. Likewise, the segment of Wixom Road from Liebert Road to Drew Road is projected to operate LOS A in 2018 with and without Phase 2 construction traffic. Therefore, less than significant impacts to the one study intersection and three roadways segments would occur in association with Existing 2018 Plus Project (Phase 2) traffic.

Increase in Hazards Due to a Design Feature or Incompatible Uses

Impact 4.7.3 No changes in the existing circulation network or access would occur as a result of implementation of the Battery Energy Storage System. Based on the Project's location in a rural portion of Imperial County with low traffic volumes, it is not considered an incompatible use with surrounding agricultural land. Therefore, **no impact** would occur in association with hazards due to a design feature or incompatible uses.

The proposed Battery Energy Storage System would not change the existing surrounding circulation network. The access driveway to the Project site off of Liebert Road from the existing driveway used to access the Campo Verde Substation would remain unchanged. Within the facility fence, construction traffic will use the existing north-south paved internal roadway parallel to Liebert Road. A proposed gravel road approximately 1,000-feet long, 20-feet wide and 6-inches in depth will be constructed as an extension of the existing paved access road. The gravel road will align east-west just south of the O&M building and Substation then align north-south along the west side of the Substation before extending to the west to terminate at the Phase 1 site and immediately north of Phase 2 of the Battery Energy Storage System site.

The proposed Battery Energy Storage System represents a supplemental component to, and compatible use with, the existing solar facilities currently developed as part of the Campo Verde Solar Project. Land on which the Battery Energy Storage System is proposed is zoned A-3 – Agricultural, Heavy. Solar energy electrical generators, electrical power generating plants, substations, and facilities for the transmission of electrical energy are allowed as conditional uses in Agricultural zones. In keeping with the provisions of the zoning designations, the Applicant is seeking to amend CUP 11-0007 to allow development of the Battery Energy Storage System.

No additional operational traffic would be generated by the Project as the six staff currently at operating the Campo Verde Solar Project, as well as the 24-hour remote monitoring staff, will be able to see and react to alarms from the system.

With no change in off-site circulation design, the extension of an existing internal access road, the addition of an allowable compatible use, and no increase in traffic volumes, the Battery Energy Storage System would have **no impact** with regard to a design feature or incompatible uses.

Mitigation Measure

None required.

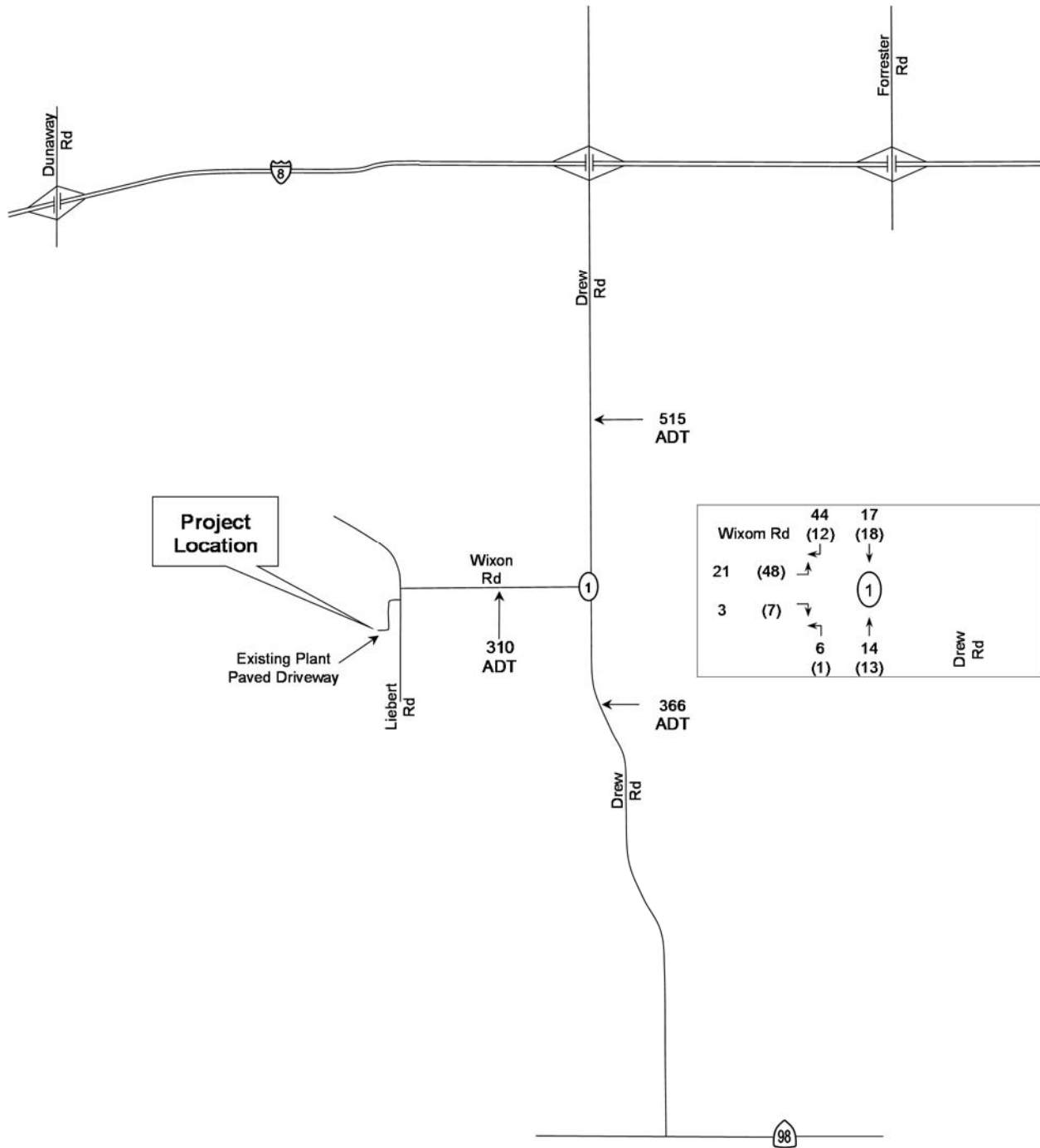
Significance After Mitigation

Not Applicable.

4.7 TRANSPORTATION AND CIRCULATION

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4.7 TRANSPORTATION AND CIRCULATION



LEGEND

- XX AM peak hour volumes at intersections
- (YY) PM peak hour volumes at intersections
- Z,ZZZ ADT volumes shown along segments
- # Intersection Reference Number to LOS Tables
- Existing Roads
- () Represents 0 PM volume



No Scale

Source: LOS 2016b.

**FIGURE 4.7-8
NEAR-TERM YEAR 2018 PLUS PROJECT (PHASE 2) VOLUMES**

4.7 TRANSPORTATION AND CIRCULATION

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**TABLE 4.7-13
NEAR-TERM YEAR 2018 WITHOUT AND WITH PROJECT (PHASE 2) INTERSECTION LOS**

Intersection & (Control) ¹	Movement	Peak Hour	Year 2018		Year 2018 + Project (Phase 2)			
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Significant ⁵
1) Drew Road at Wixom Road (U)	EB LR	AM	8.7	A	8.9	A	0.2	None
	EB LR	PM	8.7	A	8.9	A	0.2	None

Source: LOS 2016b.

1) Intersection Control – (S) Signalized (U) Unsignalized. 2) Delay – HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Impact type (none, direct or cumulative).

**TABLE 4.7-14
NEAR-TERM YEAR 2018 WITHOUT AND WITH PROJECT (PHASE 2) SEGMENT LOS**

Segment	Classification (as built)	Year 2018				Project Daily Volume	Year 2018 + Project (Phase 2)					
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Change in V/C	Impact Type
Drew Road North of Wixom Road South of Wixom Road	Prime Arterial (2U)	402	7,100	0.057	A	113	515	7,100	0.073	A	0.016	None
		353	7,100	0.050	A	13	366	7,100	0.052	A	0.002	None
Wixom Road From Liebert Road to Drew Road	Minor Collector (2U)	184	7,100	0.026	A	126	310	7,100	0.044	A	0.018	None

Source: LOS 2016b.

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element 2U = 2 land undivided roadway. Daily volume is a 24-hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact Type (none, cumulative or direct).

4.7 TRANSPORTATION AND CIRCULATION

Emergency Access

Impact 4.7.4 One access to the Project site is available off of Liebert Road. This access also serves the Campo Verde Substation. The Imperial County Fire Department will require that all fire apparatus access roads are properly designed to accommodate emergency access. Therefore, impacts associated with emergency access are considered **less than significant**.

Access to the Battery Energy Storage System site will be via Liebert Road at the existing Campo Verde Solar Project entry northeast of the O&M building. Within the facility fence, traffic will use the existing north-south paved internal roadway parallel to Liebert Road. A proposed gravel road approximately 1,000-foot long, 20-foot wide and 6-inches in depth is proposed as an extension of the existing paved access road. The gravel road will align east-west just south of the O&M building and Substation then align north-south along the west side of the Substation before extending to the west to terminate at the Phase 1 site and immediately north of Phase 2 of the Battery Energy Storage System site. The Imperial County Fire Department (ICFD) has reviewed the Project and provided requirements from the California Fire Code (CFC) regarding design of fire apparatus access roads. The Project must comply with these design requirements. The ICFD will review final Plans prior to construction to ensure that all internal roads have been designed in accordance with CFC requirements. Therefore, impacts with regard to emergency access are considered **less than significant**.

Mitigation Measures

None required.

Significance After Mitigation

Not Applicable.

4.7.4 CUMULATIVE SETTING, IMPACTS AND MITIGATION MEASURES

A. CUMULATIVE SETTING

The geographic scope for the cumulative setting for transportation and circulation is based on the roadways in the vicinity of the Project study area that may be affected by traffic generated by the Project and other probable large-scale solar projects. Because the traffic impacts of cumulative projects will be greatest during construction, the cumulative impact analysis is based on an estimate of construction traffic impacts that would be caused by other probable large-scale solar projects during the proposed Project's expected construction schedule. Information on probable cumulative projects (new large-scale solar projects) was obtained from the County of Imperial and confirmed with County of Imperial planning staff to be current as of September 2016 (refer to Table 3.0-1 in Chapter 3.0, Introduction to the Analysis and Assumptions Used). **Table 4.7-15** identifies the traffic associated with Imperial County cumulative projects (new large-scale solar projects).

**TABLE 4.7-15
TRAFFIC GENERATED BY CUMULATIVE PROJECTS**

Project Number*	Name of Project	ADT and Peak Hour Traffic Volumes**
2	Acorn Greenworks	The construction phase is calculated to generate 425 daily trips with 166 AM peak hour trips and 169 PM peak hour trips.

4.7 TRANSPORTATION AND CIRCULATION

**TABLE 4.7-15
TRAFFIC GENERATED BY CUMULATIVE PROJECTS**

Project Number*	Name of Project	ADT and Peak Hour Traffic Volumes**
4	Mount Signal Solar Farm (includes Calexico I-A at 700 acres; I-B at 600 acres; and II-A at 940 acres)	The construction phase is calculated to generate 849 daily trips with 330 AM peak hour trips and 336 PM peak hour trips.
6	Iris Solar Farm Cluster	The traffic generation for this cumulative project is calculated at 556 ADT with 221 AM and 225 PM peak hour trips.
7	Wistaria Ranch Solar Energy Center	The construction phase of the project is calculated to generate 664 ADT with 209 AM peak hour trips and 209 PM peak hour trips.

Source: County of Imperial, 2016. * Corresponds to numbers on Map 3.0-1 in Chapter 3.0, Table 3.0-1.

All of the cumulative projects listed above were assumed to be generating construction traffic during the construction phase of the Battery Energy Storage System. However, some of the cumulative projects will have a peak construction period that may or may not coincide with the construction period of the Battery Energy Storage System. In order to be conservative, all of the peak cumulative construction volumes were used in the cumulative analysis despite the low likelihood that all construction peaks will coincide. Other cumulative projects in the Imperial Valley not identified in **Table 4.7-24** are not anticipated to add traffic to the study area. **Figure 4.7-9** depicts the cumulative project (new large-scale solar projects) volumes.

B. CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Impacts to Intersection and Segment LOS (Existing Year 2016)

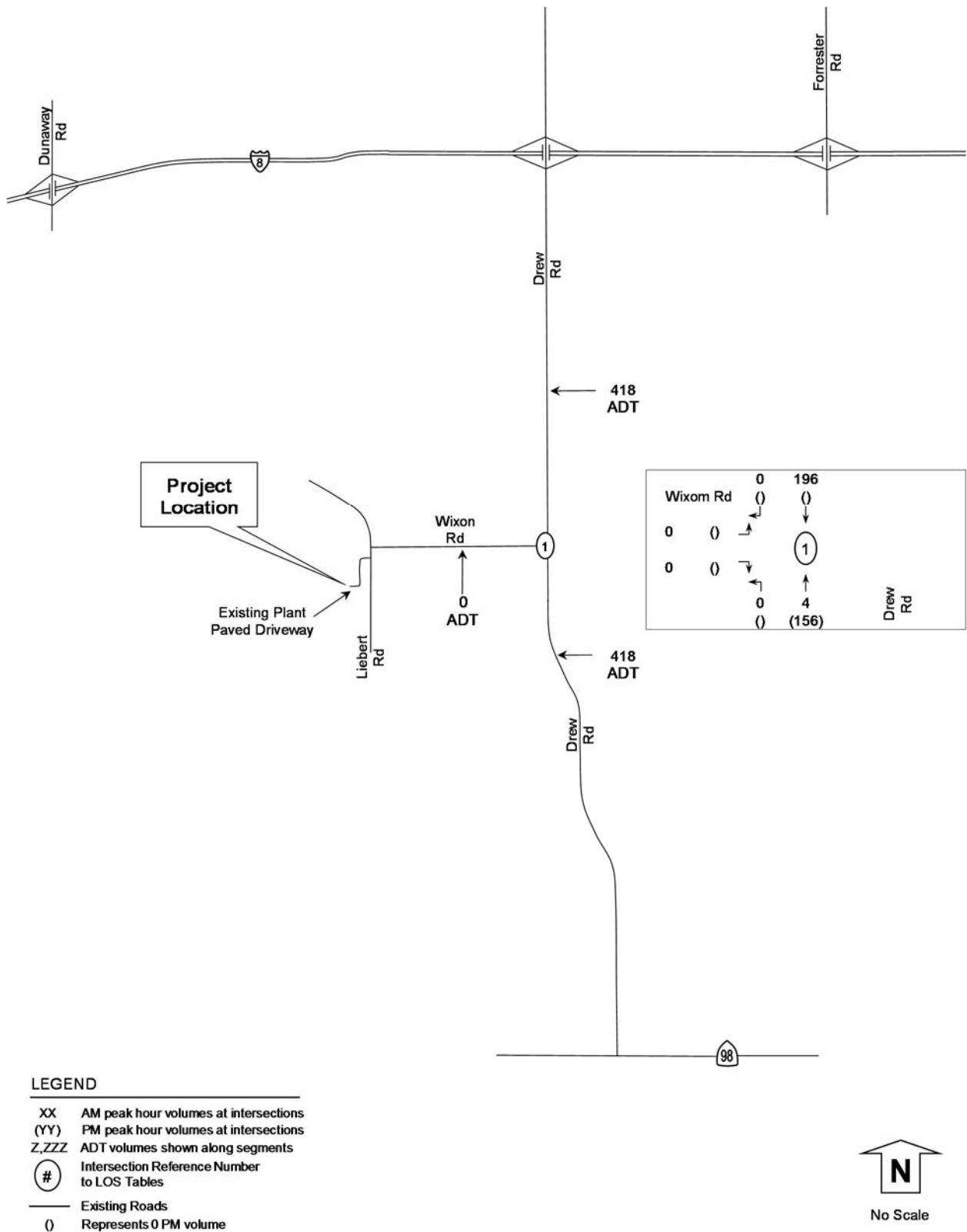
Impact 4.7.5 The proposed Project's construction traffic in combination with Year 2016 volumes would add traffic to the study area intersection and three roadway segments during peak construction. The intersection and segments are currently operating at LOS A and would not decline below LOS C with the addition of cumulative traffic. This impact is considered **less than cumulatively considerable**.

Year 2016 Plus Project Plus Cumulative

This scenario documents the anticipated Project Phase 1 traffic added onto existing Year 2016 traffic plus cumulative traffic. Year 2018 Plus Project traffic volumes plus cumulative traffic are shown in **Figure 4.7-10**. Intersection and segment LOS are shown in **Tables 4.7-16 and 4.7-17**. Intersection LOS calculations are included in Appendix H of **Appendix G** of this SEIR.

As shown in **Table 4.7-16**, the unsignalized intersection of Drew Road at Wixom Road is currently operating at LOS A in both the AM and PM peak hour in Year 2016. With the addition of Phase 1 construction traffic and cumulative traffic, the intersection would decline to LOS B in the AM peak hour but would continue to operate at LOS A in PM peak hour. Likewise, as shown in **Table 4.7-17**, the roadway segment along Drew Road both north and south of Wixom Road is currently operating at LOS A in Year 2016 and would continue to do so with the addition of Phase 1 construction traffic and cumulative traffic. Likewise, the segment of Wixom Road from Liebert

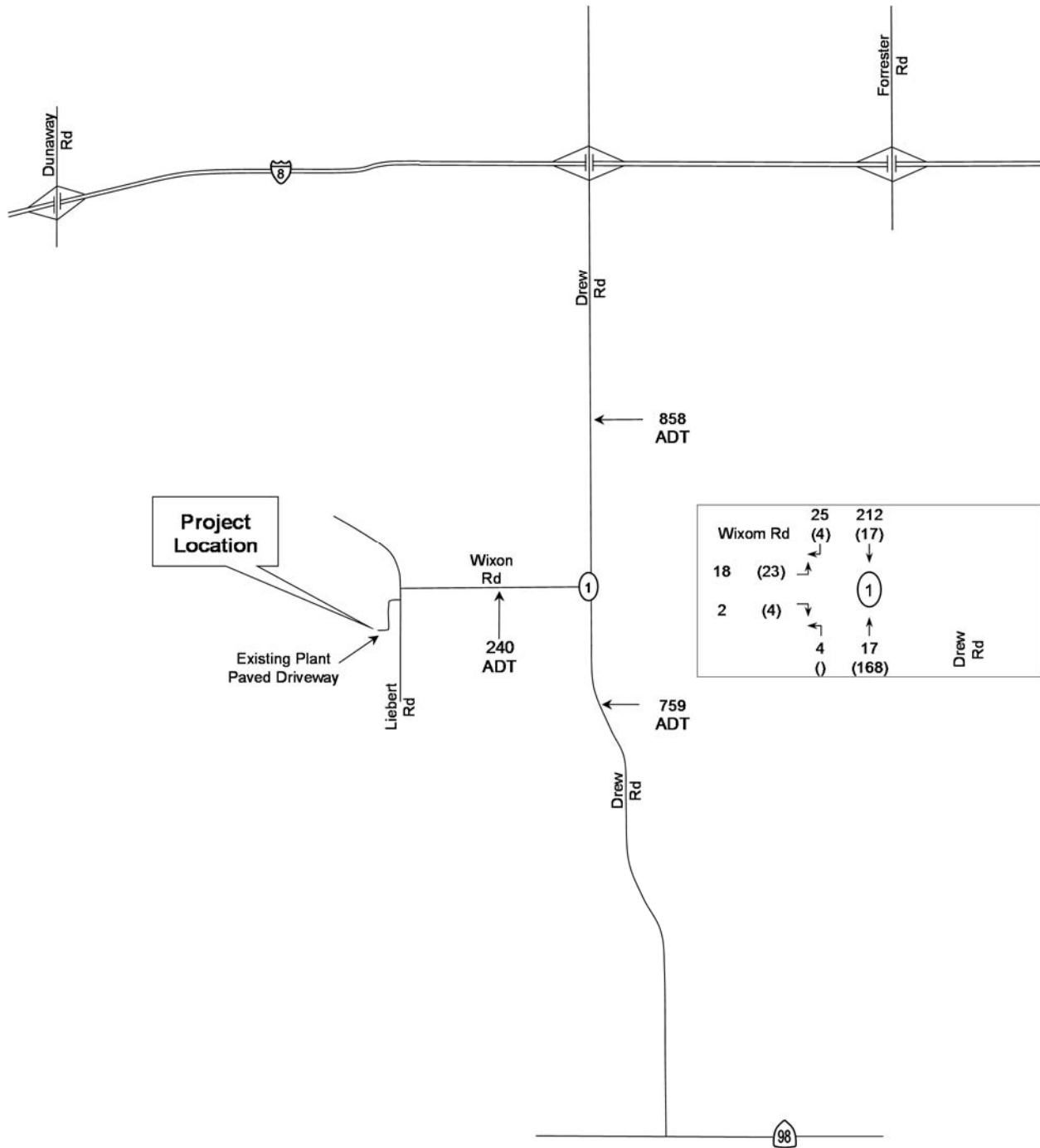
4.7 TRANSPORTATION AND CIRCULATION



Source: LOS 2016b.

FIGURE 4.7-9
CUMULATIVE PROJECT (NEW LARGE-SCALE SOLAR PROJECTS) VOLUMES

4.7 TRANSPORTATION AND CIRCULATION



LEGEND

- XX AM peak hour volumes at intersections
- (YY) PM peak hour volumes at intersections
- Z,ZZZ ADT volumes shown along segments
- # Intersection Reference Number to LOS Tables
- Existing Roads
- () Represents 0 PM volume



No Scale

Source: LOS 2016b.

FIGURE 4.7-10
EXISTING YEAR 2016 PLUS PROJECT (PHASE 1) PLUS CUMULATIVE TRAFFIC VOLUMES

4.7 TRANSPORTATION AND CIRCULATION

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4.7 TRANSPORTATION AND CIRCULATION

**TABLE 4.7-16
EXISTING 2016 PLUS PROJECT (PHASE 1) PLUS CUMULATIVE INTERSECTION LOS**

Intersection & (Control) ¹	Movement	Peak Hour	Year 2016		2016 + Project (Phase 1)			2016 + Project (Phase 1) + Cumulative		
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Delay ²	LOS ³	Impact Type
1) Drew Road at Wixom Road (U)	EB LR	AM	8.7	A	8.8	A	0.1	10.1	B	None
	EB LR	PM	8.6	A	8.7	A	0.1	9.60	A	None

Source: LOS 2016b.

- 1) Intersection Control – (S) Signalized (U) Unsignalized. 2) Delay – HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Impact type (none, direct or cumulative).

**TABLE 4.7-17
EXISTING 2016 PLUS PROJECT (PHASE 1) PLUS CUMULATIVE SEGMENT LOS**

Segment	Classification (as built)	LOS C Capacity	Year 2016			2016 + Project (Phase 1)			Cumulative Daily Volumes	2016 + Project (Phase 1) + Cumulative			
			Daily Volume	V/C	LOS	Daily Volume	V/C	LOS		Daily Volume	V/C	LOS	Impact Type
Drew Road North of Wixom Road South of Wixom Road	Prime Arterial (2U)	7,100	381	0.054	A	440	0.062	A	418	858	0.121	A	None
		7,100	334	0.047	A	341	0.048	A	418	759	0.107	A	None
Wixom Road From Liebert Road to Drew Road	Minor Collector (2U)	7,100	174	0.025	A	240	0.034	A	0	240	0.034	A	None

Source: LOS 2016b.

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element 2U = 2 land undivided roadway. Daily volume is a 24-hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact Type (none, cumulative or direct).

4.7 TRANSPORTATION AND CIRCULATION

Road to Drew Road is currently operating at LOS A in Year 2016 and would continue to do so with the addition of Phase 1 construction traffic and cumulative traffic. Therefore, less than significant impacts to the one study intersection and three roadway segments would occur in association with Existing Year 2016 Plus Project Plus Cumulative Traffic. The Project's Phase 1 contribution to cumulative conditions is considered **less than significant**. Moreover, the cumulative increases in traffic resulting from Phase 1 construction would not exceed V/C ratios or LOS standards. Therefore, impacts to the intersection of Drew Road and Wixom Road and the three roadway segments under Existing Plus Project (Phase 1) Plus Cumulative Conditions would be **less than cumulatively considerable**.

Cumulative Impacts to Intersection and Segment LOS (Near-Term Year 2018)

Impact 4.7.6 The proposed Project's construction traffic in combination with Year 2018 volumes would add traffic to the study area intersection and roadway segments during peak construction. The intersection and three roadway segments are currently operating at LOS A and will continue to do so with the addition of cumulative traffic. This impact is considered **less than cumulatively considerable**.

Year 2018 Plus Project Plus Cumulative

This scenario documents the anticipated Project Phase 1 traffic added onto near-term Year 2018 traffic. Year 2018 Plus Project volumes plus cumulative traffic are shown in **Figure 4.7-11**. Intersection and segment LOS are shown in **Table 4.7-18** and **Table 4.7-19**. Intersection LOS calculations are included in Appendix K of **Appendix H** of this SEIR.

As shown in **Table 4.7-18**, the unsignalized intersection of Drew Road at Wixom Road is projected to operate at LOS A in both the AM and PM peak hour in Year 2018. With the addition of Phase 2 construction traffic and cumulative traffic, the intersection would decline to LOS B in the AM peak hour but would continue to operate at LOS A in the PM peak hour. Likewise, as shown in **Table 4.7-19**, the roadway segment along Drew Road both north and south of Wixom Road is projected to operate at LOS A in Year 2018 and would continue to do so with the addition of Phase 2 construction traffic and cumulative traffic. Likewise, the segment of Wixom Road from Liebert Road to Drew Road is projected to operate at LOS A in Year 2018 and would continue to do so with the addition of Phase 2 construction traffic and cumulative traffic. Therefore, less than significant impacts to the one study intersection and three roadway segments would occur in association with Year 2018 Plus Project Plus Cumulative Traffic. The Project's Phase 2 contribution to cumulative conditions is considered **less than significant**. Moreover, the cumulative increases in traffic resulting from Phase 2 construction would not exceed V/C ratios or LOS standards. Therefore, impacts to the intersection of Drew Road and Wixom Road and the three roadway segments under Existing Plus Project (Phase 2) plus cumulative conditions would be **less than cumulatively considerable**.

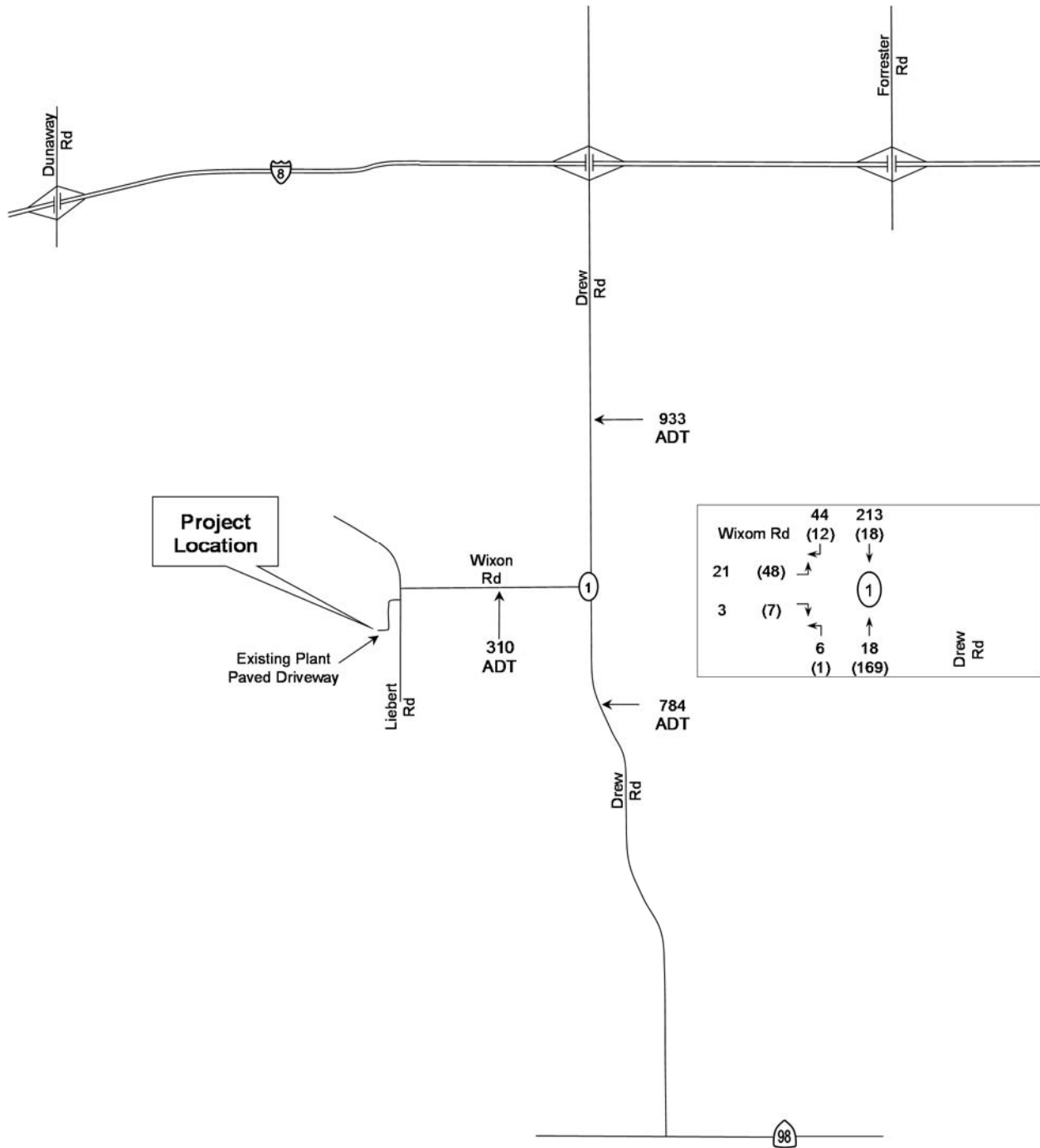
Mitigation Measures

None required.

Significance After Mitigation

Not Applicable.

4.7 TRANSPORTATION AND CIRCULATION



Project Location

Existing Plant Paved Driveway

LEGEND

- XX AM peak hour volumes at intersections
- (YY) PM peak hour volumes at intersections
- Z,ZZZ ADT volumes shown along segments
- # Intersection Reference Number to LOS Tables
- Existing Roads
- () Represents 0 PM volume



No Scale

Source: LOS 2016b.

FIGURE 4.7-11 NEAR-TERM YEAR 2018 PLUS PROJECT (PHASE 2) PLUS CUMULATIVE VOLUMES

4.7 TRANSPORTATION AND CIRCULATION

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4.7 TRANSPORTATION AND CIRCULATION

**TABLE 4.7-18
EXISTING YEAR 2018 PLUS PROJECT (PHASE 2) PLUS CUMULATIVE INTERSECTION LOS**

Intersection & (Control) ¹	Movement	Peak Hour	Year 2018		2018 + Project (Phase 2)			2018 + Project (Phase 2) + Cumulative		
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	Delay ²	LOS ³	Impact Type ⁵
2) Drew Road at Wixom Road (U)	EB LR	AM	8.7	A	8.9	A	0.2	10.3	B	None
	EB LR	PM	8.7	A	8.9	A	0.2	9.8	A	None

Source: LOS 2016b.

- 2) Intersection Control – (S) Signalized (U) Unsignalized. 2) Delay – HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Impact type (none, direct or cumulative).

**TABLE 4.7-19
EXISTING YEAR 2018 PLUS PROJECT (PHASE 2) PLUS CUMULATIVE SEGMENT LOS**

Segment	Classification (as built)	LOS C Capacity	Year 2018			2018 + Project (Phase 2)			Cumulative Daily Volumes	2018 + Project (Phase 2) + Cumulative			
			Daily Volume	V/C	LOS	Daily Volume	V/C	LOS		Daily Volume	V/C	LOS	Impact Type
Drew Road North of Wixom Road	Prime Arterial (2U)	7,100	402	0.057	A	515	0.073	A	418	933	0.131	A	None
		7,100	353	0.050	A	366	0.052	A	418	784	0.110	A	None
Wixom Road From Liebert Road to Drew Road	Minor Collector (2U)	7,100	183	0.026	A	310	0.044	A	0	310	0.044	A	None

Source: LOS 2016b.

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element 2U = 2 lane undivided roadway. Daily volume is a 24-hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact Type (none, cumulative or direct).

4.7 TRANSPORTATION AND CIRCULATION

Cumulative Impacts to Intersection and Segment LOS (Decommissioning Year 2038)

Impact 4.7.7 The proposed Project's decommissioning traffic in combination with Year 2038 volumes would add traffic to the study area intersection and roadway segments during peak construction. The intersection and three roadway segments are currently operating at LOS A and would continue to do so with the addition Year 2038 plus decommissioning traffic. This impact is considered **less than cumulatively considerable**.

In the event of possible decommissioning, a time line 20 years after construction (Year 2038) was analyzed with Phase 2 as the decommissioning construction traffic. This scenario documents the anticipated Project (Phase 2) construction traffic added to Year 2038 traffic. Year 2038 traffic was calculated by applying a 2.8% growth factor over 20-year (i.e. growth factor = 1.028 to the power of 20) for a growth factor of 1.737. Year 2038 volumes are shown in **Figure 4.7-12** with year 2038 plus Project (Phase 2) volumes shown in **Figure 4.7-13**. Intersection and segment LOS are shown in **Table 4.7-20** and **Table 4.7-21**. Intersection LOS calculations are included in Appendix M of **Appendix G** of this SEIR.

As shown in **Table 4.7-20**, the unsignalized intersection of Drew Road at Wixom Road is projected to operate at LOS A in both the AM and PM peak hour in Year 2038. With the addition of Phase 2 decommissioning traffic, the intersection would continue to operate at LOS A in the AM and PM peak hour. Likewise, as shown in **Table 4.7-21**, the roadway segment along Drew Road both north and south of Wixom Road is projected to operate at LOS A in Year 2038 and would continue to do so with the addition of Phase 2 decommissioning traffic. Likewise, the segment of Wixom Road from Liebert Road to Drew Road is projected to operate at LOS A in Year 2038 and would continue to do so with the addition of Phase 2 decommissioning traffic. Because Year 2038 is in the future, decommissioning impacts are also considered cumulative impacts. Therefore, less than significant impacts to the one study intersection and three roadways segments would occur in association with Year 2038 plus project decommissioning Phase 2 traffic. The Project's Phase 2 decommissioning traffic contribution to cumulative conditions is considered **less than significant**. Moreover, the cumulative increases in traffic resulting from Phase 2 decommissioning traffic would not exceed V/C ratios or LOS standards. Therefore, impacts to intersection of Drew Road and Wixom Road and the three roadway segments under Year 2038 Plus Project decommissioning Phase 2 conditions would be **less than cumulatively considerable**.

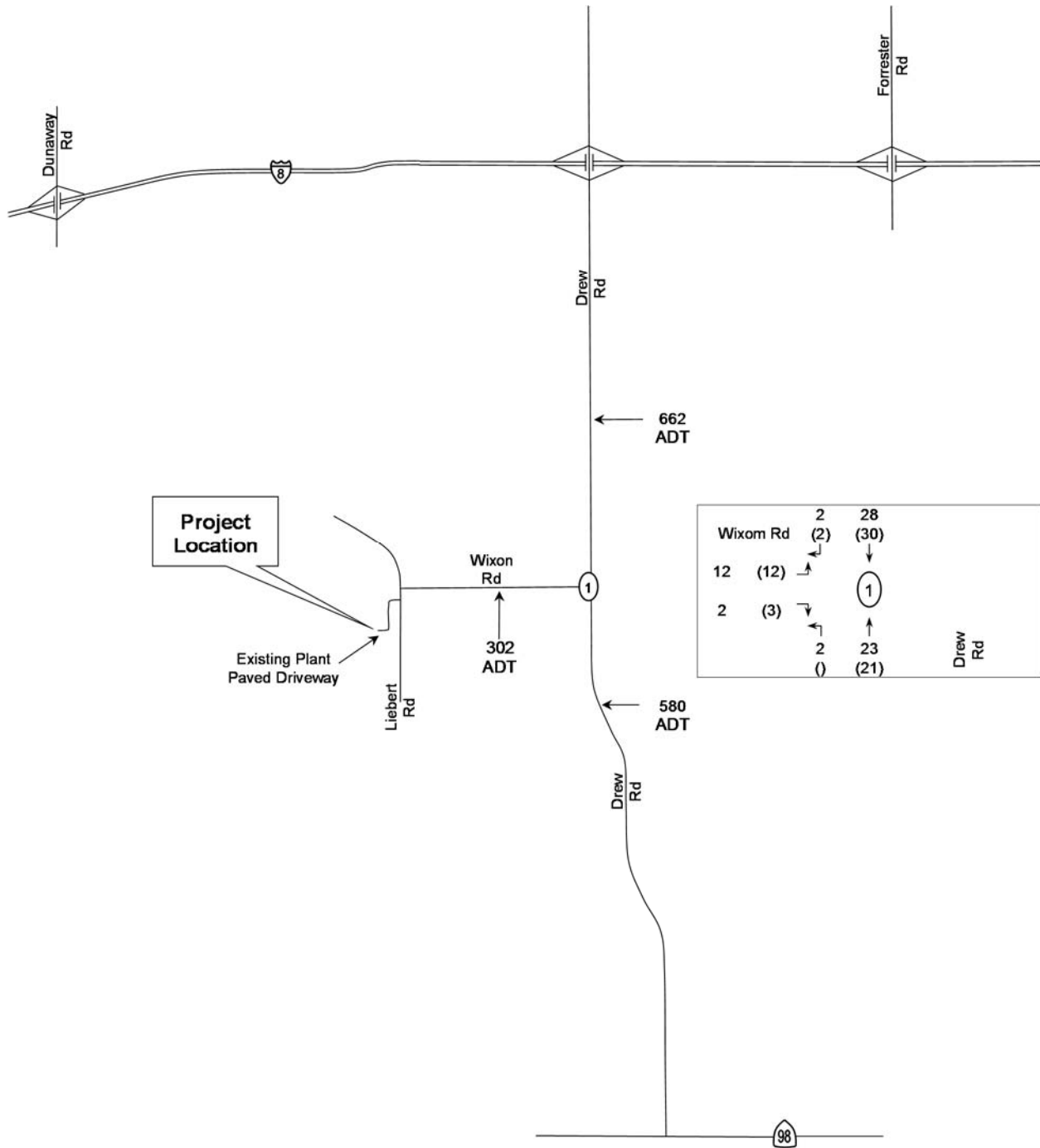
Mitigation Measures

None required.

Significance After Mitigation

Not Applicable.

4.7 TRANSPORTATION AND CIRCULATION



LEGEND

- XX AM peak hour volumes at intersections
- (YY) PM peak hour volumes at intersections
- Z,ZZZ ADT volumes shown along segments
- ① Intersection Reference Number to LOS Tables
- Existing Roads
- () Represents 0 PM volume



No Scale

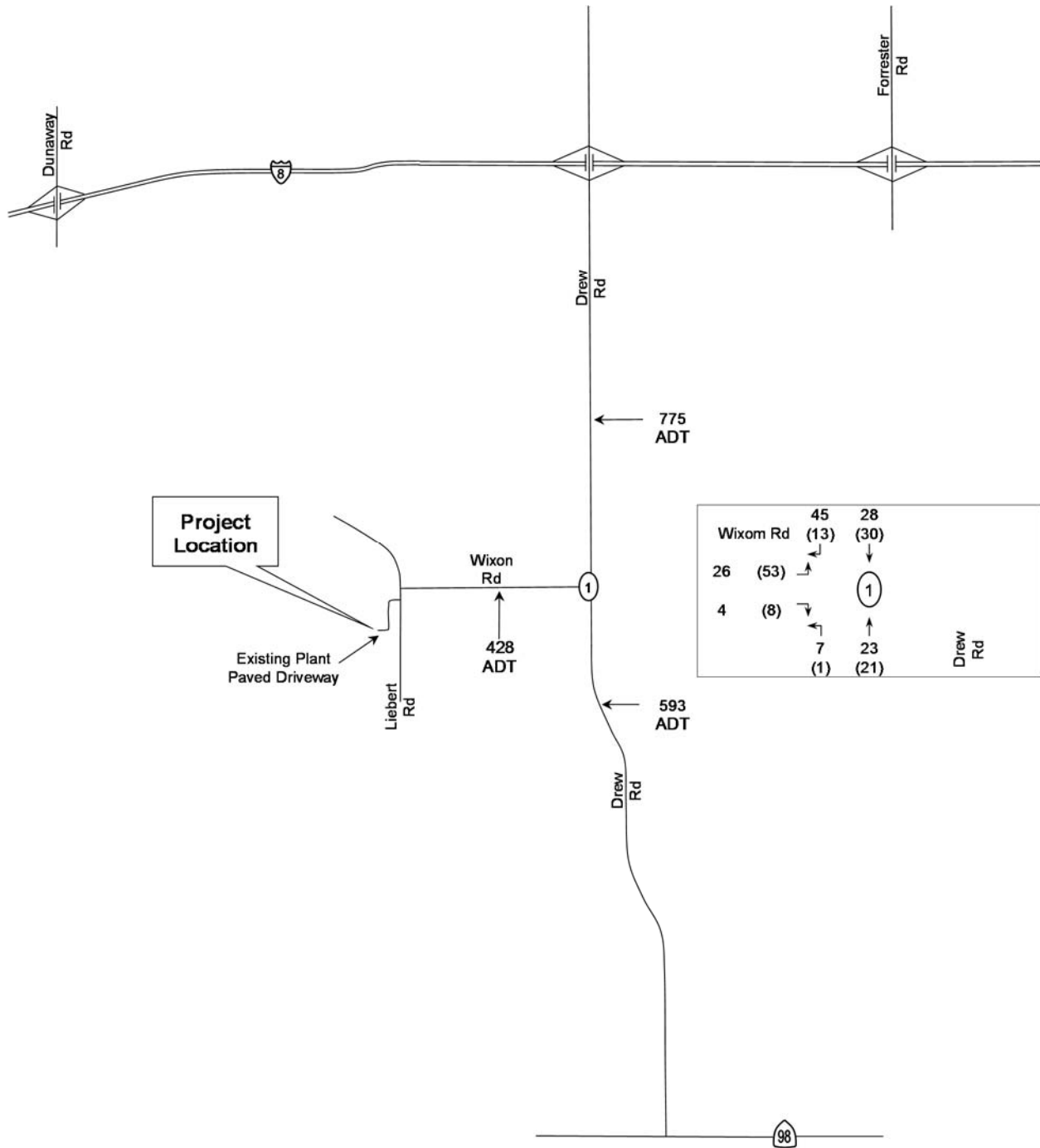
FIGURE 4.7-12
YEAR 2038 VOLUMES

Source: LOS 2016b.

4.7 TRANSPORTATION AND CIRCULATION

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4.7 TRANSPORTATION AND CIRCULATION



LEGEND

- XX AM peak hour volumes at intersections
- (YY) PM peak hour volumes at intersections
- Z,ZZZ ADT volumes shown along segments
- ① Intersection Reference Number to LOS Tables
- Existing Roads
- () Represents 0 PM volume



No Scale

Source: LOS 2016b.

FIGURE 4.7-13
YEAR 2038 PLUS PROJECT VOLUMES

4.7 TRANSPORTATION AND CIRCULATION

**TABLE 4.7-20
YEAR 2038 PLUS PROJECT (DECOMMISSIONING PHASE 2) INTERSECTION LOS**

Intersection & (Control) ¹	Movement	Peak Hour	Year 2038		2038 + Project (Phase 2)			Significant ⁵
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	
3) Drew Road at Wixom Road (U)	EB LR	AM	8.8	A	9.1	A	0.3	None
	EB LR	PM	8.8	A	9.1	A	0.3	None

Source: LOS 2016b.

1) Intersection Control – (S) Signalized (U) Unsignalized. 2) Delay – HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Impact type (none, direct or cumulative).

**TABLE 4.7-21
YEAR 2038 PLUS PROJECT (DECOMMISSIONING PHASE 2) SEGMENT LOS**

Segment	Classification (as built)	Year 2038				Project Daily Volume	2038 + Project (Phase 2)					
		Daily Volume	LOS C Capacity	V/C	LOS		Daily Volume	LOS C Capacity	V/C	LOS	Change in V/C	Impact Type
Drew Road North of Wixom Road South of Wixom Road	Prime Arterial (2U)	662	7,100	0.093	A	113	775	7,100	0.109	A	0.016	None
		580	7,100	0.082	A	13	593	7,100	0.084	A	0.002	None
Wixom Road From Liebert Road to Drew Road	Minor Collector (2U)	302	7,100	0.043	A	126	428	7,100	0.060	A	0.018	None

Source: LOS 2016b.

Notes: Classification based on 1/29/08 Circulation and Scenic Highways Element 2U = 2 land undivided roadway. Daily volume is a 24-hour volume. LOS: Level of Service. LOS based on actual number of lanes currently constructed. V/C: Volume to Capacity ratio. Impact Type (none, cumulative or direct).