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5.13 Traffic and Transportation

This section addresses the potential impact of the Mojave Solar Project on traffic and transportation. Section 5.13.1 describes the study roadway network surrounding the project site under existing conditions. Section 5.13.2 presents the traffic impact analysis on the local and regional roadways network in the near-term while the project is under construction. Section 5.13.3 presents the project traffic impact under the horizon year 2035 conditions. Section 5.13.4 addresses the mitigation measures under both the near-term and horizon year conditions. Section 5.13.5 describes applicable laws, ordinances, regulations, and standards (LORS). Section 5.13.6 lists the required transportation permits, with the applicable regulatory agency and contact information, and section 5.13.7 lists the references used to prepare the Traffic and Transportation section.

5.13.1 Existing Traffic Conditions

The proposed location of the Mojave Solar Project is approximately six (6) miles north of State Route 58 (SR-58) on Harper Lake Road in the unincorporated area of San Bernardino County. The project site is approximately 20 miles northwest of the City of Barstow and 12 miles northeast of Kramer Junction (SR-58/SR14).

5.13.1.1 Existing Regional and Local Transportation Facilities

Access to the proposed Mojave Solar Project from State Route 58 (SR-58) would be via Harper Lake Road or Santa Fe Avenue. The regional transportation network is displayed in Figure 5.13-1, Regional Transportation Network, and the roadway network in the vicinity of the project is displayed in Figure 5.13-2, Local Transportation Network. In order to minimize the effects of the construction traffic onto the local roadway network, the project proposes to bus workers from a staging park-and-ride lot located on Main Street in the City of Barstow. Therefore, the study area was expanded to include the roadway system between the proposed Park-and-ride location and the project site. Figure 5.13-3, Proposed Park-and-Ride Location, displays the location of the proposed staging Park-and-ride site. Roadway Average Daily Traffic (ADT) and intersection peak hour turning movement traffic counts were collected for the study roadways and intersections, and the data is presented in Appendix H.1. The Mojave Solar Project construction workers and maintenance employees traveling to and from the site would be expected to use the local roadway network shown in Figures 5.13-2 & 5.13-3 and described below.

5.13.1.1.1 State Route 58

State Route 58 is a regional state highway connecting the City of Bakersfield and the City of Barstow. SR-58 connects to SR-385 to the west of the project site and to Interstate 15 (I-15) to the east of the project site. The only access to the project site from SR-58 is via Harper Lake Road. Between Harper Lake Road and Main Street (Barstow), SR-58 is a two-lane to four-lane state highway. Traffic counts conducted on April 9, 2009 by National Data Services (NDS) for Wilson & Company, Inc., indicate that the existing ADT on SR-58 is approximately 12,000 per day, with trucks comprising approximately 36%.

5.13.1.1.2 Harper Lake Road

Harper Lake Road is a two-lane lightly traveled north-south roadway that bisects the proposed project site, with approximately 75% of the project located to the east of Harper Lake Road and 25% of the project to the west of Harper Lake Road. Harper Lake Road provides the primary access to the project site; and is currently a two-lane roadway with a striped median.

Please see Figure 5.13-1 Regional Transportation Network, 5.13-2 Local Transportation Network, and 5.13-3 Proposed Park-and-Ride Locations.

According to the April 9, 2009 traffic count, the ADT for Harper Lake Road is approximately 250 vehicles per day (vpd).

5.13.1.1.3 Santa Fe Avenue

Santa Fe Avenue is an east-west undivided roadway that connects Harper Lake Road and the project site to SR-58 via Hinkley Road. Between Harper Lake Road and Almeda Street (near Hinkley Road), Santa Fe Avenue is a dirt road with a one-foot dirt berm on both sides of the road. West of Almeda Street, Santa Fe Avenue is a paved two-lane undivided rural road. No ADT counts were conducted on Santa Fe Avenue due to rural characteristic and light traffic use.

5.13.1.1.4 Lockhart Road

Lockhart Road is an east-west undivided dirt roadway that provides access from Harper Lake Road via Lockhart Ranch Road to the existing SEGS VIII and IX solar power plants and approximately three (3) local residences ADT counts were not conducted on Lockhart Road due to the rural character and extremely low traffic use.

5.13.1.1.5 Lockhart Ranch Road

Lockhart Ranch Road is a locally maintained north-south undivided dirt roadway that connects Lockhart Road to the existing SEGS VIII and IX solar power plants. ADT counts were not conducted on Lockhart Ranch Road due to the rural character and light traffic volumes.

5.13.1.1.6 Hoffman Road

Hoffman Road is an east-west dirt roadway that serves as a local access road to the existing SEGS VIII and IX solar power plants between Lockhart Ranch Road to the west and Harper Lake Road to the east. ADT counts were not conducted on Hoffman Road due to the rural character and light traffic volumes.

5.13.1.1.7 Hinkley Road

Hinkley Road is a north-south two-lane undivided roadway that connects Santa Fe Avenue to SR-58. According to the April 9, 2009 traffic counts, the ADT for Hinkley Road is less than 600 vpd.

5.13.1.1.8 Main Street (Historic Route 66)

Main Street is a historic route passing through the City of Barstow, connecting with SR-58 to the west and I-15 to the east. Main Street is a four-lane roadway with a continuous left-turn lane between SR-58 and Avenue H. According to the April 9, 2009 traffic counts, the ADT for Main Street is approximately 7,200 vpd.

5.13.1.1.9 Truck Routes

Weight and load limitations are specified in the California Vehicle Code (CVC) Sections 35550-35559. In addition, local jurisdictions have their own truck weight and load restrictions as well. The County of San Bernardino allows up to the maximum load and weight under the CVC on their roadways. State Route 58 is a Surface Transportation Assistance Act (STAA) highway, which allows trucks up to the maximum legal length of 65 feet with load and weight limits per the CVC limitations. The main weight and load restrictions in the State of California is a gross weight of 80,000 pounds, with the gross weight limit on each set of tandem axles of 34,000 pounds, and a single-axle load limit of 20,000 pounds. The maximum weight for any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds, and 12,500 pounds for a front steering axle load. CVC weight and load limitations are provided in Appendix H.4. All deliveries to and from the project site will comply with these limitations.

5.13.1.1.10 Heavy Haul Routes

The Mojave Solar Project proposes to use the following designated heavy haul route from the Barstow rail yard to the project site: South on Avenue H, West on Main Street (Historic State Route 66), North on SR-58, then North on Harper Lake Road. Figure 5.13-4, Heavy Haul Route, displays the heavy haul routes described below.

5.13.1.1.11 Transport of Hazardous Materials

On-site hazardous materials (HAZMAT) will consist of small quantities of petroleum products such as diesel, water treatment chemicals and oil. The main hazardous material to be transported to the site would be the heat transfer fluid. HAZMAT materials would be transported in the form of hazardous materials or hazardous waste by truck. Transport route would be defined per Caltrans approved routes as part of the permitting process. No significant impact is expected for these processes. Additional details regarding Hazardous Material Handling are included in Section 5.6.

According to Division 13 Section 31303 of the CVC, the transportation of regulated substances and hazardous material will be on the state or interstate highway that offers the shortest overall transit time possible. Transporters of hazardous or explosive material must contact the California Highway Patrol (CHP) and apply for a Hazardous Material Transportation License. Once the license is obtained, the shipper will obtain a handbook specifying the routes approved for shipping hazardous or explosive materials. The exact transport route of the HAZMAT material will not be determined until after the shipper has contacted the CHP and applied for a license.

The recommended route, subject to Caltrans approval, is identical to the heavy haul route from the Barstow rail yard to the project site: South on Avenue H, west on Main Street (Historic State Route 66), north on SR-58, then north on Harper Lake Road.

No significant impacts are expected as a result of the transporting the hazardous material associated with this project due to the limited need for such material. Delivery of hazardous materials will occur over prearranged routes and will be in compliance with all laws and regulation governing the safe transport of hazardous materials.

Standards for the transport of hazardous materials are contained in the Code of Federal Regulations (CFR), Title 49 and enforced by the U.S Department of Transportation. Additionally, the State of California has published rules for hazardous waste transport that can be found in the California Code of Regulations, Title 26 and in the CIV (Section 2500-505, 12804-804.5, 31300, and 34500-501). The two state agencies with primary responsibility for enforcing federal and state regulations governing the transport of hazardous wastes are the CHP and Caltrans. Transport of hazardous materials to and from the project site will comply with all applicable requirements.

Outbound trucks would proceed on the reverse of the same recommended route to the Barstow rail yard described above. Hauling would be carried out in accordance with local, state, and federal regulations including the Resource Conservation and Recovery Act (42 U.S. Code 6901 et seq.) and the California Integrated Waste Management Act (Public Resources Code Section 40000 et seq.) Additionally various federal regulations covering areas from material handling to vehicle signs as described in the CFR, Title 49, Section 171 are applied to ensure public safety.

5.13.1.2 Existing Traffic Conditions and Level of Service Analysis

The traffic analysis was conducted in accordance with the 2000 Highway Capacity Manual (HCM 2000) methodologies and procedures, and applicable provisions from the California Environmental Quality Act (CEQA). Daily, morning and evening peak hour traffic volumes were used to evaluate the study area street and intersection capacities and resulting levels of service (LOS). Additionally, state highway ramp junctions were evaluated using the Intersection Lane Vehicles (ILV) procedure as described in Topic 406 of the Caltrans Highway Design Manual (HDM).

5.13.1.2.1 Existing Roadway Operations

The 2000 HCM was used to assess the capacity and operational characteristics of the study street and highway network. The LOS analysis provides a qualitative assessment of the street network and accounts for such factors as traffic volumes, roadway and intersection geometrics, speed, delays, and traffic control. The LOS criteria for roadways are presented in Table 5.13-1.

Table 5.13-1. Level of Service Criteria for Roadways

LOS Category	V/C	Definition of Operation
A	0.00-0.60	This LOS represents a completely free-flow condition, where the operation of vehicles is virtually unaffected by the presence of other vehicles and only constrained by the geometric features of the highway and by driver preferences.

LOS Category	V/C	Definition of Operation
B	0.61-0.70	This LOS represents a relatively free-flow condition, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.
C	0.71-0.80	At this LOS the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles.
D	0.81-0.90	At this LOS, the ability to maneuver is notably restricted due to traffic congestion, and only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.
E	0.91-1.00	This LOS represents operations at or near capacity. LOS E is an unstable level, with vehicles operating with minimum spacing for maintaining uniform flow. At LOS E, disruptions can not be dissipated readily thus causing deterioration down to LOS F.
F	>1.00	At this LOS, forced or breakdown of traffic flow occurs, although operations appear to be at capacity, queues form behind these breakdowns. Operations within queues are highly unstable, with vehicles experiencing brief periods of movement followed by stoppages.

Source: Highway Capacity Manual 2000
V/C: traffic volume (demand)/roadway capacity ratio

The City of Barstow General Plan specifies LOS E as the minimum acceptable level of service on all City roadways and intersections. The San Bernardino County Traffic Impact (TIS) Study Guidelines specify that all County roadways operate at LOS D or better.

The Average Daily Traffic (ADT) volumes were collected on April 9, 2009 for all study roadways. Classification counts to determine the proportion of trucks in the traffic stream were conducted on Main Street (Historic Route 66) and SR-58. A Passenger Car Equivalent (PCE) factor of 1.5 was used to convert the truck traffic in the mixed traffic flow of cars and trucks into a uniform car equivalent traffic volume.

The following study roadways and intersections were analyzed in this study.

Roadways:

- Main Street (Historic Route 66)

- State Route 58

Intersections:

- SR-58 / Harper Lake Road (Two-Way Stop-Controlled)
- SR-58 / Lenwood Road (Signalized)
- Main Street / SR-58 Southbound Ramps (Signalized)
- Main Street / SR-58 Northbound Ramps (Signalized)
- Main Street / Parking Lot Driveway (One-Way Stop-Controlled)

Table 5.13-2 presents a summary of the roadway segment ADT, Volume-to-Capacity (V/C) ratio, and LOS under existing conditions. The table shows that the study roadway segments are currently operating at acceptable LOS.

Table 5.13-2. Roadway Level of Service: Existing Conditions

Road	Segment	Average Daily Traffic Volume	Peak Hour Percent	Directional Split	Lanes Per Direction	PHF	% HV	Volume (pc/h/ln)	V/C	LOS
SR-58	Harper Lake Road to Lenwood Road	12,079	13.0%	0.55	1	0.92	20.0%	1,173	0.69	C
Main Street	SR-58 to Osborne Road	7,243	14.0%	0.54	2	0.92	20.0%	372	0.22	A

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

5.13.1.2.2 Existing Intersection Operations

Existing morning (AM) and evening (PM) peak-hour turning movement counts were conducted on April 9, 2009 between the hours of 7:00 and 9:00 AM and 4:00 and 6:00 PM. Figure 5.13-5, Existing Traffic Volumes, presents a summary of the AM and PM peak hour turning volumes at the study intersections.

As the workers' arrival times range between 6:00 AM and 8:00 AM, an hour earlier than the counted 7:00 – 9:00 AM peak period, intersection turning movement were developed for the 6:00 to 7:00 AM peak hour using the counted hourly segment traffic volumes and the peak hour intersection turning movement pattern for the 7:00 – 8:00 AM peak hour.

Traffic analysis was conducted for both the AM and PM peak periods using the Traffix Analysis Version 8.0 Software and SYNCHRO Version 7 traffic analysis software.

SYNCHRO was selected for use in the analysis for its ability to model a two-stage crossing across SR-58 from the side streets, including the use of the wide median of SR-58 to break the turning movement into two stages. The relationship between delay and LOS is shown

in Table 5.13-3 for signalized intersections and in Table 5.13-4 for un-signalized intersections.

Table 5.13-3. Signalized Intersection Level of Service: Highway Capacity Manual Operational Analysis Method

Average Control Delay (seconds/vehicle)	Level of Service (LOS) Characteristics
<10	*LOS A* describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
>10– 20	*LOS B* describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
>20 – 35	*LOS C* describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
>35– 55	*LOS D* describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.
>55 – 80	*LOS E* is considered the limit of acceptable delay. Individual cycle failures are frequent occurrences.
>80	*LOS F* describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the LOS D capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.

Source: 2000 Highway Capacity Manual, TRB Special Report 209

Table 5.13-4. Level of Service Criteria for Stop Controlled Unsignalized Intersections

Average Control Delay (sec/veh)	Level of Service (LOS)
≤10	A
>10 and ≤15	B
>15 and ≤25	C
>25 and ≤35	D
>35 and ≤50	E
>50	F

Source: 2000 Highway Capacity Manual, TRB Special Report 209

Table 5.13-5 shows the Existing intersections analysis results in terms of delays and LOS for both the AM and PM peak hours. As shown in the table, all intersections currently operate at an acceptable LOS. The detailed LOS and delay worksheets are presented in Appendix H.2.

Table 5.13-5. Peak Hour Intersection Level of Service Results: Existing Conditions

#	Intersection	AM		PM	
		Delay (Sec)	LOS	Delay (Sec)	LOS
1	SR-58 / Harper Lake Road[(1)]	12.4	B	16.1	C
2	SR-58 / Lenwood Road	3.2	A	3.1	A
3	Main Street/SR-58 SB Ramps	5.1	A	4.5	A
4	Main Street/SR-58 NB Ramps	11.3	B	11.9	B
5	Main Street / Parking Lot Driveway[(1)]	N/A	N/A	N/A	N/A

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

Note: Bold Letters indicate substandard LOS F
[(1)] Indicates a one-way or two-way Stop Controlled Intersection. Delay and LOS are for stopped approach (worst).

5.13.1.2.3 Existing Ramp Junction Operations

Consistent with Caltrans requirements, all signalized intersections at freeway ramp junctions were analyzed using the Intersecting Lane Vehicle (ILV) procedure as described in

Topic 406 of the Caltrans *Highway Design Manual* (HDM). The ILV analysis provides an assessment of the ramp junction operational characteristic based upon the sum of the critical volumes for each critical movement in terms of Intersection Lane Vehicles per Hour (ILV/Hour), in comparison with set thresholds of intersection capacity. Table 5.13-6 provides values of ILV/hr associated with corresponding intersection capacity thresholds.

Table 5.13-6. Traffic Flow Conditions at Ramp Intersections at Various Levels of Operation

ILV/hr	Description
<1200: (Under Capacity)	Stable flow with slight, but acceptable delay. Occasional signal loading may develop. Free midblock operations.
1200-1500: (At Capacity)	Unstable flow with considerable delays possible. Some vehicles occasionally wait two or more cycles to pass through the intersection. Continuous backup occurs on some approaches.
>1500: (Over Capacity)	Stop-and-go operation with severe delay and heavy congestion [(1)]. Traffic volume is limited by maximum discharges 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.

Source: Caltrans Highway Design Manual, Topic 406

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

The signalized freeway ramp junctions at the Main Street/ SR-58 Interchange were analyzed under Existing conditions using the ILV procedures and the analysis results are displayed in Table 5.13-7. The analysis worksheets for Existing conditions are provided in Appendix H.3.

Table 5.13-7. Ramp Junction Capacity Analysis: Existing Conditions

Ramp Intersection	Peak Hour	ILV / Hour	Description
Main Street/SR-58 NB Ramps	AM	416	*<1200: (Under Capacity)*
	PM	498	*<1200: (Under Capacity)*

Ramp Intersection	Peak Hour	ILV / Hour	Description
Main Street/ SR-58 SB Ramps	AM	323	*<1200: (Under Capacity)*
	PM	490	*<1200: (Under Capacity)*

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

As shown in the table above, the signalized freeway ramp junctions are considered to be "under capacity" under Existing conditions using the ILV analysis.

5.13.1.2.4 Regional Transportation Plan

The 2008 Regional Transportation Plan (RTP), prepared by the Southern California Association of Government (SCAG), provides a general description of transportation improvements in the San Bernardino region. Caltrans plan to upgrade SR-58 to a four-lane expressway with a proposed interchange at Hinkley Road by the year 2020.

5.13.1.2.5 Pedestrian/ Bicycle Facilities

The 1997 City of Barstow General Plan provides a blueprint for developing a bikeway system that includes both on-street as well as support facilities and programs throughout the City. Class II bike lanes exist within the study area on Main Street between the western City limit and Yucca Avenue. Class II bike lanes are striped lanes within the paved roadway that are designated for bicycle use only.

5.13.1.2.6 Public Transportation

Public transportation in the area is provided by the Barstow Area Transit for inter-city connections and intra-city destinations. The closest bus route (Route 5) connects the City of Barstow with the Hinkley community. It is about nine miles from the project site and is therefore not considered to be relevant to the project.

5.13.1.2.7 Rail Traffic

The City of Barstow is a major regional transportation center serviced by the Burlington Northern Santa Fe (BNSF) Railway and the Union Pacific Railroad (UPRR). The BNSF rail runs east/west through the City of Barstow and continues relatively parallel to State Route 58 between Barstow & Kramer Junction and beyond. The closest rail tracks are approximately 3.6 miles south of the project site. Passenger service is not provided on these rail lines.

5.13.1.2.8 Air Traffic

The Mojave Solar Project site is located approximately 12 miles northeast of the Edward Airforce Base, and 27 miles north of the Southern California Logistics Airport. The U.S. Department of Transportation (DOT) and Federal Aviation Administration (FAA) regulation 14 CFR 77.13(2)(i), requires an applicant to notify the FAA of the construction of structures

within 20,000 feet of the nearest point of the nearest runway of an airport with at least one runway longer than 3,200 feet. Thus, an Air Traffic Impact evaluation is not needed on this project as both airports are farther than 20,000 feet from the project site.

5.13.2 Near-Term year 2012 Traffic Conditions

This section assesses the traffic and transportation impacts associated with the construction and operation of the Mojave Solar Project. This analysis primarily assesses expected impacts on roadway and intersection LOS during both the construction and operation of the project.

Construction is expected to start in December 2010 and last 26 months with the plant operation expected to start in March 2013. During the peak construction phase (month 17), a maximum of 1,162 workers (1,117 workers for the first shift, and 45 workers for the second shift) would be required. During the plant operation phase, the project is expected to require a daily maximum of 208 workers. Since the number of workers during the operation phase is relatively insignificant, a worst-case scenario analysis was conducted for the peak construction traffic period. Table 5.13-9 (located at end of Section due to size of table) displays a breakdown of the construction workers requirements on a monthly basis throughout the entire construction period.

A horizon year (2035) traffic analysis was conducted using an average SANBAG projected thru traffic growth rate of 2% per year and the results are discussed below in Section 5.13.3.

5.13.2.1 Significance Criteria

The Significance Criteria have been developed using guidance provided by CEQA Appendix G (Title 14 California Code of Regulations 15000 et seq.) and relevant local policies. Impact of the proposed Mojave Solar Project on the transportation and circulation network will be considered significant if the following criteria are met:

- If project causes an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- If project causes to exceed, either individually or cumulatively, a LOS standard established by the county congestion management agency for designated roads or highways.
- If project substantially increases hazards due to a design feature or incompatible uses.
- If project results in inadequate emergency access.
- If project results in inadequate parking capacity.
- If project conflicts with adopted policies, plans, or programs supportive of alternative transportation.

For LOS requirements, the Caltrans requirement of LOS D or better was used on State routes, and SANBAG requirement of LOS D or better as defined in the Congestion Management Plan (CMP) was used on all County and City roadways.

5.13.2.2 Project Construction Traffic Generation

Estimates of the number of daily workers throughout the construction duration have been developed for this project. Based upon historic experience of similar projects, it is estimated that 20 percent of the workforce will carpool with average carpool vehicle occupancy of 2 persons per vehicle. During the peak month, the estimated number of workers needed is 1,162 workers per day. Work will be done in two main work shifts. The first shift would start between 6:00 & 8:00 AM and end between 4:00 & 6:00 PM, while the second shift would start at 4:00 PM and end at 2:00 AM. It is estimated that 42% of the construction workers will be bussed to the project site from a park-and-ride staging lot located on Main Street on the outer edge of the City of Barstow. The maximum number of truck trips is expected to reach 67 one-way trips per day during the 26-month duration of the project, with the majority of the trips traveling between the Barstow rail yard and the project site during the off-peak hours.

The analysis was conducted using worst-case scenario by assuming peak construction worker and truck traffic throughout construction. The peak traffic hours of the day were determined to be the 7:00 – 8:00 AM and the 4:00 – 5:00 PM peak hours. Based upon the HCM 2000 guidelines, bus traffic was converted to passenger car equivalent units (PCEs) at a rate of 3 passenger cars for each bus. Table 5.13-8 displays the construction traffic trips to and from the project site for both the AM and PM peak hours and Table 5.13-9 (located at end of Section due to size of table) presents the construction trip estimates for the various types of construction vehicles during the 26 months period.

Table 5.13-8. Project Trips Generation: Construction Phase – Peak Hours

Peak Period	Project Site		Park-and-Ride	
	Trips (In/Out)	PCE	Trips (In/Out)	PCE
AM (car)	300/0	300/0	169/0	169/0
AM (bus)	3/3	9/9	3/3	9/9
AM (Total)	**N/A**	**309/9**	**N/A**	**178/9**
PM (car)	0/300	0/300	0/169	0/169
PM (bus)	3/3	9/9	3/3	9/9
PM (total)	**N/A**	**9/309**	**N/A**	**9/178**

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

Figure 5.13-6, Project Construction Traffic Volume, presents the distribution of construction traffic.

5.13.2.3 Construction Trip Distribution

Based upon the Mojave Solar Employment Commute Behavior analysis conducted by AECOM/EDAW, the following trip origination assumptions were used to distribute construction worker traffic over the study area network:

- 86% of the construction workers will originate from areas west of the project site and 14% will originate from areas east of the project site.
- 58% of the construction workers will drive directly to the project site.
- 42% of the construction workers will drive to the park-and-ride staging lot located on Main Street on the outer edge of the City of Barstow.
- 100% of the truck traffic between the Barstow rail yard and the project site will travel during the off-peak hours.

The above assumptions were derived from the Mojave Solar Employment Commute Behavior Study, the results of which are presented in Appendix H.5.

5.13.2.4 Cumulative Projects Traffic

The impact of cumulative projects refers to the incremental effect of proposed projects (either current or reasonably foreseeable future projects) whose impact may compound or increase the incremental effect of the proposed project (Public Resources Code 21083; California Code of Regulations, title 14, 15064 (h), 15065 (c), 15130, and 15355).

Based upon the recommendations of County and City staff, as of June 2009 the following projects were assumed in this study to be cumulative projects for inclusion in the Near-Term Base conditions analysis:

1) Wal-Mart Food Distribution Center, City of Barstow: The proposed Wal-Mart Food Distribution Center is a "high-cube" Warehouse/Distribution Centers used primarily for the storage and/or consolidation of manufactured good(and to a lesser extend, raw materials) prior to their distribution to retail locations or other warehouses. The proposed project is located on the west side of Lenwood Road, North of Main Street and south of State Route 58 (SR-58). It is anticipated that the first phase of the project will be open in 2009.
2) Nursery Product LLC Composting Facility, County of San Bernardino: The proposed Nursery Product LLC Composting Facility Project is a 160 acre biosolid and green waste composting facility located just south of SR-58 between Helendale Road to the east, and the now defunct Hawes Auxiliary Airport site to the west. Access to the project site is primarily provided by Helendale Road, and SR-58.
3) Cambridge Home, City of Barstow: Cambridge Home is a proposed single-family residential development. The proposed project consists of 426 single-family residential units and 43 acres of light industrial uses on approximately 152 acres. The project is expected to have two driveways on Lenwood Road with regional access provided by Interstate 15 (I-15) via an interchange at Lenwood Road.

Table 5.13-10 presented the contribution of cumulative project on the study roadway network and Figure 5.13-7, Cumulative Project Traffic Volumes, displays the cumulative projects traffic contributions within the study area.

Table 5.13-10. Contribution of Cumulative Project onto Study Roadway

Roadway	Projects and Traffic Contribution			
	Project #1 (AM/PM)	Project #2 (AM/PM)	Project #3 (AM/PM)	Total
SR-58	81/81	15/15	73/95	169/191
Main Street	3/15	0/0	81/97	84/112

Source: Wilson & Company, Inc., Engineers & Architects; June 2009
Notes:
Project #1: Wal-Mart Distribution Center
Project #2: Nursery Products Composting Facility
Project #3: Cambridge Home Residential Development

The cumulative effects were evaluated as part of the Near-Term Base Plus Project Construction scenario as a worst-case scenario since cumulative traffic was added to the highest volume of construction worker traffic.

5.13.2.5 Near-Term Base Traffic Volumes

The 2012 Near-Term (construction phase) traffic volumes were determined by applying an average effective growth rate of 2% per year to the through traffic along SR-58 and Main Street in addition to including relevant traffic generated by the cumulative projects. The average growth rate was developed in consultation with Caltrans, County, and SANBAG staff. Figure 5.13-8, Near Term Base Traffic Volume, displays the Near-Term Year 2012 Base traffic volumes.

5.13.2.6 Near-Term Base Conditions – Roadway Level of Service

Based on the projected traffic volumes for the Year 2012 of Figure 5.13-8, Near Term Base Traffic Volume, the Level of service analysis for the study roadway was conducted and the results are presented in Table 3.13-11 for the Near-Term Base Conditions.

Table 5.13-11. Roadway Level of Service: Near-Term Base Conditions

Road	Segment	Volume	Peak Hour %	Directional Split	Lanes Per Direction	PHF	% HVF	Volume (pc/h/ln)	V/C	LOS
SR-58	Harper Lake Road to Lenwood Road	13,045	13.0%	0.55	1	0.92	20.0%	1,267	0.75	C
Main Street	SR-58 to Osborne Road	7,822	14.0%	0.54	2	0.92	20.0%	402	0.24	A

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

As shown above, the study roadway would be expected to operate at an acceptable LOS under Near-Term Year 2012 Base conditions.

5.13.2.7 Near-Term Base Conditions – Intersection Level of Service

Based on the projected traffic volumes for the Year 2012 of Figure 5.13-8, Near Term Base Traffic Volume, the Level of service analysis for the study intersections was conducted and the results are presented in Table 3.13-12 for the Near-Term Base Conditions.

Table 5.13-12. Peak Hour Intersection Level of Service: Near-Term Base Conditions

#	Intersection	AM		PM	
		Delay (Sec)	LOS	Delay (Sec)	LOS
1	SR-58 / Harper Lake Road[(1)]	13.0	B	17.1	C
2	SR-58 / Lenwood Road	4.0	A	4.3	A
3	Main Street / SR-58 SB Ramps	4.8	A	4.3	A
4	Main Street / SR-58 NB Ramps	10.9	B	11.5	B
5	Main Street / Parking Lot Driveway[(1)]	N/A	N/A	N/A	N/A

Source: Wilson & Company, Inc., Engineers & Architects; June 2009
[(1)] Indicates a one-way or two-way Stop Controlled Intersection. Delay and LOS are for stopped approach (worst).

As shown above, all intersections would be expected to operate at an acceptable LOS under the Near-Term Base conditions. LOS and delay worksheet are presented in Appendix H.6.

5.13.2.8 Near-Term Base Conditions – Ramp Junction Operations

The Intersecting Lane Vehicles (ILV) analysis results for the Near-Term Base conditions are presented in Table 5.13-13 and the worksheets are provided in Appendix H.7.

Table 5.13-13. Ramp Junction Capacity Analysis: Near-Term Base Conditions

Ramp Junction	Peak Hour	ILV / Hour	Description
Main Street/SR-58 NB Ramps	AM	474	*<1200: (Under Capacity)*
	PM	558	*<1200: (Under Capacity)*
Main Street/SR-58 SB Ramps	AM	371	<1200: (Under Capacity)
	PM	547	<1200: (Under Capacity)

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

As shown in the table, both signalized freeway ramp junctions are considered to be "under capacity" under Near-Term Base conditions.

5.13.2.9 Near-Term Base Plus Project Construction - Roadway Level of Service

The peak hour construction worker traffic volume was added to the Near-Term Base traffic volumes for each of the roadway segments. Table 5.13-14 displays the results of the roadway LOS analysis under Near-Term Base Plus Project Construction conditions. Based upon the analysis results shown in the table, all of the roadway segments are expected to operate at acceptable LOS.

Table 5.13-14. Roadway Level of Service: Near-Term Base Plus Project Construction

Road	Segment	Volume	Peak Hour Percent	Directional Split	Lanes Per Direction	PHF	% HVF	Volume (pc/h/ln)	V/C	LOS
SR-58	Harper Lake Road to Lenwood Road	13,965	13.0%	0.55	1	0.92	20.0 %	1,357	0.80	D
Main Street	SR-58 to Osborne Road	8,662	14.0%	0.54	2	0.92	20.0 %	445	0.26	A

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

5.13.2.10 Near-Term Base Plus Project Construction - Intersection Level of Service

The peak hour construction traffic volumes were added to the Near-Term Base traffic volumes for each of the intersections within the study roadway network. Figure 5.13-9, Near Term Base Plus Construction Traffic Volumes, displays the Near-Term Base Plus Project Construction traffic. The results of the Near-Term Base and Near-Term Base Plus Project Construction traffic analysis are displayed in Table 5.13-15 for the AM and PM peak hours. The LOS and delay worksheets are presented in Appendix H.8.

Table 5.13-15. Peak Hour Intersection Level of Service: Near-Term Base Plus Project Construction

#	Intersection	AM					PM				
		Base		During Construction		Δ	Base		During Construction		Δ
		Delay (Sec)	LOS	Delay (Sec)	LOS		Delay (Sec)	LOS	Delay (Sec)	LOS	
1	SR-58 / Harper Lake Road[(1)]	13.0	B	33.3	D	20.3	17.1	C	31.3	D	14.2
2	SR-58 / Lenwood Road	4.0	A	4.1	A	0.1	4.3	A	4.6	A	0.3
3	Main Street / SR-58 SB Ramps	4.8	A	10.1	B	5.3	4.3	A	5.4	A	1.1
4	Main Street / SR-58 NB Ramps	10.9	B	10.9	B	0.0	11.5	B	11.5	B	0.0

#	Intersection	AM					PM				
		Base		During Construction		Δ	Base		During Construction		Δ
5	Main Street / Parking Lot Driveway[1]	N/A	N/A	3.2	A	3.2	N/A	N/A	3.9	A	3.9

Source: Wilson & Company, Inc., Engineers & Architects; June 2009
Δ Change in intersection delay
[1] Indicates a one-way or two-way Stop Controlled Intersection. Delay and LOS are for stopped approach (worst).

As shown above, all intersections are projected to continue to operate at acceptable LOS under Near-Term Plus Project Construction conditions.

5.13.2.11 Near-Term Plus Project Construction - Intersection Lane Vehicles Analysis

The ILV analysis results for the SR-58 ramp junctions under Near-Term Plus Project Construction conditions are displayed in Table 5.13-16 and the analysis worksheets are provided in Appendix H.9.

Table 5.13-16. Ramp Junction Capacity Analysis: Near-Term Base Plus Project Construction

Ramp Intersection	Peak Hour	ILV / Hour	Description
Main Street/ SR-58 NB Ramps	AM	642	*<1200: (Under Capacity)*
	PM	577	*<1200: (Under Capacity)*
Main Street/ SR-58 SB Ramps	AM	521	*<1200: (Under Capacity)*
	PM	556	*<1200: (Under Capacity)*

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

As shown above, both signalized freeway ramp junctions were determined to be "under capacity" under the Near-Term Base Plus Project Construction conditions.

5.13.2.12 Additional Potential Near-Term Project Impact - (Public Safety)

Transport of hazardous material and waste will be required to obtain a Hazardous Material Transportation License in accordance with CVC Section 32105 and follow all appropriate safety procedures as described above, and therefore would not pose any possible hazards to the public.

5.13.3 Horizon Year 2035 Traffic Conditions

Horizon year analysis is based on Future Year 2035 conditions. Under these conditions, there will be no construction-related activities and no park-and-ride lot traffic or busing of

workers involved. Therefore, traffic will be limited to the employees responsible for the operation and maintenance of the power plant. The study area under Horizon Year 2035 conditions will no longer include Main Street or the SR-58 interchange in Barstow as relevance of these locations to the study area was only in effect during the Near-Term conditions when use of the park-and-ride staging lot for busing construction workers was in effect.

5.13.3.1 Project Operation and Maintenance Impact

During the operation and maintenance (O&M) phase, the Mojave Solar Project is expected to generate a maximum of 52 trips during the peak hours and a maximum of 250 trips per day. The project is expected to generate 38 truck trips per month, mostly during off-peak traffic times.

The majority of the horizon year project traffic is expected to be coming from the I-15 freeway. Therefore the following roadways and intersection were evaluated as part of the Horizon Year 2035 Base Plus Project scenario. Intersections along SR-58 including the interchange ramp junctions in Barstow were not evaluated, since no bussing operation would be talking place from Barstow, and the park-and-ride staging lot will no longer be used.

Roadways:

- SR-58

Intersections:

- SR-58 / Harper Lake Road

Table 5.13-17 presents the 2035 Horizon Year trips generation and Figure 5.13-10, Horizon Year O&M Phase Traffic Distribution, displays the Mojave Solar Project operation and maintenance traffic distribution under Horizon Year 2035 conditions.

Table 5.13-17. Project Trips Generation: O&M Phase

Peak Period	Total
AM	52
PM	52

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

5.13.3.2 Horizon Year Traffic Volumes

The horizon year (O&M) traffic volumes were determined by applying an average growth rate of 2% per year to the through traffic along SR-58 and Main Street. This growth factor was developed in consultation with Caltrans, County, and SANBAG staff. Figure 5.13-11, Horizon Year Base Traffic Volume, displays the Horizon Year 2035 Base traffic volumes. LOS and delay worksheet are presented in Appendix H.10.

5.13.3.3 Horizon Year 2035 Base Conditions – Roadway Level of Service

Based on the forecasted traffic volumes for the Horizon Year of Figure 5.13-11, Horizon Year Base Traffic Volume, the Level of service analysis for the study roadway was conducted and the results are presented in Table 5.13-18 for the Horizon Year 2035 Base Conditions.

Table 5.13-18. Roadway Level of Service: Horizon Year 2035 Base Conditions

Road	Segment	Volume	Peak Hour Percent	Directional Split	Lanes Per Direction	PHF	%HV	Volume (pc/h/ln)	V/C	LOS
SR-58	Harper Lake Road to Lenwood Road	18,602	13.0%	0.55	2	0.92	20.0%	904	0.53	B

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

As shown above, the study roadway would be expected to operate at an acceptable LOS under Horizon Year 2035 Base conditions.

5.13.3.4 Horizon Year 2035 Base Conditions – Intersection Level of Service

Based on the forecasted traffic volumes for the Horizon Year of Figure 5.13-11, Horizon Year Base Traffic Volume, the Level of service analysis for the study intersections was conducted and the results are presented in Table 3.13-19 for the Horizon Year 2035 Base Conditions.

Table 5.13-19. Peak Hour Intersection Level of Service Results: Horizon Year 2035 Base Conditions

#	Intersection	AM		PM	
		Delay (Sec)	LOS	Delay (Sec)	LOS
1	SR-58 / Harper Lake Road[(1)]	15.2	C	25.0	C

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

[(1)] Indicates a one-way or two-way Stop Controlled Intersection. Delay and LOS are for stopped approach (worst).

As shown above, the study intersection would be expected to operate at an acceptable LOS C under Horizon Year Base Conditions.

5.13.3.5 Horizon Year 2035 Base Plus Project Conditions – Roadway Level of Service

The peak hour project traffic volumes (O&M phase) were added to the 2035 Horizon Year Base traffic volumes for each of the study roadway segments. Table 5.13-20 displays the roadway analysis under 2035 Horizon Year Base Plus Project conditions.

Table 5.13-20. Roadway Level of Service: Horizon Year Base Plus Project Conditions

Road	Segment	Volume	Peak Hour %	Directional Split	Lanes Per Direction	PHF	HVF	Volume (pc/h/ln)	V/C	LOS
SR-58	Harper Lake Road to Lenwood Road	18,852	13.0%	0.55	2	0.92	20.0%	916	0.54	B

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

As shown above, the study roadway would be expected to operate at an acceptable LOS B under the 2035 Horizon Year Base Plus Project conditions.

5.13.3.6 Horizon Year 2035 Base Plus Project Conditions – Intersection Level of Service

The peak hour project traffic was added to the horizon year traffic volumes for each of the intersections within the study area roadway network. Figure 5.13-12, Horizon Year Base Plus Project Traffic Volume, displays the 2035 Horizon Year Base Plus Project traffic volumes. The result of the horizon year and horizon year with project (O&M phase) traffic are displayed in Table 5.13-21. LOS and delay worksheet are presented in Appendix H.11.

Table 5.13-21. Peak Hour Intersection Level of Service Results: Horizon Year Base Plus Project Conditions

#	Intersection	AM					PM				
		Base		With Project		Δ	Base		With Project		Δ
		Delay (Sec)	LOS	Delay (Sec)	LOS		Delay (Sec)	LOS	Delay (Sec)	LOS	
1	SR-58/Harper Lake Road[(1)]	15.2	C	15.7	C	0.5	25.0	C	31.6	D	6.6

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

Δ Change in intersection delay
[(1)] Indicates a one-way or two-way Stop Controlled Intersection. Delay and LOS are for stopped approach (worst).

As shown above, the study intersection would be expected to operate at acceptable LOS under the Horizon Year Base Plus Project conditions.

5.13.3.7 Additional Potential Horizon Year Impact – Aircraft Operation

There are no airports in the immediate vicinity of the project site, and hence the project would not have an impact on aircraft operations.

5.13.4 Mitigation Measures

Neither the construction nor the O&M phases of the Mojave Solar Project would have significant impact on the local or regional roadway network. Thus, no mitigation measures would be required as a result of the Mojave Solar Project.

5.13.5 Laws, Ordinances, Regulations, and Standards

Federal and State Laws, Ordinances, Regulations, and Standards (LORS) relating to traffic and transportation are summarized in the following subsection and in Table 5.13-21.

Table 5.13-21. Laws, Ordinances, Regulations, and Standards for Traffic and Transportation

LORS	Requirements / Applicability	Administering Agency	AFC Sections explaining Conformance
Federal			
49 CFR, Section 171-177 and 350-399	Requires proper handling and storage of hazardous materials during transportation.	U.S. Department of Transportation and Caltrans	Project and transportation will comply with all standards for the transportation of hazardous materials. (Sections 5.13.2.4 and 5.13.3.2)
14 CFR, Section 77.13(2)(i), 77.17, 77.21, 77.23, and 77.25	Requires an applicant to notify the FAA of the construction or alterations of structures within certain distance from an airport, in order to avoid air navigation conflicts.	U.S. Department of Transportation and Federal Aviation Administration	No airports are within 20,000 feet of the project site; therefore, this requirement is not applicable. (Section 5.13.3.3)
State			

LORS	Requirements / Applicability	Administering Agency	AFC Sections explaining Conformance
CVC §13369, 15275, and 15278	Addresses the licensing of drivers and classifications of licenses required for the operation of particular types of vehicles. In addition, certificates permitting the operation of vehicles transporting hazardous materials are required.	Caltrans	The project will conform to these sections in the CVC. (Section 5.13.5.2)
CVC §25160 et seq.	Addresses the safe transport of hazardous materials.	Caltrans	The project will conform to these sections in the CVC. (Section 5.13.5.2)
CVC §2500-2505	Authorizes the issuance of licenses by the Commissioner of the CHP for the transportation of hazardous materials including explosives.	Caltrans	The project will conform to these sections in the CVC. (Section 5.13.5.2)
CVC §31300 et seq.	Requires transporters to meet proper storage and handling standards for transporting hazardous materials on public roads.	Caltrans	Transporters will comply with standards for transportation of hazardous materials on state highways during construction and operations. The project will conform to CVC §31303 by requiring that shippers of hazardous materials use the shortest route possible to and from the site. (Section 5.13.5.2)
CVC §31600 – 31620	Regulates the transportation of explosive materials.	Caltrans	The project will conform to CVC §31600 – 31620. (Section 5.13.5.2)
CVC §32000 – 32053	Regulates the licensing of carriers of hazardous materials and includes noticing requirements.	Caltrans	The project will conform to CVC §31600 – 31620. (Section 5.13.5.2)

LORS	Requirements / Applicability	Administering Agency	AFC Sections explaining Conformance
CVC §32100 – 32109 and 32105	Establishes special requirements for the transportation of substances presenting inhalation hazards and poisonous gases. Requires that shippers of inhalation or explosive materials contact the CHP and apply for a Hazardous Material Transportation License.	Caltrans	The project will conform by requiring shippers of inhalation or explosive materials to contact the CHP and obtain a Hazardous Materials Transportation License. (Section 5.13.2.4 and Section 5.13.5.2)
CVC §34000 – 34121	Establishes special requirements for the transportation of flammable and combustible liquids over public roads and highways.	Caltrans	The project will conform to CVC §§34000 – 34121. (Section 5.13.2.4 and Section 5.13.5.2)
CVC §34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5-7, 34506, 34507.5 and 34510-11	Regulates the safe operation of vehicles, including those used to transport hazardous materials.	Caltrans	The project will conform to these sections in the CVC. (Section 5.13.2.4 and Section 5.13.5.2)
S&HC §660, 670, 1450, 1460 et seq., 1470, and 1480	Regulates right-of-way encroachment and the granting of permits for encroachments on state and county roads.	Caltrans	The project will conform to these sections in the S&HC. (Section 5.13.5.2)
S&HC §117, 660-711	Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery.	Caltrans	Encroachment permits will be obtained by transporters, as required. (Section 5.13.6)

LORS	Requirements / Applicability	Administering Agency	AFC Sections explaining Conformance
CVC §35780; S&HC §660-711	Requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.	Caltrans	Transportation permits will be obtained by transporters for all overloads, as required. (Section 5.13.6)
CVC §35550-35559	Regulates weight and load limitations.	Caltrans	The project will conform to these sections in the CVC. (Section 5.13.6)

CVC California Vehicle Code
CFR Code of Federal Regulations
S&HC California Streets and Highways Code

5.13.5.1 Federal LORS

Title 49, CFR, Sections 171-177 (49 CFR 171-177), governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles. Title 49 CFR 350-399, and Appendices A-G, Federal Motor Carrier Safety Regulations, address safety considerations for the transport of goods, materials, and substances over public highways. Title 49 CFR 397.9, the Hazardous Materials Transportation Act of 1974, directs the U.S. Department of Transportation to establish criteria and regulations for the safe transportation of hazardous materials.

Title 14, CFR 77.13(2)(i) requires an applicant to notify the Federal Aviation Administration (FAA) of the construction of structures within 20,000 feet of the nearest point of the nearest runway of an airport with at least one runway longer than 3,200 feet. This requirement is not applicable to this project. Title 14, CFR 77.17 requires an applicant to submit a Notice of Proposed Construction or Alteration (FAA Form No. 7460-1) to the FAA for construction within 20,000 feet of the nearest runway of an airport with at least one runway longer than 3,200 feet. This requirement is not applicable to this project. Title 14, CFR 77.21, 77.23, and 77.25 outlines the criteria used by the FAA to determine whether an obstruction would create an air navigation conflict. This requirement is not applicable to this project.

5.13.5.2 State LORS

CVC Sections 13369, 15275, and 15278 addresses the licensing of drivers and classifications of licenses required to operate particular types of vehicles. In addition, certificates permitting the operation of vehicles transporting hazardous materials are addressed.

CVC Sections 25160 et seq. addresses the safe transport of hazardous materials.

CVC Sections 2500-2505 authorize the issuance of licenses by the Commissioner of the CHP to transport hazardous materials, including explosives.

CVC Sections 31300 et seq. regulates the highway transportation of hazardous materials, routes used, and restrictions. CVC Section 31303 requires hazardous materials to be

transported on state or interstate highways that offer the shortest overall transit time possible.

CVC Sections 31600-31620 regulate the transportation of explosive materials.

CVC Sections 32000-32053 regulate the licensing of carriers of hazardous materials and include noticing requirements.

CVC Sections 32100-32109 establish special requirements for the transportation of substances presenting inhalation hazards and poisonous gases. CVC Section 32105 requires shippers of inhalation or explosive materials to contact the CHP and apply for a Hazardous Material Transportation License. Upon receiving this license, the shipper will obtain a handbook specifying approved routes.

CVC Sections 34000-34121 establish special requirements for transporting flammable and combustible liquids over public roads and highways.

CVC Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5-7, 34506, 34507.5, and 34510-11 regulate the safe operation of vehicles, including those used to transport hazardous materials.

California Street and Highways Code (S&HC), Sections 660, 670, 1450, 1460 et seq. 1470, and 1480, regulate right-of-way encroachment and granting of permits for encroachments on state and county roads.

S&HC, Sections 117 and 660-711, and CVC, Sections 35780 et seq., require permits to transport oversized loads on county roads. California S&HC Sections 117 and 660 to 711 require permits for any construction, maintenance, or repair involving encroachment on state highway rights-of-way. CVC Section 35780 requires approval for a permit to transport oversized or excessive loads over state highways.

Caltrans weight and load limitations for state highways apply to all state and local roadways. The weight and load limitations are specified in the CVC Sections 35550 to 35559. The following provisions, from the CVC, apply to all roadways and are therefore applicable to this project.

5.13.5.2.1 General Provisions:

- The gross weight imposed upon the highway by the wheels on any axle of a vehicle shall not exceed 20,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle, and resting upon the roadway, shall not exceed 10,500 pounds.
- The maximum wheel load is the lesser of the following: a) the load limit established by the tire manufacturer, or b) a load of 620 pounds per lateral inch of tire width, as determined by the manufacturer's rated tire width.

5.13.5.2.2 Vehicles with Trailers or Semi-trailers:

- The gross weight imposed upon the highway by the wheels on any one axle of a vehicle shall not exceed 18,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle and resting upon the roadway, shall not exceed 9,500 pounds, except that the gross weight imposed upon the highway by

the wheels on any front steering axle of a motor vehicle shall not exceed 12,500 pounds.

- California State Planning Law, Government Code Section 65302, requires each city and county to adopt a General Plan, consisting of seven mandatory elements, to guide its physical development. Section 65302(b) requires that a circulation element be one of the mandatory elements.

All construction in the public right-of-way will need to comply with the "Manual on Uniform Traffic Control Devices" (Caltrans, 2003; FHWA, 2003).

5.13.6 Agencies and Agency Contacts

Table 5.13-22 lists the agency contacts related to traffic and transportation and Table 5.13-23 lists the permits related to traffic and transportation and the permit schedule. The vehicles used to transport heavy equipment and construction materials will require transportation permits when exceeding the size, weight, width, or length thresholds set forth in section 35780 of the CVC, section 117 and 660-711 of the California State Highway Code and Section 1411.1 to 1411.6 of the California Code of Regulations. Affected vehicles will be required to obtain transportation permits from Caltrans, San Bernardino County, and the City of Barstow.

Transport route arrangement would be required with Caltrans and CHP officials for permitting and escort, as applicable. Transport of hazardous materials to and from the Mojave Solar Plant Project will be conducted in accordance with CVC Section 31303.

Table 5.13-22. Agency Contacts for Traffic and Transportation

Issue	Agency	Contact
Transportation Permit for Oversized Loads	Caltrans	Caltrans, North Region Transportation Permits Office 1823 14th Street Sacramento, CA 95814 Officer on Duty (909) 383-4637
Transportation Permit for Oversized Loads	San Bernardino County	San Bernardino County Public Works -Transportation Operation Division 825 East Third Street San Bernardino, CA 92415 (909) 387 - 8046
Transportation Permit for Oversized Loads	City of Barstow	City of Barstow, Engineering 900 H Street Barstow, CA 92311 Domingo Gonzales (760) 255-5156
Hazardous Material Transportation License	California Highway Patrol	Accounting Section (HM Licensing Program) P.O. Box 942902 Sacramento, CA 94298-2902 (916) 327-5039 Email form available at: http://www.chp.ca.gov/prog/email.cgi
Safety Permits	Federal Motor Carrier Safety Administration	California Field Office 1325 J Street, Suite 1540 Sacramento, CA 95814 (916) 930-2760 Fax: (916) 930-2770 Email contact depends on the nature of the hazardous material hauled.

Table 5.13-23. Permits and Permit Schedule for Traffic and Transportation

Permit	Agency Contact	Schedule
Single/annual-trip transportation permit for oversized loads and oversized vehicles	Caltrans – South Region Transportation Permits Office Permit Officer on Duty (909) 383-4637	Apply at least 7 working days prior to oversize load on State highways
Hazardous materials transportation license	California Highway Patrol Hazardous Material Licensing Program (916) 327-5039	Obtain when necessary, approximately 2-week processing time.
Transportation permit for moving any extra-legal load that is overweight or oversized	San Bernardino County Public Works - Transportation Operation Division 825 East Third Street San Bernardino, CA 92415 (909) 387 - 8046	Apply at least 10 working days prior to oversize load on County roadways
Encroachment Permit for San Bernardino County	San Bernardino County Public Works - Transportation Operation Division 825 East Third Street San Bernardino, CA 92415 (909) 387 - 8046	Submit plans showing work 30 days prior to construction work in public ROW.
Transportation permit for oversize and overweight loads through the City of Barstow	City of Barstow Engineering Department Domingo Gonzales (760) 255-5156	Submit notice at least 2 weeks prior to transport.

5.13.7 References

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City of Barstow. Circulation Element, 1997.

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San Bernardino Associated Governments. Traffic Congestion Management Plan, 2005. http://www.sanbag.ca.gov/planning/subr_congestion.html

Southern California Association of Governments. 2008. 2008 Regional Transportation Plan. http://www.scag.ca.gov/rtp2008/final.htm

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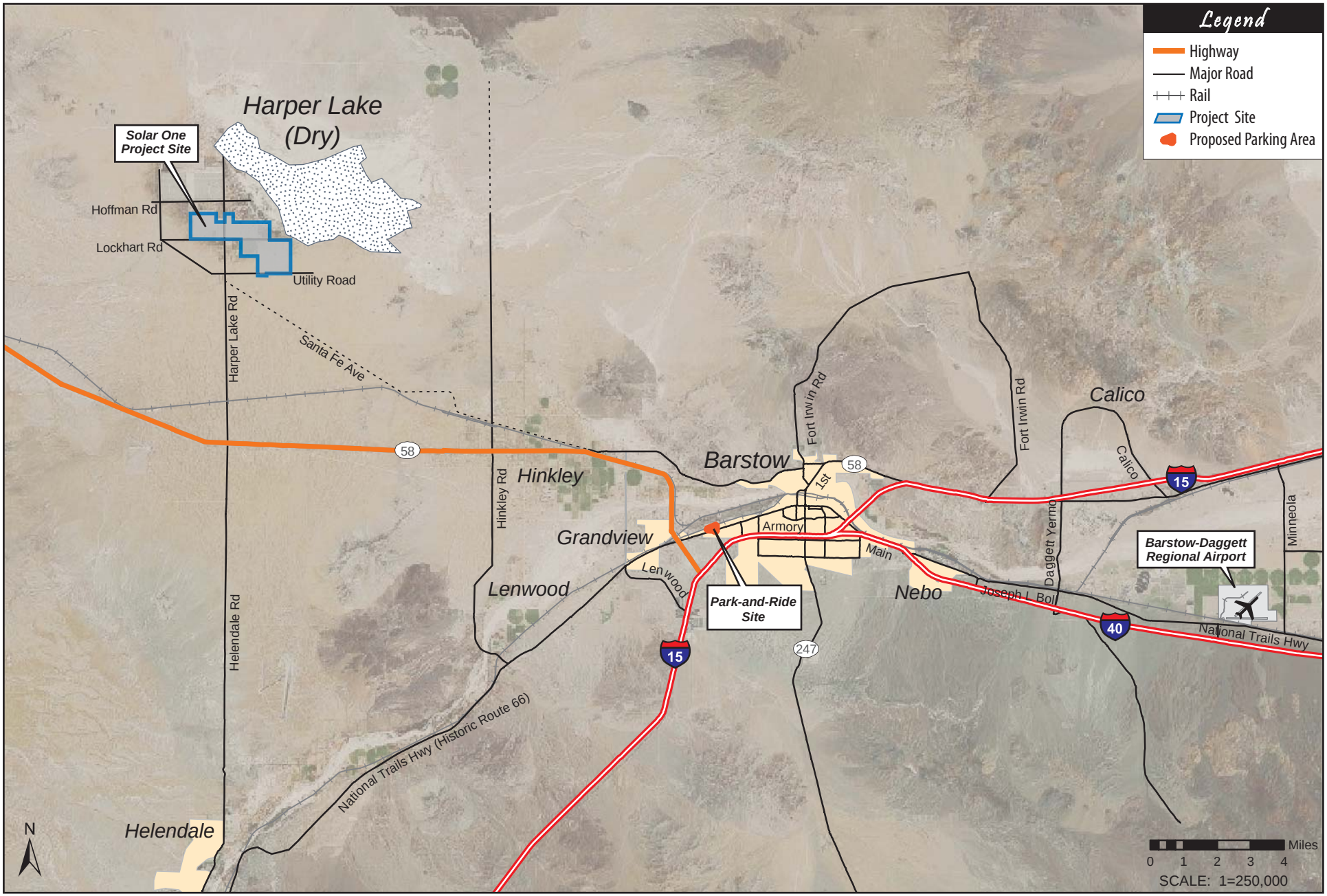

Source: Wilson & Company, Inc., Engineers & Architects; June 2009

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Mojave Solar Project

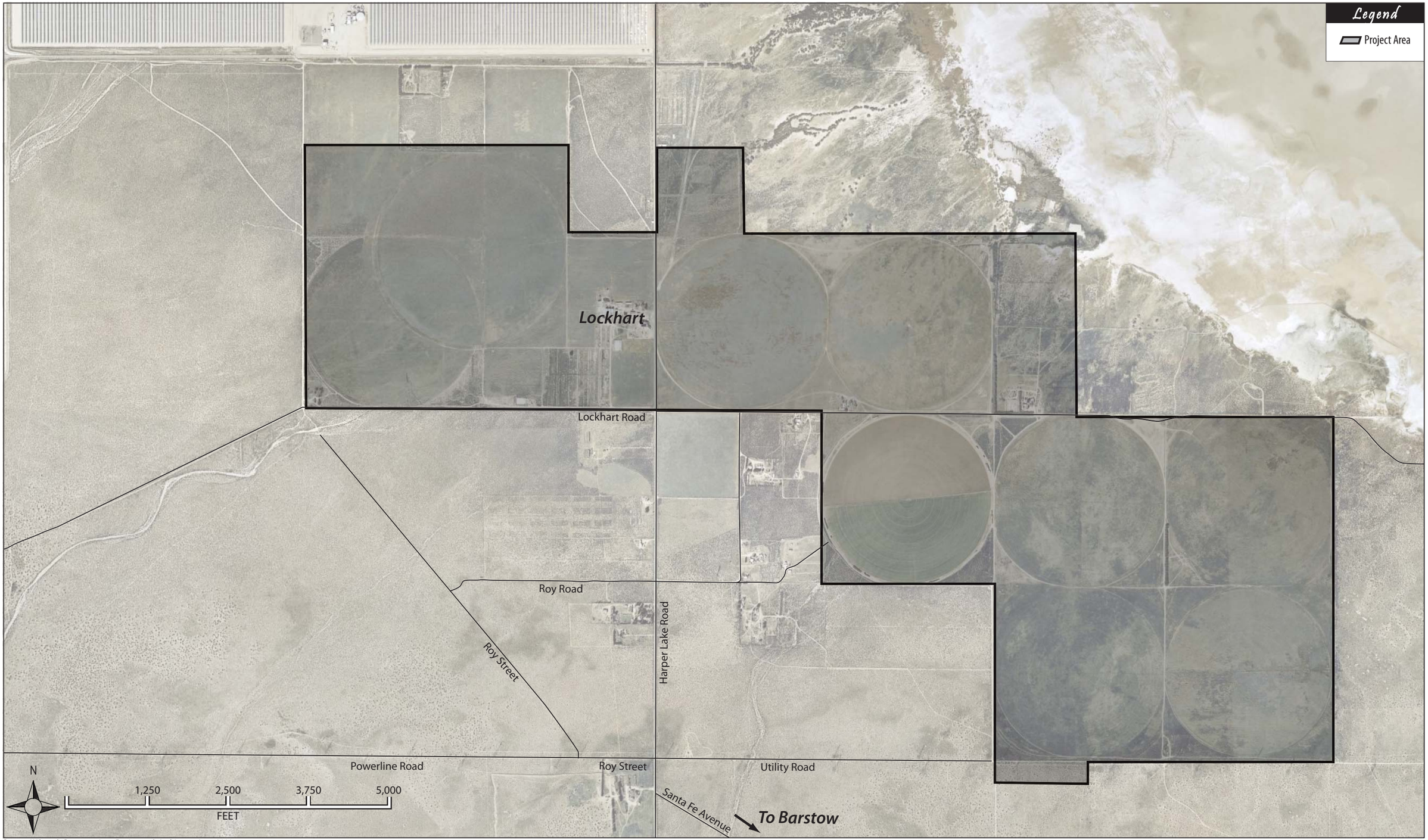
Figure 5.13-1
Regional Transportation Network

TABLE 5.13-9 - OFFSITE CONSTRUCTION VEHICLES

VEHICLE TYPE	Mi./ Veh.-Day	Number M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17*	M18	M19	M20	M21	M22	M23	M24	M25	M26
Number of Trucks by Month																											
Off-Site Flat Bed Trucks (From Rail Facility)	40	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	2	2
Off-Site Asphalt Trucks	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	2
Off-Site Cement Trucks	40	1	12	46	46	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	46	46	46	37	14	4
Off-Site Dump Trucks	40	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Site Low Boy Trucks (From Rail Facility)	40	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1
Off-Site Pickup Trucks	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
Off-Site Pipe Hauling Trucks (From Rail Facility)	40	0	0	0	0	0	0	0	0	0	3	4	5	5	5	5	5	5	5	4	2	0	0	0	0	0	0
Off-Site Water Trucks	40	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Off-Site Fuel/Lube Trucks	40	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Off-Site HTF Delivery Trucks (From Rail Facility)	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2
Off-Site Box Van Trucks	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	1	0
Total Trucks		**6**	**18**	**52**	**52**	**60**	**60**	**60**	**60**	**60**	**63**	**64**	**65**	**65**	**65**	**65**	**67**	**67**	**69**	**69**	**67**	**57**	**60**	**60**	**51**	**25**	**11**
Off-Site Construction Workers Bussing Adjustments																											
Day Shift - Must Drive		100	142	186	238	394	477	498	527	538	553	604	601	628	640	637	634	648	645	632	597	587	532	496	335	126	80
Day Shift - Can be Bussed		73	102	135	173	286	345	360	381	390	400	437	435	454	464	462	460	469	468	458	432	424	385	360	243	91	58
Evening Shift - non Bussed							40	40	40	40	45	45	45	45	45	45	45	45	42	40	40	40	29	29	29		
Total		**173**	**244**	**321**	**411**	**680**	**862**	**898**	**948**	**968**	**998**	**1086**	**1081**	**1127**	**1149**	**1144**	**1139**	**1162**	**1155**	**1130**	**1069**	**1051**	**946**	**885**	**607**	**217**	**138**

Source: Redell Engineering, Inc. June 2009

* Peak construction traffics month used in traffic analysis



Source: Wilson & Company, Inc., Engineers & Architects; June 2009

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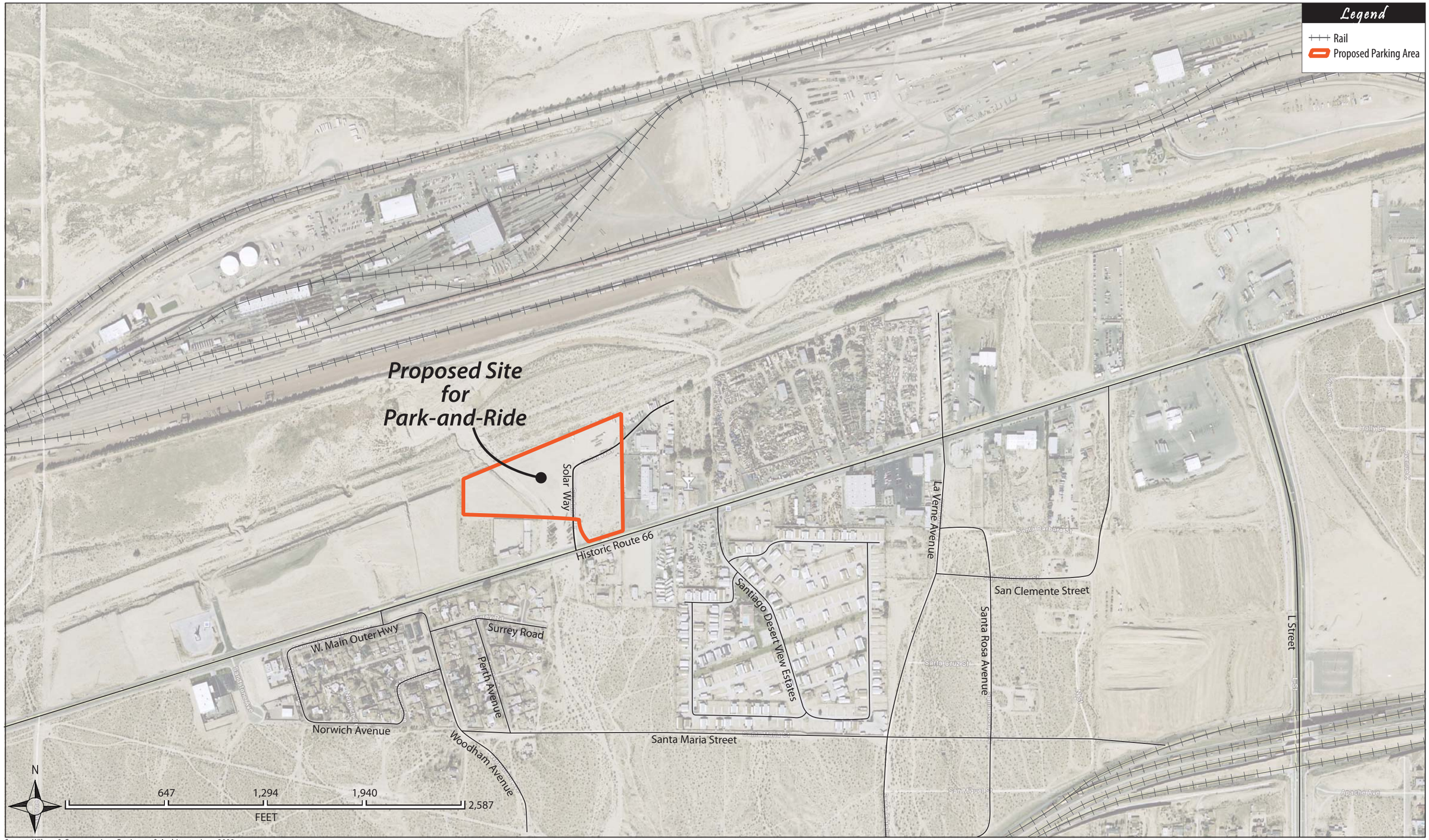
Figure 5.13-2
Local Transportation Network



Source: Wilson & Company, Inc., Engineers & Architects; June 2009

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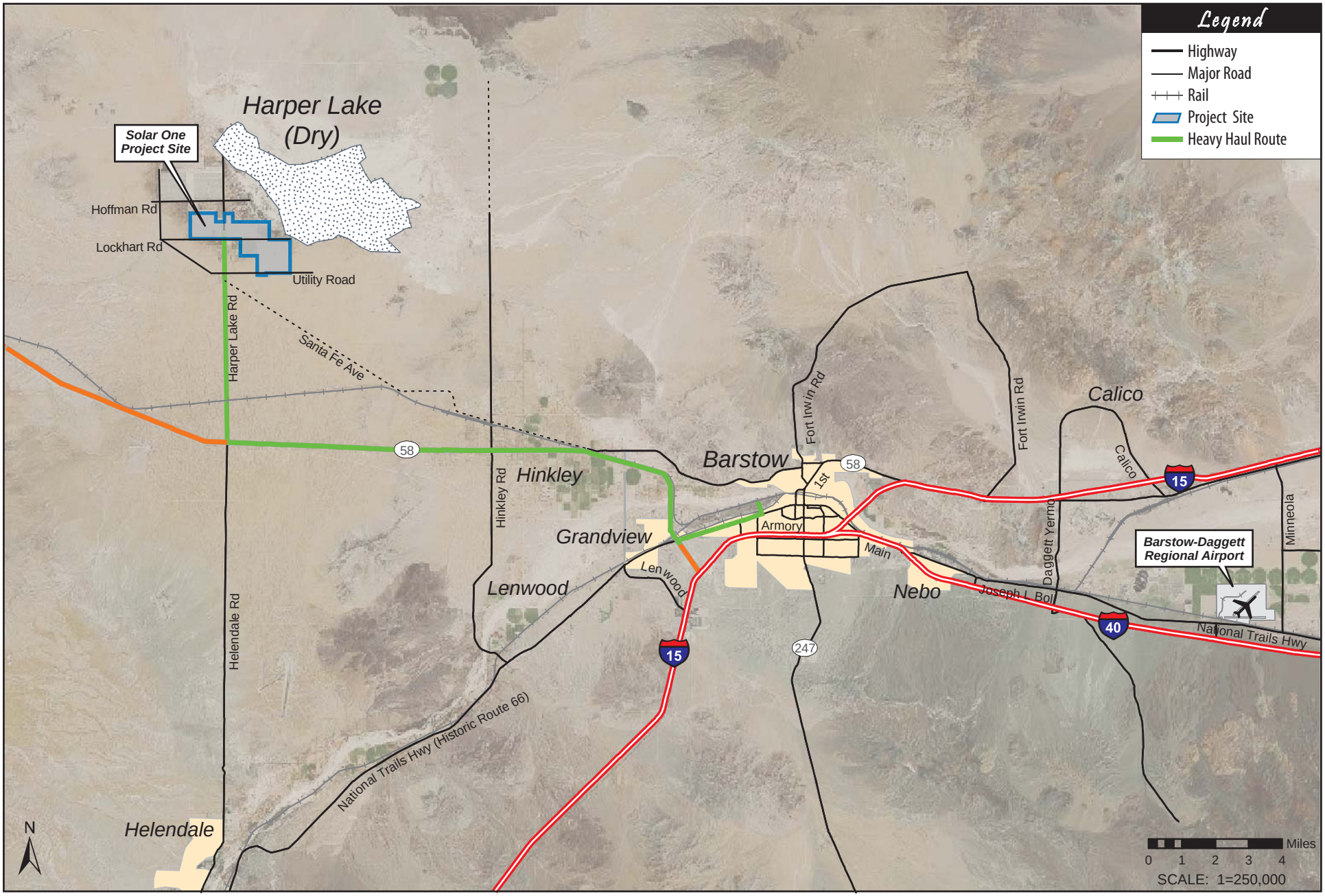
Figure 5.13-3
Proposed Park-And-Ride Location



Source: Wilson & Company, Inc., Engineers & Architects; June 2009

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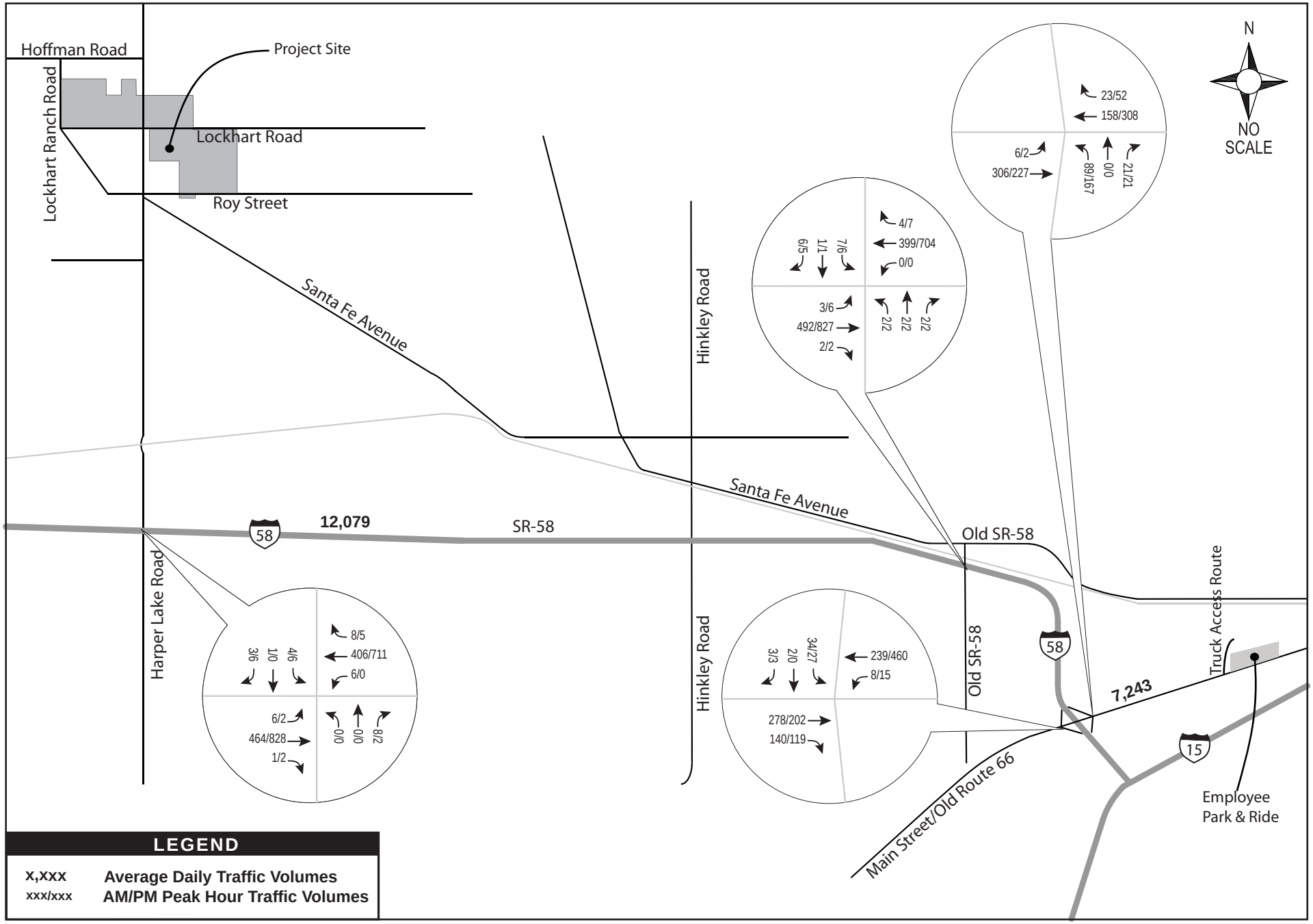
Figure 5.13 - 4
Heavy Haul Route



SOURCE: Wilson & Company, Inc., Engineers & Architects; June 2009

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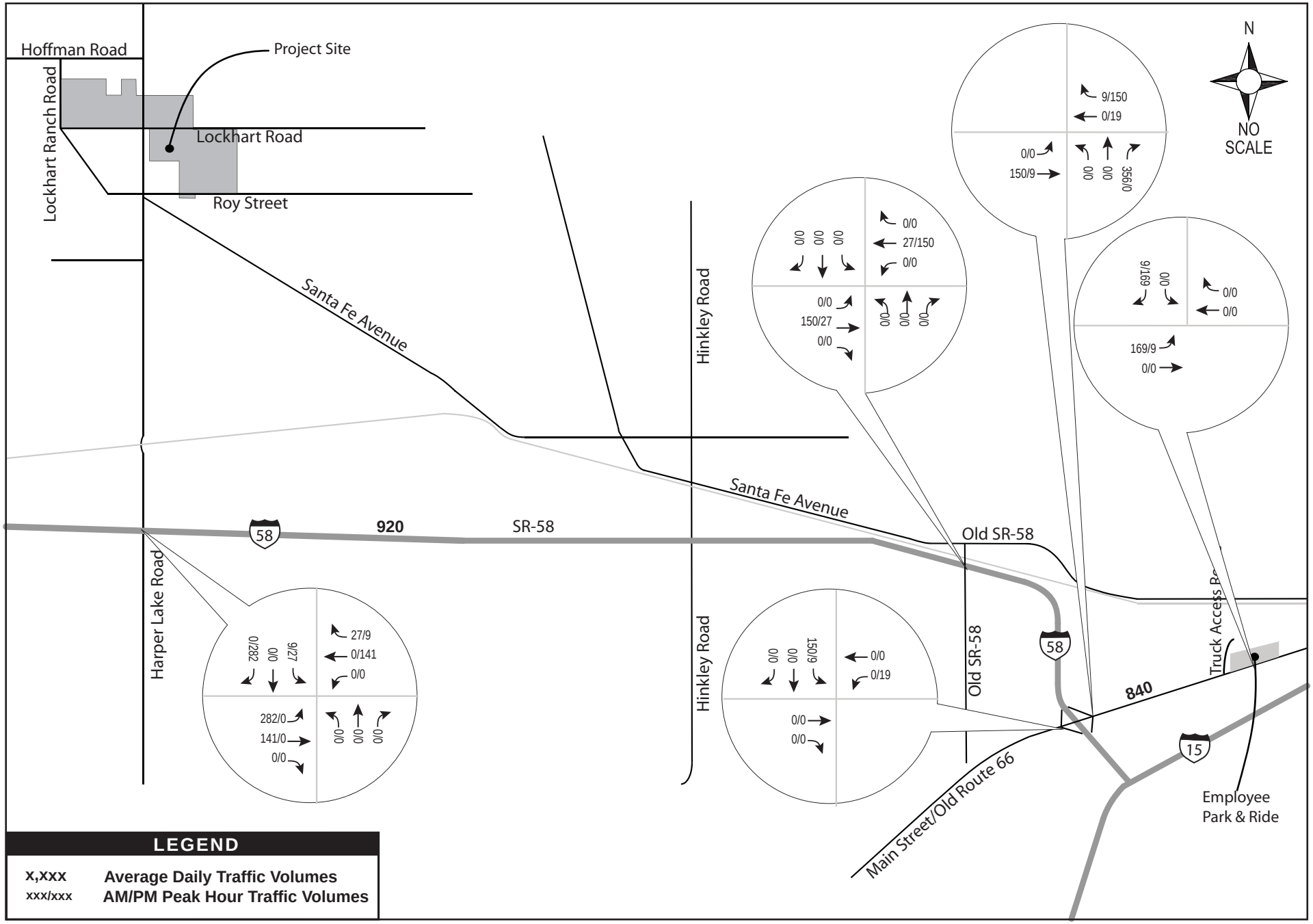
Figure 5.13-5
Existing Traffic Volumes



SOURCE: Wilson & Company, Inc., Engineers & Architects; June 2009

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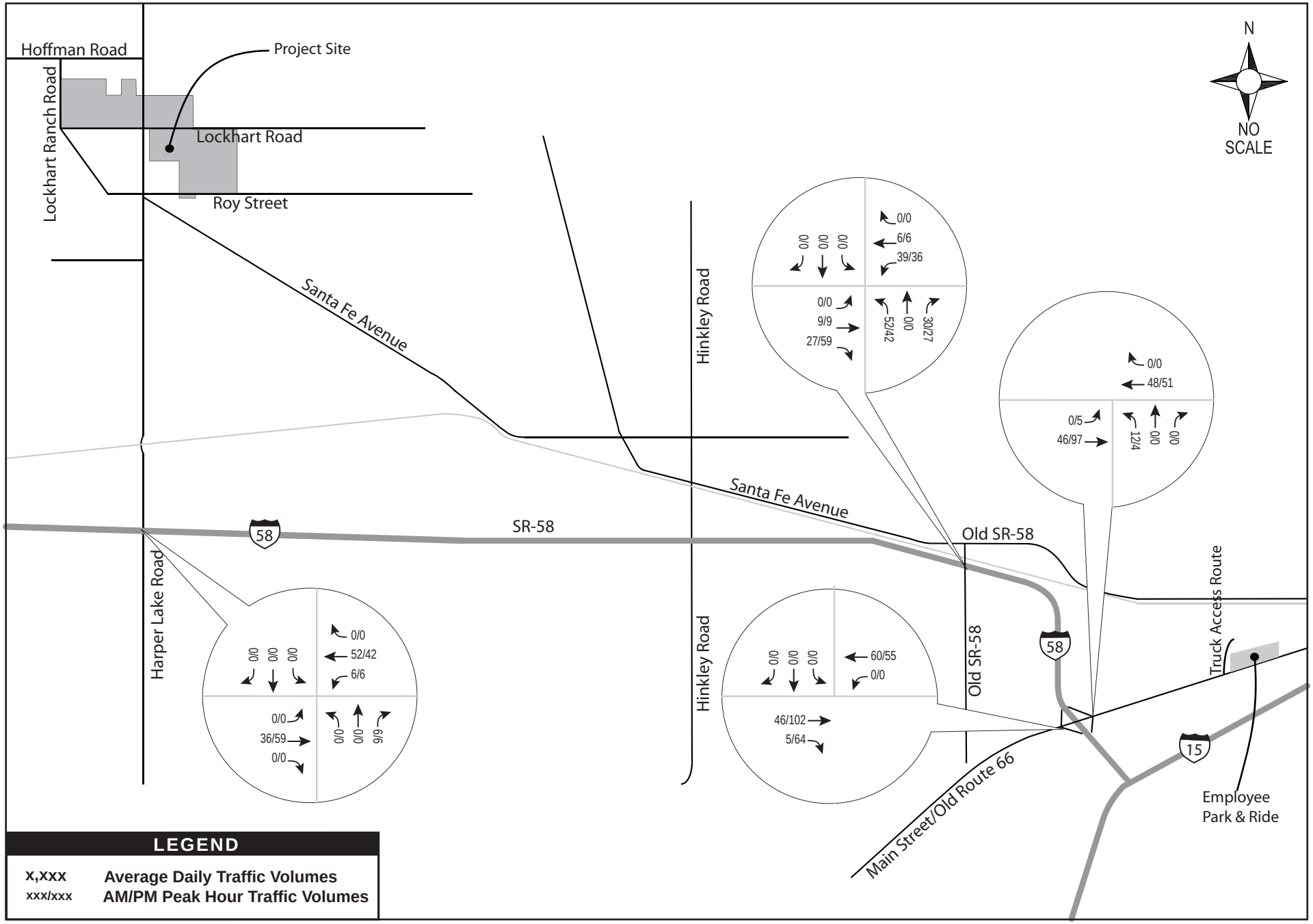
Figure 5.13-6
Project Construction Traffic Volume



SOURCE: Wilson & Company, Inc., Engineers & Architects; June 2009

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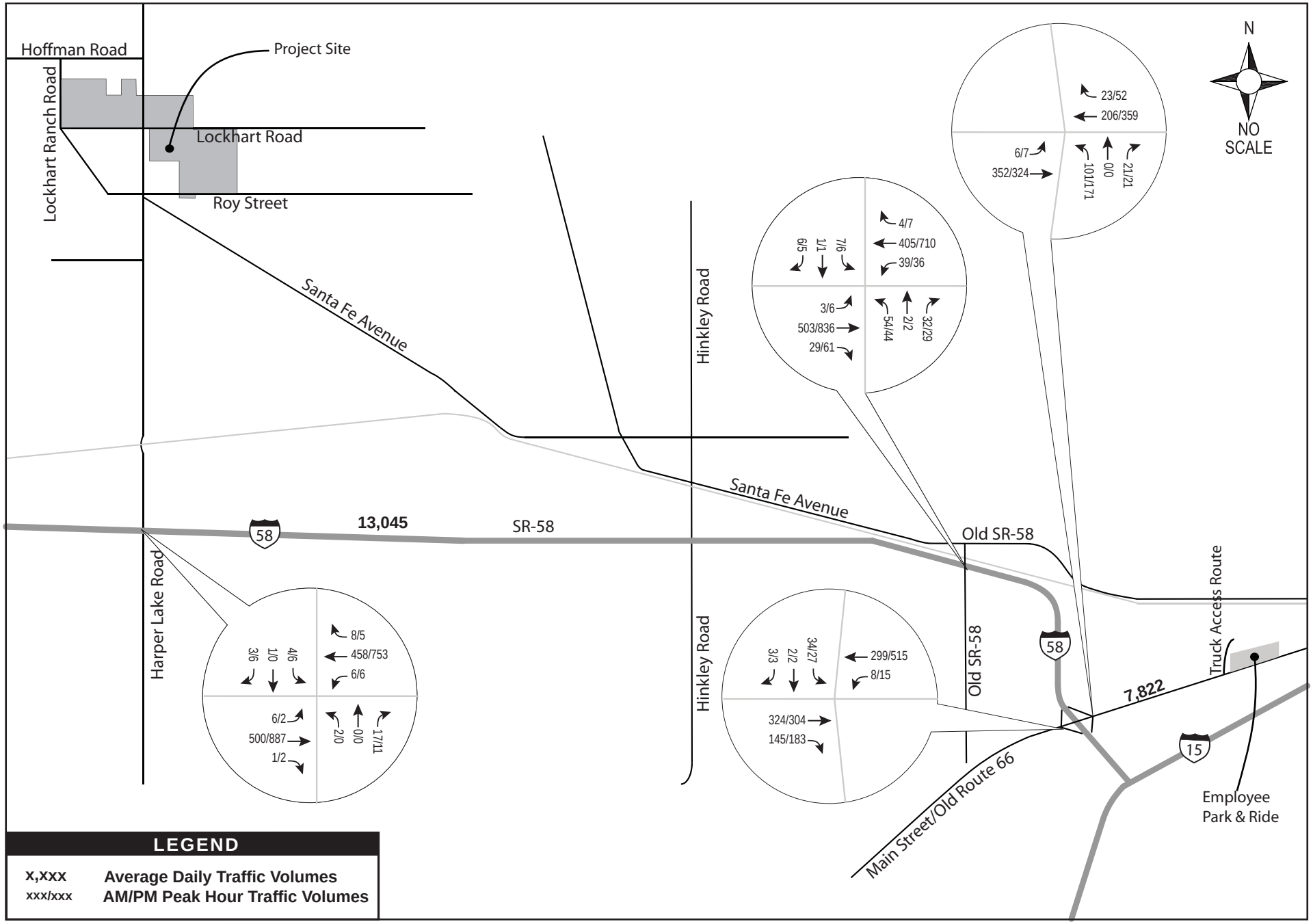
Figure 5.13-7
Cumulative Projects Traffic Volumes



SOURCE: Wilson & Company, Inc., Engineers & Architects; June 2009

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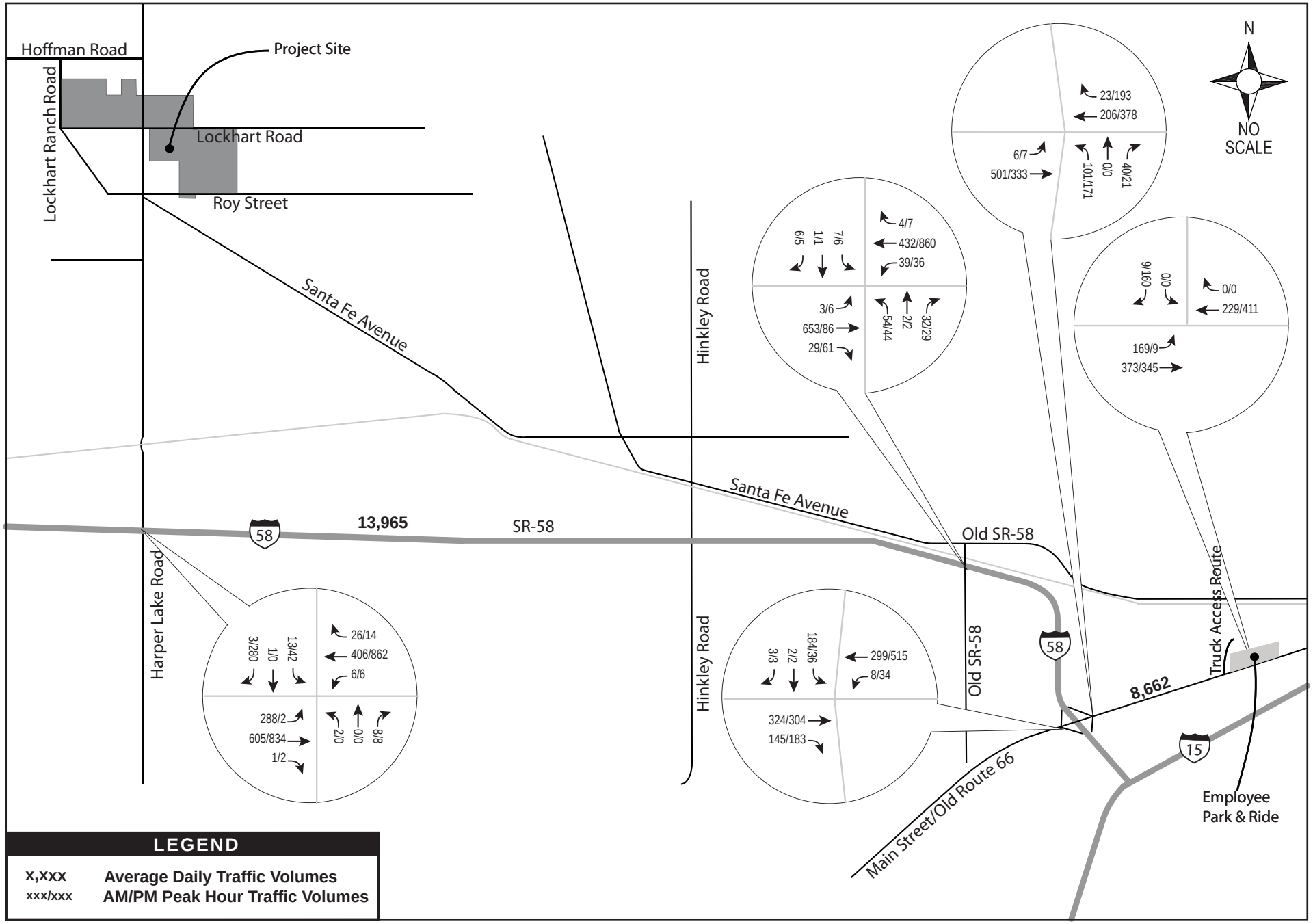
Figure 5.13-8
Near Term Base
Traffic Volumes



SOURCE: Wilson & Company, Inc., Engineers & Architects; June 2009

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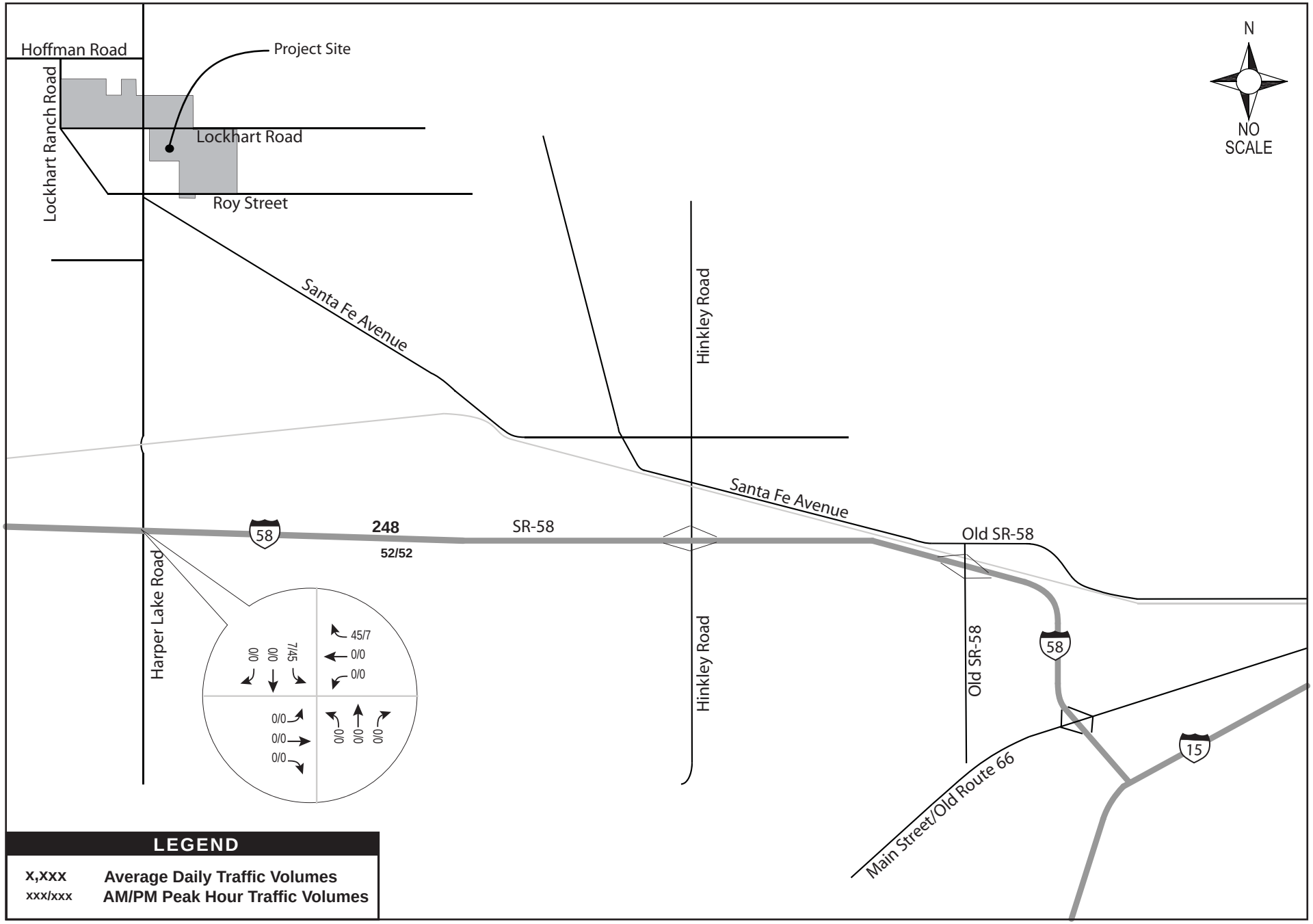
Figure 5.13-9
Near Term Base Plus Construction
Traffic Volumes



SOURCE: Wilson & Company, Inc., Engineers & Architects; June 2009

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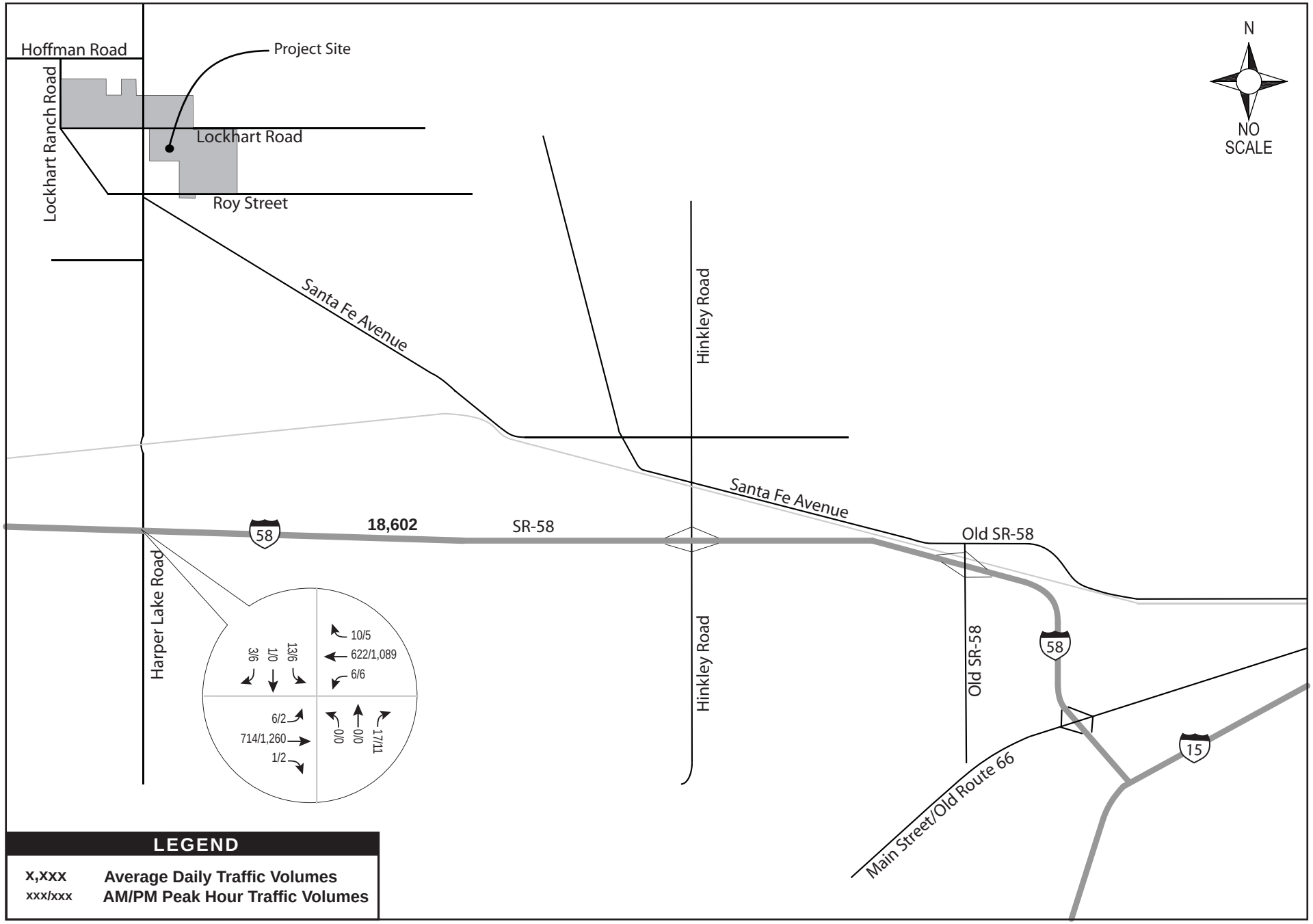
Figure 5.13-10
Horizon Year
O&M Phase Traffic Distribution



SOURCE: Wilson & Company, Inc., Engineers & Architects; June 2009

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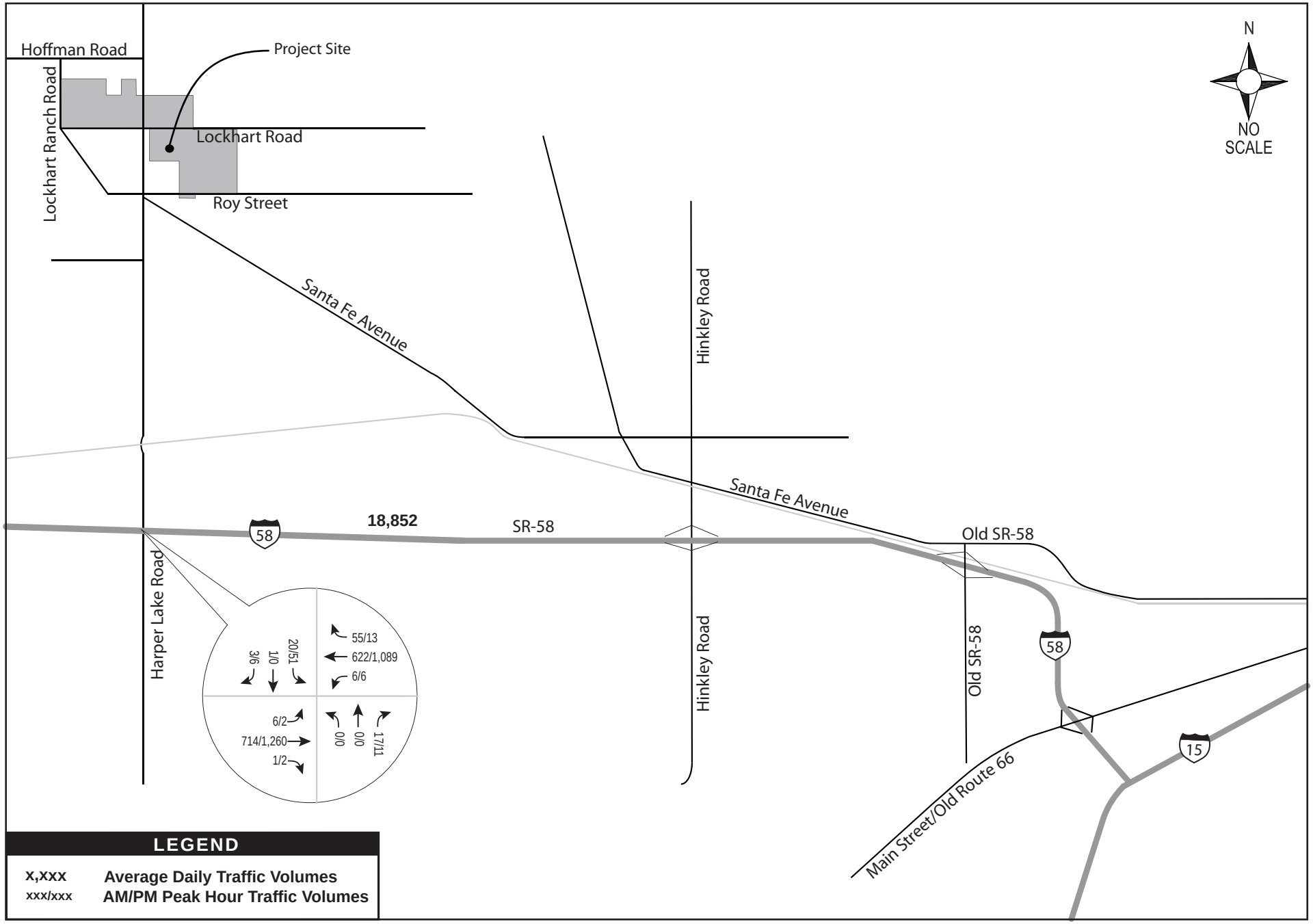
Figure 5.13-11
Horizon Year
Base Traffic Volumes



SOURCE: Wilson & Company, Inc., Engineers & Architects; June 2009

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Figure 5.13-12
Horizon Year
Base Plus Project Traffic Volumes