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5.10 TRAFFIC AND TRANSPORTATION

Hydrogen Energy International LLC (HEI or Applicant) is jointly owned by BP Alternative Energy North America Inc. and Rio Tinto Hydrogen Energy LLC. HEI is proposing to build an Integrated Gasification Combined Cycle power generating facility called Hydrogen Energy California (HECA or Project) in Kern County, California. The Project will produce low-carbon baseload electricity by capturing carbon dioxide (CO₂) and transporting it for CO₂ enhanced oil recovery (EOR) and sequestration (storage)¹.

The 473-acre Project Site is located approximately 7 miles west of the outermost edge of the city of Bakersfield and 1.5 miles northwest of the unincorporated community of Tupman in western Kern County, California, as shown in Figure 2-1, Project Vicinity.

The Project Site is near a hydrocarbon- producing area known as the Elk Hills Field. The Project Site is currently used primarily for agricultural purposes. Existing surface elevations vary from about 282 feet to 291 feet above mean sea level.

The Project will gasify petroleum coke (petcoke) (or blends of petcoke and coal, as needed) to produce hydrogen to fuel a combustion turbine operating in combined cycle mode. The Gasification Block feeds a 390-gross-megawatt (MW) combined cycle plant. The net electrical generation output from the Project will provide California with approximately 250 MW of low-carbon baseload power to the grid. The Gasification Block will also capture approximately 90 percent of the carbon from the raw syngas at steady-state operation, which will be transported to the Elk Hills Field for CO₂ EOR and Sequestration. In addition, approximately 100 MW of natural gas generated peaking power will be available from the Project.

The Project Site and linear facilities comprise the affected study area and are entirely located in Kern County, California. These Project components are described below.

Major on-site Project components will include, as shown on Figure 2-5, Preliminary Plot Plan:

- Solids Handling, Gasification, and Gas Treatment
 - Feedstock delivery, handling and storage
 - Gasification
 - Sour shift/gas cooling
 - Mercury removal
 - Acid gas removal
- Power Generation
 - Combined-cycle power generation
 - Auxiliary combustion turbine generator

¹ This carbon dioxide will be compressed and transported via pipeline to the custody transfer point at the adjacent Elk Hills Field, where it will be injected. The CO₂ EOR process involves the injection and reinjection of carbon dioxide to reduce the viscosity and enhance other properties of the trapped oil, thus allowing it to flow through the reservoir and improve extraction. During the process, the injected carbon dioxide becomes sequestered in a secure geologic formation. This process is referred to herein as CO₂ EOR and Sequestration.

- Electrical switching facilities
- Supporting Process Systems
 - Natural gas fuel systems
 - Air separation unit (ASU)
 - Sulfur recovery unit/Tail Gas Treating Unit
 - Zero liquid discharge (ZLD) units for process and plant waste water streams
 - Carbon dioxide compression
 - Raw water treatment plant
 - Other plant systems

The Project also includes the following offsite facilities, as shown on Figure 2-7, Project Location Map:

- **Electrical Transmission Line** – An electrical transmission line will interconnect the Project to Pacific Gas & Electric Company’s (PG&E’s) Midway Substation. Two alternative transmission line routes are proposed; each alternative is approximately 8 miles in length.
- **Natural Gas Supply** – A natural gas interconnection will be made with PG&E or So Cal Gas natural gas pipelines, each of which are located southeast of the Project Site. The natural gas pipeline will be approximately 8 miles in length.
- **Water Supply Pipelines** – The Project will utilize brackish groundwater supplied from the Buena Vista Water Storage District (BVWSD) located to the northwest. The raw water supply pipeline will be approximately 15 miles in length. Potable water for drinking and sanitary use will be supplied by West Kern Water District to the southeast. The potable water supply pipeline will be approximately 7 miles in length.
- **Carbon Dioxide Pipeline** – The carbon dioxide pipeline will transfer the carbon dioxide captured during gasification from the Project Site southwest to the custody transfer point. Two alternative carbon dioxide pipeline routes are proposed; each alternative will be approximately 4 miles in length.

The Project components described above are shown on Figure 2-8, Project Location Details, which depicts the region, the vicinity, the Project Site and its immediate.

All temporary construction equipment laydown and parking, including construction parking, offices, and construction laydown areas, will be located on the Project Site.

This section assesses traffic and transportation impacts associated with the construction and operation of the Project. The study area for this Traffic and Transportation analysis, as depicted in Figure 5.10-2, Transportation Setting of the Local Project Area and Affected Roadways, was developed in consultation with Kern County. The analysis primarily examines impacts on roadway circulation system levels of service (LOS) within the study area during the construction and operation of the Project. This section also identifies and reviews applicable laws, ordinances, regulations, and standards (LORS) relevant to traffic and transportation activities.

Information sources include data collected from the California Department of Transportation (Caltrans) traffic count database; field review and observations; and communications with local, regional, and federal agencies. URS staff performed reconnaissance on February 26, 2008 for a former candidate site that is near the Project Site to document roadway characteristics, identify physical constraints, and assess general traffic conditions. Traffic counts for ten study intersections were collected in April 2008 and additional traffic counts were collected in February 2009 for two additional study intersections and roadway segments near the vicinity of the Project Site.

5.10.1 Affected Environment

5.10.1.1 Regional Setting

The affected environment relative to the Project Site is discussed in both a regional and local context. The regional setting includes the existing and planned public and private roads, rail lines, and pipelines considered in the transportation impact analysis. Figure 5.10-1, Regional Vicinity, depicts the affected environment as discussed below and illustrates the relationship of the Project to local and major roads and highways in the study area. Figure 5.10-2, Transportation Setting of the Local Project Area and Affected Roadways, depicts the location of the study area.

The following plans and programs describe the framework for managing the transportation resources in the study area.

Kern Council of Governments' Regional Transportation Plan

Kern County's Regional Transportation Plan (RTP), also known as Destination 2030, is a planning guide projecting the following in the next 24-year period: (1) transportation and air quality goals, (2) policies and actions for now and into the future, and (3) programs and projects for congestion management, transit, airports, bicycles, pedestrians, roadways, and freight.

Key functions and role of the RTP are further summarized below:

- Provide a discussion of all mechanisms used to finance transportation and air quality program implementation.
- Provide a multi-modal plan representing Kern Council of Governments' (COG) vision for a better transportation system to the planning horizon of 2030.
- Provide the basic policy and program framework for long-term investment in a vast regional transportation system in a coordinated, cooperative, and continuous manner.
- Provide a regional long-range and comprehensive plan that coordinates local transportation plans for all communities within the Kern region.

Kern County Airport Land Use Compatibility Plan

Kern County has adopted an Airport Land Use Compatibility Plan (ALUCP) and alternative process to comply with the State Aeronautics Act (Public Utilities Code commencing with Section 21670). Pursuant to Public Resources Code Section 21675, in each county containing a public use airport, an Airport Land Use Commission (ALUC) is required to assist local agencies in ensuring compatible land uses in the vicinity of existing or proposed airports; to coordinate planning at state, regional, and local levels; to prepare and adopt an airport land use plan; to review plans, regulations, or locations of agencies and airport operators; and to review and make recommendations regarding the land uses, building heights, and other issues relating to air navigation safety and promotion of air commerce.

The County of Kern is designated as the agency responsible for carrying out functions of the Kern County ALUC. The Commission's Airport Land Use Policy Plan provides the criteria for evaluating land use compatibility between proposed development in the vicinity of the county's public use, general aviation airport facilities. Within the Kern County ALUC (Figure 9 – Circulation Element Kern Region Airports), are a total of fourteen public use airports, three private, and two military airports. There are five public airport facilities within the immediate vicinity of the Project Site:

1. Elk Hills – Buttonwillow Airport – approximately 26,400 feet (5 miles) northwest of the Project Site.
2. Taft Airport – approximately 63,360 feet (12 miles) southwest of the site.
3. Minter Field – approximately 89,760 feet (17 miles) northeast of the site.
4. Meadows Field – approximately 105,600 feet (20 miles) northeast of the site.
5. Bakersfield Municipal – approximately 110,880 feet (21 miles) east of the site.

A landing strip is shown on the northwest quadrant of the Project Site in topographic maps; however, this landing strip was private, is no longer used, and will be removed upon purchase of the property for the Project Site.

Kern County General Plan Circulation Element

The authority and purpose of the Kern County General Plan Circulation Element is quoted in its entirety below:

State of California Government Code 65302(b) includes requirements and authority for the Circulation Element. The Circulation Element is one of seven mandated elements each local government must maintain in its general plan.

The general plan shall include a circulation element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the land use element of the plan.

The purpose of a circulation element is to set up local Goals and guiding Policies about building transportation improvements. A circulation element introduces planning tools essential for achieving the local transportation Goals and Policies. Several California Court decisions have compelled local governments to make their circulation element consistent with the land use element.

A circulation element consists of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the land use element of the plan.

5.10.1.2 Highways and Roadways

The transportation network within the Project study area is composed of a mix of interstate, county highways, and local roadways. The circulation system plays a major role in the movement of farm products originating from the San Joaquin Valley, Kern County, and outlying agricultural communities that require access and rely on the state and county roadways.

As illustrated in Figure 5.10-1, Regional Vicinity, the Project study area is primarily served by Interstate 5 to the east. The majority of the existing roadways serving the Project are relatively straight and the terrain is flat to moderate, with adequate sight distance in both directions.

Regional Roadway Facilities

Interstate 5 (I-5). I-5 is a major north-south interstate freeway through the Central Valley and the length of California, extending north from San Diego County toward the states of Oregon and Washington. Located approximately 4 miles east of the Project Site, I-5 provides two mainline lanes in each direction with wide shoulders and a center median. I-5 has separate acceleration/deceleration lanes at the interchange of I-5/State Route 119, I-5/Stockdale Highway, and I-5/State Route 58. It is posted at 70 miles per hour (mph) for cars and 55 mph for trucks in the vicinity of the Project. The Annual Average Daily Traffic (AADT) on the segment of I-5 within the study area is 32,000 vehicles per day and the truck traffic percentile is 26 percent.

State Route 119 (SR 119). SR 119 is an east-west state highway located approximately 7 miles south of the Project Site that provides regional and emergency egress and workforce commute to the Project. SR 119 connects to SR 99 on the east with SR 33 on the west. It has a two-lane (one lane in each direction) cross section with an 8- to 12-foot shoulder on both sides. SR 119 is posted at 55 mph in the vicinity of the Project. The average daily traffic (ADT) on the roadway just west of I-5 southbound ramps is 12,300 vehicles per day and the truck traffic percentile is 26 percent. As a pro-active measure, the Project proponent does not plan to use SR 119 as the primary access route during construction and operations activities, thereby minimizing Project-added traffic through the community of Tupman.

State Route 58 (SR 58). SR 58 is an east-west state highway, located approximately 4 miles north of the site. It is a two-lane highway posted at 55 mph. SR 58 is designated as a state truck route. It is a two-lane conventional state highway with 4- to 8-foot shoulders on flat terrain and moderate grades. The I-5 southbound ramp/SR 58 interchange is currently signalized. The ADT

on the segment of SR 58 to the north of the site is 2,200 vehicles per day and the truck traffic percentile is 32 percent.

Local Roadway Facilities

The primary local north-south roadways near the vicinity of the Project include Tupman Road, Dairy Road, and Morris Road. Station Road and Adohr Road provide local east-west access adjacent to and north of the Project Site. In consultation with Kern County Roads Department, the traffic analysis will focus on the a.m. and p.m. peak hour intersection operations, as illustrated in Figure 5.10-3, Existing Traffic Volumes (a.m./p.m. peak). The local roadway characteristics are briefly described below. Figure 5.10-4, Existing Intersection Geometrics, shows the roadway circulation network and intersection lane configurations in the Project vicinity.

Stockdale Highway. Stockdale Highway is an east-west highway 1 mile north of the Project Site. It starts near Wasco Way on the west and continues to the east through metropolitan Bakersfield. An unsignalized freeway interchange provides connection to I-5. The segment of Stockdale Highway in the vicinity of the Project Site has two through lanes (one lane in each direction) with no shoulders. The roadway segment is relatively straight and the terrain is flat with good sight distance in both directions. The speed limit on Stockdale Highway is currently 55 mph in the vicinity of the Project Site.

Tupman Road. Tupman Road is a north-south, two-lane primary road adjacent to the eastern boundary of the Project Site. Tupman Road is classified as a collector road by the Kern County General Plan Circulation Element. Tupman Road starts at SR 119 on the south and ends at Adohr Road on the north. It has two through lanes (one in each direction) with two-foot shoulders on both sides. The intersection of Tupman Road and SR 119 is unsignalized with stop signs on Tupman Road. Heading north from SR 119, the terrain is relatively flat to moderately rolling grade. Some segments have limited horizontal sight visibility to opposing traffic. The posted speed limit is 55 mph in the vicinity of the Project Site.

Station Road. Station Road is a two-lane, east-west local roadway. It starts at Tupman Road on the west and ends at Morris Road on the east. The intersection of Tupman Road and Station Road is controlled by a stop sign on Station Road. The roadway segment is relatively straight and the terrain is flat with good sight distance in both directions.

Morris Road. Morris Road is a two-lane, north-south local roadway. It starts at Station Road on the south and ends at Stockdale Highway on the north. The intersection of Stockdale Highway and Morris Road is controlled by a stop sign on Morris Road. The roadway segment is relatively straight and the terrain is flat with good sight distance in both directions.

Dairy Road. Dairy Road is a two-lane, north-south local roadway. It starts at Adohr Road on the south and ends at Stockdale Highway on the north. The intersection of Stockdale Highway and Dairy Road is controlled by a stop sign on Dairy Road. The roadway segment is relatively straight and the terrain is flat with good sight distance in both directions.

Adohr Road. Adohr Road is a two-lane, east-west roadway and is classified as Major (Arterial) Highway by the Kern County General Plan Circulation Element. It starts at Freeborn Road on the west and ends at Tupman Road on the east. The roadway segment is relatively straight and the terrain is flat with good sight distance in both directions.

5.10.1.3 Railroads

The following railroad lines currently serve the Project study area:

- Both Burlington Northern Santa Fe (BNSF) and Union Pacific Railroad (UPRR) provide interstate and transcontinental connection and service. The railroad tracks are located east of I-5 and the Project Site.
- San Joaquin Valley Railroad provides local train connection to areas west of Bakersfield and I-5. Coal will be transported by train and unloaded off site and then transported to the Project using trucks.
- AMTRAK California San Joaquin Route connects downtown Bakersfield to Sacramento and the Bay Area.
- Various short spur lines serve former and current commercial/industrial related operations in the area.

5.10.1.4 Public Transportation

Kern Regional Transit. Kern Regional Transit provides transit service to the unincorporated communities of Buttonwillow, Lamont, Kern River Valley, Frazier Park, Rosamond, and Mojave. In addition, the county has agreements with several, small cities to share the cost of providing transit service to county areas surrounding incorporated places (i.e., Delano, Ridgecrest, Shafter, Taft, Tehachapi, and Wasco).

5.10.1.5 Pipelines

A network of gas and oil production lines is currently in place within the Project study area. A new gas line will supply natural gas from PG&E or Southern California Gas (SoCalGas). In addition, two new water lines will supply process water and potable water from Buena Vista Water Storage District and West Kern Water Bank, respectively. A new pipeline will also supply carbon dioxide from the Project Site to the custody transfer point. The pipeline linear routes are shown in Figure 5.10-2, Transportation Setting of the Local Project Area and Affected Roadways.

5.10.1.6 Bicycle Routes and Pedestrian Circulation

No existing or planned bicycle facilities are within the immediate vicinity of the Project Site. The 2001 Kern County Bicycle Plan describes the existing and planned bicycle facilities for the metropolitan Bakersfield area, Wasco, Taft, and other cities and communities in Kern County.

5.10.1.7 Level of Service Concept

LOS is identified through a letter designation and is an indicator of operating conditions on a roadway or at an intersection. LOS is defined in categories ranging from A to F (i.e., LOS A to LOS F). These categories can be viewed much like school grades, with A representing the best traffic flow conditions and F representing poor conditions. LOS A indicates free-flowing traffic and LOS F indicates substantial congestion with stop-and-go traffic and long delays at intersections.

Table 5.10-1, Intersection Level of Service Description, describes the LOS performance designations for both signalized and unsignalized intersections.

**Table 5.10-1
Intersection Level of Service Description**

Description of Operation	Signalized Intersection Delay (seconds per vehicle)	Stop-Controlled Intersection Delay (seconds per vehicle)
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.	<10.0	<10.0
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.	10.1 – 20.0	10.1 – 15.0
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.	20.1 – 35.0	15.1 – 25.0
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.	35.1 – 55.0	25.1 – 35.0
LOS E is considered the limit of acceptable delay. Individual cycle failures are frequent occurrences.	55.1 – 80.0	35.1 – 50.0
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.	>80.0	>50.0

Source: HECA Project

Notes:

< = less than

> = greater than

LOS = level of service

5.10.1.8 Existing Traffic Conditions

As described earlier, the Project will be located 1.5 miles northwest of the unincorporated community of Tupman. The regional vicinity map of the Project within the surrounding region is depicted on Figure 5.10-1, Regional Transportation Setting. The Project location, including major roads, local streets, and highways in the immediate vicinity of the Project, is illustrated on Figures 5.10-2, Transportation Setting of the Local Project Area and Affected Roadways. The existing traffic volumes in the vicinity of the Project are shown on Figure 5.10-3, Existing Traffic Volumes (a.m./p.m. peak). The existing geometric configuration of roadway segments and intersections in the vicinity of the Project Site are shown on Figure 5.10-4, Existing Intersection Geometrics. The existing traffic volumes are based on traffic counts collected by National Data Services (NDS) in April 2008 and February 2009. The intersection turning movement counts are included in Appendix U, Traffic Counts.

Existing Intersection Level of Service

Table 5.10-2, Existing Intersection LOS, presents results for peak hour intersection LOS and average vehicle delay under existing conditions. The LOS calculation worksheets are provided in Appendix U, Traffic Counts. Figure 5.10-3, Existing Traffic Volumes (a.m./p.m. peak), shows existing a.m. and p.m. peak-hour turning movement volumes at each study area intersection.

As shown in Table 5.10-2, Existing Intersection Levels of Service, all study intersections are currently operating at acceptable LOS C or better.

5.10.2 Environmental Consequences

5.10.2.1 Significance Criteria

The Kern County California Environmental Quality Act (CEQA) Implementation Document and the Kern County Environmental Checklist provide seven significance criteria for evaluating a project's impact on transportation and traffic. The Project will have the potential to result in adverse impacts for the two significance criteria listed below:

1. Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).
2. Exceed, either individually or cumulatively, an LOS standard established by the county congestion management agency or adopted county threshold for designated roads or highways. Specifically, would implementation of the project cause the LOS for roadways and/or intersections to decline below the following standards or further degrade already degraded segment(s)?

**Table 5.10-2
Existing Intersection Levels of Service**

Intersection	Control	a.m. Peak Hour		p.m. Peak Hour	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	1.2	A	1.9	A
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	3.4	A	7.0	A
3. I-5 NB Ramp/SR 119	Unsignalized	1.0	A	0.6	A
4. I-5 SB Ramp/SR 119	Unsignalized	0.4	A	0.9	A
5. SR 119/SR 43	Signalized	27.0	C	33.9	C
6. SR 43/Stockdale Highway	Unsignalized	11.2	B	16.3	C
7. Stockdale Highway/Morris Road	Unsignalized	1.7	A	2.0	A
8. SR 119/Tupman Road	Unsignalized	0.8	A	3.4	A
9. Tupman Road/Grace Avenue	Unsignalized	7.0	A	7.1	A
10. Tupman Road/Station Road	Unsignalized	3.8	A	1.1	A
11. Dairy Road/Stockdale Highway	Unsignalized	1.5	A	0.6	A
12. Dairy Road/Adohr Road	Unsignalized	5.7	A	1.9	A

Notes:

- a.m. = morning
- I-5 = Interstate 5
- LOS = level of service
- NB = north bound
- p.m. = evening
- SB = south bound
- sec/veh = seconds per vehicle
- SR = State Route

State Level of Service Standard

For Caltrans' facilities (intersections, roadway segment, freeway segments, and freeway ramp junctions), a degradation in the level of service from an acceptable level (LOS C/D threshold or better) to an unacceptable level (LOS D, E, or F) is a significant impact. Caltrans' standard for state highways is LOS C-D.

County Facilities Level of Service Standard

According to the Kern County General Plan Circulation Element, LOS D is an accepted standard for planning of intensive urban facilities. The plan's policies consider LOS D acceptable within the general plan area for county-maintained roads.

5.10.2.2 Project Trip Generation and Distribution

Project Construction Trip Generation

During Project construction, the study area will experience short-term increases in traffic associated primarily with construction worker commute and material and equipment delivery trips. The traffic analysis evaluated the worst-case Project construction scenario by analyzing the peak month worker commute as the highest, plus material and equipment delivery trips.

Construction Workers

The construction trade projections provided by the Project design engineer estimated that, during the peak construction month approximately 1,500 workers will be working on site on a daily basis. The traffic analysis assumed that some workers would carpool and assumed one-third of the worker vehicles would arrive during the morning peak hour (7:00 a.m. to 9:00 a.m.) and all would depart during the evening peak hour (4:00 p.m. to 6:00 p.m.).

Truck Deliveries

The construction equipment and material delivery projections provided by the Project design engineer indicate that during the peak construction month, there will be 50 truck deliveries daily, equal to 100 daily one-way truck trips per day. These trips were subsequently converted into passenger car equivalent (PCE) trips at 3 PCE per truck (or 300 PCE trips). Even though truck deliveries will likely arrive and depart throughout the day, the truck trips were conservatively assumed to occur during the morning and evening peak hours to represent the worst-case scenario.

Soil Fill Deliveries

During Project construction, soil fill materials will be imported to the Project Site. The soil fill material deliveries are assumed to originate from local sources. The soil fill projections provided by the Project design engineer indicate that during the peak construction month, there will be on average 160 truck deliveries daily, trucks or 320 one-way daily truck trips per day. Similar to the truck delivery trips described above, these trips were subsequently converted into PCE trips at 3 PCE per truck (or 960 trips). Specific details of the soil fill delivery assumptions are described in greater detail in the footnotes of Table 5.10-3. See Section 5.9, Soils, regarding the local borrow pit site.

The Project construction trip generation data in Table 5.10-3, Anticipated Project Construction Trip Generation, show the resultant trips that would be generated by construction personnel, and construction equipment and material delivery trucks, and soil fill delivery trucks.

**Table 5.10-3
Anticipated Project Construction Trip Generation**

Vehicle Type	Actual Vehicle Round Trips	Peak Daily Trips	Peak Hourly Trips (a.m.)			Peak Hourly Trips (p.m.)		
			Inbound	Outbound	Total	Inbound	Outbound	Total
Construction Worker Vehicles ¹	1,154	2,308	385	0	385	0	1,154	1,154
Truck Deliveries ²	50	300	75	75	150	75	75	150
Soil Fill Deliveries ³	160	960	48	48	96	48	48	96

Source: HECA Project

Notes:

- Note that 1.3 people per vehicle was assumed to account for the carpooling of approximately 1,500 people, yielding 1,154 vehicles for the construction workers. It was conservatively assumed that one-third of the worker vehicles will arrive during the a.m. (peak one hour between 7:00 to 9:00) and all will leave during p.m. (peak one hour between 4:00 to 6:00) peak hours.
- Trucks deliveries shown in the table were adjusted into Passenger Car Equivalent (3 PCE) vehicles. The trip generation estimate was based on the average 24-hour and maximum 1-hour truck delivery trips during Project construction. There are 50 (average 24-hour) truck deliveries @ 3 PCE/truck = 150 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2×150 PCE vehicles = 300 PCE Trips. There are 25 (maximum 1-hour) truck deliveries @ 3 PCE/truck = 75 PCE vehicles. Therefore, peak hourly trips (assuming equal number of inbound and outbound trips) = 2×75 PCE vehicles = 150 PCE Trips
- Average import fill delivery truck trips (at 18 cubic yard capacity per truck), adjusted into Passenger Car Equivalent vehicles (3 PCE per truck). The trip generation estimate was based on the average 24-hour and 1-hour trips during Project construction site preparation. There are 160 (average 24-hour) truck deliveries @ 3 PCE/truck = 480 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2×480 PCE vehicles = 960 PCE Trips. There are 16 (average 1-hour) truck deliveries @ 3 PCE/truck = 48 PCE vehicles. Therefore, peak hourly trips (assuming equal number of inbound and outbound trips) = 2×48 PCE vehicles = 96 PCE Trips. It must be noted that applying the maximum number of fill material truck loads is not appropriate as these trips are anticipated to decrease and taper off by Month 21 of the project construction schedule. For construction analysis purposes, using the average number of fill material truck loads is very conservative when added to the peak construction workforce as well as construction material delivery trips as these peak construction activities overlap and occur between Months 21 to 36. Source data provided by HECA Project, 2009.

a.m. = morning

p.m. = evening

Project Operations Trip Generation

During Project operations, the Project study area will experience increases in traffic associated primarily with operation worker commute, feedstock deliveries and operation and maintenance (O&M) trips.

Operations

According to the Project design engineer, during operations each shift normally consists of one shift supervisor, three inside operators, and seven outside operators. A number of maintenance workers and supervisors may be on site during the day shift, and fewer maintenance personnel would be on site during the off-hour shifts. Workers on site other than the O&M personnel are not expected to make frequent routine trips to the Project Site.

To evaluate the worst-case scenario, these vehicle trips were assumed to arrive during the morning peak period (7:00 a.m. to 9:00 a.m.) and depart during the evening peak period (4:00 p.m. to 6:00 p.m.).

Deliveries

To sustain and support Project operations, regular deliveries of feedstock and O&M supplies are anticipated at the Project Site. Delivery trips will likely arrive and depart throughout the day, as presented in Table 5.10-4, Project Operations Trip Generation.

**Table 5.10-4
Project Operations Trip Generation**

Vehicle Type	Actual Vehicle Round Trips	Peak Daily Trips	Peak Hourly Trips (a.m.)			Peak Hourly Trips (p.m.)		
			Inbound	Outbound	Total	Inbound	Outbound	Total
Operations and Maintenance Trips ¹	120	240	82	12	94	12	82	94
Process Materials and Byproducts Trips ^{2,3}	62	372	36	36	72	36	36	72
Feedstock Material Delivery Trips ^{3,4}	189	1,134	60	60	120	60	60	120

Notes:

¹ Source: HECA Project.

² Total process materials and byproducts truck trips, adjusted into Passenger Car Equivalent vehicles (3 PCE per truck). The trip generation estimate is based on the maximum 24-hour and 1-hour trips during Project operation. There are 62 (maximum 24-hour) truck deliveries and shipments @ 3 PCE/truck = 186 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2 × 186 PCE vehicles = 372 PCE Trips. There are 12 (maximum 1-hr) truck deliveries and shipments @ 3 PCE/truck = 36 PCE vehicles. Therefore, peak hourly trips (assuming equal number of inbound and outbound trips) = 2 × 36 PCE vehicles = 72 PCE Trips.

³ Source: HECA Project, 2009.

⁴ Total feedstock material delivery truck trips (including petcoke, coal, and fluxant), adjusted into Passenger Car Equivalent vehicles (3 PCE per truck). The trip generation estimate is based on the maximum 24-hour and 1-hour trips during Project operation. There are 189 (maximum 24-hour) truck deliveries @ 3 PCE/truck = 567 PCE vehicles. Peak daily trips (including both the inbound and outbound trips) = 2 × 567 PCE vehicles = 1,134 PCE Trips. There are 20 (maximum 1-hour) truck deliveries @ 3 PCE/truck = 60 PCE vehicles. Therefore, peak hourly trips (assuming equal number of inbound and outbound trips) = 2 × 60 PCE vehicles = 120 PCE Trips.

% = percent

a.m. = morning

p.m. = evening

Project Trip Distribution

Trip Distribution and Assignment

It is assumed that workers will come from metropolitan Bakersfield and adjoining communities. It is anticipated that the construction and operation workforces will be originating from the geographical area shown in Table 5.10-5, Workforce and Material Distribution.

**Table 5.10-5
Workforce and Material Distribution**

Origin of Vehicle Travel to Project Site	Construction Workforce (%)	Operation Workforce (%)	Material/Feedstock Petcoke (%)	Material/Feedstock Coal (%)
I-5 North (Kern County)	10	5		N/A
I-5 North (San Luis Obispo and Santa Barbara County)	N/A	N/A	45	
I-5 South (Kern County)	10	5		N/A
I-5 South (Los Angeles County)	N/A	N/A	45	
Stockdale Highway East (Metro Bakersfield)	35	50	5	
SR 119 East (Metro Bakersfield)	30	25	5	
SR 119 West (Taft and Buttonwillow)	5	5		N/A
SR 43 North (Wasco)	5	5		100
Local (Tupman and others)	5	5		N/A

Source: HECA Project

Notes:

% = percent

I-5 = Interstate 5

N/A = not applicable

SR = State Route

5.10.2.3 Planned Roadway and Circulation Improvements

Based on information shared by Caltrans staff, at this time and during the course of the Project construction, there are no applicable roadway and circulation improvements to be considered for inclusion in the traffic analysis scenarios conducted for this Project. Recent applicable improvements along SR 119 were incorporated in the existing conditions discussion of this report.

5.10.2.4 Future Baseline Traffic Projections

In consultation with Kern County Roads and Planning Department staff, no cumulative projects were identified within the immediate vicinity of the Project that could potentially contribute cumulative added trips.

Consistent with the Kern County Roads Department requirements and from recently conducted traffic studies, an annual ambient traffic growth of 2 percent was used to establish No Project baselines for Year 2014 Construction and Year 2016 Project Operations analysis scenarios.

Both the Years 2014 and 2016 no project traffic conditions shown in Figures 5.10-5, Year 2014 No Project Traffic Volumes, and 5.10-7, Year 2016 No Project Traffic Volumes, were derived by applying the 2 percent annual growth rate per year to existing traffic volumes.

5.10.2.5 Project Impacts

Construction of the Project will result in a temporary increase in traffic associated with the movement of construction vehicles, equipment, and personnel on the transportation network serving the study area. Where warranted, the Project will use proper signs and traffic control measures in accordance with Caltrans and Kern County requirements during the construction period. The Project will also coordinate construction activities with appropriate Caltrans, California Highway Patrol (CHP) and Kern County departments, and other jurisdictions to maintain traffic flow and safety, including the transport of oversized and overweight loads on state and county roadways.

Operation of the Project will result in the addition of traffic associated with employees and feedstock deliveries and O&M trips serving the Project.

The key concern of Kern County Roads Department staff regarding the Project is the structural integrity of the local roadways to handle construction and operations traffic, specifically heavy construction equipment and feedstock deliveries during Project operations. Both Project construction and operations scenarios are discussed in detail below as they relate to potential traffic and transportation effects in the study area.

Project Construction Impacts

Project construction is expected to start in 2011 and be completed in late 2015 with varying levels of manpower, construction delivery, and equipment use. The majority of Project construction activities are expected to occur during normal daytime work hours. Possible exceptions may include limited night construction activities that are considered time-critical or continuous in nature (such as concrete pours), and that may require extension of work hours based on inherent process requirements or material-driven characteristics. These nighttime construction activities are considered non-recurring events that would generate a minimal number of trips, retain a small number of workers on site, and would likely have a minimal effect on evening peak hour traffic. Therefore, nighttime work is anticipated to be a non-critical trip generation factor in the Project construction phase, with no significant effects.

During Project construction, the local roadways adjacent to the Project Site could potentially be subjected to heavy loads from material delivery carriers that would also need wider turning radii at the local intersections near the Project Site. Although no significant traffic impacts from a traffic operations standpoint were identified at these locations, HEI will work and coordinate with Kern County Roads Department to remedy potential pavement deterioration associated with heavy loadings, improve the local intersections to facilitate traffic flow via the introduction of dedicated turn lanes, and improve the turn radius at the affected intersections. The design and implementation of these proposed improvements will be subject to Kern County Roads Department oversight and standards. These proactive mitigation measures are discussed in Section 5.10.4, TR-1 Roadway Improvements and TR-2 Intersection Improvements for Dairy Road/Stockdale Highway and Dairy Road/Adohr Road intersections.

The aforementioned proactive measures will also continue to benefit the Project during operations, ensuring more efficient traffic circulation and movement of feedstock material deliveries, and operations and maintenance trips to and from the Project Site.

During the Project construction, small quantities of hazardous materials will be delivered, and construction waste products will be hauled from the Project Site. A more detailed discussion on Project handling of hazardous materials and waste management are presented in Section 5.12, Hazardous Materials Handling, and Section 5.13, Waste Management, respectively. All applicable LORS will be observed during the course of Project construction.

Intersection Level of Service During Project Construction

Table 5.10-6, Peak-Hour Intersection LOS – Year 2014 No Project Conditions, presents peak hour intersection LOS and average vehicle delay results under Year 2014 No Project Conditions. The LOS calculation worksheets are provided in Appendix U, Traffic Counts. Figure 5.10-5, Year 2014 No Project Traffic Volumes, shows Year 2014 No Project morning and evening peak-hour turning-movement volumes at each study area intersection.

**Table 5.10-6
Peak-Hour Intersection LOS –
Year 2014 No Project Conditions**

Intersection	Control	Peak Hour (a.m.)		Peak Hour (p.m.)	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	1.2	A	2.0	A
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	3.3	A	7.3	A
3. I-5 NB Ramp/SR 119	Unsignalized	1.0	A	0.6	A
4. I-5 SB Ramp/SR 119	Unsignalized	0.3	A	1.0	A
5. SR 119/SR 43	Signalized	27.3	C	33.3	C
6. SR 43/Stockdale Highway	Unsignalized	12.2	B	20.8	C
7. Stockdale Highway/Morris Road	Unsignalized	1.7	A	2.0	A
8. SR 119/Tupman Road	Unsignalized	0.9	A	5.4	A
9. Tupman Road/Grace Avenue	Unsignalized	7.0	A	7.1	A
10. Tupman Road/Station Road	Unsignalized	4.1	A	1.2	A
11. Dairy Road/Stockdale Highway	Unsignalized	1.4	A	0.5	A
12. Dairy Road/Adohr Road	Unsignalized	5.8	A	3.5	A

Source: HECA Project

Notes:

- a.m. = morning
- I-5 = Interstate 5
- LOS = level of service
- NB = northbound
- p.m. = evening
- SB = southbound
- sec/veh = seconds per vehicle
- SR = State Route

5.10 Traffic and Transportation

As shown in Table 5.10-6, Peak-Hour Intersection LOS – Year 2014 No Project Conditions, all study intersections are forecasted to operate at LOS C or better under Year 2014 No Project conditions.

Table 5.10-7, Peak-Hour Intersection LOS – Year 2014 Project Construction Conditions, presents peak-hour intersection LOS and average vehicle delay results under Year 2014 Project Construction conditions. The LOS calculation worksheets are provided in Appendix U, Traffic Counts. Figure 5.10-6, Year 2014 No Project Traffic Plus Project Construction Traffic Volumes, shows Year 2014 Project Construction conditions for morning and evening peak-hour turning-movement volumes at each study area intersection.

**Table 5.10-7
Peak-Hour Intersection LOS –
Year 2014 Project Construction Conditions**

Intersection	Control	Peak Hour (a.m.)		Peak Hour (p.m.)	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	3.4	A	19.2	C
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	3.2	A	33.7	D
3. I-5 NB Ramp/SR 119	Unsignalized	1.7	A	0.7	A
4. I-5 SB Ramp/SR 119	Unsignalized	0.4	A	2.3	A
5. SR 119/SR 43	Signalized	28.3	C	35.1	D
6. SR 43/Stockdale Highway	Unsignalized	16.9	B	147.3	F
7. Stockdale Highway/Morris Road	Unsignalized	0.4	A	0.6	C
8. SR 119/Tupman Road	Unsignalized	1.0	A	3058.2	F
9. Tupman Road/Grace Avenue	Unsignalized	8.0	A	13.9	B
10. Tupman Road/Station Road	Unsignalized	0.6	A	0.1	A
11. Dairy Road/Stockdale Highway	Unsignalized	7.4	A	22.1	C
12. Dairy Road/Adohr Road	Unsignalized	8.6	A	2.0	A

Source: HECA Project

Notes:

- a.m. = morning
- I-5 = Interstate 5
- LOS = level of service
- NB = northbound
- p.m. = evening
- SB = southbound
- sec/veh = seconds per vehicle
- SR = State Route

As shown in Table 5.10-7, Peak-Hour Intersection LOS – Year 2014 Project Construction Conditions, all study intersections are forecast to operate at LOS D or better under Year 2014 Project Construction conditions, with the exception of the following intersections, which will be significantly affected by Project construction activities.

- SR 43/Stockdale Highway – will be significantly impacted during the p.m. peak hour (when LOS C without Project construction becomes LOS F with Project construction).
- SR 119/Tupman Road – will be significantly impacted during the p.m. peak hour (when LOS A without Project construction becomes LOS F with Project construction).

The proposed mitigation measures (i.e., signalization) for the aforementioned construction traffic impacts are discussed in Section 5.10.4.

Project Operations Impacts

The Project is expected to be in full operation by Year 2016. During the normal operations of the Project, a fulltime employee workforce will oversee Project O&M. There will be regular deliveries of feedstock to sustain Project operations. Occasional deliveries and maintenance-related trips are anticipated as part of normal Project operations. During Project operations, small quantities of hazardous materials will be delivered and operational waste products will be hauled from the Project Site. A more detailed discussion on Project handling of hazardous materials and waste management are presented in Section 5.12, Hazardous Materials Handling, and Section 5.13, Waste Management, respectively. All applicable LORS will be observed during Project operations.

The following sections describe the operational effects of the Project.

Intersection Level of Service During Project Operations

Table 5.10-8, Peak-Hour Intersection LOS – Year 2016 No Project Conditions, presents peak-hour intersection LOS and average vehicle delay under Year 2016 No Project conditions. The LOS calculation worksheets are provided in Appendix U, Traffic Counts. Figure 5.10-7, Year 2016 No Project Traffic Volumes, shows Year 2016 No Project conditions for morning and evening peak-hour turning-movement volumes for each traffic study area intersection.

As shown in Table 5.10-8, Peak-Hour Intersection LOS – Year 2016 No Project Conditions, all study intersections are forecast to operate at LOS C or better under Year 2016 No Project conditions.

Table 5.10-9, Peak-Hour Intersection LOS – Year 2016 Project Operations Conditions, presents peak-hour intersection LOS and average vehicle delay results under Year 2016 Project Operations conditions. The LOS calculation worksheets are provided in Appendix U, Traffic Counts. Figure 5.10-8, Year 2016 No Project Traffic Plus Project Operations Traffic Volumes, shows Year 2016 Project Operations morning and evening peak-hour turning-movement volumes for each study area intersection.

**Table 5.10-8
Peak-Hour Intersection LOS –
Year 2016 No Project Conditions**

Intersection	Control	Peak Hour (a.m.)		Peak Hour (p.m.)	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	1.2	A	2.0	A
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	3.3	A	7.4	A
3. I-5 NB Ramp/SR 119	Unsignalized	1.0	A	0.7	A
4. I-5 SB Ramp/SR 119	Unsignalized	0.3	A	1.0	A
5. SR 119/SR 43	Signalized	26.7	C	32.7	C
6. SR 43/Stockdale Highway	Signalized ¹	18.0	B	18.8	B
7. Stockdale Highway/Morris Road	Unsignalized	1.6	A	2.0	A
8. SR 119/Tupman Road	Signalized ¹	11.8	B	12.4	B
9. Tupman Road/Grace Avenue	Unsignalized	7.0	A	7.1	A
10. Tupman Road/Station Road	Unsignalized	4.1	A	1.2	A
11. Dairy Road/Stockdale Highway	Unsignalized	1.5	A	0.5	A
12. Dairy Road/Adohr Road	Unsignalized	6.2	A	3.5	A

Source: HECA Project

Notes:

¹ Assumed to be signalized as part of Project Construction Mitigation.

- a.m. = morning
- I-5 = Interstate 5
- LOS = level of service
- NB = northbound
- p.m. = evening
- SB = southbound
- sec/veh = seconds per vehicle
- SR = State Route

**Table 5.10-9
Peak-Hour Intersection LOS –
Year 2016 Project Operations Conditions**

Intersection	Control	Peak Hour (a.m.)		Peak Hour (p.m.)	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. I-5 NB Ramp/Stockdale Highway	Unsignalized	2.8	A	3.7	A
2. I-5 SB Ramp/Stockdale Highway	Unsignalized	2.7	A	7.4	A
3. I-5 NB Ramp/SR 119	Unsignalized	1.1	A	0.7	A
4. I-5 SB Ramp/SR 119	Unsignalized	0.4	A	1.1	A
5. SR 119/SR 43	Signalized	27.4	C	31.7	C
6. SR 43/Stockdale Highway	Signalized ¹	18.2	B	19.2	B
7. Stockdale Highway/Morris Road	Unsignalized	0.5	A	0.9	A
8. SR 119/Tupman Road	Signalized ¹	12.3	B	12.9	B
9. Tupman Road/Grace Avenue	Unsignalized	7.1	A	7.2	A
10. Tupman Road/Station Road	Unsignalized	1.8	A	0.6	A
11. Dairy Road/Stockdale Highway	Unsignalized	6.6	A	5.9	A
12. Dairy Road/Adohr Road	Unsignalized	6.1	A	4.0	A

Source: HECA Project

Notes:

¹ Assumed to be signalized as part of Project Construction Mitigation.

a.m. = morning

I-5 = Interstate 5

LOS = level of service

NB = northbound

p.m. = evening

SB = southbound

sec/veh = seconds per vehicle

SR = State Route

As shown in Table 5.10-9, Peak-Hour Intersection LOS – Year 2016 Project Operations Conditions, all traffic study area intersections are forecast at LOS C or better under Year 2016 Project Operations.

It must be noted that during Project operations, the intersection of SR 43/Stockdale Highway would operate at LOS B (a.m.) and LOS B (p.m.), and the intersection of SR 119/Tupman Road would operate at LOS A (a.m.) and LOS B (p.m.), even without a traffic signal. Nevertheless, the traffic signals that will be installed for construction impact mitigation (see Mitigation Measure TRA-2) will remain during operations. Based on these findings, no significant traffic effects would occur at the traffic study area intersections during Project operations.

5.10.2.6 Project Impact Summary

Project Construction Traffic Impacts on Roadways

The roadways that will experience a short-term increase in traffic due to construction worker and truck deliveries will be Stockdale Highway, I-5, SR 43 (Enos Lane), SR 119 (Taft Highway), Dairy Road, Adohr Road, and Tupman Road. During Project construction, some roadways could be subjected to loadings beyond their current use as local or farm access roads. In consultation with Kern County Roads Department, county engineers will conduct pavement evaluations to ascertain the loading characteristics of these roadways. As of this time, this report is being prepared with the results of the pavement evaluations that have not yet been provided to URS. However, with the implementation of mitigation measures discussed in Section 5.10.4, below, impacts to roadway loading during construction would be reduced to less than significant levels.

Project Construction Traffic Impacts on Intersections

The results of the intersection LOS analysis shown in Table 5.10-7, Peak-Hour Intersection LOS – Year 2014 Project Construction Conditions, indicate that all study intersections would operate at LOS D or better under Year 2014 Project Construction conditions, with the exception of following intersections, which will be significantly affected by Project construction activities:

- SR 43/Stockdale Highway – will be significantly impacted during the p.m. peak hour (when LOS C without Project construction becomes LOS F with Project construction)
- SR 119/Tupman Road – will be significantly impacted during the p.m. peak hour (when LOS A without Project construction becomes LOS F with Project construction)

However, with the implementation of mitigation measures discussed in Section 5.10.4, below, impacts to the intersection at SR 43/Stockdale Highway and SR 119/Tupman Road during construction would be reduced to less-than-significant levels.

Project Operations Traffic Impacts on Roadways

Similar to construction conditions, the roadways that will experience Project operational traffic will be Stockdale Highway, I-5, SR 43 (Enos Lane), SR 119 (Taft Highway), Dairy Road, Adohr Road, and Tupman Road.

The projected added trips from operational workers, feedstock and maintenance deliveries, and visitors along the local roadways could potentially contribute to roadway wear and tear due to Project operational trips. However, with the implementation of mitigation measures discussed in Section 5.10.4, below, impacts to roadway wear-and-tear during operations would be reduced to less-than-significant levels.

Project Operations Traffic Impacts on Intersections

The results of the intersection LOS analysis, shown in Table 5.10-9, Peak-Hour Intersection LOS – Year 2016 Project Operations Conditions, indicate that all study intersections would

operate at an acceptable LOS C or better during both morning and evening peak-hour analysis periods. These good intersection operating conditions are attributed to the low future pre-operational traffic in the study area, which provided sufficient intersection capacity to handle Project operations traffic.

Based on these findings, no significant traffic effects would occur at the traffic study intersections during Project operation.

5.10.3 Cumulative Impacts Analyses

Based on information provided by Kern County Roads Department staff, the Project's construction traffic would not coincide with any potential future project within the study area, so its contribution to cumulative traffic impacts during construction would not be cumulatively considerable, and cumulative impacts of the Project would therefore be less than significant.

In addition, the cumulative projects list provided by Kern County Planning Department staff show that only one project (a proposed dairy farm) is expected to occur within the traffic study area. The generally low trip-generation potential of dairy farming operations is not expected to contribute to a cumulative project impact.

The results of the traffic analysis showed that the Project's construction and operational traffic, combined with future ambient traffic growth, will not be cumulatively considerable, and cumulative impacts of the Project would therefore be less than significant.

Based on the above findings, it is expected that the Project will not result in cumulative construction and operational Project impacts.

5.10.4 Mitigation Measures

The following mitigation measures will be implemented by the Project Applicant.

5.10.4.1 Project Construction Mitigations

During Project construction, the following locations would potentially require improvements or mitigation:

- Local roadways would be potentially subjected to heavy loadings.
- SR 43/Stockdale Highway would be significantly impacted during the p.m. peak hour (when LOS C without Project construction becomes LOS F with Project construction).
- SR 119/Tupman Road would be significantly impacted during the p.m. peak hour (when LOS A without Project construction becomes LOS F with Project construction)
- Two local intersections would need geometric modification to accommodate construction traffic.

Specific details of the proposed mitigation measures are described below.

Mitigation Measures

The following proposed mitigation measures will be offered pro-actively to address Project-related activities during construction.

TRA-1 Roadway Improvements. The Project proponent will coordinate with Kern County to identify and construct roadway improvements, if needed, to support construction traffic to ensure that roadway impacts are less than significant.

TRA-2 Intersection Improvements. The Project proponent will coordinate with Kern County to identify and construct intersection improvements needed to support construction traffic so that intersection impacts are reduced to less-than-significant levels.

- **Intersection of SR 43 (Enos Lane) and Stockdale Highway.** Signalization of the current 4-way-Stop intersection would improve p.m. peak hour LOS F conditions to LOS B conditions during Project construction, thereby mitigating a significant Project construction traffic impact. A traffic signal warrant analysis was conducted to determine the need for a traffic signal. The result of the analysis shows that signalization is warranted. The peak-hour traffic-signal warrant sheet is included in Appendix U, Traffic Counts.
- **Intersection of SR 119 and Tupman Road.** Signalization of the current 2-way-stop intersection would improve p.m. peak hour LOS F conditions to LOS B conditions during Project construction, thereby mitigating a significant Project construction traffic impact. A traffic-signal warrant analysis was conducted to determine the need for a traffic signal. The result of the analysis shows that signalization is warranted. The peak-hour traffic-signal warrant sheet is included in Appendix U, Traffic Counts.
- **Intersection of Dairy Road and Stockdale Highway.** Construct a separate left-turn lane on the westbound approach of Stockdale Highway, and a separate right-turn lane on the northbound approach of Dairy Road. This improvement will facilitate the safe and efficient movement of construction and operations vehicles to and from the Project Site.
- **Dairy Road/Adohr Road:** Reconstruct the intersection to accommodate the turning radius needed by large trucks to make the turns. This improvement will facilitate the safe and efficient movement of construction and operations vehicles to and from the Project Site.

TRA-3 Traffic Control Measures. Use proper signs and traffic control measures in accordance with Caltrans and county requirements. All traffic signs, equipment, and control measures shall conform to the provisions specified in the Manual of Uniform Traffic Control Device (MUTCD), California Edition.

TRA-4 Lane Closures. Schedule traffic lane or road closures during off-peak hours whenever possible.

TRA-5 Limit Construction Traffic. Limit vehicular traffic to designated access roads, construction laydown and worker parking areas, and Project construction site. Encourage worker carpooling to minimize drive-alone worker trips.

Level of Significance after Mitigation

The signalization of SR 43/Stockdale Highway will improve the p.m. peak LOS F with Project construction conditions to acceptable LOS C, thereby mitigating the Project construction LOS traffic impact to less-than-significant levels.

The signalization of SR 119/Tupman Road will improve the p.m. peak LOS F with Project construction conditions to acceptable LOS D, thereby mitigating the Project construction LOS traffic impact to less-than-significant levels.

With the implementation of the mitigation measures in this Section 5.10.4.1, traffic and transportation impacts during construction would be reduced to less-than-significant levels.

5.10.4.2 Project Operations Mitigation

Mitigation Measures

The following proposed mitigation measures will be offered pro-actively to address Project-related activities during operation:

TRA-6 Minimize Operations Traffic. Limit vehicular traffic to designated access roads. Encourage worker carpooling to minimize drive-alone worker trips.

Level of Significance after Mitigation

The study intersections are not significantly impacted based on traffic impact threshold of significance; therefore, no mitigation is required to reduce impacts to less-than-significant levels. However, mitigation is proposed above to present a proactive approach to minimize operational traffic.

5.10.5 Laws, Ordinances, Regulations, and Standards

5.10.5.1 Federal

Title 49, Code of Federal Regulations (CFR), Parts 171-177. Governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.

The administering agencies for the above regulation are CHP and U.S. Department of Transportation (DOT), Pipeline and Hazardous Materials Safety Administration (PHMSA).

The Project would conform to this law by requiring that shippers of hazardous materials use the required markings on their transportation vehicles.

Title 14, CFR, Section 77.13(2)(i). Requires an Applicant to notify the Federal Aviation Administration (FAA) of construction of structures with a height (1) greater than 200 feet from grade; or (2) greater than an imaginary surface extending outward and upward at a slope of

10 to 1 from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.

The administering agencies for the above regulation are DOT and FAA.

The project includes several structures taller than 200 feet. The project's tallest structure is the carbon dioxide vent at 260 feet. FAA notification is required for all of these structures that exceed 200 feet (refer to Section 5.10.7, Permits Required and Permit Schedule – FAA Permit).

5.10.5.2 State

California Vehicle Code, Section 353. Defines hazardous materials as any substance, material, or device posing an unreasonable risk to health, safety, or property during transportation, as defined by regulations adopted pursuant to Section 2402.7.

The administering agency for the above statute is the CHP.

The Project would comply with these codes by continuing to classify all hazardous materials in accordance with their classification.

California Vehicle Code, Sections 2500-2505. Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials, including explosives.

The administering agency for the above statutes is the CHP.

The Project would comply with these codes by requiring that contractors and employees be properly licensed and endorsed when operating vehicles used to transport hazardous materials.

California Vehicle Code, Sections 13369, 15275, 15278. Addresses the licensing of drivers and the classification of license required for the operation of particular types of vehicles. Requires a commercial driver's license to operate commercial vehicles. Requires an endorsement issued by the Department of Motor Vehicles (DMV) to drive any commercial vehicle identified in Section 15278.

The administering agency for the above statutes is DMV.

The Project would comply with these codes by requiring that contractors and employees be properly licensed and endorsed when operating such vehicles.

California Vehicle Code, Sections 31303-31309. Requires that the transportation of hazardous materials be on the state or interstate highway that offers the shortest overall transit time possible.

The administering agency for the above statutes is CHP.

The Project would comply with this law by requiring that shippers of hazardous materials use the shortest route possible to and from the Project Site.

California Vehicle Code, Sections 31600-31620. Regulates the transportation of explosive materials.

The administering agency for the above statutes is CHP.

It must be noted that the Project would not use explosive materials specifically defined in Section 12000 of the Health and Safety Code. However, the Project would comply with this law by requiring that shippers of other potentially explosive materials have the required licenses from CHP.

California Vehicle Code, Sections 32000-32053. Authorizes CHP to inspect and license motor carriers transporting hazardous materials of the type requiring placards.

The administering agency for the above regulation is CHP.

The Project would comply with this law by requiring that motor carriers of hazardous materials be properly licensed by CHP.

California Vehicle Code, Sections 32100-32109. Requires that shippers of inhalation hazards in bulk packaging comply with rigorous equipment standards, inspection requirements, and route restrictions.

The administering agency for the above regulation is CHP.

If applicable, the Project would comply with this law by requiring shippers of these types of material to comply with all route restrictions, equipment standards, and inspection requirements.

California Vehicle Code, Sections 34000-34100. Establishes special requirements for vehicles having a cargo tank and for hazardous waste transport vehicles and containers, as defined in Section 25167.4 of the Health and Safety Code. The commissioner shall provide for the establishment, operation, and enforcement of random on- and off-highway inspections of cargo tanks and hazardous waste transport vehicles and containers, and ensure that they are designed, constructed, and maintained in accordance with the regulations adopted by the commissioner pursuant to this code and Chapter 6.5 (commencing with Section 25100) of Division 20 of the Health and Safety Code.

The administering agency for the above regulation is CHP.

The Project would comply with this law by requiring that shippers of hazardous materials maintain their hazardous material transport vehicles in a manner that ensures the vehicles will pass CHP inspections.

California Vehicle Code, Section 34500. Regulates the safe operation of vehicles, including those vehicles that are used for the transportation of hazardous materials.

The administering agency for the above regulation is CHP.

5.10 Traffic and Transportation

The Project would comply with this law by requiring shippers of hazardous materials to have the necessary permits, inspections, and licenses issued by CHP for the safe operation of the hazardous materials transport vehicles.

California Vehicle Code, Section 35550. Imposes weight guidelines and restrictions upon vehicles traveling on freeways and highways. The section holds that “a single axle load shall not exceed 20,000 pounds. The load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds. The front steering axle load is limited to 12,500 pounds.”

Furthermore, California Vehicle Code Section 35551 defines the maximum overall gross weight as 80,000 pounds, and adds that “the gross weight of each set of tandem axles shall not exceed 34,000 pounds.”

The administering agency for the above statute is Caltrans.

The Project would comply with this code by requiring compliance with weight restrictions and by requiring heavy haulers to obtain permits, if required, prior to delivery of any heavy haul load.

California Vehicle Code, Section 35780. Requires a Single-Trip Transportation Permit to transport oversized or excessive loads over state highways. The permit can be acquired through Caltrans.

The administering agency for the above statute is Caltrans.

The Project would comply with this code by requiring that heavy haulers obtain a Single-Trip Transportation Permit for oversized loads for each vehicle, prior to delivery of any oversized load.

California Streets and Highways Code, Section 117. Unless otherwise specifically provided in the instrument conveying title, the acquisition by the department of any right-of-way (ROW) over any real property for state highway purposes includes the right of the department to issue, under Chapter 3 (commencing with Section 660), permits for the location in the ROW of any structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures.

The administering agency for the above statute is Caltrans.

If applicable, the Project would comply with this code by acquiring the necessary permits and approval from Caltrans with regard to use of public ROWs.

The California Streets and Highways Code, Sections 660, 670, 672, 1450, 1460, 1470, 1480, et seq. Defines highways and encroachment, requires encroachment permits for projects involving excavation in state highways, and county/city streets. This law is generally enforced at the local level.

The administering agencies for the above regulation are Caltrans, Kern County Roads Department, and City of Bakersfield Public Works Department.

The Project or its assigned contractors would apply for encroachment permits for any excavation in state and county roadways prior to construction.

California Health and Safety Code, Section 25160 *et seq.* Addresses the safe transport of hazardous wastes, requires a manifest for hazardous waste shipments, and requires a person who transports hazardous waste in a vehicle to have a valid registration issued by the Department of Toxic Substances Control (DTSC), in his or her possession while transporting the hazardous waste.

The administering agency for the above regulation is DTSC.

The Project would comply with this law by requiring that shippers of hazardous wastes are properly licensed by DTSC and hazardous waste transport vehicles are in compliance with DTSC requirements.

California Manual on Uniform Traffic Control Devices, Section 6C.01. Requires a temporary traffic control plan be provided for “continuity of function (movement of traffic, pedestrians, bicyclists, transit operations), and access to property/utilities” during any time the normal function of a roadway is suspended. Some important elements that cannot be conveniently shown in the plans will be incorporated in the Special Provisions of the temporary traffic control plan.

The administering agency for the above regulation is Caltrans and/or Kern County Roads Department. If needed, the Applicant would file a temporary traffic control plan prior to the start of construction.

5.10.5.3 Local

Kern County General Plan

Circulation Element, 2.3 Highways, 2.3.3 Highway Plan, Policies. The goal of the General Plan is to provide a network of roadway systems for the county. The county requires new development to provide for local roads in areas where the traffic model estimates little growth through and beyond year 2010.

The administering agency for the above regulation is Kern County Roads Department. If needed, the Applicant would build the necessary roadways to access the Project Site.

The applicable LORS related to traffic and transportation are summarized in Table 5.10-10, Summary of LORS – Traffic and Transportation.

5.10 Traffic and Transportation

**Table 5.10-10
Summary of LORS – Traffic and Transportation**

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact ¹
Federal Jurisdiction				
Title 49, Code of Federal Regulations, Section 171-177	Governs the transportation of hazardous materials, including the marking of transportation vehicles.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.1 Federal	California Highway Patrol, USDOT Pipeline and Hazardous Materials Safety Administration	2, 3
Title 14, Code of Federal Regulations, Section 77.13(2)(i)	Requires Applicant to notify FAA of any construction greater than height limits defined by the FAA.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.1 Federal	FAA	1
State Jurisdiction				
California Vehicle Code, Section 353	Defines the hazardous materials.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Highway Patrol	3
California Vehicle Code, Sections 2500-2505	Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials, including explosives.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Highway Patrol	3
California Vehicle Code, Sections 13369, 15275, 15278	Addresses the licensing of drivers and the classification of license required for the operation of particular types of vehicles. In addition, these sections require the possession of certificates for permitting the operation of vehicles transporting hazardous materials.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Motor Vehicles	4
California Vehicle Code, Sections 31303-31309	Requires transporters of hazardous materials to use the shortest route possible.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Highway Patrol	3

**Table 5.10-10
Summary of LORS – Traffic and Transportation**

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact¹
California Vehicle Code, Sections 31600-31620	Regulates the transportation of explosive materials.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Highway Patrol	3
California Vehicle Code, Section 32000-32053	Regulates the licensing of carriers of hazardous materials and notice requirements.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Highway Patrol	3
California Vehicle Code, Section 32100-32109	Transporters of inhalation hazardous materials or explosive materials must obtain a hazardous materials transportation license.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Highway Patrol	3
California Vehicle Code, Section 34000-34100	Establish special requirements for flammable and combustible liquids over public roads and highways.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Highway Patrol	3
California Vehicle Code, Section 34500	Regulate the safe operation of vehicles, including those that are used for the transportation of hazardous materials.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Highway Patrol	3
California Vehicle Code, Section 35550	Imposes weight guidelines and restrictions on vehicles traveling upon freeways and highways.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Transportation	4
California Vehicle Code, Section 35780	Requires approval for a permit to transport oversized or excessive load over state highways.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Transportation	4

**Table 5.10-10
Summary of LORS – Traffic and Transportation**

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact ¹
California Streets and Highways Code, Sections 117	Permits for the location in the ROW of any structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Transportation	5
California Streets and Highways Code, Sections 660, 670, 672, 1450, 1460, 1470, 1480 <i>et seq.</i>	Defines highways and encroachment. Regulate ROW encroachment and the granting of permits with conditions for encroachment in state and county roads.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Transportation, Kern County Roads Department	6, 7
California Health and Safety Code, Section 25160 <i>et seq.</i>	Addresses the safe transport of hazardous materials.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Toxic Substance Control	8
California Manual on Uniform Control Devices (MUTCD), Section 6C.01	Requires traffic control plans to ensure continuity of traffic during roadway construction.	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.2 State	California Department of Transportation, Kern County Roads Department	6, 7
Local Jurisdiction				
Kern County General Plan, Circulation Element	Provide a network of roadway systems for the county	Section 5.10.5, Laws, Ordinances, Regulations, and Standards 5.10.5.3 Local	Kern County Roads Department	6

Source: HECA Project Team, 2008-2009.

Notes:

¹ Numbers in this column correspond to Agency Contacts listed in Table 5.10-11.

FAA = Federal Aviation Administration

LORS = laws, ordinances, regulations, and standards

ROW = right-of-way

USDOT = United States Department of Transportation

5.10.6 Involved Agencies and Agency Contacts

Table 5.10-11, Agency Contact List for LORS, provides agency contacts for traffic and transportation.

**Table 5.10-11
Agency Contact List for LORS**

Number	Agency	Contact	Address	Telephone
1	Federal Aviation Administration	Karen McDonald, Obstruction Evaluation Specialist	Federal Aviation Administration Western Pacific Region AWP5202 15000 Aviation Boulevard Lawndale, CA 90261-1002	(310) 725-6557
2	U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA)	Jeffrey Gilliam, Team Leader, California Office	3401 Centrelake Drive Suite 550B Ontario, CA 91761	(909) 937-3279 (720) 963-3160
3	California Highway Patrol	Officer Justin Olson, Accident Investigator	29449 Stockdale Highway Bakersfield, CA 93312-9644	(661) 764-5580
4	Caltrans North Region Permits Office MS# 41	Kien Le, Permits Manager	Caltrans North Region Permits Office MS# 41 1823 14th Street Sacramento, CA 942874-001	(916) 322-6001
5	Department of Motor Vehicles, Licensing Operations Division	Public Inquiry	2415 1st Avenue Mail Station F101 Sacramento, CA 95818	(916) 657-8698
6	Kern County Roads Department	Barry Nienke, P.E., County Traffic Engineer	2700 M Street, Suite 400 Bakersfield, CA 93301	(661) 862-8850
7	California Department of Transportation, District 6	Kurt Hatton, Transportation Engineer	1352 West Olive Avenue Fresno, CA 93728	(559) 243-3451
8	California Department of Toxic Substance Control	Gloria Conti, Information Officer	1001 I Street Mail: P.O. Box 806 Sacramento, CA 95812-0806	(800) 728-6942

Source: HECA Project Team, 2008-2009.

Note:

LORS = laws, ordinances, regulations, and standards

5.10.7 Permits Required and Permit Schedule

FAA Permit. FAA will be notified for structures exceeding 200 feet.

Encroachment Permit. Any connection to a county-maintained road is considered an encroachment. If a building permit involves the construction of a new driveway or improvement to an existing one, or the connection to utilities under the road, it will require an encroachment permit. Encroachment permits allow individuals, contractors, or utilities to do work within the

5.10 Traffic and Transportation

public ROW. Permits are issued by the Kern County Roads Department Transportation and Encroachment Permit Division.

Pipeline Permits are also issued as part of the Encroachment Permit process. Depending on road conditions, a determination is made whether a road may be open-cut or bored.

Transportation Permit. Required whenever the size or weight of a vehicle and/or load exceeds the maximums allowed by the California Vehicle Code. A transportation permit is written permission to move an oversized load on roads within the County of Kern’s jurisdiction. A permit may be granted to a private company or an individual. Permits are issued by the Kern County Roads Department Transportation and Encroachment Permit Division. An applicant can apply for Single Trip, or if qualified for Annual Blanket Transportation Permit.

Construction-Related Road Closures. Permits are issued when a road closure is necessary for public safety for any road construction. A detour plan is required as part of the permit application process.

Building Permit. Building permits issued within the jurisdiction of the county follow the County of Kern Engineering and Survey Services Permit Process.

In addition to Kern County, Caltrans District 6, which has operational jurisdiction on I-5, SR 58, SR 119, and SR 33, also requires permits for work conducted within state highway ROW. Table 5.10-12, Applicable Permits, shows the permits that need to be included.

**Table 5.10-12
Applicable Permits**

Responsible Agency	Permit/Approval	Schedule
Federal Aviation Administration	Notification for structure heights exceeding 200 feet	TBD
Caltrans	State Highways Encroachment Permit	TBD
Caltrans	State Highways Transportation Permit	TBD
County of Kern Roads Department Transportation and Encroachment Permit Division	Encroachment Permit Pipeline Permit	TBD
County of Kern Roads Department Transportation and Encroachment Permit Division	Transportation Permit	TBD
County of Kern Roads Department Transportation and Encroachment Permit Division	Construction Related Roadway Closure	As Needed
County of Kern Engineering and Survey Services Department Building Inspection Division	Building Permit	TBD

Source: HECA Project Team, 2008-2009.

Note:

TBD = to be determined

5.10.8 References

California Code, 2005a. *Vehicle Code*.

California Code, 2005b. *Streets and Highways Code*.

California Department of Transportation (Caltrans), 2004. State Route 58 Transportation Concept Report, Office of Systems Planning, District 6.

California Department of Transportation (Caltrans), 2005. Interstate 5 Transportation Concept Report, Office of Systems Planning, District 6.

California Department of Transportation (Caltrans), 2006a. State Route 43 Transportation Concept Report, Office of Systems Planning, District 6.

California Department of Transportation (Caltrans), 2006b. State Route 119 Transportation Concept Report, Office of Systems Planning, District 6.

California Department of Transportation (Caltrans), 2007. Status of Projects Central Region, District 6.

California Department of Transportation (Caltrans), District 6, Program Project Management, 2008. Telephone conversation with Kurt Hatton on March 06, 2008, (559) 243-3451.

California Department of Transportation (Caltrans), Traffic Operations Program, Traffic and Vehicle Data Systems, 2005. *2005 Truck Volumes*.

California Department of Transportation (Caltrans), Traffic Operations Program, Traffic and Vehicle Data Systems, 2006. *2006 Traffic Volumes*.

California Department of Transportation (Caltrans), Traffic Operations Program, Traffic and Vehicle Data Systems, 2007. California Department of Transportation, Traffic Operations Program, Traffic and Vehicle Data Systems.

California Highway Patrol, Buttonwillow Office, 2008. Telephone conversation with CHP Officer Justin Olson, Public Affairs Officer, on March 06, 2008, (661) 764-5580.

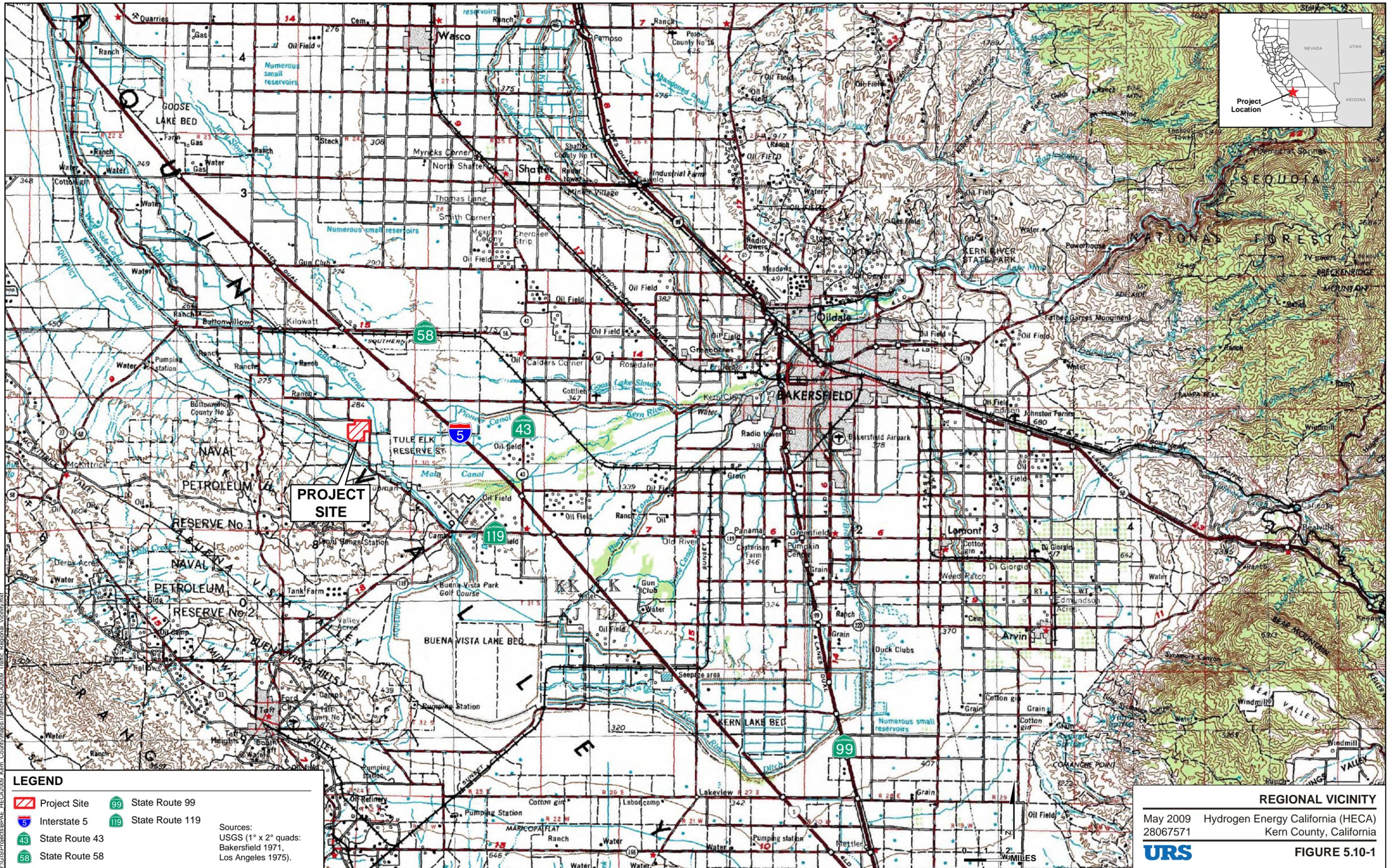
Code of Federal Regulations (CFR), 2002. *Title 14 Aeronautics and Space, Federal Aviation Administration*.

Code of Federal Regulations (CFR), 2002. *Title 49 Environment, Subtitle B – Other Regulations Relating to Transportation*.

Code of Federal Regulations (CFR), 2007. 2007 Destination 2003 Regional Transportation Plan, Kern Council of Governments.

5.10 Traffic and Transportation

- Code of Federal Regulations (CFR), 2007. Final Environmental Impact Report, State Clearinghouse No. 2006111119, Kern County 2007 Revision of the 2030 Regional Transportation Plan.
- Code of Federal Regulations (CFR), 2007. Kern County General Plan, Circulation Element.
- Code of Federal Regulations (CFR), 2009. *2009 Traffic Volumes*.
- Hydrogen Energy California (HECA) Project Team, 2008. Field work and observations.
- Kern Council of Governments, 2001. *Kern County Bicycle Facilities Plan*. Adopted October 2001.
- Kern County Planning Department, 2008. Telephone conversation and e-mail correspondence with Mr. Michael Hollier, Planner 2, Plan Development Unit – General and Specific Plan Development, Major Development Projects May 22, 27, 2008, (661)862-8787, email: Hollierm@co.kern.ca.us.
- Kern County Planning Department, 2008. Telephone conversation with Mr. Randall Cates, Planner 2, Land Division Unit – Parcel Maps, Tract Maps, Lot Line Adjustments, Certificates Of Compliance, May 28, 2008, (661)862-8612
- Kern County Roads Department, 2008. Telephone conversation and e-mail correspondence with Mr. Barry Nienke, P.E., Kern County Traffic Engineer, April 1, 3, 2008, (805)781-5252, email: barryn@co.kern.ca.us.
- Kern County Roads Department, 2008. Telephone conversation and e-mail correspondence with Mr. Brian Blacklock, P.E., Kern County Roads Department, March to May, 2008, March 16, 2009, (661)862-8881, email: blacklockb@co.kern.ca.us.
- McTrans Center, University of Florida, 2000. *Highway Capacity Software*. Version 4.1a.
- Transportation Research Board, 2000. *Highway Capacity Manual*.



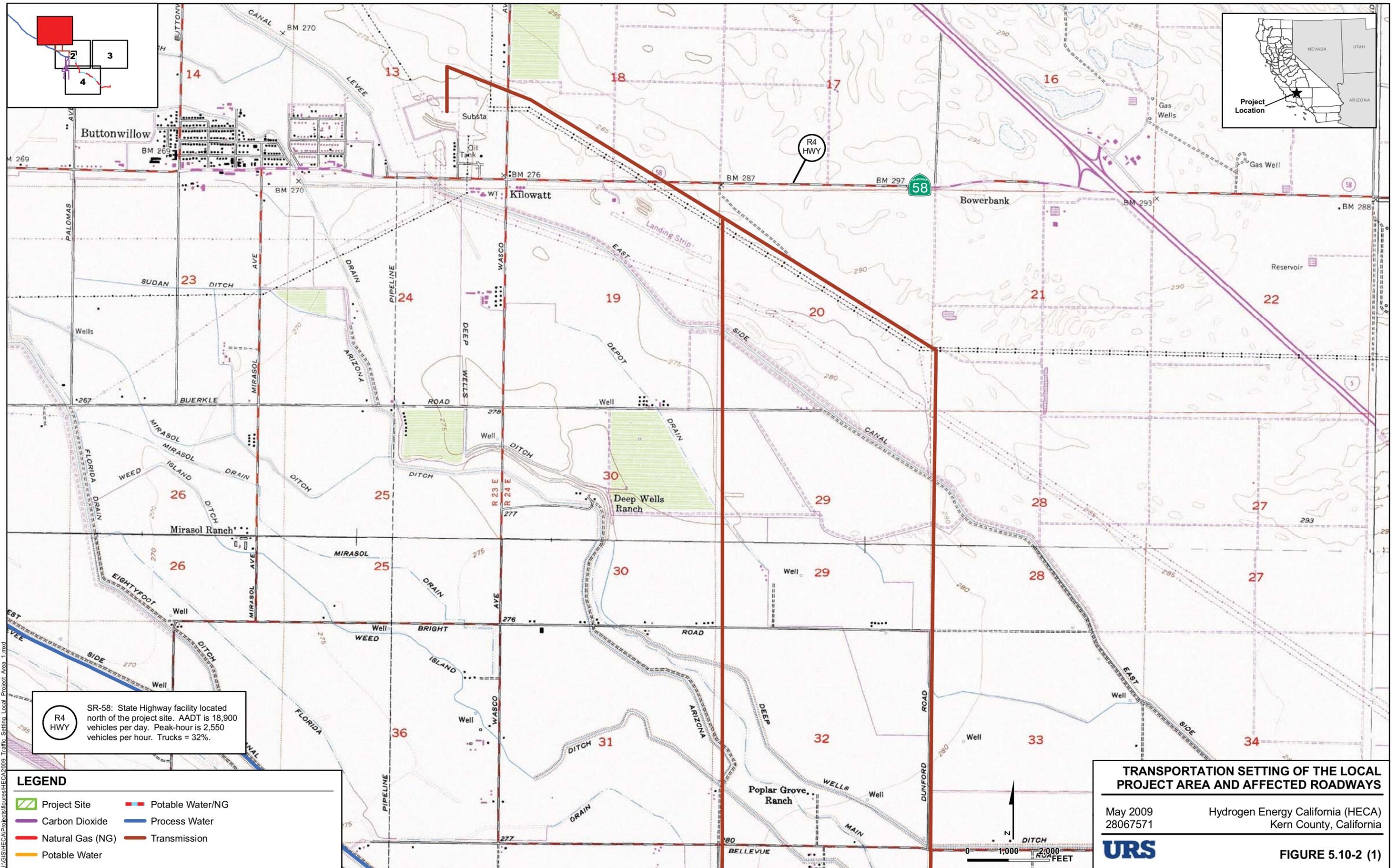
PROJECT SITE

- LEGEND**
- Project Site
 - State Route 99
 - State Route 119
 - State Route 43
 - State Route 58
 - Interstate 5

Sources:
USGS (1° x 2° quads:
Bakersfield 1971,
Los Angeles 1975).

REGIONAL VICINITY
 May 2009 Hydrogen Energy California (HECA)
 28067571 Kern County, California
FIGURE 5.10-1

Y:\GIS\Projects\BPAE_HECA\2009_Kern_County\maps\Traffic\HECA2009_Traffic_Regional_Vicinity.mxd



R4 HWY
 SR-58: State Highway facility located north of the project site. AADT is 18,900 vehicles per day. Peak-hour is 2,550 vehicles per hour. Trucks = 32%.

LEGEND

- Project Site
- Potable Water/NG
- Carbon Dioxide
- Process Water
- Natural Gas (NG)
- Transmission
- Potable Water

TRANSPORTATION SETTING OF THE LOCAL PROJECT AREA AND AFFECTED ROADWAYS

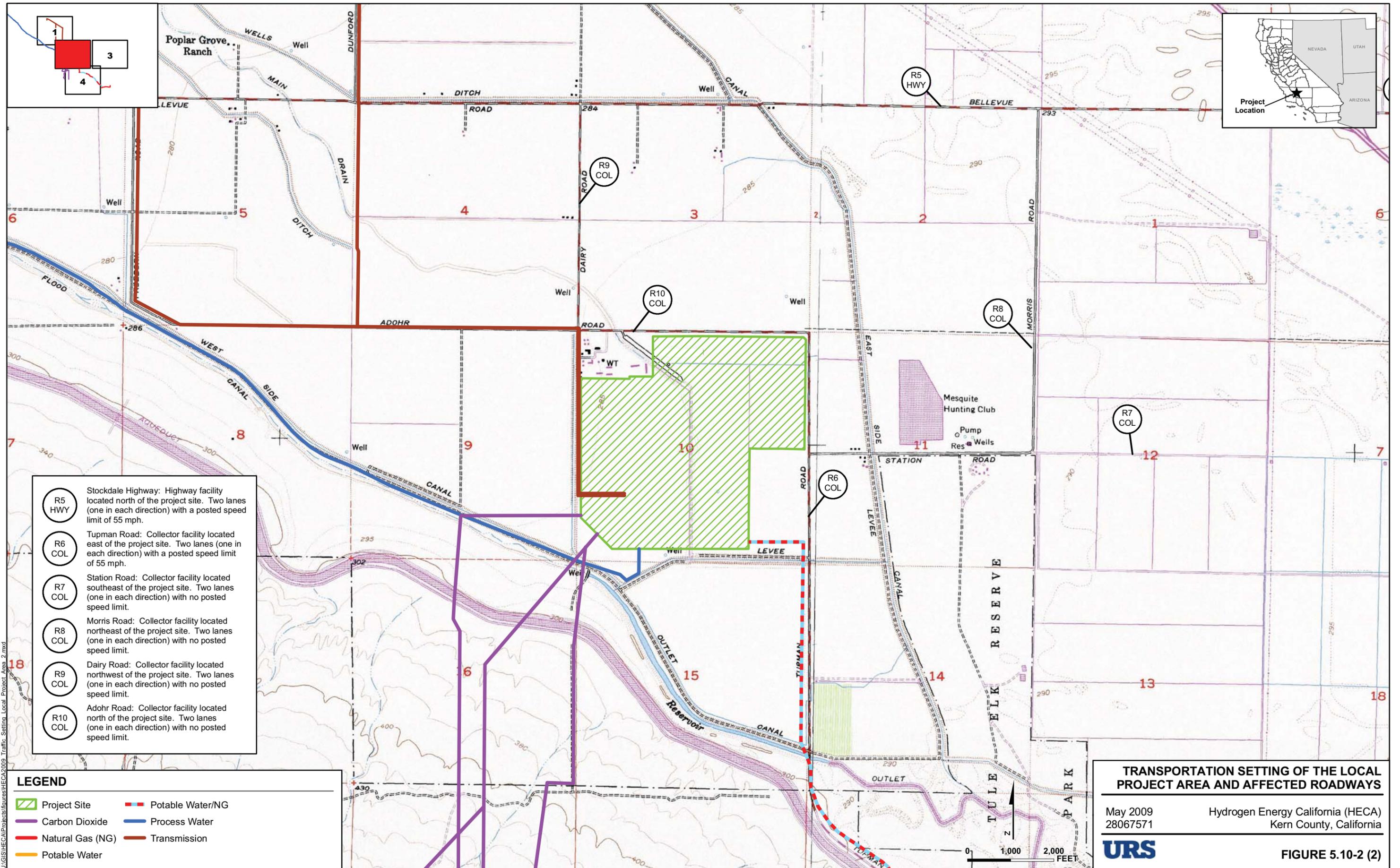
May 2009
 28067571

Hydrogen Energy California (HECA)
 Kern County, California

URS

FIGURE 5.10-2 (1)

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 Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPOI, ©2006 National Geographic Maps, All Rights Reserved. Created using TOPOI, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).



- R5 HWY** Stockdale Highway: Highway facility located north of the project site. Two lanes (one in each direction) with a posted speed limit of 55 mph.
- R6 COL** Tupman Road: Collector facility located east of the project site. Two lanes (one in each direction) with a posted speed limit of 55 mph.
- R7 COL** Station Road: Collector facility located southeast of the project site. Two lanes (one in each direction) with no posted speed limit.
- R8 COL** Morris Road: Collector facility located northeast of the project site. Two lanes (one in each direction) with no posted speed limit.
- R9 COL** Dairy Road: Collector facility located northwest of the project site. Two lanes (one in each direction) with no posted speed limit.
- R10 COL** Adoahr Road: Collector facility located north of the project site. Two lanes (one in each direction) with no posted speed limit.

LEGEND

Project Site	Potable Water/NG
Carbon Dioxide	Process Water
Natural Gas (NG)	Transmission
Potable Water	

TRANSPORTATION SETTING OF THE LOCAL PROJECT AREA AND AFFECTED ROADWAYS

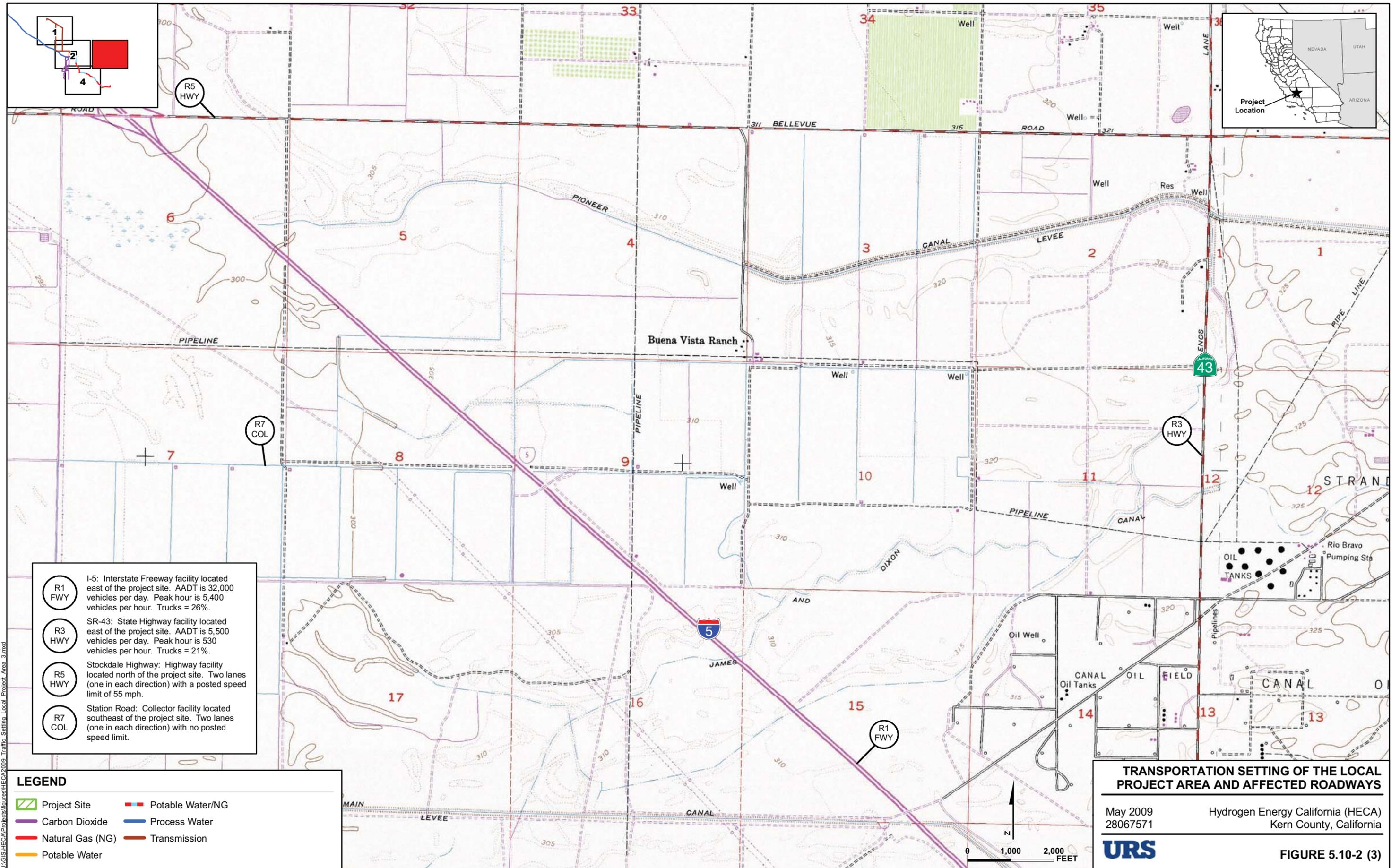
May 2009
28067571

Hydrogen Energy California (HECA)
Kern County, California

URS

FIGURE 5.10-2 (2)

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 Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPOI, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).



R1 FWY I-5: Interstate Freeway facility located east of the project site. AADT is 32,000 vehicles per day. Peak hour is 5,400 vehicles per hour. Trucks = 26%.
R3 HWY SR-43: State Highway facility located east of the project site. AADT is 5,500 vehicles per day. Peak hour is 530 vehicles per hour. Trucks = 21%.
R5 HWY Stockdale Highway: Highway facility located north of the project site. Two lanes (one in each direction) with a posted speed limit of 55 mph.
R7 COL Station Road: Collector facility located southeast of the project site. Two lanes (one in each direction) with no posted speed limit.

LEGEND

	Project Site		Potable Water/NG
	Carbon Dioxide		Process Water
	Natural Gas (NG)		Transmission
	Potable Water		

TRANSPORTATION SETTING OF THE LOCAL PROJECT AREA AND AFFECTED ROADWAYS

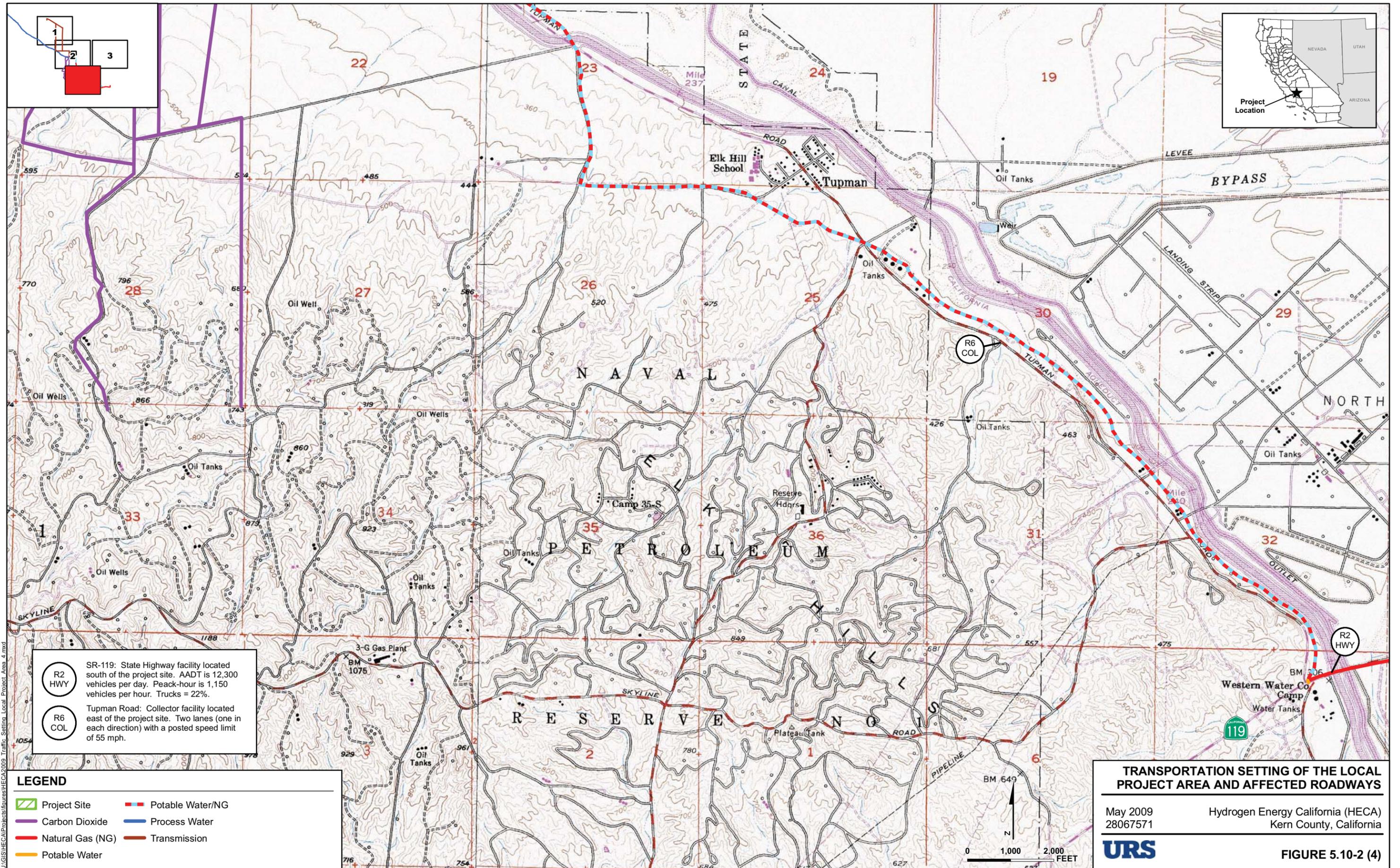
May 2009
 28067571

Hydrogen Energy California (HECA)
 Kern County, California

FIGURE 5.10-2 (3)

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Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPOI, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).



U:\GIS\HECA\Projects\figures\HECA2009_Traffic_Setting_Local_Project_Area_4.mxd
 Sources: USGS (7.5' quads: Buttonwillow 1976, East Elk Hills 1977, Tupman 1977, Stevens, 1977). Created using TOPOI, ©2006 National Geographic Maps, All Rights Reserved. HECA Project Team (Traffic Data, 2009).

R2 HWY
 SR-119: State Highway facility located south of the project site. AADT is 12,300 vehicles per day. Peak-hour is 1,150 vehicles per hour. Trucks = 22%.

R6 COL
 Tupman Road: Collector facility located east of the project site. Two lanes (one in each direction) with a posted speed limit of 55 mph.

LEGEND

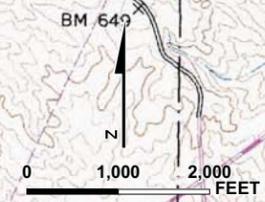
	Project Site		Potable Water/NG
	Carbon Dioxide		Process Water
	Natural Gas (NG)		Transmission
	Potable Water		

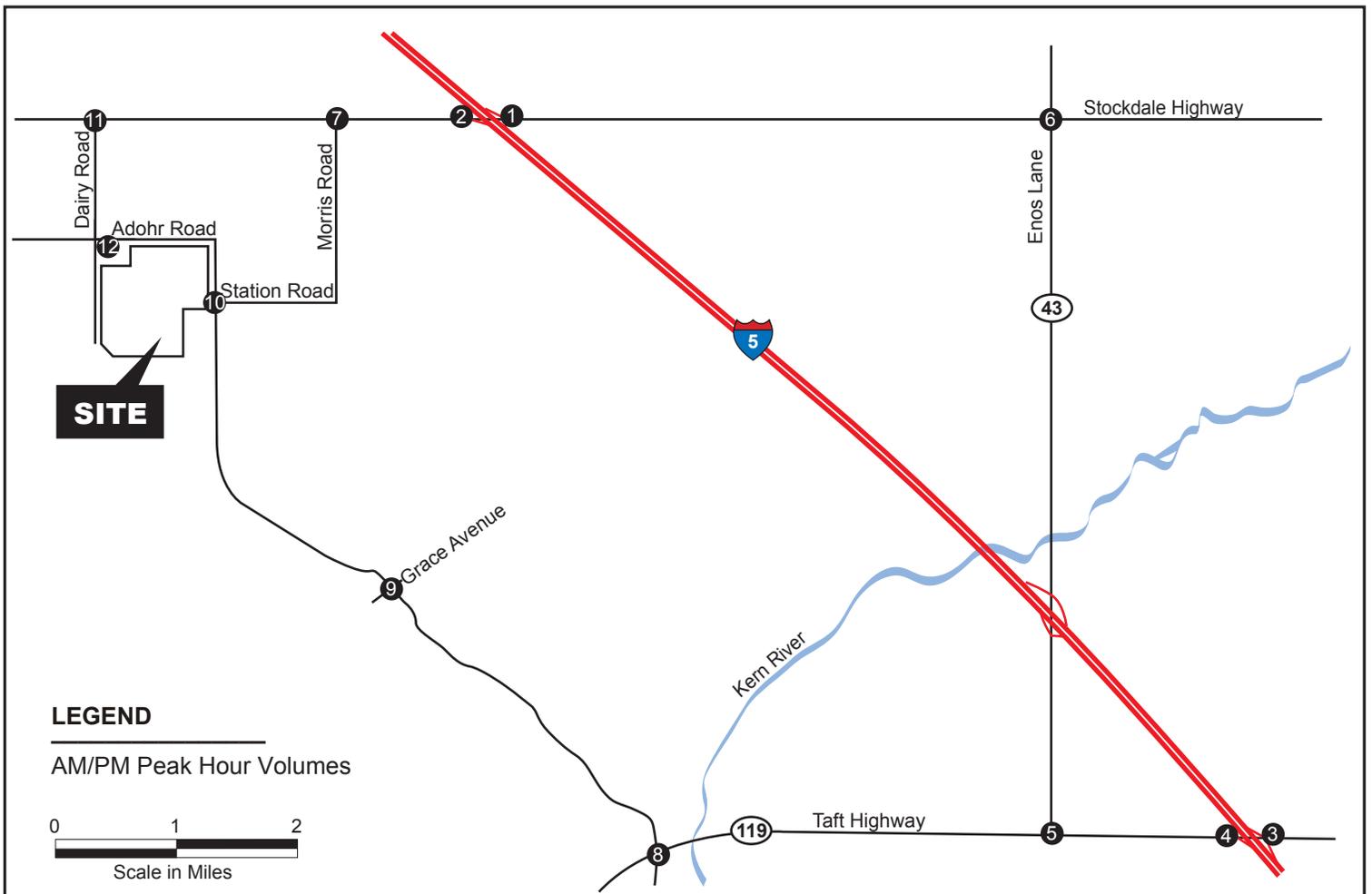
TRANSPORTATION SETTING OF THE LOCAL PROJECT AREA AND AFFECTED ROADWAYS

May 2009
 28067571

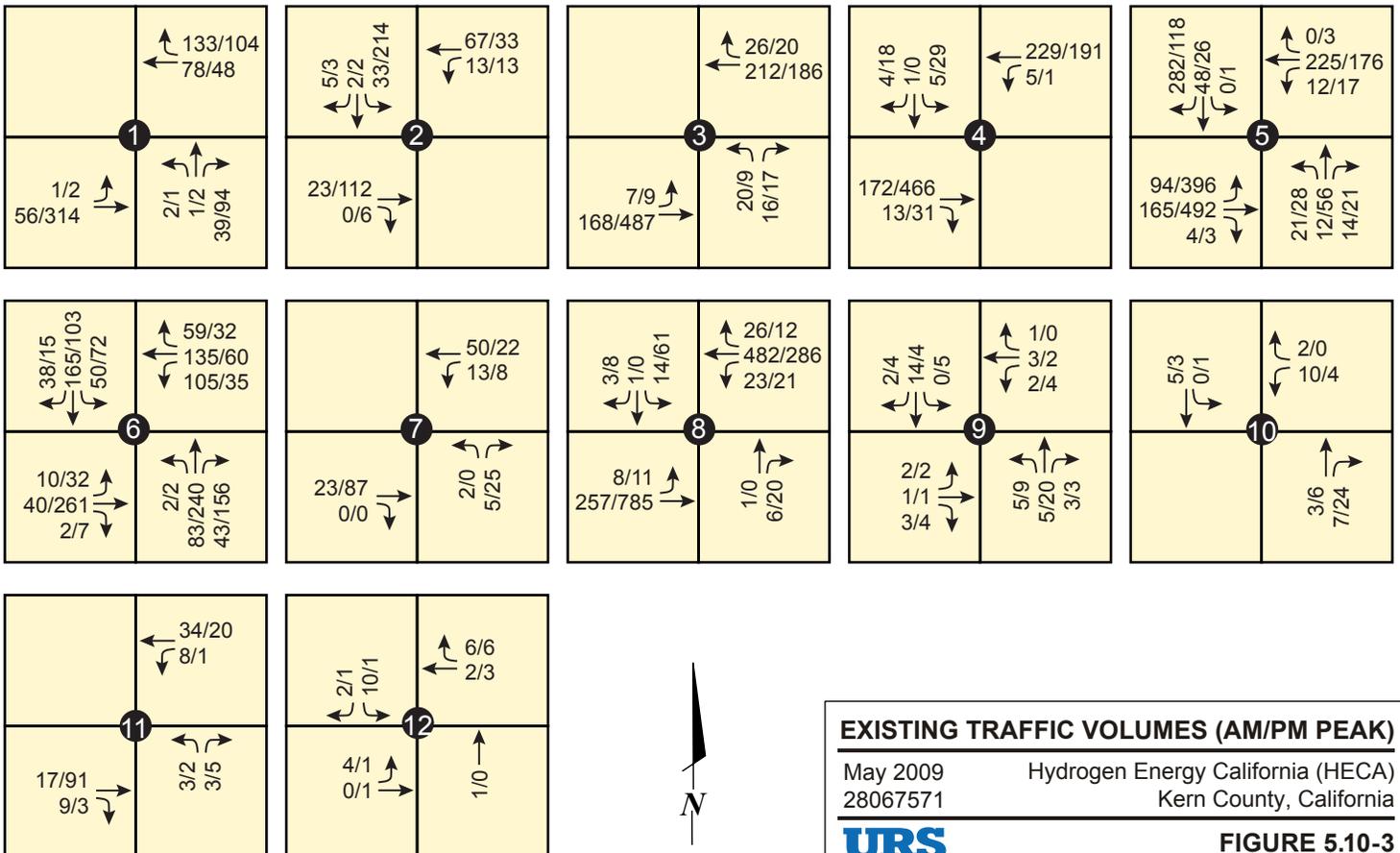
Hydrogen Energy California (HECA)
 Kern County, California

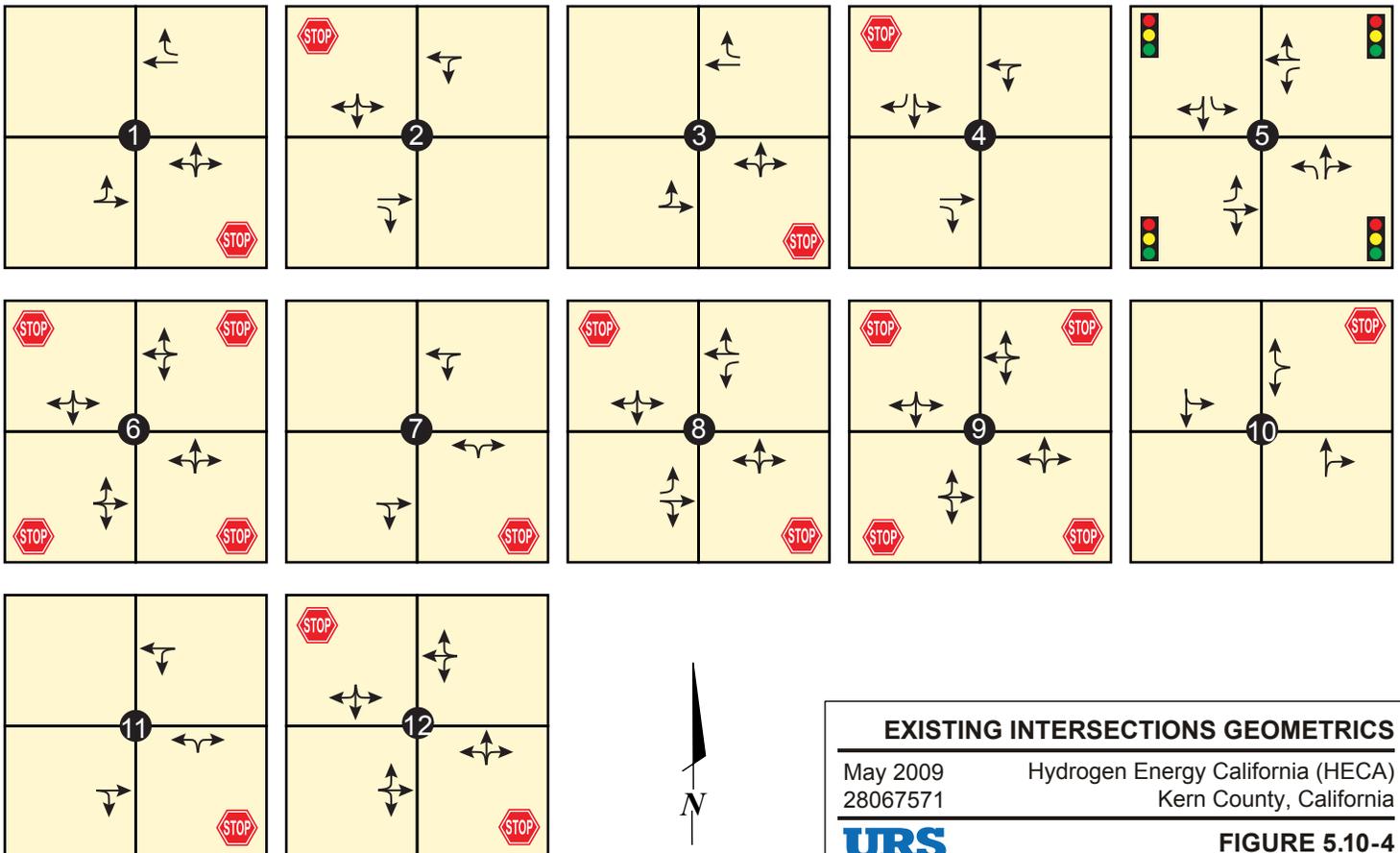
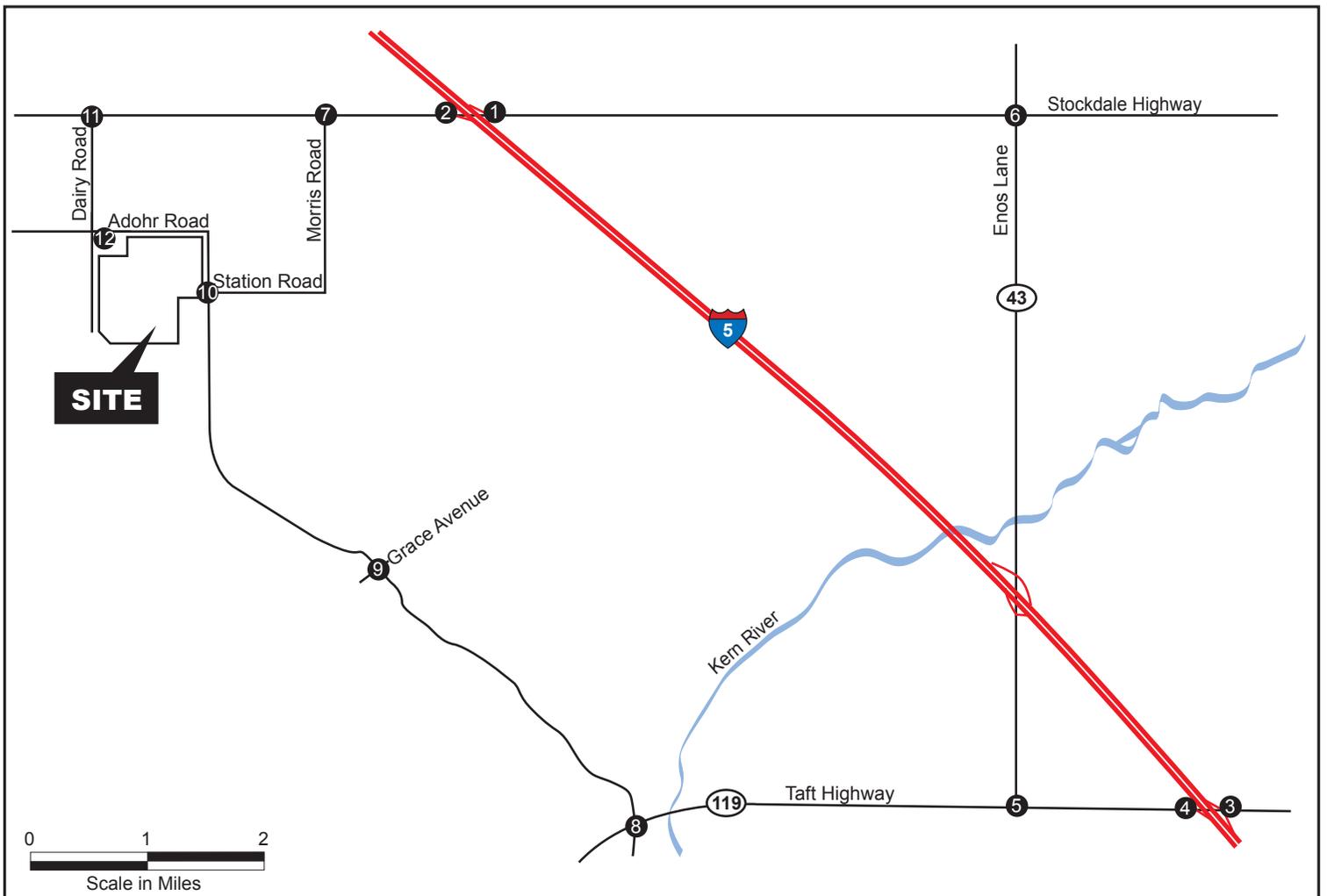
FIGURE 5.10-2 (4)



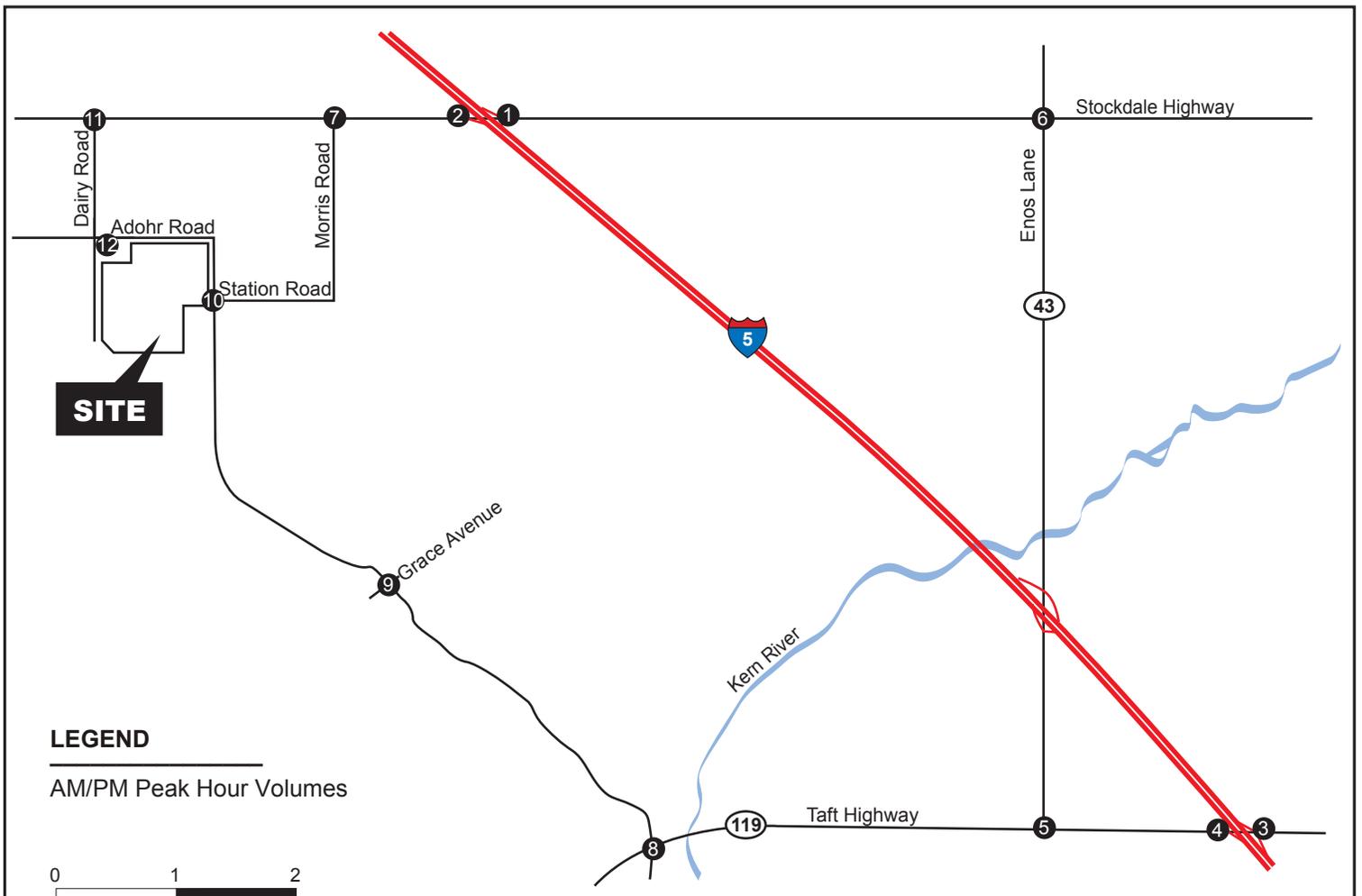


NOTE: Intersection # 7 has been analyzed as a T-intersection. The north leg has minimum/negligible traffic volumes.





EXISTING INTERSECTIONS GEOMETRICS
 May 2009 Hydrogen Energy California (HECA)
 28067571 Kern County, California
URS **FIGURE 5.10-4**

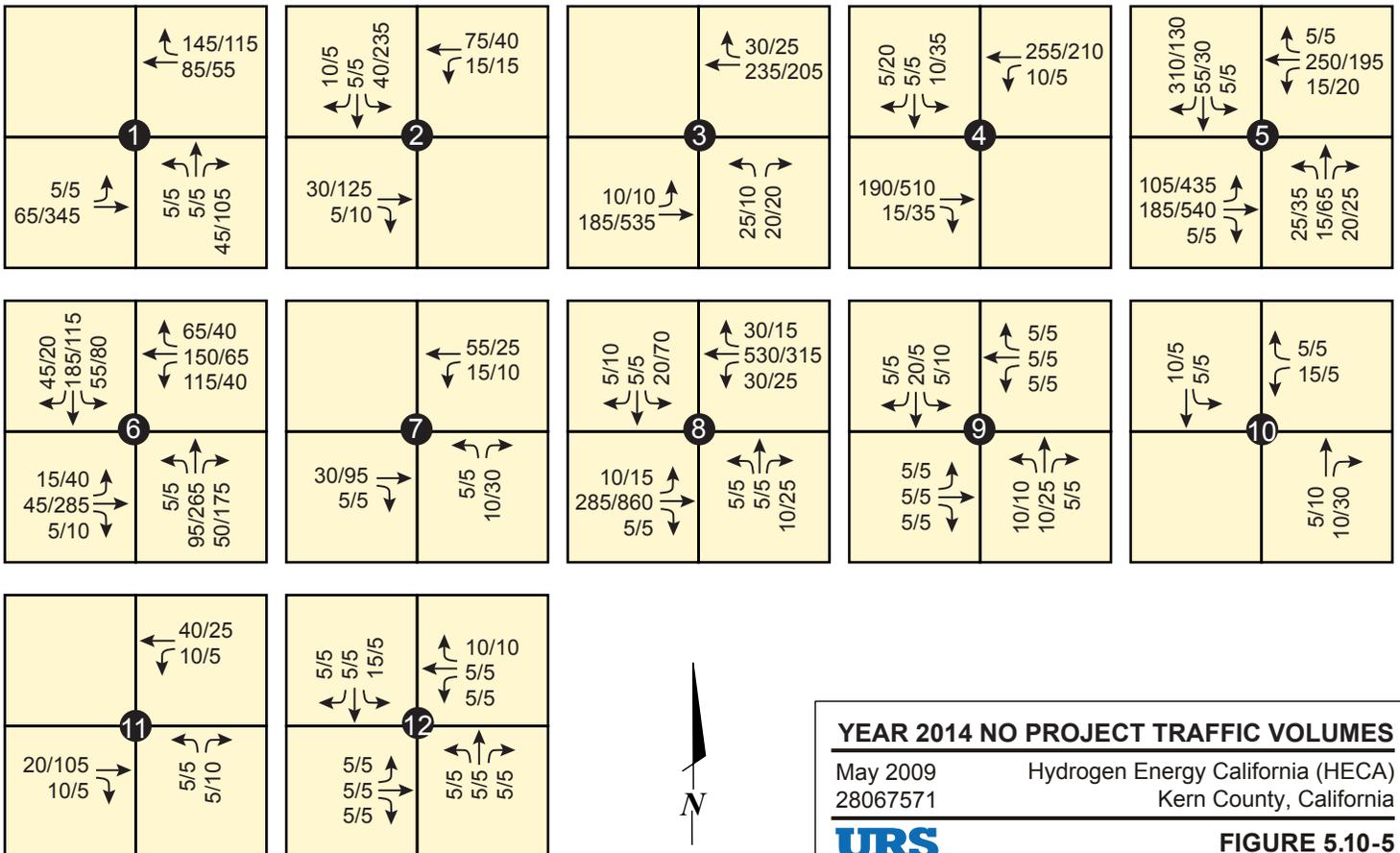


LEGEND

AM/PM Peak Hour Volumes



NOTE: Volumes Rounded to the Nearest Five.

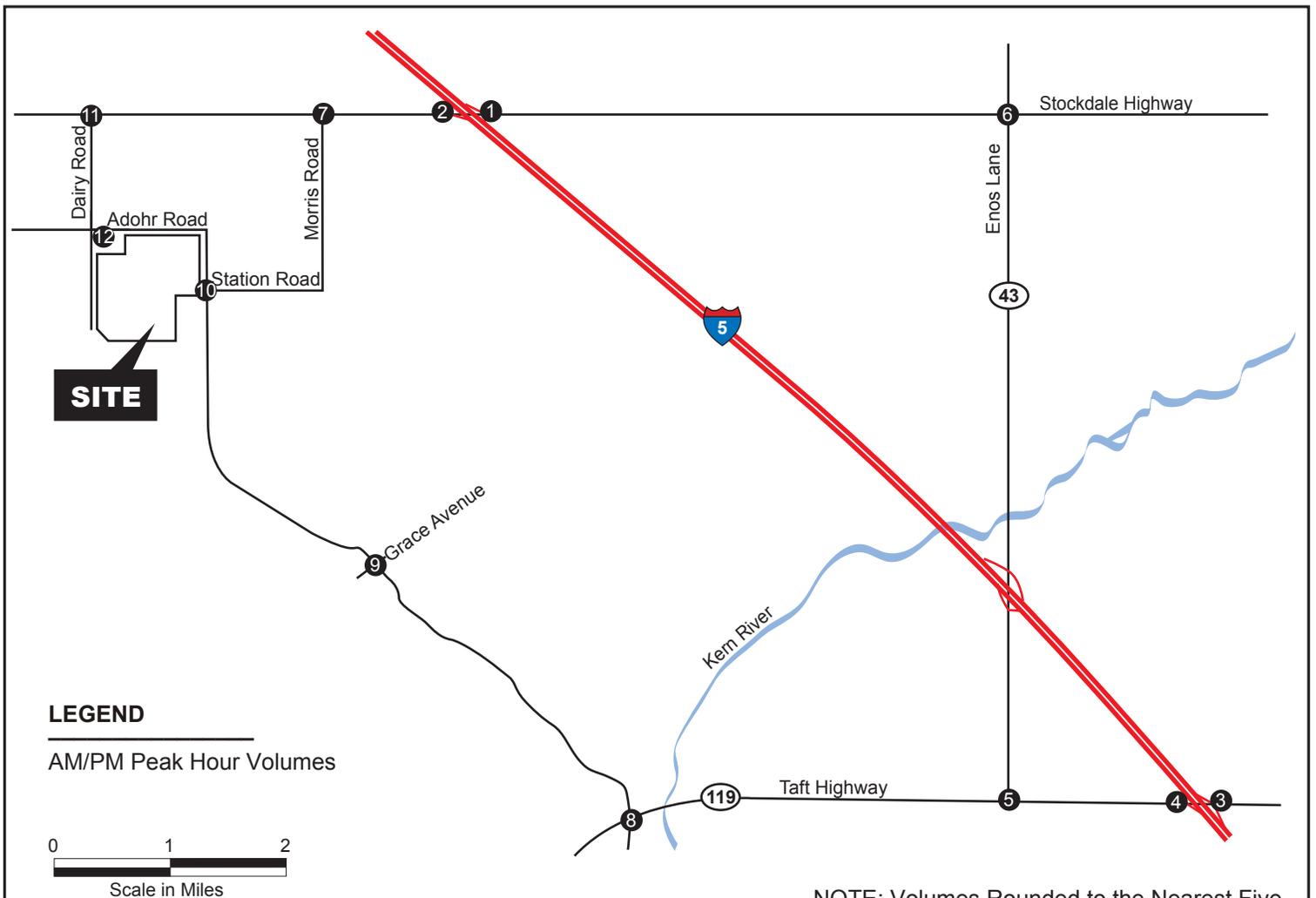


YEAR 2014 NO PROJECT TRAFFIC VOLUMES

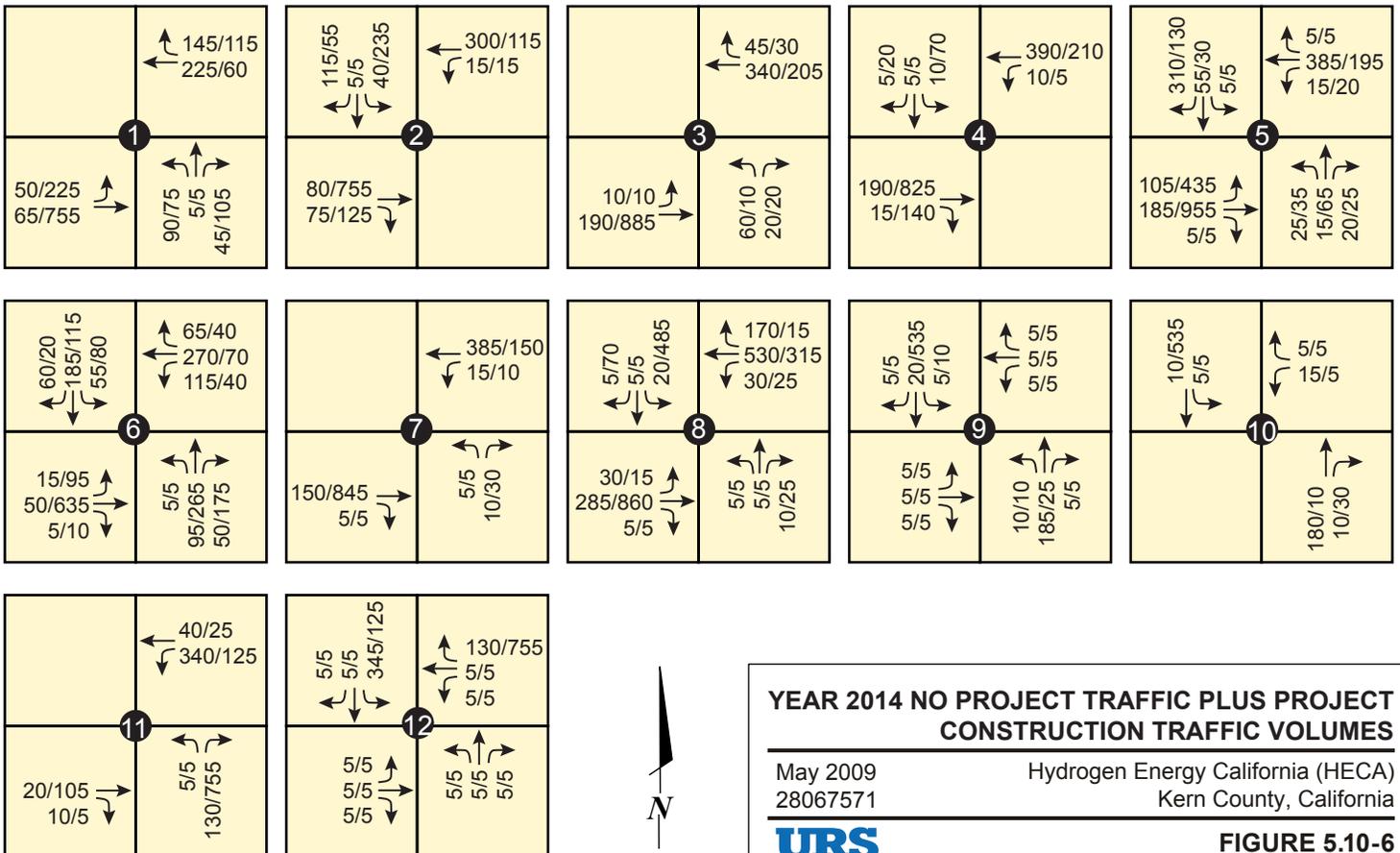
May 2009 Hydrogen Energy California (HECA)
28067571 Kern County, California



FIGURE 5.10-5



NOTE: Volumes Rounded to the Nearest Five.



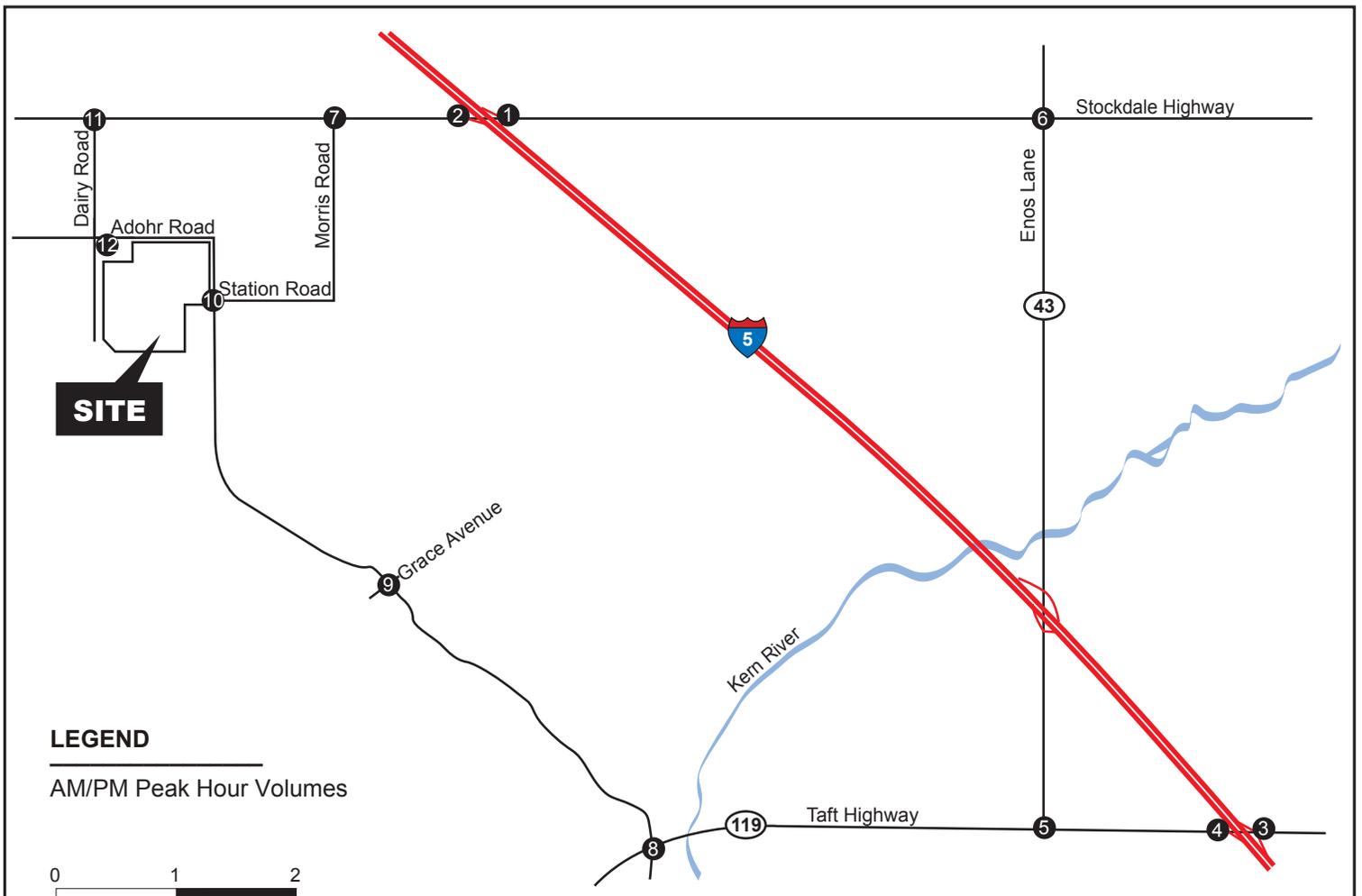
YEAR 2014 NO PROJECT TRAFFIC PLUS PROJECT CONSTRUCTION TRAFFIC VOLUMES

May 2009
28067571

Hydrogen Energy California (HECA)
Kern County, California



FIGURE 5.10-6

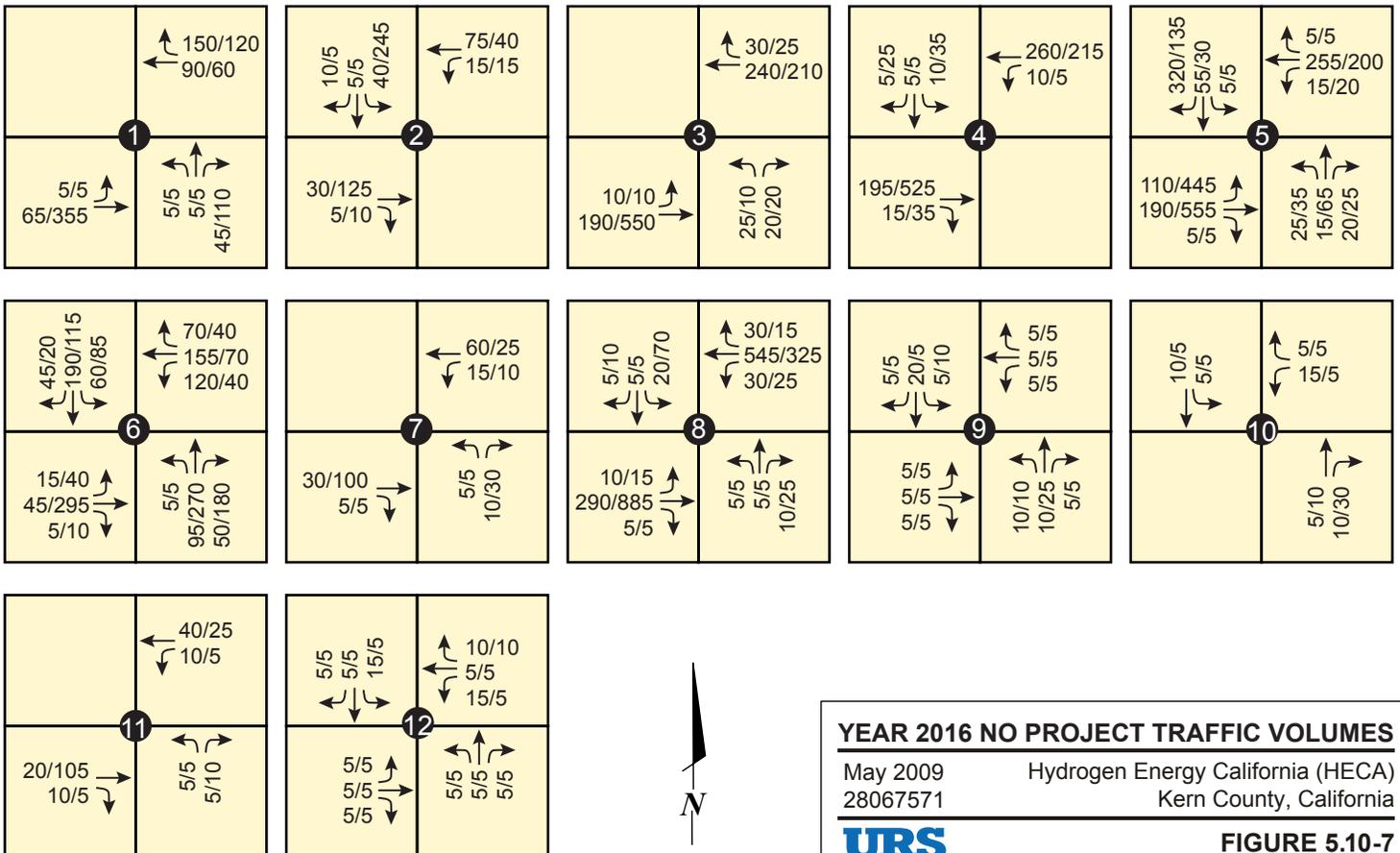


LEGEND

AM/PM Peak Hour Volumes



NOTE: Volumes Rounded to the Nearest Five.

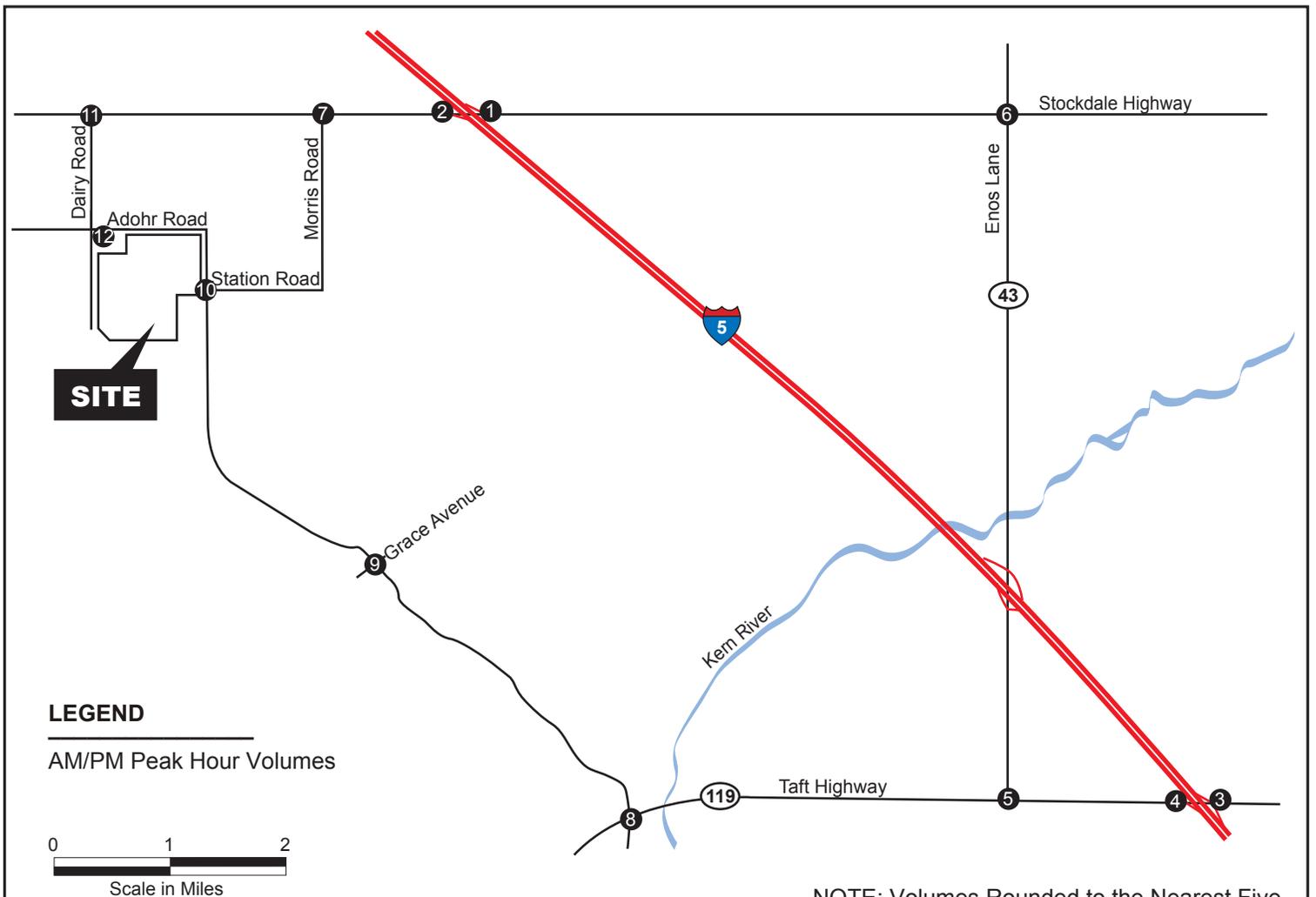


YEAR 2016 NO PROJECT TRAFFIC VOLUMES

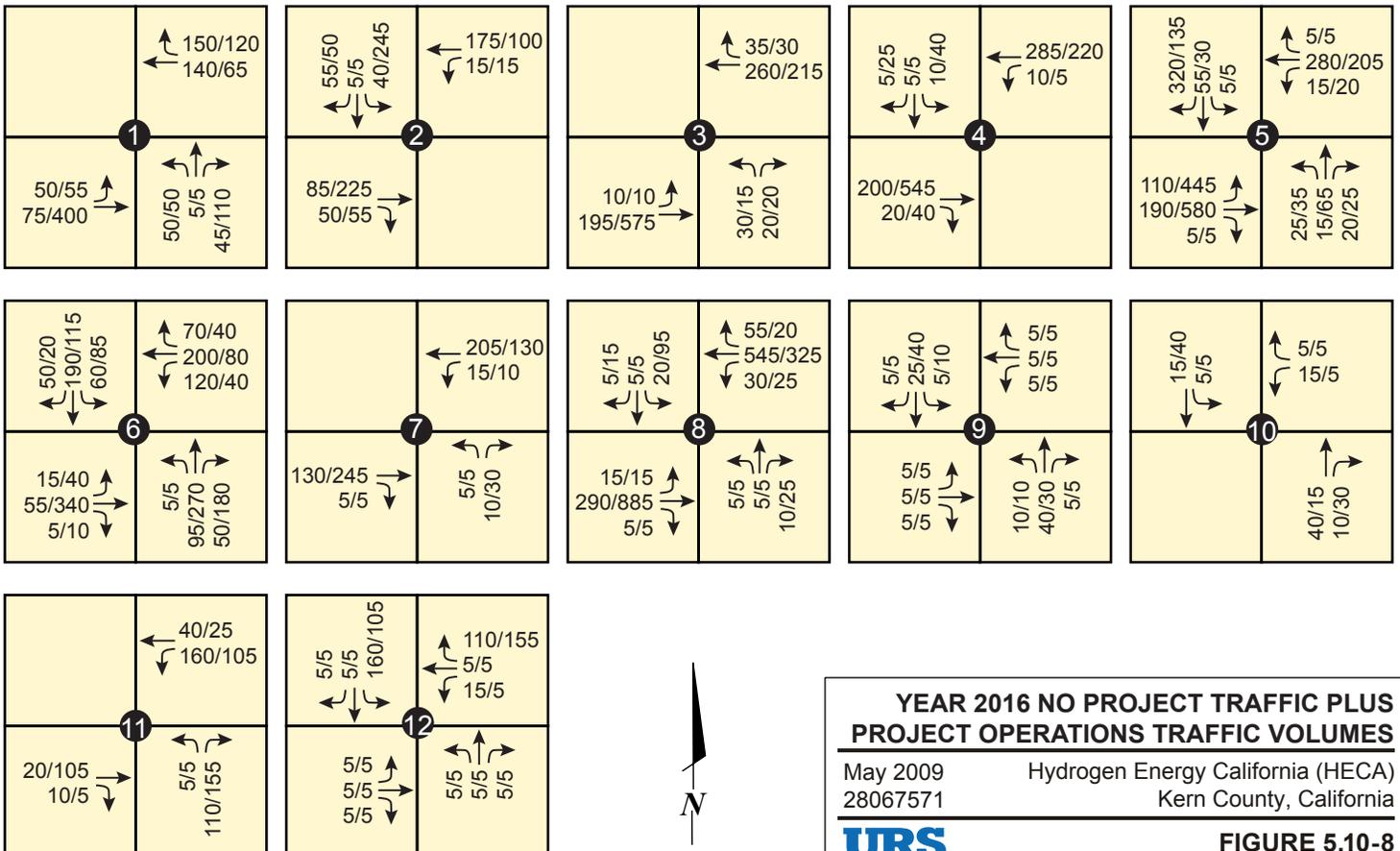
May 2009 Hydrogen Energy California (HECA)
28067571 Kern County, California



FIGURE 5.10-7



NOTE: Volumes Rounded to the Nearest Five.



Adequacy Issue: Adequate Inadequate

DATA ADEQUACY WORKSHEET

Revision No. 0 Date _____

Technical Area: **Traffic and Transportation**

Project: _____

Technical Staff: _____

Project Manager: _____

Docket: _____

Technical Senior: _____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Section 5.10.1, p. 5.10-3 Section 5.10.2, p. 5.10-10 Section 5.10.3, p. 5.10-22 Section 5.10.4, p. 5.10-22		
Appendix B (g) (5) (A)	A regional transportation setting, on topographic maps (scale of 1:250,000), identifying the project location and major transportation facilities. Include a reference to the transportation element of any applicable local or regional plan.	Figure 5.10-1 Figure 5.10-2		

Adequacy Issue: Adequate _____ Inadequate _____
 Technical Area: **Traffic and Transportation**
 Project Manager: _____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date _____
 Technical Staff: _____
 Technical Senior: _____

Project: _____
 Docket: _____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (5) (B)	If the proposed project including any linear facility is to be located within 20,000 feet of an airport runway that is at least 3,200 feet in actual length, or 5,000 feet of a heliport (or planned or proposed airport runway or an airport runway under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration), discuss the project's compliance with the applicable sections of the current Federal Aviation Regulation Part 77 – Objects Affecting Navigable Airspace, specifically any potential to obstruct or impede air navigation generated by the project at operation; such as, a thermal plume, a visible water vapor plume, glare, electrical interference, or surface structure height. The discussion should include a map at a scale of 1:24,000 that displays the airport or airstrip runway configuration, the proposed power plant site and related facilities.	Section 5.10.5.1, p. 5.10-24 Section 5.10.7, p. 5.10-32		
Appendix B (g) (5) (C)	An identification, on topographic maps at a scale of 1:24,000, and a description of existing and planned roads, rail lines; (including light rail), bike trails, airports, bus routes serving the project vicinity, pipelines, and canals in the project area affected by or serving the proposed facility. For each road identified, include the following information, where applicable:	Figure 5.10-2		
Appendix B (g) (5) (C) (i)	Road classification and design capacity;	Figure 5.10-2		
Appendix B (g) (5) (C) (ii)	Current daily average and peak traffic counts;	Appendix U.		

Adequacy Issue: Adequate _____ Inadequate _____
 Technical Area: **Traffic and Transportation**
 Project Manager: _____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date _____
 Technical Staff: _____
 Technical Senior: _____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (5) (C) (iii)	Current and projected levels of service before project development, during construction, and during project operation;	Table 5.10-2, p. 5.10-8 Table 5.10-6, p. 5.10-16 Table 5.10-7, p. 5.10-17 Table 5.10-8, p. 5.10-18 Table 5.10-9, p. 5.10-20 Figures 5.10-5, 5.10-6, 5.10-7, 5.10-8		
Appendix B (g) (5) (C) (iv)	Weight and load limitations;	Figure 5.10-2		
Appendix B (g) (5) (C) (v)	Estimated percentage of current traffic flows for passenger vehicles and trucks; and	Section 5.10.1.8, p. 5.10-9 Figure 5.10-3		
Appendix B (g) (5) (C) (vi)	An identification of any road features affecting public safety.	Figure 5.10-2		
Appendix B (g) (5) (D)	An assessment of the construction and operation impacts of the proposed project on the transportation facilities identified in subsection (g)(5)(C). Also include anticipated project-specific traffic, estimated changes to daily average and peak traffic counts, levels of service, and traffic/truck mix, and the impact of construction of any facilities identified in subsection (g)(5)(C).	Appendix U		
Appendix B (g) (5) (E)	A discussion of project-related hazardous materials to be transported to or from the project during construction and operation of the project, including the types, estimated quantities, estimated number of trips, anticipated routes, means of transportation, and any transportation hazards associated with such transport.	Section 5.12 Hazardous Materials Handling and Figure 5.12-2		

Adequacy Issue: Adequate _____ Inadequate _____

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Docket: _____

Technical Senior: _____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (i) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, leases, and permits applicable to the proposed project, and a discussion of the applicability of, and conformance with each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed; and	Table 5.10-10, p. 5.10-29 Section 5.10.5, p. 5.10-24		
Appendix B (i) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits, leases, and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Table 5.10-11, p. 5.10-32 Section 5.10.6, p. 5.10-32		
Appendix B (i) (2)	The name, title, phone number, address (required), and email address (if known), of an official who was contacted within each agency, and also provide the name of the official who will serve as a contact person for Commission staff.	Table 5.10-11, p. 5.10-32 Section 5.10.6, p. 5.10-32		
Appendix B (i) (3)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Table 5.10-12, p. 5.10-33 Section 5.10.7, p. 5.10-32		