7.10 TRAFFIC AND TRANSPORTATION

This section assesses transportation impacts associated with the construction and operation of the Marsh Landing Generating Station (MLGS) project. The analysis primarily examines impacts on roadway level of service expected during both construction and operation of the plant. Additional transportation factors examined in this section include parking, pedestrian and bicyclist impacts, safety, goods movement, and potential impacts to air, rail, and waterborne transportation networks. This section also identifies and reviews applicable laws, regulations and ordinances relevant to traffic and transportation activities.

Information sources include traffic counts conducted by URS Corporation, data provided by the California Department of Transportation (Caltrans), field observations, and conversations with Mirant and City of Antioch staff. URS Corporation performed project area explorations during the month of November 2007 to document roadway characteristics, identify physical constraints, and assess general traffic conditions in the immediate vicinity of the project.

7.10.1 Affected Environment

7.10.1.1 Regional Roadway Facilities

The project is located in a heavy industrial area of Contra Costa County, approximately 27 acres within the northwestern portion of the existing Contra Costa Power Plant (CCPP) property. The project is located approximately 0.5 mile west of State Route (SR) 160 and the Antioch Bridge and south of the San Joaquin River. Figure 7.10-1 illustrates the vicinity of the project. Adjacent to the CCPP property, PG&E owns a switchyard and the Gateway Generating Station.

The MLGS site lies near prime transportation corridors that connect northeastern Contra Costa County with major destinations within the state. SR 4 runs in an east-west and allows access to Interstate (I-) I-680, I-80 and I-5. SR 160 runs north from SR 4 towards Sacramento. Figure 7.10-2 shows the location of the project.

SR 4 provides road access from the San Francisco Bay Area. Currently, it provides four to six lanes of mixed flow traffic with limited access. The speed limit along SR 4 varies between 45 and 65 miles per hour (mph) as the road transitions between urban and rural settings. Near the MLGS site, the sections of SR 4, near City of Antioch, consists of four to six lanes with limited access highway that carry an average daily volume of approximately 37,590 vehicles consisting of 5,300 vehicles during the peak hour near SR 160 and more than 184,000 vehicles in both directions at A Street (Caltrans, 2006). Under Existing Conditions, SR 4 carries approximately 6 percent truck traffic of the total traffic volume in the immediate vicinity of the project.

SR 160 runs north-south between Sacramento County and Contra Costa County. The average daily traffic volume along SR 160 at Wilbur Avenue (southeast of the project site) is approximately 12,950 vehicles, with approximately 1,000 vehicles in the peak hour. Under Existing Conditions, SR 160 carries approximately 7 percent truck traffic of the total traffic volume in the immediate vicinity of the project.

SR 4 and SR 160 do not have any weight or load limitations in the immediate vicinity of the project.

7.10.1.2 Local Roadway Facilities

Wilbur Avenue provides direct access to the MLGS site from SR 160. Currently, Wilbur Avenue is a two-lane road with shoulders and left-turn pockets at the intersections. Traffic counts taken within the project's vicinity and west of SR 160 reveal that approximately 15,000 vehicles per day transverse Wilbur Avenue, with a nearly even split between westbound and eastbound traffic. Wilbur Avenue between Viera Avenue and SR 160 has a posted speed limit of 45 mph. Land uses along the south side of Wilbur Avenue consist of numerous industrial and commercial activities, including vehicle storage and freight rail facilities. Land uses on Wilbur Avenue between Minaker Drive and A Street include residential land uses. Under Existing Conditions, the local roadways carry approximately 2 percent truck traffic of the

total traffic volume in the immediate vicinity of the project (see Appendix P-1). Wilbur Avenue between SR 160 and Viera Avenue does not have any weight restriction signs posted.

7.10.1.3 Level of Service

Level of service (LOS) is a qualitative indication of the level of delay and congestion experienced by motorists using an intersection. LOS is designated by the letters A through F, with A being the best condition and F being the worst (high delay and congestion). Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption, and lost travel time. Table 7.10-1 summarizes the LOS criteria.

Signalized study intersections were evaluated based on the analysis method outlined in the *Technical Procedures Update* prepared by Contra Costa Transportation Authority (CCTA, 2006). The CCTA planning level analysis uses traffic volumes, lane geometry and signal phasing to estimate the volume-to-capacity ratio at a signalized intersection. For unsignalized intersections, the method from Chapter 17 of the Transportation Research Board's 2000 *Highway Capacity Manual* (HCM) was used. The LOS at unsignalized intersections is based on the average delay for stopped controlled movements. Tables 7.10-2 and 7.10-3 summarize the LOS criteria for signalized and unsignalized intersections.

Roadway segments with two lanes were evaluated using appropriate methodologies contained in Chapter 20 of the 2000 Highway Capacity Manual. Two-lane highways where motorists expect to travel at high speeds are classified as Class I highways. On Class I highways, efficient mobility is paramount. These methodologies report level of service based on both percentage of time-spent-following and average travel speed for a Class I facility. Two-lane highways that function as access routes to Class I facilities serve as scenic or recreational routes that are not primary arterials or pass through rugged terrain and are generally assigned to Class II. They often serve short trips and mobility on them is less critical. All study roadway segments were evaluated as Class I facilities. Table 7.10-4 summarizes the LOS thresholds for two-lane roadway segments.

For multi-lane roadway segments, LOS is based on the typical speed-flow and density-flow relationships as defined in the 2000 HCM. Multi-lane roadway segments have posted speed limits of 45 to 55 mph. They usually have four to six lanes, any may or may not have a median, or a two-way left-turn lane. They are typically located in suburban communities, leading into central cities, or along high-volume rural corridors connecting two cities or two significant land uses that generate a substantial number of daily trips. Table 7.10-5 summarizes the LOS thresholds for multi-lane roadway segments.

An existing LOS analysis based on the existing traffic volumes, lane geometries, and traffic controls was conducted for the following six study intersections and five roadway segments.

Study Intersections

- Minaker Drive/Wilbur Avenue
- Viera Avenue/Wilbur Avenue
- Fleming Avenue/Wilbur Avenue
- SR 160 SB Ramps/Wilbur Avenue
- SR 160 NB Ramps/Wilbur Avenue
- Bridgehead Drive/Wilbur Avenue

Roadway Segments

- Wilbur Avenue, between Minaker Drive and Viera Avenue
- Wilbur Avenue, between Viera Avenue and Fleming Avenue
- Wilbur Avenue, between Fleming Avenue and SR 160 SB Ramps
- Wilbur Avenue, between SR 160 NB Ramps and SR 160 SB Ramps
- Bridgehead Road, between Shady Haven Trailer Park and Wilbur Avenue

LOS analysis at the study intersections and roadway segments was conducted for the following conditions:

- Existing Conditions – Evaluate traffic conditions based on existing lane geometries, traffic controls and traffic volumes.
- Near-Term Conditions – Evaluate traffic conditions considering existing traffic plus growth applied to Year 2009 traffic volumes based on CCTA Travel Demand Model. Year 2009 was evaluated as Near-Term Conditions, since the construction of the project is projected to begin during 2009.
- Near-Term plus Project Conditions – Evaluate traffic conditions considering Near-Term forecasted conditions plus project construction-related traffic. Construction-related traffic was considered to analyze worst-case conditions, since the construction workforce is projected to generate maximum trips.
- Projected Future Conditions (2035) – Future conditions (Year 2035) were forecasted, based on CCTA Travel Demand Model, taking into account future developments in addition to planned roadway improvements.
- Projected Future Conditions plus Project Operations (2035) – Future forecasted conditions (Year 2035) plus project-related traffic during operations.

Peak-hour turning movement volumes at the study intersections and 24-hour bi-directional traffic volumes along the study roadway segments were collected during the month of November 2007. Figure 7.10-3 illustrates the existing lane geometries and traffic control at the study intersections. Figure 7.10-4 illustrates the peak-hour turning movement volumes at the study intersections and 24-hour traffic volumes under existing conditions. The peak-hour turning movements and 24-hour bi-directional traffic volumes are included in Appendix P. It should be noted that the peak hour turning movement volumes used for the analysis, do not include the construction traffic from the Gateway Generating Station (GGS) construction. The GGS construction is projected to be completed by the time the construction of MLGS begins.

LOS analysis at the study intersections and roadway segments was conducted based on the traffic volumes, lane geometries and traffic control data collected. Tables 7.10-6 and 7.10-7 summarize the results of the analysis. Under existing conditions, all of the study intersections operate at acceptable levels (i.e., LOS D or better), except the intersection of Bridgehead Drive and Wilbur Avenue, which operates at unacceptable levels during the a.m. peak hour. This intersection was analyzed further, and it was determined that it could be restored to operate at acceptable levels of service with the installation of traffic signals at the intersection. In addition, all of the approaches at the intersection would need to provide an exclusive left-turn lane and shared through/right-turn lane. Signal warrant analysis at the intersection using MUTCD Warrant 3 (Peak Hour Warrant) was conducted at the intersection. The analysis revealed that the intersection warrants installation of a traffic signal.

Under existing conditions, four of the five study roadway segments operate at unacceptable levels during both peak hours. The roadway segment of Wilbur Avenue, between the SR 160 northbound and southbound ramps is the exception, operating at LOS A. The roadway segments that are operating at unacceptable levels could be restored to operate at acceptable levels by widening the roadway segments to provide two lanes in either direction.

The projected average daily traffic volumes along the roadway segments under existing conditions (and all other analyzed scenarios) are summarized in Table 7.10-8.

Detailed calculations for the study intersections and roadway segments are attached in Appendix P.

7.10.1.4 Other Transportation Elements

Parking

Parking for the existing CCPP is provided on site. Other facilities in close proximity to the vicinity of this site have available onsite parking sufficient to accommodate all existing parking demand. Wilbur Avenue contains soft shoulders and adequate space for offsite parking when needed.

Public Transportation

Eastern Contra Costa Transit Authority (Tri Delta Transit) provides over 2,500,000 trips each year for a population of nearly 250,000 residents in the 225 square miles of Eastern Contra Costa County according to information provided by Tri-Delta Transit. Tri Delta Transit operates 15 local bus routes Monday through Friday, 3 local bus routes on weekends and holidays, commuter routes to Livermore, Dublin, and Martinez, door-to-door bus service for senior citizens and people with disabilities, and numerous shuttle services for community events.

Tri Delta Transit functions as the principal transit service provider for the Eastern Contra Costa communities of Bay Point: Pittsburg, Antioch, Brentwood, and Oakley. Service remains limited, with express Route 300 running every 30 minutes during peak periods, and Route 387, which operates on 60-minute intervals. Weekend service is provided by Routes 392 and 393. Although Routes 380 and 387 run along Wilbur Avenue, they terminate west of Minaker Drive. No bus line carries passengers directly to the project location.

BART has a Pittsburg/Bay Point station that directly connects these communities with the rest of the Bay Area, including Contra Costa County communities such as Concord, Walnut Creek, and Lafayette, as well as downtown Oakland, San Francisco, and Daly City.

Bicycle and Pedestrian Circulation

Lanes and signing for bicyclists are provided on Wilbur Avenue west of Shipyard Road under existing conditions. East of Shipyard Road, the speed limit on Wilbur Avenue increases from 25 mph to 45 mph as land use transitions from residential to industrial. The eastern portion of Wilbur Avenue provides shoulders and adequate space to accommodate cyclists; however, no specific facilities or signs currently exist. Pedestrian circulation close to the plant would be difficult, considering the size of properties. Wilbur Avenue provides no sidewalks east of Shipyard Road.

Airports

Oakland International Airport, located along Interstate 880 approximately 50 miles from the project site, operates as the nearest major international gateway. San Francisco International Airport, one of the nation's busiest airports, is located approximately 70 miles from the project site and is accessible via U.S. Highway 101. San Jose Mineta International Airport is located farther south, also accessible via U.S. Highway 101 or I-280. Regional airports accessible from Antioch include Byron, Sacramento, Stockton, and Buchanan fields. The airports closest to the project are Byron and Buchannan; both are more than 20,000 feet (3.8 miles) from the site. Byron airport is a full-service general aviation airport approximately 15 miles southeast of the project (see Figure 7.10-1). Buchannan airport is a general use airport approximately 14 miles southwest of the project.

Safety

No roadway construction is currently occurring along Wilbur Avenue in the immediate vicinity of the project. Sight distances are adequate at the study intersections. Wilbur Avenue, including the access road to the project, provides adequate sight distances. Railroad crossings present a moderate safety hazard, although safety measures such as signs and crossing gates identify theses hazards, and railroad crossing signs are currently posted along Wilbur Avenue.

Within the vicinity of the MLGS proposed site, Wilbur Avenue has an accident rate of approximately 0.81 vehicles collisions per year (based on data provided by City of Antioch Police Department). Over a period of 10 years there have been a total of 32 recorded collisions along Wilbur Avenue between Minaker Drive and Bridgehead Road. Out of the 32 collisions, 20 occurred at the intersection of Wilbur Avenue and Minaker Drive. This accident rate is lower than the statewide accident rate for similar facilities, which indicates that there are no significant safety issues within the immediate vicinity of the MLGS site. Accident data provided by City of Antioch Police Department are attached in Appendix P.

Goods Movement

Construction materials such as concrete, pipe, wire and cable, fuels, reinforcing steel, and small tools and comsumables will be delivered to the MLGS site by trucks. The eastern portion of Wilbur Avenue remains relatively isolated from downtown Antioch, with the land uses immediately surrounding the MLGS site consisting entirely of industrial uses. The resulting low traffic volumes, close proximity to the entrance of SR 160, and the necessity of maintaining the local industrial activities require access by freight vehicles. Freight rail service currently supplies the various industrial uses in proximity to the MLGS site.

7.10.2 Environmental Consequences

This section discusses potential transportation-related impacts from the construction and operation of the project. A Year 2009 (i.e., Near-Term) traffic analysis was conducted to evaluate the impacts of traffic generated by construction workers from the project, and a Year 2035 (i.e., Projected Future) traffic analysis was conducted to evaluate the impacts of traffic generated by employees at the project. Essentially all of the project elements would be constructed within Mirant's property. All construction parking and laydown areas would be within the CCPP property. The only offsite features are the new water supply and waste water lines that would be constructed along Wilbur Avenue and the satellite treatment facility at Bridgehead Lift Station (see Figure 7.10-2).

7.10.2.1 Thresholds of Significance

Significance criteria were developed based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines, which identifies potentially significant project impacts. A significant traffic-related project impact would occur if the project significantly changed the operating conditions on the surrounding roadway network. Roadway section LOS analysis was conducted to assess operational performance of the roads during construction and operation of the project. For LOS, the applicable significance threshold is a degradation in level of service from acceptable levels to unacceptable levels.

Significant issues to be addressed include:

- Additional Vehicular Traffic: would the additional traffic generated by the project adversely affect operating conditions (i.e., LOS) on local and regional roadways?

- Public Transit: would the additional traffic generated by the project impede public transit operations in the vicinity of the project?

- Bicycle and Pedestrian Circulation: would the additional traffic generated by the project obstruct bicycle and pedestrian access to and from the project site or along adjacent bicycle and pedestrian routes?

- Parking Facilities: would the additional traffic generated by the project consume limited parking in the proximity of the project site?

- Goods Movement: would the additional traffic generated by the project hinder goods movement along local and regional roadways?

- Safety: would the traffic generated by the project impose any safety concerns, such as a significant increase in accidents?

- Air, Rail, and Waterborne Traffic: would the traffic generated by the project interfere with air, rail, or waterborne traffic, or access to these transportation modes?

Based on the adopted policies of CCTA, a significant impact would occur if the addition of project-related traffic would:

- Cause:

  – The operations of a signalized study intersection to decline from an acceptable level (LOS D) to an unacceptable level (LOS E or higher);

  – Deterioration in already unacceptable operations at a signalized intersection by a change in v/c ration of more than 0.01 or a change in average delay of more than 5 seconds; or

  – Substantially increase hazards or congestion due to a design feature (e.g., sharp curves) or incompatible uses.

- Result in inadequate emergency access; or

- Result in inadequate parking capacity.

7.10.2.2 Construction Impacts

Construction Activities and Traffic Forecast

Mobilization of the project is expected to begin after receipt of certification. Construction is estimated to begin in October 2009 and take up to 33 months. Commercial operation for the Simple Cycle units is planned for summer 2011, with the operation of the FP10 units in summer of 2012.

Weekday traffic operations during peak hours were evaluated for the local roadway network adjacent to the project during construction. Onsite construction of the project is expected to take place over a period of 33 months, as summarized in Table 7.10-9. The schedule has been estimated on a single-shift, 10 hour per day and 50 hour per week basis. However, occasional use of a second shift may be necessary to make up schedule delays or to complete critical construction activities. During the startup and testing phase of the project, some activities may continue 24 hours per day, 7 days a week.

The onsite workforce will consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The onsite workforce is expected to reach its maximum peak of 403 individuals during the 21st month of construction. However, peak construction traffic is expected during

the 19th month of construction when both the construction workforce and delivery truck traffic are projected to be high, as shown on Table 7.10-9.

Based on the projected construction workforce, additional traffic from the project was projected. For the worst-case analysis, it is assumed that 90 percent of the total construction workforce and 100 percent of the delivery trucks will arrive and depart from the project site during the a.m. and p.m. peak hours. Table 7.10-10 summarizes the proposed trip generation from the project in the peak construction month. Based on experience with similar projects, it is estimated that part of the workforce will carpool, and the average vehicle occupancy will be 1.5 persons per vehicle. During the peak month, the estimated number of construction staff arriving and departing during the peak hours per day based on the assumption is projected to be 357 (397 × 90 percent = 357). The projected number of trips by construction staff is projected to be 238 (357 ÷ 1.5 = 238) during the peak hours. The greatest number of truck trips expected during construction of the project in the peak construction month is approximately 16 daily truck trips. Truck deliveries will normally be made on weekdays between 7:00 a.m. and 5:00 p.m. Peak construction traffic during the peak month (Month 19) was used for level of service analysis, to analyze a worst-case scenario for construction traffic.

Based on the assumptions and projected construction workforce, it is projected that during the peak construction month the project is projected to generate approximately 508 daily trips, with 254 trips occurring during the a.m. and p.m. peak hours. It should be noted that the construction workers usually arrive early in the morning and depart early in the evening before the peak hour of the roadway begins. Assuming the arrival and departure of the construction workers during the peak hour results in a conservative traffic analysis. It should be noted that the projected traffic will occur only during the peak construction month and will then start to reduce.

New water supply and waste water lines will be constructed for the project. Construction of these pipelines would require trenching within or along Wilbur Avenue, and could potentially require alternating partial closure of the traveled roadway during trenching work. If any roadway closures are required during construction, the closures would be scheduled in accordance with County and City requirements.

Most of the heavy equipment and its components will be transported by rail to the existing spur at the site. Potential candidates for rail shipment are the combustion turbines and generators, GSU transformers, and HRSG modules. Shipments will be offloaded at the laydown yard. A heavy haul transport will be used to move the equipment to their foundations or assembly point. Truck deliveries normally will be on weekdays between 7:00 a.m. and 5:00 p.m.

Trip Distribution

Directional trip distribution and assignment of projected traffic generated by the project was estimated using existing traffic counts, assessment of existing and projected traffic flows and travel patterns, vicinity and location of the project, and the Regional Travel Demand Model maintained by CCTA. The trip distribution is illustrated in Figure 7.10-5. The projected traffic from the project during construction was assigned to the study intersections based on the trip distribution. Figure 7.10-6 illustrates the project only peak-hour trips at the study intersections that are projected to occur during the peak construction month of the project.

Traffic Impacts during Project Construction

It is assumed that construction of the project will start in late 2009. LOS analyses at the study intersections and roadway segments were conducted based on peak-hour turning movements under Near-Term Conditions by applying a growth factor of 4 percent per year to existing traffic volumes at the study intersections and roadway segments. Figure 7.10-7 illustrates the daily average and peak-hour turning

movements at the study intersections under Near-Term Conditions. The projected peak-hour project trips from the project under a worse-case scenario as described above were added to the Near-Term Conditions to project peak-hour traffic volumes under Near-Term plus Project Conditions. The projected daily average and peak-hour turning movements at the study intersections under Near-Term plus Project Conditions are illustrated in Figure 7.10-8.

Level of service analysis under Near-Term and Near-Term plus Project Conditions was conducted based on the projected peak-hour turning movements. Table 7.10-11 summarizes the results of the analysis at the study intersections. Under Near-Term Conditions, all of the study intersections are projected to operate at acceptable levels (i.e., LOS D or better), except the intersection of Bridgehead Drive/Wilbur Avenue, which is expected to operate at LOS F, similar to the Existing Conditions for this intersection. While the addition of traffic from project construction will temporarily decrease the level of service of several of the study intersections, the level of service for all of these (except Bridgehead Drive/Wilbur Avenue as described above) will remain above acceptable levels (i.e., LOS D or better). Therefore the addition of the construction traffic from the project is not projected to have any significant impacts and no additional improvements will be required.

Table 7.10-12 summarizes the results of the analysis for the roadway segments. Similar to existing conditions, four of the five study roadway segments under Near-Term and Near-Term plus Project Conditions are projected to operate at unacceptable levels during both peak hours. The roadway segment of Wilbur Avenue between the SR 160 northbound and southbound ramps is projected to continue to operate above acceptable levels. As shown on Table 7.10-12, the addition of the projected construction traffic from the project during the peak month of construction is not expected to have any significant impacts along the study roadway segments and no additional improvements will be required.

The projected average daily traffic volumes along the roadway segments under Near-Term Conditions (and all other analyzed scenarios) are summarized in Table 7.10-8. Detailed calculations for the study intersections and roadway segments are attached in Appendix P.

Based on the significance thresholds documented under Section 7.10.2.1, it is projected that the addition of the traffic during construction of the project will not have any significant impacts at the study intersections or roadway segments. The addition of the traffic is projected not to degrade the LOS to unacceptable levels.

Parking Facilities

Adequate onsite parking will be provided, and low parking demand from the surrounding land uses will be low. Therefore, the projected traffic during the peak construction month would not have any significant impacts on surrounding parking facilities or roadway segments.

Public Transportation

Since no public transportation routes run along Wilbur Avenue, the addition of the traffic projected to be generated during the peak month of construction is projected not to have any significant impacts on public transportation.

Bicycle and Pedestrian Circulation

A bicycle route runs along Wilbur Avenue west of Shipyard Road. No bicycle facilities are present within the immediate vicinity of the MLGS project. No pedestrian facilities or designated routes are present under Existing Conditions along this eastern portion of Wilbur Avenue; therefore, no significant impacts to pedestrian or bicycle circulation would result from the addition of the traffic projected to be generated during the peak month of construction of the project.

Goods Movement

The relatively few vehicles expected during construction and after the permanent addition of 20 employees, and the small number of businesses located within the immediate vicinity of the project suggest that no significant impacts would result to goods movement.

Safety

The roads within the immediate vicinity of the MLGS site provide adequate sight distances, while accident rates along the eastern section of Wilbur Avenue are relatively low (approximately 0.81 accidents per million vehicle miles traveled per year). Truck traffic within the area does not mandate special consideration, and no significant impacts are expected to result from either construction traffic or the permanent addition of 20 employees.

Air, Rail, and Waterborne Traffic

The project would have no adverse impact on air, rail, or waterborne traffic.

The airports closest to the site are the regional Byron and Buchannan airports, which are 14 miles and 15 miles away from the site, respectively. Due to the considerable distance away from the site, the project would have no effect on air traffic patterns.

In the vicinity of the project study area, the Burlington Northern & Santa Fe Railroad (BNSF) tracks run generally parallel and south of Wilbur Avenue (see Figure 7.10-2). Based on the construction worker routes and delivery routes, construction activities would not adversely conflict with the current rail traffic. Most of the heavy equipment items will be transported by rail to the rail spur located adjacent to the site. Equipment and material will be off-loaded from the rail spur and transported to the site or construction laydown areas by trucks.

The project would not affect any waterborne traffic in the San Joaquin River, since there will be no construction activities in or adjacent to the river.

7.10.2.3 Operation Impacts

Operations Activities and Traffic Forecast

To assess potential traffic impacts from project operations, Projected Future Conditions (i.e., year 2035) were estimated based on CCTA Travel Demand Model forecasts and taking into account future developments in the project area and planned roadway improvements. Future developments are based on the assumption that all vacant lands throughout the County will be developed according to on their specific plan and general plan designations.

Once the Projected Future Conditions were estimated, Projected Future Condition plus Project Operations was estimated.

The project is expected to begin operations in 2012. Plant operations will require approximately 20 permanent workers; 12 full-time personnel working 5 days per week, 8 hours per day, and 8 personnel working a rotating shift. The worst-case scenario for transportation of these workers to and from the MLGS site, it was assumed that there would be no carpooling and all of the workers would arrive and leave during peak hours. It is projected that these workers would generate approximately 40 daily trips, with 20 occurring during the a.m. peak hour and 20 occurring during the p.m. peak hour. The plant is scheduled to operate 7 days a week, 365 days a year, and therefore traffic trips projected to be generated from workers would be consistent throughout the year. Plant operations would also generate approximately 10 delivery truck trips a day. The delivery truck trips are projected to generate

approximately 20 daily trips. The projected trip generation during operation of the plant is summarized in Table 7.10-13.

According to the Contra Costa Transportation Authority, there are three potential projects near the MLGS site. The timing of these projects is unknown. The widening of Wilbur Avenue, from two to four lanes, from east of the BNSF Right-of-Way to SR 160 is one of the potential roadway improvements within this study area. Another potential improvement project identified is the widening of SR 4, from two lanes to three mixed-flow lanes and one High Occupancy Vehicle (HOV) lane in each direction, from Somersville to Hillcrest to SR 160, including auxiliary lanes between interchanges and a wide median to accommodate future mass transit. This potential project also includes construction of interchanges at Somersville Road, Contra Loma/G Street, and partial reconstruction at A Street and Hillcrest Avenue. The interchange of SR 4 and East 18th Street is another potential improvement project.

Signal Warrant Analysis

In addition to level of service analysis, signal warrant analysis using the Manual of Uniform Traffic Control Devices (MUTCD) Peak Hour Warrant (Warrant 3) was conducted at all unsignalized intersections to assess Projected Future (2035) and Projected Future plus Project Operations (2035). Signal warrant analysis under Near-Term plus Project Conditions was not conducted because the construction traffic is projected to be temporary.

Intersections projected to meet the MUTCD peak-hour signal warrant under Projected Future Conditions were analyzed as signalized intersections as described below. It was also assumed that with the installation of traffic signals the intersection approaches would be widened to provide an exclusive left-turn lane and a shared through/right-turn lane. Level of service analysis at the study intersections was conducted based on the projected peak-hour turning movements and the assumptions made above.

Under existing conditions, the intersection of Bridgehead Drive and Wilbur Avenue warrants the installation of traffic signal. Under the Project Future Conditions, the intersections of Fleming Avenue/Wilbur Avenue, Viera Avenue/Wilbur Avenue, SR 160 Northbound Ramps/Wilbur Avenue and SR 160 Southbound Ramps/Wilbur Avenue are also projected to warrant installation of a traffic signal. Therefore, under Projected Future Conditions (2035) and Projected Future Conditions plus Project Operations (2035) analysis, all intersections were assumed to be signalized with lane geometries as shown on Figure 7.10-9.

Traffic Conditions and Impacts during Operations

Based on the minimal operational added trips, the MLGS plant operations would not substantially change the LOS of intersections or roadway segments in the study area. However, even without the project there are three intersections and one roadway segment that have unacceptable conditions (i.e., LOS F) under projected year 2035 conditions.

Level of service analysis at the study intersections and roadway segments was conducted under Projected Future Conditions (2035) to evaluate future traffic conditions and to determine whether a significant cumulative traffic impact exists. The peak-hour turning movements were projected by applying a growth factor of 4 percent per year to project Year 2035 Conditions. Figures 7.10-10 illustrates daily average and peak-hour turning movements at the study intersections under Project Future Conditions (2035). The results of the analysis for Projected Future Conditions (2035) are summarized in Table 7.10-14. Under Projected Future Conditions, three additional study intersections are projected to operate at unacceptable levels during the peak hours. The intersection of Wilbur Avenue/Bridgehead Road is projected to continue to operate at unacceptable levels similar to Existing Conditions. Under Projected Future Conditions the intersections of Viera Avenue/Wilbur Avenue and Fleming Avenue/Wilbur Avenue are

projected to operate at unacceptable levels. This is a significant cumulative impact to study intersections and improvements would be required to restore the intersections.

The roadway segments along Wilbur Avenue in the study area were analyzed as multi-lane roadways, because Contra Costa County has plans to widen Wilbur Avenue to provide two lanes in either direction. The roadway segment of Bridgehead Road between Wilbur Avenue and Shady Haven Trailer Park was analyzed as a two-lane road, similar to Existing Conditions. Table 7.10-15 summarizes the results of the analysis. Under Projected Future Conditions (2035), four of the five roadway segments are projected to operate at acceptable levels, the fifth—roadway segment of Bridgehead Road between Wilbur Avenue and Shady Haven Trailer Park—would not. This would be a significant cumulative impact to study roadway segments and improvements would be required to restore this roadway segment.

The projected average daily traffic volumes along the roadway segments under Projected Future Conditions (and all other analyzed scenarios) are summarized in Table 7.10-8.

Level of service analysis at the study intersections and roadway segments was conducted under Projected Future Conditions plus Project Operations (2035) to evaluate future traffic generated from project operation and to determine whether the project's contribution to the cumulative traffic impact is cumulatively considerable. Traffic from the project was distributed based on the trip distribution at the study intersections and roadway segments and added to the projected traffic volumes under Projected Future Conditions. Figure 7.10-11 illustrates the project only peak-hour turning movements at the study intersections under Projected Future Conditions. Figure 7.10-12 illustrates daily average and peak-hour turning movements at the study intersections under Project Future Conditions plus Project Operations. Tables 7.10-14 and 7.10-15 summarize the results of the Projected Future Conditions (2035) and Project Future Conditions plus Project Operations (2035) analysis for study intersections and roadway segments. The addition of the traffic from the project is not projected to have a significant impact on intersections or roadway segments and is not considered cumulatively considerable. Therefore the project's operational impacts would be less than significant and would not require any additional improvements.

Detailed calculations for the level of service analysis at the study intersections and roadway segments are attached in Appendix P in Volume II of this AFC.

While the traffic generated during operations is expected to have a less-than-significant impact on future traffic conditions, a significant future cumulative traffic impact is projected for study area intersections and roadways. The three intersections and one road segment in the project area are already operating at unacceptable levels and require improvements.

Hazardous Materials and Waste Transport

Construction of the proposed facility improvements would generate hazardous wastes consisting primarily of batteries, mercury (e.g., fluorescent lights), asbestos-containing materials, and various liquid wastes (e.g., cleaning solutions, solvents, paint, and antifreeze). In the meanwhile, the MLGS would generate additional materials that include lubricants, water treatment chemicals, herbicides and pesticides, and sludge.

Truck trips required to transport of hazardous waste materials during normal plant operations are included in the calculation of truck trips in the above sections. A licensed hazardous waste transporter would move materials that require offsite disposal to a Class I hazardous waste landfill. Direct access by waste haulers to the MLGS will be via Wilbur Avenue. The close proximity of the MLGS to SR 4 prevents any need to carry hazardous waste along residential streets. Upon reaching SR 4, hazardous waste haulers can head east to Stockton to reach I-5. Alternatively, haulers could continue through Stockton SR 99, which parallels I-5 but runs slightly east through the Central Valley communities of Merced and Fresno. I-5 and SR 99 reach three Class I hazardous waste facilities, see Section 7.13, Waste Management, for additional information.

I-5, which is the major highway that would be used to carry hazardous wastes from the MLGS to the appropriate landfills, contains adequate capacity to accommodate these vehicle trips. In case of a hazardous materials spill, the California Highway Patrol, local fire department, and other local authorities shall be contacted immediately by the transporter.

Aqueous ammonia will be used, stored, and delivered to the site during operation as described in detail in Section 7.12, Hazardous Materials Handling. Tanker trucks with a capacity of up to about 8,000 gallons will deliver aqueous ammonia to the facility from suppliers in Northern or Central California. Such deliveries will be made as necessary (approximately twice a week during peak operation).

7.10.3 Mitigation Measures

The addition of the traffic projected to be generated from the project during construction or during operations of the project is projected not to have any significant impacts at the study intersections or roadway segments. No additional improvements than that required under "No-Project" Conditions will be required due to the addition of the traffic from the project. Based on the significance threshold documented earlier, the addition of the traffic from the project is projected not to have any significant impacts at the study intersections or roadway segments.

The following are proposed mitigation measures to minimize construction-related trip-making and resultant increases of traffic to the surrounding roadway circulation system.

TRA-1 Traffic Control Measures

A standard traffic and monitoring control plan designed to minimize impacts to traffic flow will be developed and implemented consistent with the size and scope of the project construction activity.

Proposed measures include but are not limited to the following:

- Schedule traffic lane or road closures during off-peak hours whenever possible (e.g., during construction of pipeline along Wilbur Avenue).
- Use proper signs and traffic control measures in accordance with Caltrans, County, and City requirements. All traffic signs, equipment, and control measures shall conform to the provisions specified in the California Manual of Uniform Traffic Control Devices. Specific jurisdictional requirements will be identified during the plan review and approval process.
- Schedule traffic lane or road closures during off-peak hours whenever possible (e.g., during construction of pipeline along Wilbur Avenue).
- Employ cut and cover techniques during the excavation/trenching operations for utilities to minimize roadway delays.
- Limit vehicular traffic to designated access roads, construction laydown and worker parking areas, and the project construction site.
- Provide orientation and briefing to employees and contractors on the desired construction route.
- Encourage worker carpooling to minimize drive-alone worker trips.

7.10.4 Laws, Ordinances, Regulations, and Standards

Table 7.10-16 summarizes applicable traffic and transportation laws ordinances, regulations, and standards for the project.

The Contra Costa County Transportation Authority serves as the principal transportation agency for Contra Costa County. In order to ensure a uniform standard for analyzing traffic impacts, CCTA has prepared Technical Procedures that detail the appropriate analytical tools and methodology for conducting traffic studies. Local jurisdictions within Contra Costa County follow the CCTA Technical Procedures and guidelines for analyzing traffic impacts.

7.10.5 Involved Agencies and Agency Contacts

This project lies in proximity to roads operated by both the City of Antioch and Contra Costa County. The relevant agencies and appropriate contacts are provided in Table 7.10-17.

7.10.6 Permits Required and Permit Schedule

It is anticipated that no road closures along existing roadways will be required for the project. In addition, the total number of trips projected to be generated during construction and operation will not be significant. Therefore no special permits will be required with respect to the traffic and transportation for the project. Should a temporary road closure be necessary, the required permits will be obtained.

7.10.7 References

Caltrans (California Department of Transportation), 1999 and 2006. *Traffic and Vehicle Systems Data Unit*. District 4. Internet address: http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/

CCTA (Contra Costa Transportation Authority), 2006. Technical Procedures. Updated July 19.

CFR *(Code of Federal Regulations*), 2007. *49, Transportation, Parts 100 to 185*. Office of the Federal Register, National Archives and Records Administration. Revised, October 1, 2007. Internet address: http://www.access.gpo.gov/nara/cfr/waisidx_07/49cfrv2_07.html

City of Antioch Police Department, 2008. Email conversation. February 6, 2008.

Transportation Research Board, 2004. *Highway Capacity Manual 2000.* National Research Council, Washington, D.C. Updated 2004.

Tri Delta Transit, 2008. Internet address: http:// trideltatransit.com/. Schedule and Map Information.

Table 7.10-1
Level of Service Description

Level of Service	Type of Flow	Delay
A	Stable Flow	Very slight or no delay. If signalized, conditions are such that no approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.
B	Stable Flow	Slight delay. If signalized, an occasional approach phase is fully utilized.
C	Stable Flow	Acceptable delay. If signalized, a few drivers arriving at the end of a queue may occasionally have to wait through one signal cycle.
D	Approaching Unstable Flow	Tolerable delay. Delays may be substantial during short periods, but excessive back ups do not occur.
E	Unstable Flow	Intolerable delay. Delay may be great—up to several signal cycles.
F	Forced Flow	Excessive delay.

Table 7.10-2
Signalized Intersection Level of Service

LOS	Sum of Critical Volume-to-Capacity Ratio
A	< 0.60
B	0.61 – 0.70
C	0.71 – 0.80
D	0.81 – 0.90
E	0.91 – 1.00
F	> 1.00

Source: Contra Costa Transportation Authority, Technical Procedures.

Table 7.10-3
Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (seconds)
A	0 – 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 – 50
F	> 50

Source: Transportation Research Board (TRB), 2000. Highway Capacity Manual, 2000.

Table 7.10-4
Level of Service Thresholds for Two-Lane Roadway Segments (Class I)

Level of Service	Percent Time Spent Following (%)	Average Travel Speed (mph)
A	≤ 35.0	≤ 55.0
B	> 35.0 – 50.0	> 50.0 – 55.0
C	> 50.0 – 65.0	> 45.0 – 50.0
D	> 65.0 – 80.0	> 40.0 – 45.0
E	> 80.0	≤ 40.0

Source: Chapter 20, *Highway Capacity Manual*, 2000. Transportation Research Board, 2000.

Table 7.10-5
Level of Service Criteria for Multi-Lane Highways

Free-Flow Speed (mph)	Criteria	Level of Service				
		A	B	C	D	E
60	Maximum Density	11	18	26	35	40
	Average Speed	60.0	60.0	59.4	56.7	55.0
	Maximum V/C	0.30	0.49	0.70	0.90	1.00
	Maximum Service Flow Rate	660	1,080	1,550	1,980	2,200
55	Maximum Density	11	18	26	35	41
	Average Speed	55.0	55.0	54.9	52.9	51.2
	Maximum V/C	0.29	0.47	0.68	0.88	1.00
	Maximum Service Flow Rate	600	990	1,430	1,850	2,100
50	Maximum Density	11	18	26	35	43
	Average Speed	50.0	50.0	50.0	48.9	47.5
	Maximum V/C	0.28	0.45	0.65	0.86	1.00
	Maximum Service Flow Rate	550	900	1,300	1,710	2,000
45	Maximum Density	11	18	26	35	45
	Average Speed	45.0	45.0	45.0	44.4	42.2
	Maximum V/C	0.26	0.62	0.62	0.82	1.00
	Maximum Service Flow Rate	490	810	1,170	1,550	1,900

Source: Chapter 21, Transportation Research Board, 2000. *Highway Capacity Manual 2000.*

Note: LOS F is characterized by highly unstable and variable traffic flow.

Table 7.10-6
Peak-Hour Intersection Levels of Service – Existing Conditions

No.	Intersection	Type of Control	Existing Conditions			
			A.M. Peak		P.M. Peak	
			*	LOS	*	LOS
1	Minaker Drive/Wilbur Avenue	Signal	0.26	A	0.30	A
2	Viera Avenue/Wilbur Avenue	Stop Sign	20.3	C	15.4	C
3	Fleming Avenue/Wilbur Avenue	Yield Sign	15.3	C	14.3	B
4	SR 160 SB Ramps/Wilbur Avenue	Stop Sign	13.2	B	12.3	B
5	SR 160 NB Ramps/Wilbur Avenue	Stop Sign	14.6	B	13.0	B
6	Bridgehead Drive/Wilbur Avenue	Stop Sign	42.3(0.46)	E(A)	17.0(0.49)	C(A)

Notes:
* = Volume-to-capacity ratio at signalized intersections and average delay in seconds at unsignalized intersections.
LOS is based on volume-to-capacity for signalized intersections and average delay for unsignalized intersections.
Numbers in parentheses illustrate conditions assuming improvements are implemented.

Table 7.10-7
Peak-Hour Roadway Segment Levels of Service – Existing Conditions

ID	Roadway	Segment	Roadway Classification	No. of Lanes	Existing Conditions			
					A.M. Peak		P.M. Peak	
					*	LOS	*	LOS
1	Wilbur Avenue	Minaker Drive and Viera Avenue	Class I Highway	2 (4)	72.4/38.0 (2.1/7.5)	E (A/A)	67.9/38.7 (6.4/2.3)	E (A/A)
2	Wilbur Avenue	Viera Avenue and Fleming Avenue	Class I Highway	2 (4)	72.0/38.4 (1.9/7.5)	E (A/A)	69.4/38.6 (6.8/2.2)	E (A/A)
3	Wilbur Avenue	Fleming Avenue and SR 160 SB Ramps	Class I Highway	2 (4)	72.1/39.3 (2.2/7.6)	E (A/A)	73.1/38.9 (8.2/2.2)	E (A/A)
4	Wilbur Avenue	SR 160 NB Ramp/SR 160 SB Ramps	Class I Highway	4	2.2/7.9	A/A	6.5/2.4	A/A
5	Bridgehead Road	Shady Haven Trailer Park and Wilbur Avenue	Class I Highway	2 (4)	75.0/38.3 (8.8/2.3)	E (A/A)	69.9/39.1 (3.4/6.4)	E (A/A)

Notes:

* = Percent Time-Spent Following (PTSF) (in sec) /Average Travel Speed (ATS) (in mph), for a two-lane highway and Density (in pc/mi/ln) for Dir. 1/Dir. 2, for a multi-lane highway
Numbers in parentheses illustrate conditions assuming improvements are implemented.

Table 7.10-8
Projected Average Daily Traffic

No.	Roadway	Segment	Average Daily Traffic Volumes				
			Existing Conditions	Near-Term Conditions	Near-Term plus Project Conditions	Future Projected Conditions	Future Projected Conditions plus Project Operations
1	Wilbur Avenue	Minaker Drive and Viera Avenue	8,800	9,500	9,800	26,300	26,300
2	Wilbur Avenue	Viera Avenue and Fleming Avenue	8,700	9,400	9,700	25,900	26,000
3	Wilbur Avenue	Fleming Avenue and SR 160 SB Ramps	8,900	9,600	12,900	26,700	27,000
4	Wilbur Avenue	SR 160 NB Ramp/SR 160 SB Ramps	8,800	9,500	11,800	26,300	26,500
5	Bridgehead Road	Shady Haven Trailer Park and Wilbur Avenue	9,800	10,600	10,800	29,400	29,400

Note: All five roadway segments carry approximately 2 percent truck traffic out of total traffic volume for all conditions (see Appendices P-1 through P-7).

Table 7.10-9
Projected Construction Workforce and Deliveries

Month	Projected Construction Workers	Heavy Vehicle Trips
1	32	4
2	59	4
3	89	5
4	100	4
5	88	4
6	84	5
7	106	6
8	133	7
9	171	9
10	198	11
11	243	13
12	291	14
13	287	14
14	289	13
15	289	14
16	297	14
17	312	16
18	340	17
19	397	16
20	379	18
21	403	5
22	361	2
23	374	1
24	317	1
25	276	
26	244	
27	235	
28	169	
29	133	
30	99	
31	64	
32	44	
33	35	

Table 7.10-10
Trip Generation During Peak Construction Month

Use	Size	Units	Daily Trips		A.M. Peak Hour					P.M. Peak Hour				
			Rate	Total	Rate	In:Out	In	Out	Total	Rate	In:Out	In	Out	Total
Construction Workforce	397	employees	1.2	476	0.6	95:05	226	12	238	0.6	05:95	12	226	238
Delivery Vehicles	16	trucks	2	32	1.0	95:05	15	1	16	1.0	05:95	1	15	16
Net Total				**508**			**241**	**13**	**254**			**13**	**241**	**254**

Note: Peak hour trip generation rates are derived based on the assumptions made as documented in this section.

Table 7.10-11
Peak-Hour Intersection Levels of Service – Near-Term Conditions

No.	Intersection	Type of Control	Near-Term Conditions				Near-Term Plus Project Conditions			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			*	LOS	*	LOS	*	LOS	*	LOS
1	Minaker Drive/Wilbur Avenue	Signal	0.28	A	0.33	A	0.28	A	0.33	A
2	Viera Avenue/Wilbur Avenue	Stop Sign	18.6	C	17.0	C	19.5	C	17.5	C
3	Fleming Avenue/ Wilbur Avenue	Yield Sign	16.0	C	14.5	B	21.0	C	18.4	C
4	SR 160 SB Ramps/ Wilbur Avenue	Stop Sign	12.6	B	12.0	B	15.1	C	12.5	B
5	SR 160 NB Ramps/ Wilbur Avenue	Stop Sign	13.6	B	13.5	B	24.3	C	17.6	C
6	Bridgehead Drive/ Wilbur Avenue	Stop Sign	>50(0.50)	F(A)	21.1(0.53)	C(A)	>50(0.51)	F(A)	22.7(0.54)	C(A)

Notes:
* = Volume-to-capacity ratio at signalized intersections and average delay in seconds at unsignalized intersections.
LOS is based on volume-to-capacity for signalized intersections and average delay for unsignalized intersections.
Numbers in parentheses illustrate conditions assuming improvements are implemented.

Table 7.10-12
Roadway Segment Level of Service – Near-Term Conditions

ID	Roadway	Segment	Roadway Classification	No. of lanes	Near-Term Conditions				Near-Term plus Project Conditions			
					A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
					*	LOS	*	LOS	*	LOS	*	LOS
1	Wilbur Avenue	Minaker Drive and Viera Avenue	Class I Highway	2(4)	74.5/37.5 (2.2/8.2)	E(A/A)	71.5/37.9 (7.1/2.5)	E(A/A)	74.8/37.3 (2.5/8.3)	E(A/A)	71.9/37.8 (7.1/2.8)	E(A/A)
2	Wilbur Avenue	Viera Avenue and Fleming Avenue	Class I Highway	2(4)	74.7/37.7 (2.0/8.3)	E(A/A)	70.9/38.3 (6.9/2.4)	E(A/A)	74.9/37.6 (2.3/8.4)	E(A/A)	71.3/38.2 (6.9/2.7)	E(A/A)
3	Wilbur Avenue	Fleming Avenue and SR 160 SB Ramps	Class I Highway	2(4)	74.8/38.7 (2.2/8.3)	E(A/A)	72.5/39.1 (7.4/2.4)	E(A/A)	80.0/37.1 (2.3/10.9)	E(A/B)	78.6/37.6 (9.9/2.5)	E(A/A)
4	Wilbur Avenue	SR 160 NB Ramp and SR 160 SB Ramps	Class I Highway	4	2.3/8.4	A/A	6.7/2.6	A/A	2.3/10.3	A/A	7.5/2.7	A/A
5	Bridgehead Road	Shady Haven Trailer Park and Wilbur Avenue	Class I Highway	2(4)	77.5/37.6 (9.4/2.6)	E(A/A)	72.8/38.5 (3.5/6.9)	E(A/A)	77.9/37.5 (9.5/2.6)	E(A/A)	73.2/38.4 (3.5/7.0)	E(A/A)

Notes:
* = Percent Time-Spent Following (PTSF) (in sec) /Average Travel Speed (ATS) (in mph), for a two-lane highway and Density (in pc/mi/ln) for Direction 1/Direction 2, for a multi-lane highway.
Numbers in parentheses illustrate conditions assuming improvements are implemented.

Table 7.10-13
Trip Generation During Plant Operation

Use	Size	Units	Daily Trips		A.M. Peak Hour					P.M. Peak Hour				
			Rate	Total	Rate	In:Out	In	Out	Total	Rate	In:Out	In	Out	Total
Workforce	20	employees	2	40	1.0	95:05	18	2	20	1.0	95:05	18	2	20
Delivery Vehicles	10	trucks	2	20	1.0	95:05	9	1	10	1.0	95:05	9	1	10
Net Total				**60**			**27**	**3**	**30**			**27**	**3**	**30**

Note: Peak Hour trip generation rate are derived based on the assumptions made as documented in this section.

Table 7.10-14
Peak-Hour Intersection Levels of Service – Projected Future Conditions (2035)

No.	Intersection	Type of Control	Projected Future Conditions				Projected Future Plus Project Operations			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			*	LOS	*	LOS	*	LOS	*	LOS
1	Minaker Drive/Wilbur Avenue	Signal	0.78	C	0.90	D	0.78	C	0.90	D
2	Viera Avenue/Wilbur Avenue	Stop Sign	1.16	F	1.28	F	1.16	F	1.29	F
3	Fleming Avenue/Wilbur Avenue	Yield Sign	1.04	F	1.09	F	1.05	F	1.11	F
4	SR 160 SB Ramps/Wilbur Avenue	Stop Sign	0.66	B	0.72	C	0.67	B	0.73	C
5	SR 160 NB Ramps/Wilbur Avenue	Stop Sign	0.59	A	0.50	A	0.60	A	0.51	A
6	Bridgehead Drive/Wilbur Avenue	Stop Sign	1.38	F	1.47	F	1.38	F	1.47	F

Notes:
* = Volume-to-capacity ratio at signalized intersections and average delay in seconds at unsignalized intersections.
LOS is based on volume-to-capacity for signalized intersections and average delay for unsignalized intersections.

Table 7.10-15
Roadway Segment Levels of Service – Projected Future Conditions (2035)

ID	Roadway	Segment	Roadway Classification	No. of Lanes	Projected Future Conditions				Projected Future Conditions plus Project Operations			
					AM Peak		PM Peak		AM Peak		PM Peak	
					*	LOS	*	LOS	*	LOS	*	LOS
1	Wilbur Avenue	Minaker Drive and Viera Avenue	Class I Highway	4	6.1/22.8	A/C	19.7/6.9	C/A	6.1/22.8	A/C	19.7/6.9	C/A
2	Wilbur Avenue	Viera Avenue and Fleming Avenue	Class I Highway	4	5.7/23.2	A/C	19.2/6.7	C/A	5.7/23.2	A/C	19.2/6.7	C/A
3	Wilbur Avenue	Fleming Avenue and SR 160 SB Ramps	Class I Highway	4	6.1/23.1	A/C	20.5/6.6	C/A	6.2/23.3	A/C	20.8/6.7	C/A
4	Wilbur Avenue	SR 160 NB Ramp/SR 160 SB Ramps	Class I Highway	4	6.3/23.4	A/C	18.5/7.3	C/A	6.3/52.0	A/C	18.7/7.3	C/A
5	Bridgehead Road	Shady Haven Trailer Park and Wilbur Avenue	Class I Highway	2(4)	(26.1/7.2)	F (D/A)	96.1/25.3 (9.8/19.1)	F (A/C)	(26.1/7.2)	F (D/A)	96.1/25.3 (9.8/19.1)	F (A/C)

Notes:
* = Percent Time-Spent Following (PTSF) (in sec) /Average Travel Speed (ATS) (in mph), for a two-lane highway and Density (in pc/mi/ln) for Direction 1/Direction 2, for a multi-lane highway.
Numbers in parentheses illustrate conditions assuming improvements implemented.

Table 7.10-16
Applicable Traffic and Transportation Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Administering Agency	AFC Section
Federal			
Hazardous Materials Regulation	Transporting Hazardous Materials	Federal Motor Carrier Safety Administration	Section 7.10.2.4
State			
Caltrans Standard Plans	Traffic Control/Lane Closures	Caltrans	Section 7.10.5
Local			
Regulations for Working in Contra Costa County Streets	Traffic Control	Contra Costa County Department of Public Works	Section 7.10.5
Regulations for Excavating and Restoring Streets in Contra Costa County	Pavement Excavation/Restoration	Contra Costa County Department of Public Works	Section 7.10.5

Table 7.10-17
Involved Agencies and Agency Contacts

Issue	Agency/Address	Contact/Title	Telephone
Local Roadway Improvements	City of Antioch, Department of Public Works 3rd and H Streets P.O. Box 5007 Antioch, CA 94531-5007	Ed Frazen, Public Works	(925) 779-7051
		Ron Bargar, Planning	(925) 779-7042
Local Circulation Plans and Policies	Contra Costa Transportation Authority 1340 Treat Boulevard, Suite 150 Walnut Creek, CA 94596	Martin Engleman, Planning	(925) 256-4729
Hazard Materials Transport	California Highway Patrol P.O. Box 942902 Sacramento, CA 94298-2902	Rachel Guiterrez, Licensing Technician	(916) 327-5039
		Joel Arbuckle, Motor Carrier Specialist II	(916) 327-5039
Safety and Hazardous Materials Regulations	Federal Motor Carrier Safety Administration 201 Mission St., Suite 2100 San Francisco, CA 94104	Bob Brown	(415) 744-3088
Permits	California Department of Transportation, Transportation Permits P.O. Box 942874 (MS 41) Sacramento, CA 94274-0001	Dee Garcia, Permit Engineer	(916) 322-4954

Source:
Topo USA, 2004; www.delorme.com

N

0 4 Miles

1:250,000

REGIONAL VICINITY

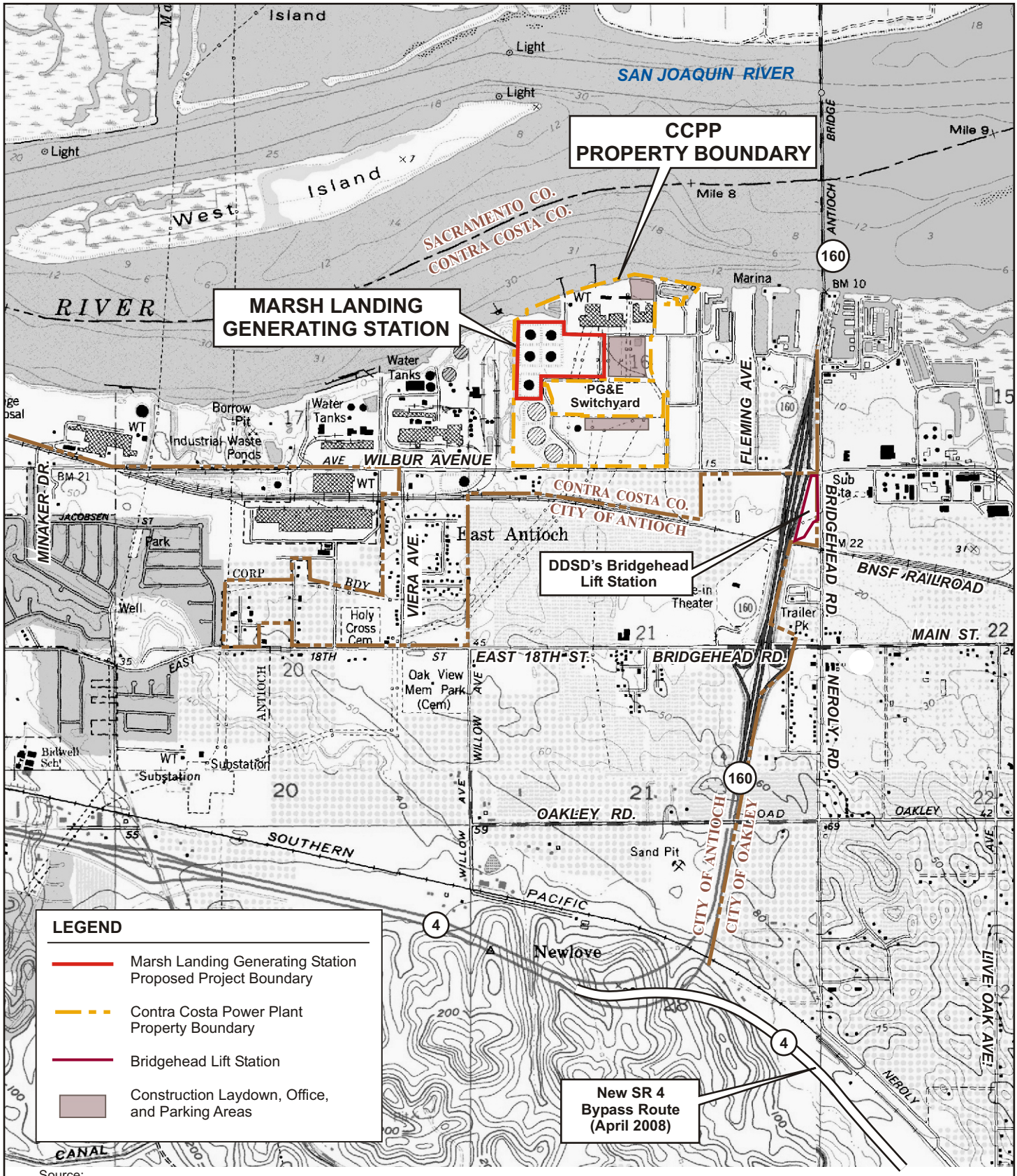
Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

May 2008
28067344

URS

FIGURE 7.10-1

5/08/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\7.10 Traffic\7.10-1_reg vicinity.cdr



Source:
USGS Topographic Maps, 7.5 Minute Series:
Antioch North, California, 1978
Antioch South, California, 1980
Jersey Island, California, 1978
Brentwood, California, 1978

0 2000 4000

Scale in Feet
1:24,000

N

PROJECT LOCATION

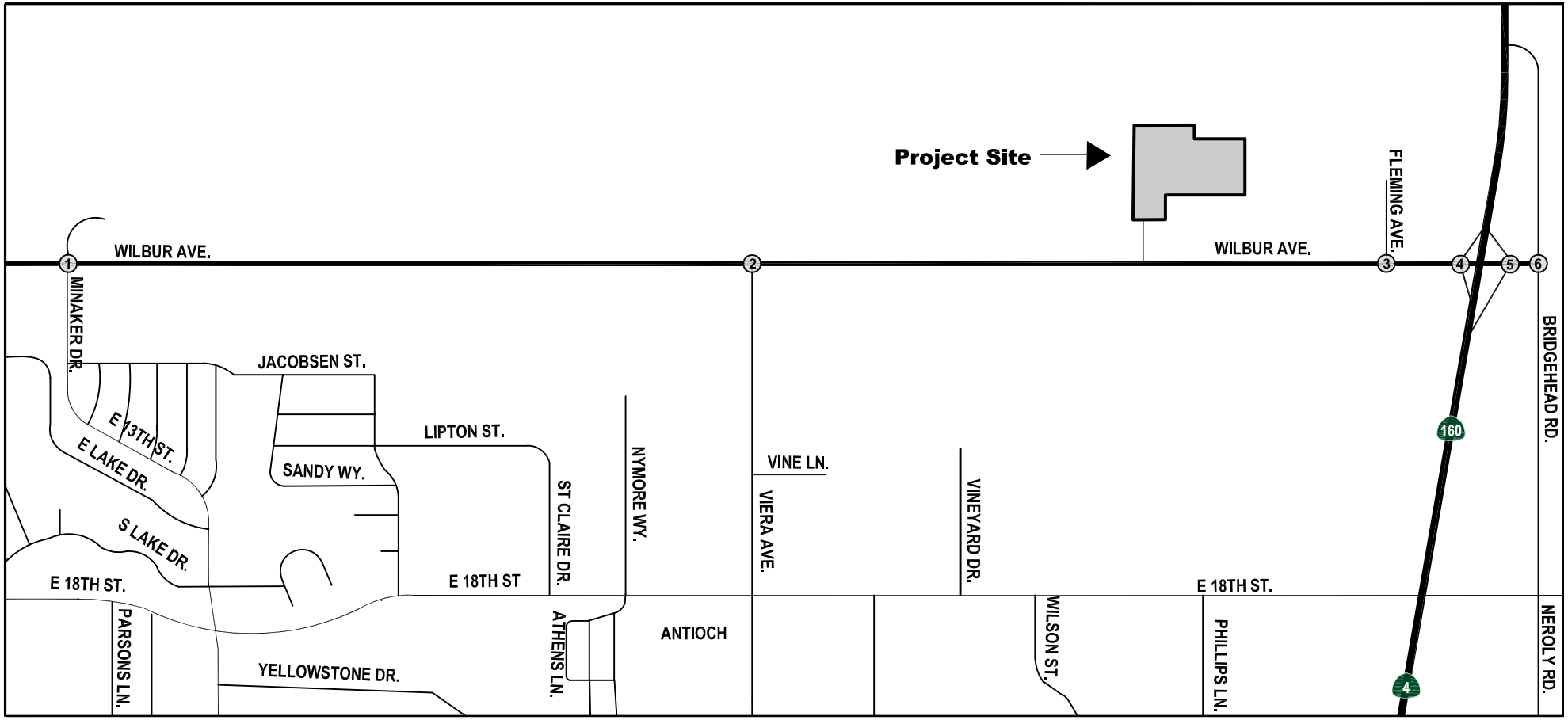
Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

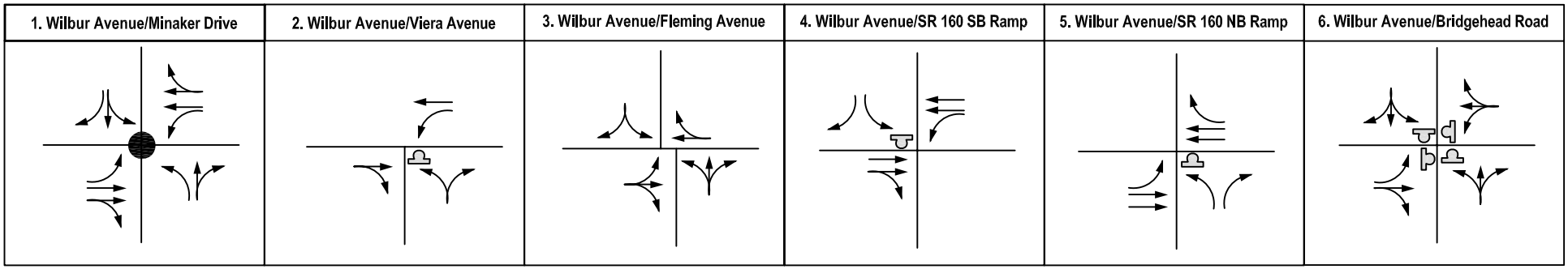
May 2008
28067344

URS

FIGURE 7.10-2

5/22/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\7.10 traffic\7.10-2_projloc.cdr





LEGEND

- (X) Study Intersection
- ● Signalized Intersection
- Stop Sign

N

Not to Scale

EXISTING CONDITIONS LANE GEOMETRIES

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

May 2008
28067344

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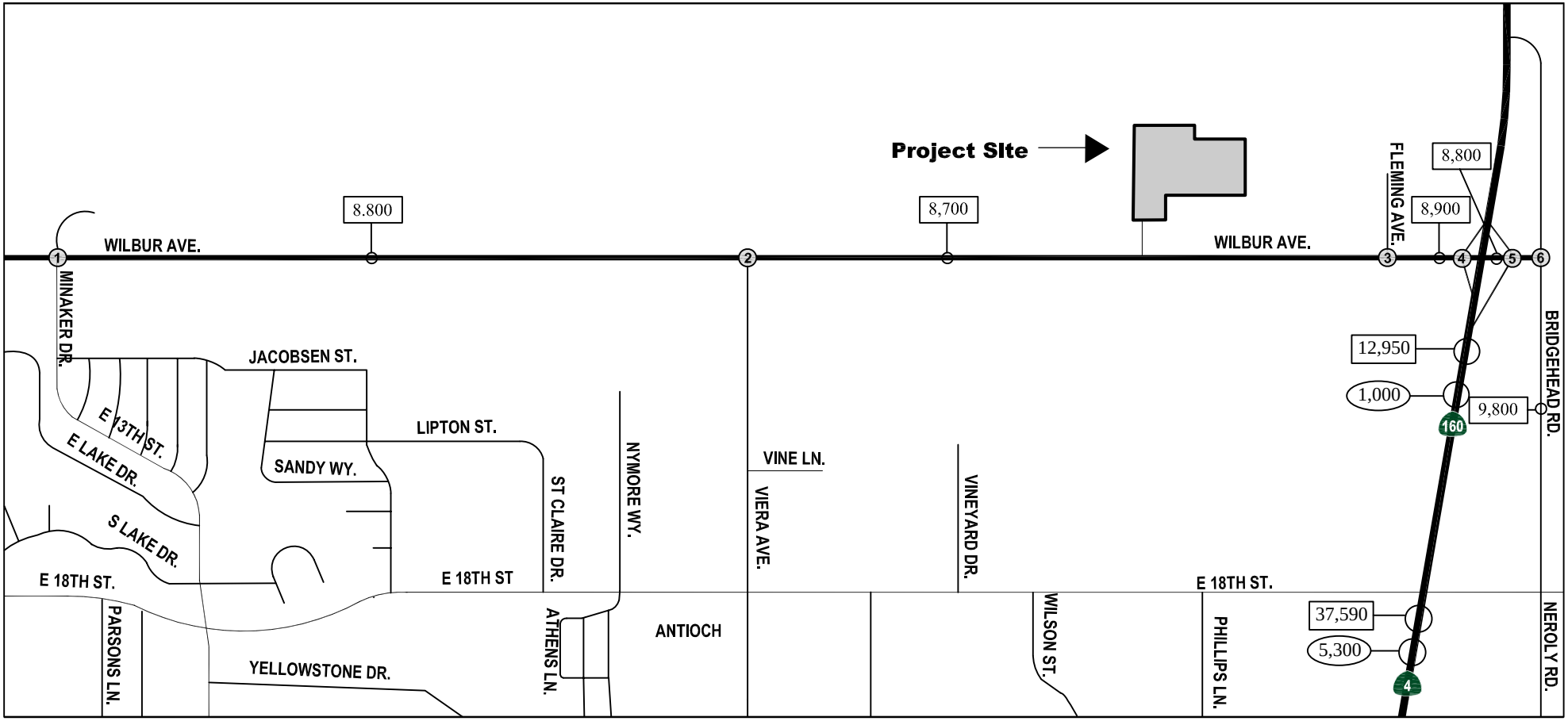
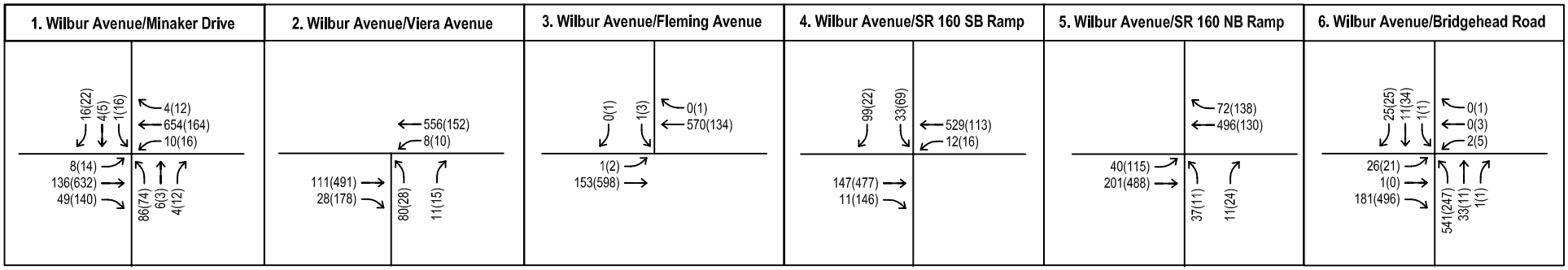
FIGURE 7.10-3

5/2/08 hk ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.0 Traffic\7.10-3_existing lane geo.ai





LEGEND

- (X) Study Intersection
- XX(XX) AM(PM) Peak Hour Volumes
- [X,XXX] Daily Average Traffic
- (X,XXX) Peak Hour Traffic at State Route Locations

N

Not to Scale

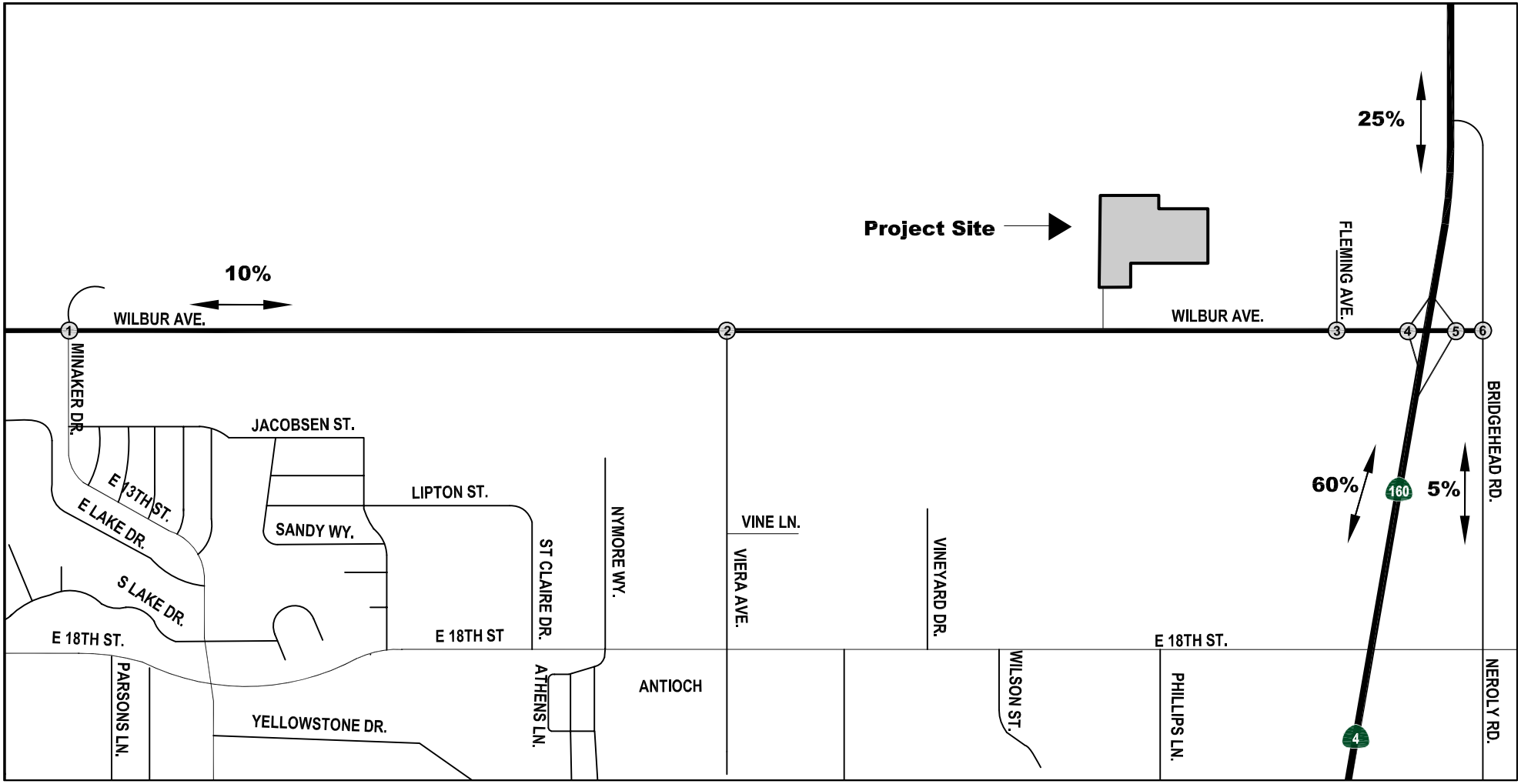
EXISTING CONDITIONS
DAILY AVERAGE AND PEAK HOUR
TURNING MOVEMENT VOLUMES

Marsh Landing Generating Station
July 2008 — Mirant Marsh Landing, LLC
28067344 — Contra Costa County, California

URS

REPLACEMENT FIGURE 7.10-4

7/07/08 hk/vsa ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\Data Adequacy Supplement\REP_7.10-4_existing peak vol.ai



LEGEND

(X) Study Intersection

XX(XX) AM(PM) Peak Hour Volumes

N

Not to Scale

TRIP DISTRIBUTION

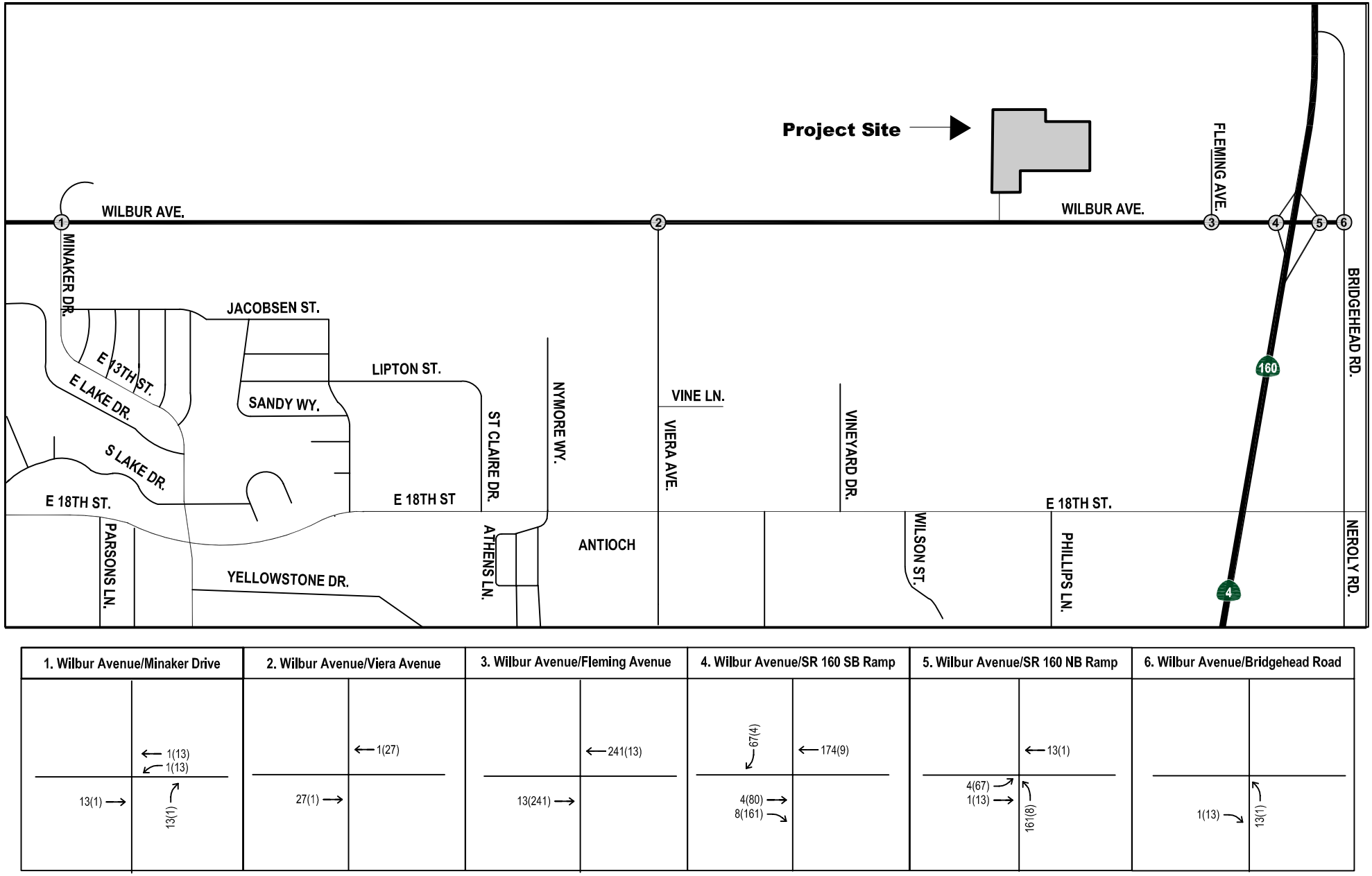
Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

May 2008
28067344

URS

FIGURE 7.10-5

5/2/08 hk ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.0 Traffic\7.10-5_trip distrib.ai



LEGEND

(X) Study Intersection

XX(XX) AM(PM) Peak Hour Volumes

N

Not to Scale

NEAR-TERM CONDITIONS
PROJECT ONLY TRIPS

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

May 2008
28067344

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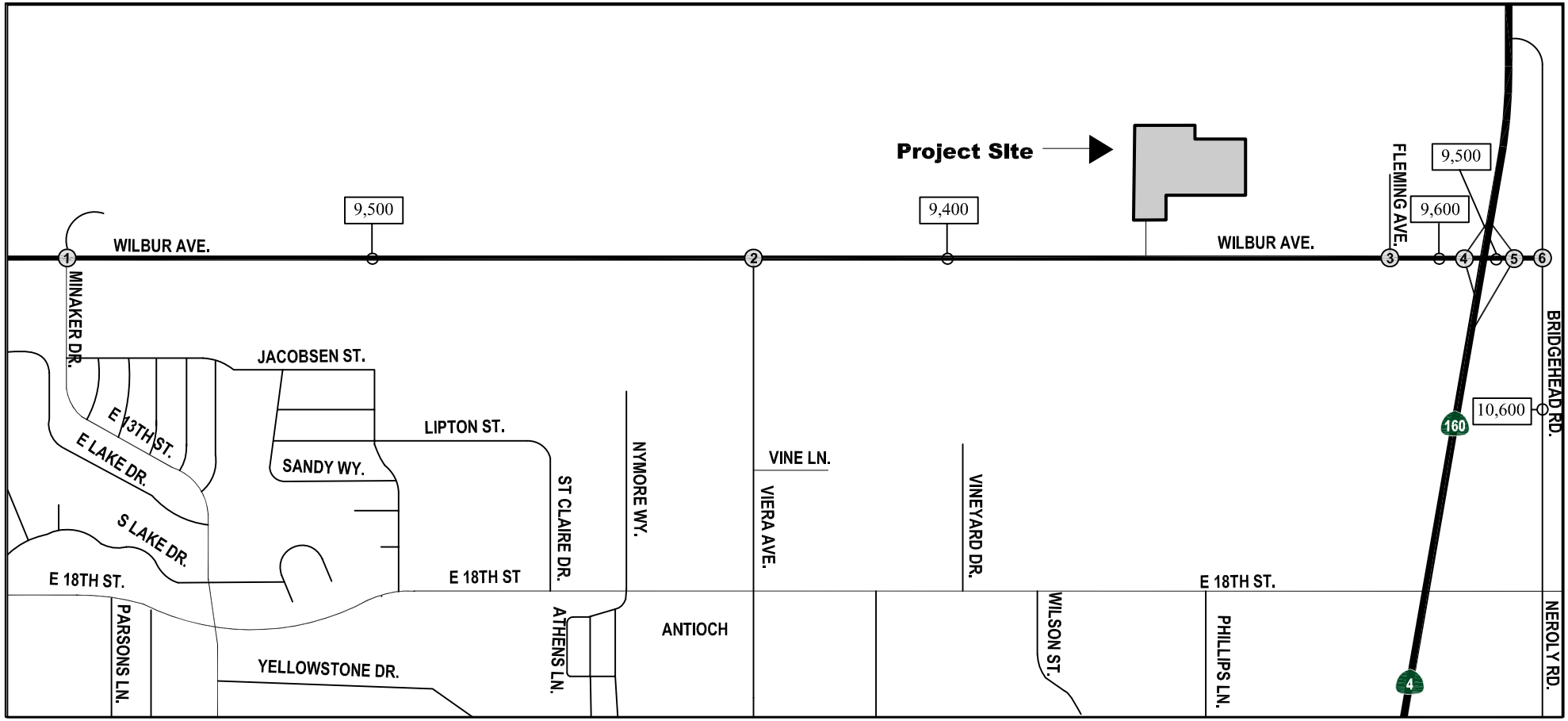
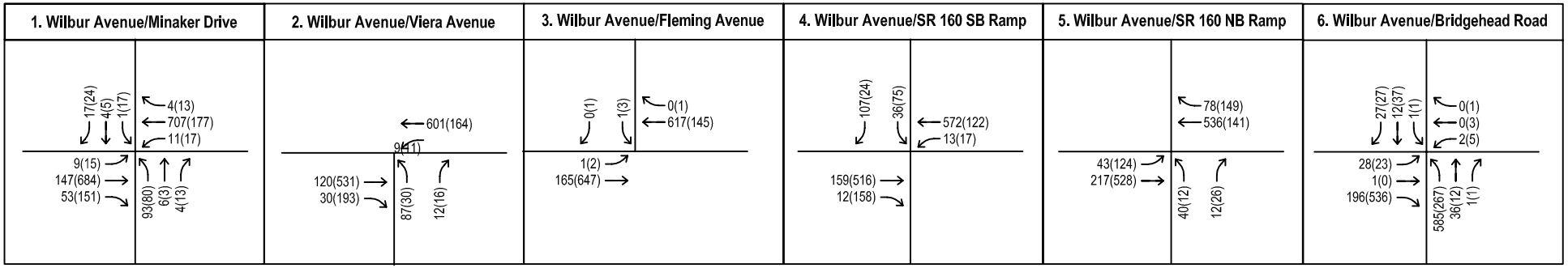
FIGURE 7.10-6

5/12/08 hk ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.0 Traffic\7.10-6_near-term proj only.ai





LEGEND

- (X) Study Intersection
- XX(XX) AM(PM) Peak Hour Volumes
- XX,XXX Daily Average Traffic

N

Not to Scale

NEAR-TERM CONDITIONS
DAILY AVERAGE AND PEAK HOUR
TURNING MOVEMENT VOLUMES

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

May 2008
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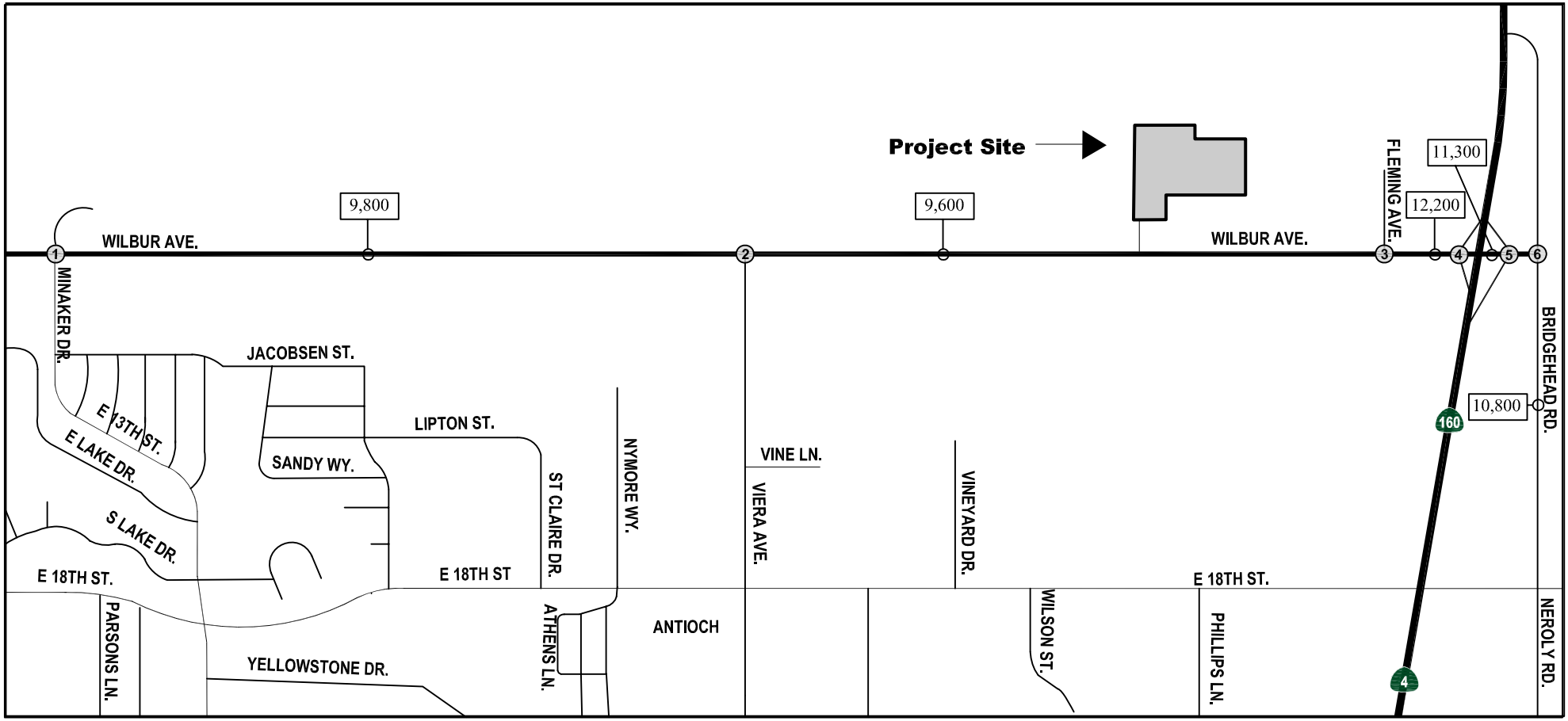
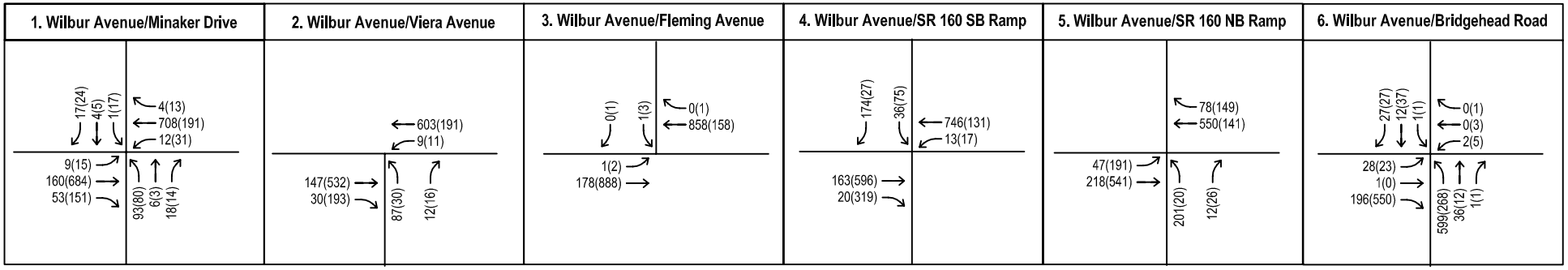
FIGURE 7.10-7

5/2/08 hk ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.0 Traffic\7.10-7_near-term peak hr.ai





LEGEND

- (X) Study Intersection
- XX(XX) AM(PM) Peak Hour Volumes
- [XX,XXX] Daily Average Traffic

N

Not to Scale

NEAR-TERM PLUS PROJECT CONDITIONS DAILY AVERAGE AND PEAK HOUR TURNING MOVEMENT VOLUMES

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

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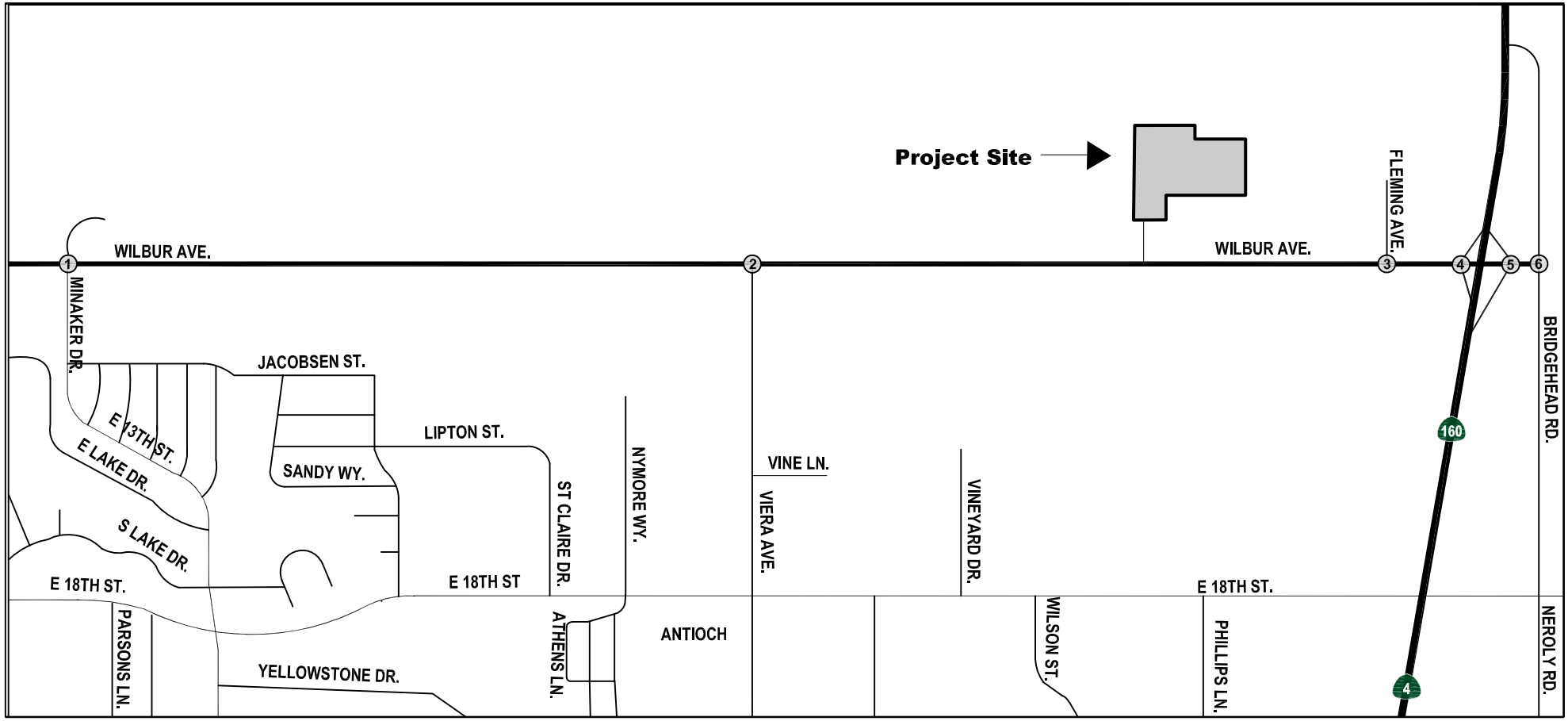
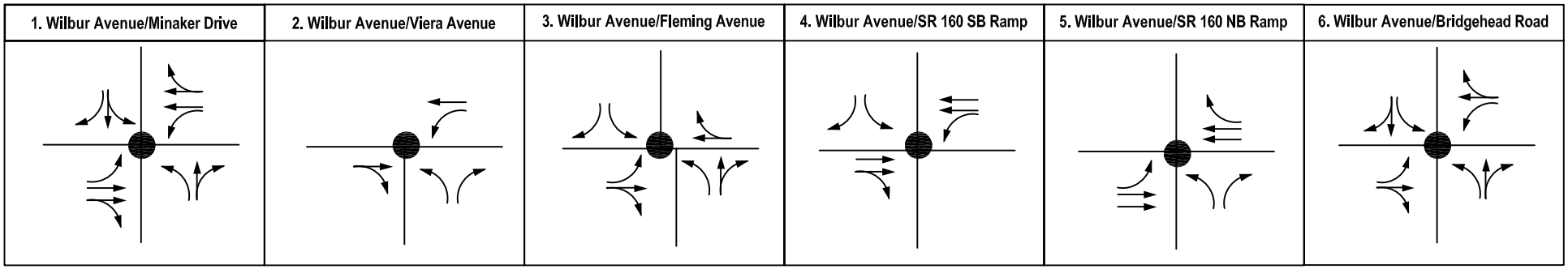
FIGURE 7.10-8

5/12/08 hk ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.0 Traffic\7.10-8_near-term plus peak hr.ai





LEGEND

- (X) Study Intersection
- ● Signalized Intersection

N

Not to Scale

PROJECTED FUTURE CONDITIONS (2035)
LANE GEOMETRIES

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

May 2008
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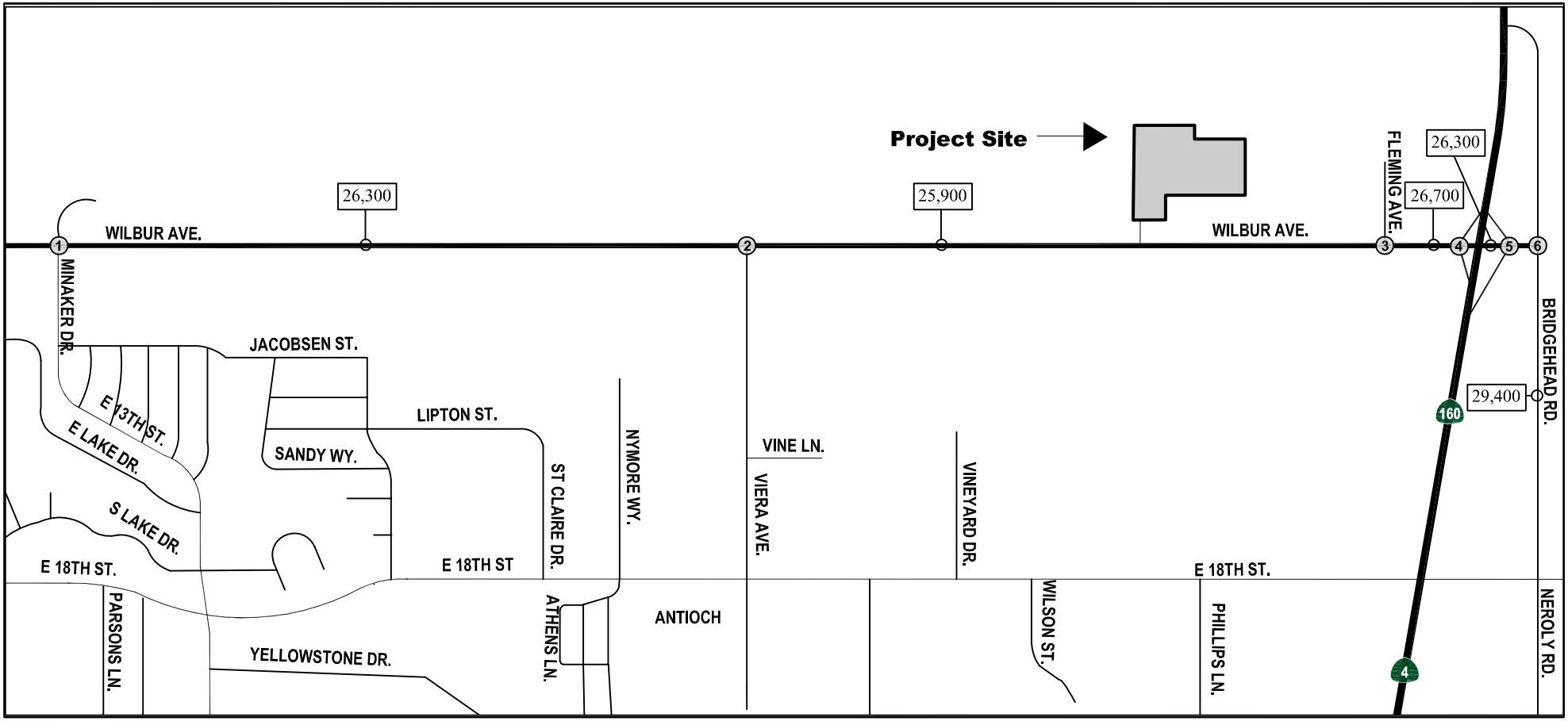
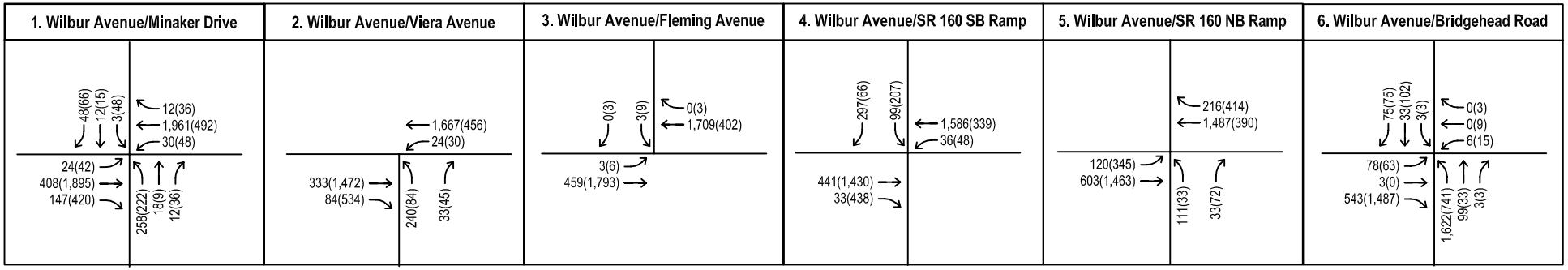
FIGURE 7.10-9

5/2/08 hk ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.0 Traffic\7.10-9_2035 lane geo.ai





LEGEND

- (X) Study Intersection
- XX(XX) AM(PM) Peak Hour Volumes
- XX,XXX Daily Average Traffic

N

Not to Scale

PROJECTED FUTURE CONDITIONS (2035)
DAILY AVERAGE AND PEAK HOUR
TURNING MOVEMENT VOLUMES

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

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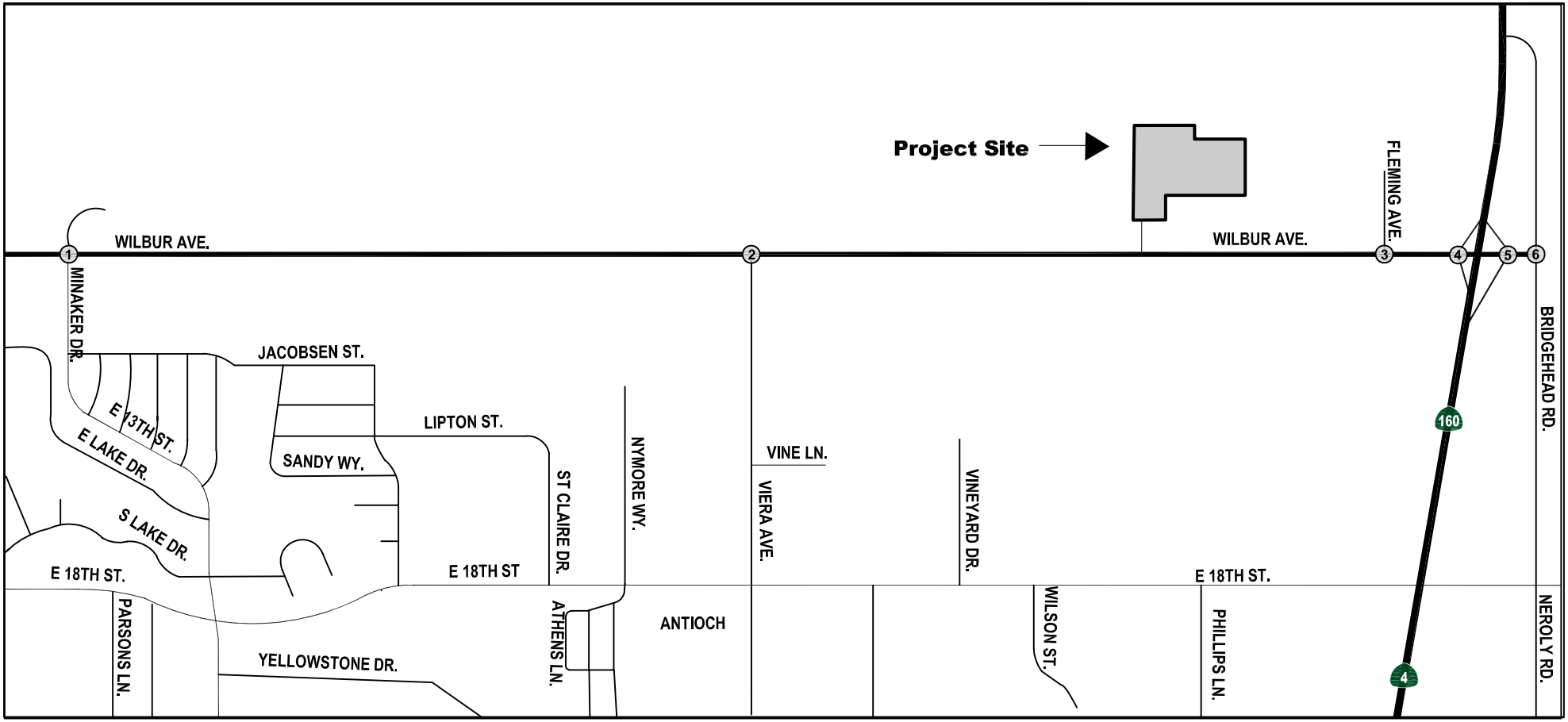
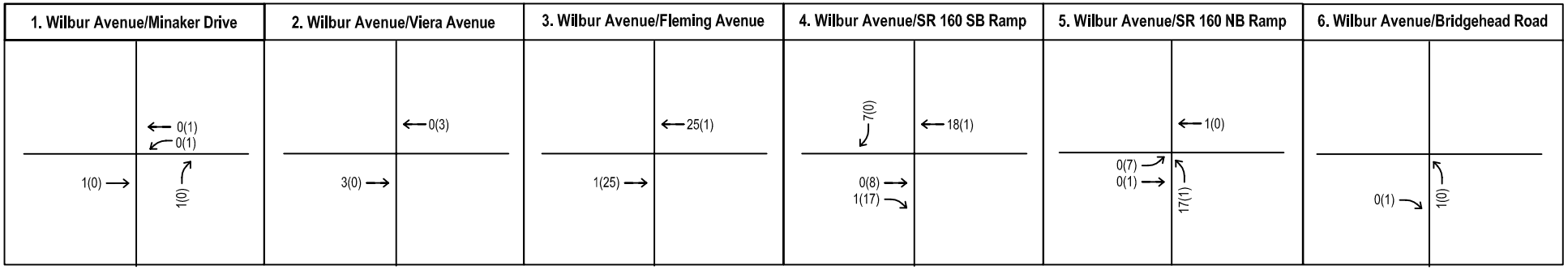
FIGURE 7.10-10

5/2/08 hk ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.0 Traffic\7.10-10_2035 peak vol.ai





LEGEND

(X) Study Intersection

XX(XX) AM(PM) Peak Hour Volumes

N

Not to Scale

PROJECTED FUTURE CONDITIONS (2035)
PROJECT ONLY TRIPS

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

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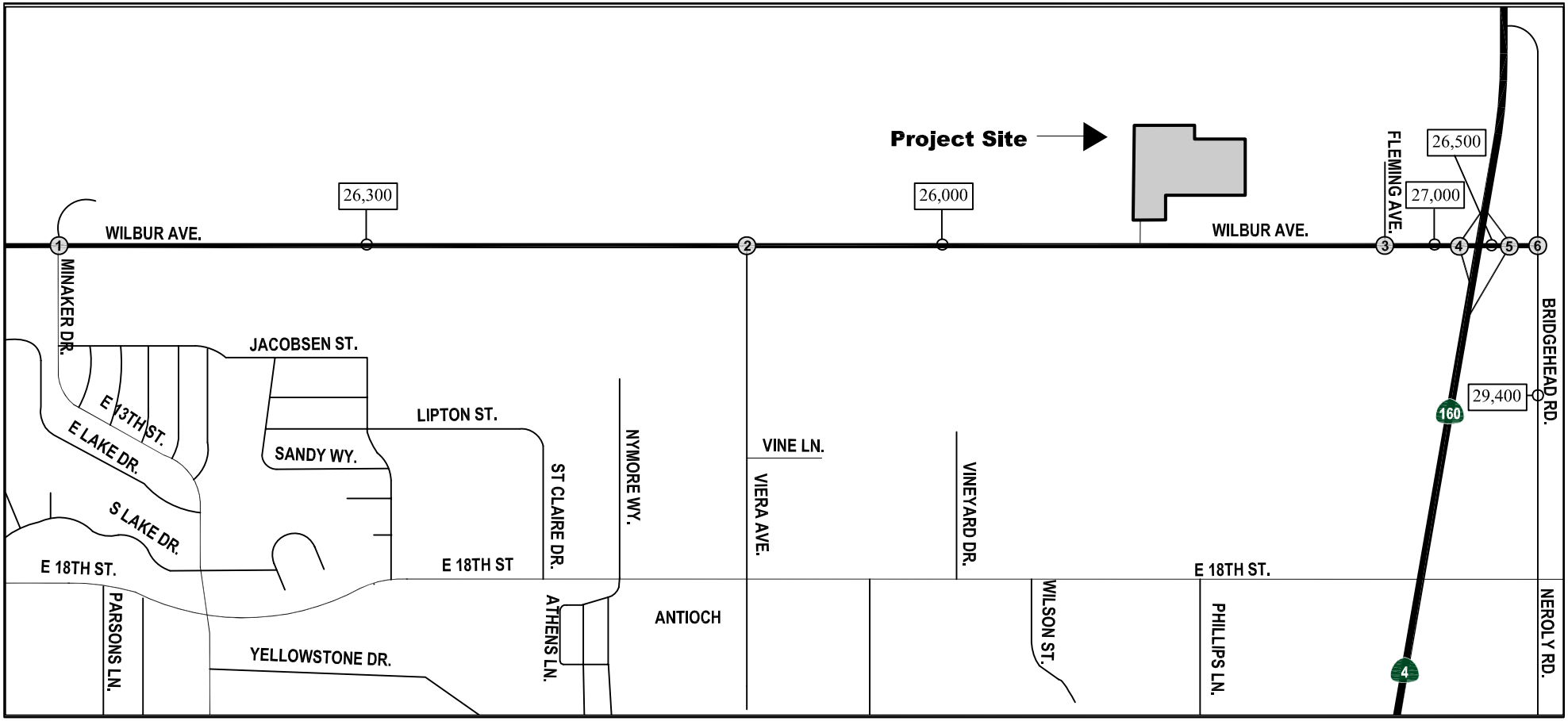
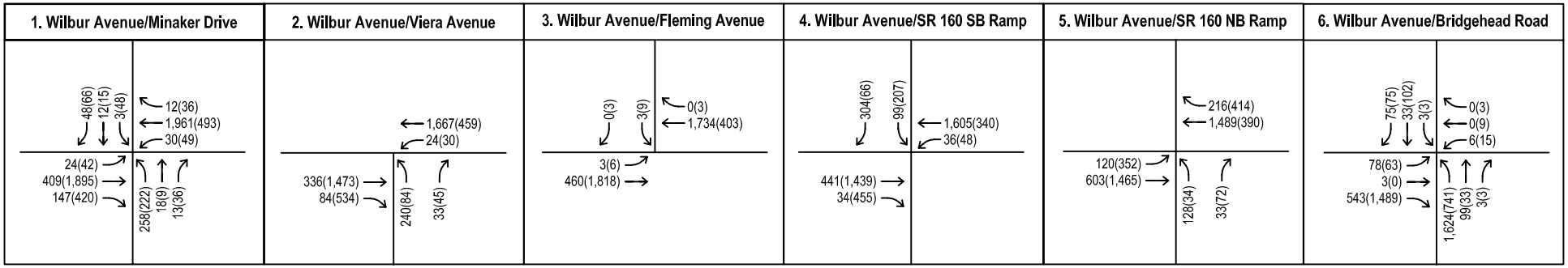
FIGURE 7.10-11

5/2/08 hk ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.0 Traffic\7.10-11_2035 proj only.ai





LEGEND

- (X) Study Intersection
- XX(XX) AM(PM) Peak Hour Volumes
- XX,XXX Daily Average Traffic

N

Not to Scale

PROJECTED FUTURE CONDITIONS PLUS OPERATIONS (2035) DAILY AVERAGE AND PEAK HOUR TURNING MOVEMENT VOLUMES

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

May 2008
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FIGURE 7.10-12

5/2/08 hk ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\7.0 Traffic\7.10-12_2035 plus peak vol.ai