receptor located 50 feet away) because the building walls and roofs would intervene between the inmates and the HVAC units, blocking the line of sight to the HVAC unit, thereby reducing noise by 12 to 15 dBA. This additional attenuation would result in a noise level of 51 to 54 dBA within exterior gathering places. These noise levels are compliant with the noise level criteria set forth in the Napa County General Plan and Napa County Code.

Note that if HVAC systems are located in mechanical rooms, it would result in much lower noise levels due to the attenuation provided by the solid enclosure.

EMERGENCY ELECTRICAL GENERATORS

Correctional facilities generally include emergency backup electrical generators. Emergency generators supply necessary power requirements to vital systems within the facilities to ensure public safety and the health and safety of inmates, patients, caregivers, and correctional personnel. Emergency generators are typically operated under two conditions: loss of main electrical supply or preventive maintenance/testing. The operation of mechanical equipment of this nature associated with emergency operations is exempt from the noise standards outlined in the Napa County Municipal Code (Section 8.16.090); thus, this analysis focuses on routine preventive maintenance and testing operations, which are conducted on a periodic basis during daytime hours. Generators would be located inside the Facilities Services Building located on the east side of the project site (see Exhibit 2-3). Reference noise-level measurements conducted for emergency generators with rated power outputs from 25 kilowatts (kW) to 220 kW resulted in noise levels ranging from 61 to 73 dBA L_{eq} and 63 dBA to 84 dBA L_{max} at 50 feet (CDCR 2010:4.9-28). Considering typical exterior-to-interior noise reduction of 30–40 dB for these types of structures, noise levels for the loudest type of generators (i.e., 220 kW) would be reduced to at least 54 dBA L_{max} at 50 feet from the source. The Facilities Services Building is located over 50 feet from any other noise-sensitive structure, which would further reduce noise levels at sensitive receptors. Therefore noise from generators during regular maintenance would not exceed applicable noise standards (i.e., 55 dBA during the daytime hours when maintenance/testing would occur) and would not expose sensitive receptors to increased noise levels.

OTHER STATIONARY NOISE SOURCES

Additional intermittent noise sources attributable to operation of the proposed project include the opening and closing of entries, adult voices, operation of other miscellaneous mechanical equipment, and the use of maintenance equipment. Such noise-generating activities are generally intermittent and typically generate noise levels lower than the noise sources described above; therefore, exceedance of County noise standards at nearby noise-sensitive receptors would not be anticipated.

INTERIOR NOISE LEVELS AFFECTED BY PROPOSED STATIONARY NOISE SOURCES

As mentioned above, building facades constructed with a wood frame and a stucco or wood sheathing exterior typically provides a minimum exterior-to-interior noise reduction of 25 dBA with its windows closed, whereas a building constructed of a steel or concrete frame, a curtain wall or masonry exterior wall, and fixed plate glass windows of one-quarter-inch thickness typically provides an exterior-to-interior noise reduction of 30–40 dBA with its windows closed (Caltrans 2002). Therefore, because the stationary noise sources described above would comply with the County's exterior 55 dBA noise standard (and up to 65 dBA for daytime noise lasting less than a total of five minutes in an hour), the proposed project would also meet the County's interior noise standard of 45 dBA for sleeping areas.

Noise generated by on-site stationary sources would not exceed standards set forth in the Napa County General Plan and the Napa County Code. Therefore, impacts would be **less than significant**.

Mitigation Measure

No mitigation is required.

Impact 3.8-3	**Project-Related Traffic Noise Increase.** Traffic generated by the project (366 beds or 526 beds) would result in less than 1 dB increase in traffic noise on SR 221. This impact is considered *less than significant*.

Generally, a doubling of a noise source is required to result in an increase of 3 decibels, which is perceived as barely noticeable by humans (Egan 2007:21). Thus, in regard to traffic noise specifically, a noticeable increase in traffic noise could occur with a doubling in the volume of traffic on a roadway.

This noise impact analysis is based on the full buildout of the jail (i.e., 526 beds) because this option would result in the greatest number of operational vehicle trips on local roadways and would provide a conservative analysis in regards to the 366-bed option. Operation of the full project buildout (526 beds) would be expected to result in a net increase of approximately 554 daily vehicles (see Section 3.9, "Transportation and Traffic"). These trips would be distributed broadly over the local street network, but nearly all vehicles traveling to and from the project site would access SR 221. Therefore, the traffic noise analysis focuses primarily on project-related noise increases on SR 221. (It should be noted that although all project-related vehicles would also utilize Basalt Road to access the proposed driveway, the roadway terminates just east of the project site, and there are no existing sensitive receptors along the affected segment of Basalt Road; therefore, project-related increases in traffic noise along this roadway segment would not result in adverse environmental effects, and it is not evaluated further.)

Based on Caltrans 2011 Traffic Volumes for SR 221 in the project vicinity, existing annual average daily trip volume is 27,000 (Caltrans 2011a). A daily increase of 554 vehicles would not result in a doubling of traffic on SR 221 and consequently would not result in a substantial increase in traffic noise. According to noise modeling results, the increase in noise would be less than 1 dB. (See Appendix D for the detailed modeling results). The project's increase in traffic noise (under the 366-bed or 526-bed options) along SR 221 would not be perceptible.

It should be noted that during peak construction months, it is estimated that 120 construction workers would access the site, along with six truck deliveries. The peak of project construction would, therefore, generate up to 240 one-way auto trips and 12 one-way truck trips per day. Because 240 daily trips is nearly half the number of trips generated during project operation, and because 12 truck trips represents less than one percent of the truck volume on SR 221, project construction would result in less of an increase in traffic noise on SR 221 than project operation, which would not be perceptible.

Therefore, traffic noise generated by project construction and operation would result in a **less-than-significant** impact.

Mitigation Measure

No mitigation is required.

Impact 3.8-4	**Exposure of a Proposed Noise-Sensitive Land Use to Excessive Noise Levels.** Implementation of the proposed project would place new noise sensitive receptors adjacent to the Syar Napa Quarry, where noise-generating activities such as blasting, mining, rock crushing, and asphalt batching take place. Based on estimated noise levels and the relative distances where these activities would take place, and considering typical exterior-to-interior noise reduction, applicable noise standards (i.e., USMRE standards for blasting, Napa County Noise standards for other noise sources), would not be exceeded. Thus, proposed noise sensitive land uses would not be exposed to excessive noise levels. This impact is considered ***less than significant***.

Implementation of the proposed project would place new noise-sensitive receptors as close as 1,170 feet from mining operations (e.g., blasting, rock removal, rock processing, and material recycling) at the nearby Syar Napa Quarry. Blasting and other daily operations at the Syar Napa Quarry would result in noise levels depending on the type of activity, duration of activity, and type of heavy-duty equipment being used. The noise levels associated with the operation of these noise-generating activities are described separately below.

BLASTING

Blasting is currently used at the adjacent Syar Napa Quarry to loosen rock from the quarry face and floor. There are three sites where blasting occurs, the Snake Pit, that State Grey Pit, and the State Blue Pit. Blasting would occur intermittently based on the demand for material. It would occur during daytime hours, typically between the hours of 9:00 am and 2:00 pm. During the construction season, blasting can occur at a rate of one to two blasts per week, and during the off-season, blasting typically occurs at a rate of zero to one blast per month.

Air overpressure (blast noise) dB levels for confined blast charges depend on many factors, for example the charge weight used for the blast, depth of burial of the charge, terrain features and other natural screening, orientation of the blast, velocity of the blast progression, atmospheric conditions, and temperature gradients.

Based on records of previous blasts at the existing Syar Napa Quarry, typical charge weights range from 170 pounds (lbs) to 700 lbs. Larger blasts (i.e., up to 700 lb charge weight) would only be conducted at the Snake Pit blasting site, located approximately 6,330 feet to the east of the proposed noise sensitive receptors at the Boca Project Site (this project site would be closest to mining operations and therefore only this project location was considered for a more conservative noise analysis). Smaller blasts, typically 332 lbs in charge weight, would occur at the State Grey Pit, located approximately 2,600 feet to the east of the proposed noise sensitive receptors at the Boca parcel (Bordona, pers. comm., 2013).

Due to the many factors influencing air overpressure dB levels, typical upper and lower constants (used to estimate air overpressures) have been determined for typical blast charge weights (Caltrans 2004). These upper and lower bounds as well as typical charge weights of the blasts at the Syar Napa Quarry, as discussed above, were used to estimate air overpressure exposure at the proposed noise-sensitive receptors at the Boca parcel. Estimated air overpressures of typical blasts and their associated distance from proposed noise-sensitive receptors are shown in Table 3.8-15.

Table 3.8-15 Estimated Air Overpressures from Blasting at Proposed Noise-Sensitive Receptors

Receptor	Feet	Charge Weight[1]	Blast Pit	Lower/Upper Bound (dB)
Boca Project Site	2,600	332	State Grey Pit	107/117
Boca Project Site	6,330	700	Snake Pit	100/110

Notes:
[1] Charge weights based on typical operations at the Syar Napa Quarry (Bordona, pers. comm., 2013)
Source: Modeled by Ascent Environmental in 2013

The State Grey Pit is the closest pit to the proposed noise-sensitive receptors where blasting would occur, and based on the estimated air overpressure dB levels shown above for both the lower and upper bounds, typical blasts at this site would not exceed the OSMRE recommended threshold of 120 dB for structural damage or human annoyance. In addition, larger blasts (i.e., charge weights of up to 700 lbs) could occur as far away as 6,330 feet from proposed noise-sensitive receptors. Blasts of this size would not exceed the OSMRE recommended standard of 120 dB for structural damage or human annoyance.

QUARRY EQUIPMENT OPERATION

Typical daily operations at the adjacent Syar Napa Quarry would result in noise from the use of heavy-duty equipment. Rock removal, crushing and screening of materials, rock processing, and mineral extraction are typical noise-generating activities that take place. Mined rock and materials are hauled to the appropriate on-site processing plant where it is crushed, screened and conveyed to stockpiles. The crushed rock is then directly transferred from the stockpile by a front-end loader or conveyor to customer's trucks or it would be transported to the asphaltic concrete plants at the quarry to make asphalt (noise from this operation is discussed in detail below). Noise would also be generated by the unshielded aggregate mining activities.

Typical noise sources are a result of the use of front end loaders, water trucks, material trucks, aggregate mining operations, and noise associated with the rock crushing process (i.e., hoppers, rocks falling, crushing of rocks). Reference noise levels for these equipment and activities are provided in Table 3.8-16.

Table 3.8-16 Typical Equipment Noise Levels

Type of Equipment	Noise Level dBA (L_{max})
Material Truck	88 @ 20 feet
Water Truck	97 @ 20 feet
Front End Loader[1]	94 @ 20 feet
Aggregate Crushing (i.e., rushing rock, rocks falling, hopper)	81 @ 150 feet
Aggregate Mining Operations	85 @ 100 feet

Notes:
[1] Noise from front end loader is captured in the reference noise levels for rock crushing and aggregate mining
Source: Bordona, pers. comm., 2013

Mining activities vary on a daily basis depending on the level of activity in the pits on any given day. Under normal operations when aggregate material is mined from the State Grey Pit, one front end loader loads rock onto large trucks or pay haulers. This activity can be characterized by combining reference noise levels for trucks and for the Aggregate Mining Operation. If aggregate mining were to occur at the State Grey Pit (i.e., approximately 2,600 feet to the east of proposed noise-sensitive receptors), activities would result in noise levels of up to 48 dBA L_{max}. If aggregate mining were to occur at the next closest mining pit (i.e., the State Blue Pit located approximately 6,300 feet from the proposed noise-sensitive receptors), noise levels could reach up to 38 dBA L_{max}.

Aggregate crushing is another type of activity that occurs at the quarry but would not occur at the same location as mining operations. Noise levels from this activity can be characterized by combining noise from trucks and aggregate crushing. If aggregate crushing were to occur at the State Grey Pit (i.e., approximately 2,600 feet to the east of proposed noise-sensitive receptors), activities would result in noise levels of up to 49 dBA L_{max}. If aggregate crushing were to occur at the next closest mining pit (i.e., the State Blue Pit located approximately 6,300 feet from the proposed noise-sensitive receptors), noise levels could reach up to 39 dBA L_{max}.

Predicted noise levels for the activities described above would not exceed the County's daytime or nighttime exterior noise standards (i.e., 55 dBA or 50 dBA, respectively). Additionally, typical building walls provide and outside-to-interior attenuation of approximately 25 dB. Therefore, the estimated noise levels would be reduced to at least 30 dBA based on typical attenuation rates from the 15-foot jail security wall (as described in the project description) and the inmate housing unit walls. Therefore, the County's most stringent interior noise standard of 45 dBA at indoor sleeping areas would not be exceeded by these activities alone.

ASPHALT BATCHING

Asphalt batching occurs at two separate locations at the adjacent Syar Napa Quarry. The site closest to the proposed noise-sensitive receptors is located approximately 1,170 feet to the west. Activities at the asphalt batching plant are similar to those described above for aggregate crushing, and therefore reference noise levels are also similar, and are shown above in Table 3.8-15. Operations at the closest asphalt batching site to the proposed noise-sensitive receptors could result in noise levels of up to 57 dBA L_{max}, which would exceed applicable county exterior noise standards of 55 dBA. Based on typical attenuation rates from building walls, interior noise levels would be reduced to about 32 dBA, which would be well below county interior noise standards of 45 dBA.

COMBINED NOISE SOURCES

In the discussion above typical noise-generating activities (i.e., blasting, aggregate mining, aggregate crushing, and asphalt batching) were discussed separately. However, it is likely that during heavier production periods, several of these activities would occur simultaneously, but at different locations, throughout the quarry. Combined noise levels are discussed herein.

With regards to blasting, and as described above, blast noise is characterized using a linear scale as opposed to an A-weighted scale, commonly used in noise ordinances and standards, as is the case with the Napa County noise standards. For this reason, blast noise cannot be directly compared to applicable noise standards or combined with other noise sources (e.g., aggregate mining, aggregate crushing, asphalt batching). In addition, blasts occur relatively infrequently (i.e., one to two blasts per week, and during the off-season, blasting typically occurs at a rate of zero to one blast per month) and when they do occur, a blast would only last for a matter of seconds. Further, as discussed above, blasting would not exceed accepted thresholds for human disturbance/annoyance of 120 dB. Therefore, because blasting would not exceed applicable standards for human annoyance and would only occur for a matter of seconds, and relatively infrequently in any given month, blasts would not expose proposed noise-sensitive receptors to excessive noise levels.

Other typical activities at the adjacent Syar Napa Quarry include aggregate mining, aggregate crushing, and asphalt batching. Although these activities could operate simultaneously in any given hour, they do not occur at the same location on the site, and this scenario would represent a typical operation, during more intense periods when demand for materials is higher than normal. Therefore, to represent a worst-case operation day, when all activities are taking place (i.e., aggregate mining, aggregate crushing, and asphalt batching), noise levels could reach up to 58 dBA L_{max} at the outdoor activity areas of the proposed noise-sensitive land uses. As described in the project description, the proposed jail would be surrounded by a 15-foot security wall. When sound barriers (i.e., buildings, walls, etc.) are located in the direct path of a noise source, a typical attenuation rate of 5 dB reduction in noise levels would be achieved (Caltrans 2009). Therefore, accounting for the 5 dB reduction that the security wall would provide, noise levels at the outdoor activity areas of the proposed jail could reach up to 53 dBA L_{max}., which would not exceed the County's daytime exterior noise standards of 55 dBA, but could exceed the nighttime standards of 50 dBA. However, this type of extensive noise-generating activities would generally occur during the less sensitive hours of the day (i.e., 7 am to 10 pm) and therefore would be subject to the daytime exterior standard of 55 dBA and not the nighttime standard of 50 dBA. If

operations at the adjacent Syar Napa Quarry were to begin before 7 am or continue past 10 pm, these activities would not be as intensive and would consist primarily of trucks loading/unloading material, equipment setting up and shutting down, and other minor activities. In these cases, noise levels would resemble more typical operation activities such as those described above under quarry equipment operation, and could reach levels of up to 49 dBA at the proposed noise-sensitive receptors. These noise levels would comply with all applicable exterior (i.e., 55 dBA daytime and 50 dBA nighttime) and interior noise standards (considering 25 dB reductions from jail walls) of 45 dBA.

Therefore, in summary, worst-case noise levels could reach up to 53 dBA (considering a 5 dB reduction from security walls) during the daytime hours (i.e., 7 am to 10 pm), which would comply with daytime exterior noise standards of 55 dBA and, considering typical exterior-to-interior reductions from building walls, result in interior noise levels of 30 dBA at sleeping areas, which would comply with nighttime noise standards of 45 dBA. Activities occurring outside of the less sensitive, daytime hours, hours could result in noise levels of up to 49 dBA, which would comply with daytime exterior noise standards of 55 dBA and, considering typical exterior-to-interior reductions from building walls, result in interior noise levels of 24 dBA at sleeping areas, which would comply with nighttime noise standards of 45 dBA. Thus, proposed noise-sensitive land uses would not be exposed to noise levels that exceed applicable Napa County's noise standards or be exposed to prolonged periods of excessive blasting noise. This would be a **less-than-significant** impact.

Mitigation Measure

No mitigation is required.

Impact 3.8-5	Exposure of a Proposed Noise-Sensitive Land Use to Excessive Ground Vibration Levels. Implementation of the proposed project would place new vibration sensitive receptors adjacent to the Syar Napa Quarry, where vibration-generating activities such as blasting, mining, rock crushing, and asphalt batching take place. Based on estimated vibration levels and the relative distances where these activities would take place, applicable vibration criteria for structural damage, would not be exceeded. Thus, proposed vibration sensitive land uses would not be exposed to excessive levels of ground vibration. This impact is considered *less than significant*.

Noise source described above under Impact 3.8-4 (i.e., blasting and other mining operations) would also result in varying degrees of ground vibration. Implementation of the proposed project would place new noise-sensitive receptors as close as 2,600 feet from mining operations (e.g., blasting, rock removal, rock processing, material recycling, etc.) at the nearby Syar Napa Quarry. Blasting and other daily operations at the Syar Napa Quarry would result in varying ground vibration levels depending on the type of activity, duration of activity, and type of heavy-duty equipment being used. The ground vibration levels associated with the blasting operations would result in the greatest amount of ground vibration.

Blasting is currently used at the adjacent Syar Napa Quarry to loosen rock from the quarry face and floor. There are three sites where blasting occurs, the Snake Pit, that State Grey Pit, and the State Blue Pit. Blasting would occur intermittently based on the demand for material. Blasting would occur during daytime hours, typically between the hours of 9:00 am and 2:00 pm. During the construction season, blasting can occur at a rate of one to two blasts per week, and during the off-season, blasting typically occurs at a rate of zero to one blast per month.

As described above under Impact 3.8-4, blasting can result in air overpressures that can result in cosmetic structural damage (e.g., cracking in walls, windows breaking) to buildings as well as human annoyance. In addition, blasting results in ground vibration which can also lead to damage of nearby structures.

Based on site soil conditions and typical charge weights used at the adjacent Syar Napa Quarry, ground vibration levels were calculated at the proposed noise-and-vibration sensitive receptors at the Boca Site (this project site would be closest to mining operations and therefore only this project location was considered for a more conservative vibration analysis). Estimated ground vibration levels of typical blasts and their associated distance from proposed vibration-and noise-sensitive receptors is shown in Table 3.8-17.

Table 3.8-17 Ground Vibration Levels from Blasting at Proposed Vibration-and Noise-Sensitive Receptors

Receptor	Feet	Charge Weight[1]	Blast Pit	PPV (in/sec)[2]
Boca Project Site	2,600	332	State Grey Pit	0.107
Boca Project Site	6,330	700	Snake Pit	0.047

Notes:
[1] Charge weights based on typical operations at the Syar Napa Quarry (Bordona, pers. comm., 2013)
[2] PPV were calculated based on site soil conditions at the Syar Napa Quarry (Bordona, pers. comm., 2013)
Source: Modeled by Ascent Environmental in 2013

The State Grey Pit is the closest pit to the proposed noise-sensitive receptors where blasting would occur, and based on the estimated ground vibration levels shown above, typical blasts at this site would not exceed the Caltrans recommended threshold of 1.0 PPV (in/sec) for structural damage to new residential structures. Note that the proposed project would be constructing a new jail, not new residential structures. However, for purpose of this analysis, this is the recommended threshold that fits the proposed project the closest. In addition, larger blasts (i.e., charge weights of up to 700 lbs) could occur as far away as 6,330 feet from proposed vibration-and-noise-sensitive receptors. Blasts of this size would not exceed the Caltrans recommended threshold of 1.0 PPV (in/sec) for structural damage to new residential structures. Therefore, proposed structures would not be exposed to vibration levels that could lead to structural damage. This would be a **less-than-significant** impact.

Mitigation Measure

No mitigation is required.

3.9 TRANSPORTATION AND TRAFFIC

This section describes the existing circulation patterns in the vicinity of the project site and evaluates transportation impacts due to construction and operation of the Napa County Jail Project.

3.9.1 REGULATORY SETTING

This study considered documents prepared by the County, the City, and the California Department of Transportation (Caltrans), as study intersections are located in each of those jurisdictions. Relevant policy goals, guidelines and objectives adopted by these jurisdictions are provided below.

FEDERAL

There are no federal regulations that are relevant to the project.

STATE

The *Guide for the Preparation of Traffic Impact Studies* (Caltrans 2002) – The Caltrans Guide for the Preparation of Traffic Impact Studies provides guidance on the evaluation of traffic impacts to State highway facilities. The document outlines when a traffic impact study is needed and what should be included in the scope of the study.

REGIONAL

METROPOLITAN TRANSPORTATION COMMISSION

The Metropolitan Transportation Commission (MTC) serves as the transportation planning, coordinating and financing agency for the nine-county San Francisco Bay Area. MTC, in conjunction with the Association of Bay Area Governments (ABAG), the San Francisco Bay Area's regional planning agency, published *Plan Bay Area* in July 2013 (MTC and ABAG 2013). *Plan Bay Area* identifies a list of transportation projects within Napa County, including a flyover at the SR 12-SR 29/Napa-Vallejo Highway (SR 221) interchange.

LOCAL

NAPA COUNTY

The Circulation Element of the *Napa County General Plan* (Napa County 2008) provides existing and proposed maps of the county's transit network, vehicular circulation network and bicycle/pedestrian circulation network. The *Napa County General Plan* outlines three goals that address circulation and land use, State highway routes and county roads, transit services, air transportation, rail service, navigable waterways and non-motorized transportation:

- The County's transportation system shall be correlated with the policies of the Agricultural Preservation and Land Use Element and protective of the County's rural character.
- The County's transportation system shall provide for safe and efficient movement on well-maintained roads throughout the county, meeting the needs of Napa County residents, businesses, employees, visitors, special needs populations and the elderly.
- The County's transportation system shall encompass the use of private vehicles, transit, paratransit, walking, bicycling, air travel, rail and water transport.

On January 8, 2013, the County Board of Supervisors adopted a Complete Streets Policy (Napa County Board of Supervisors 2013). The following would be applicable to the project:

- **Complete Streets Serving All Users**. Napa County expresses its commitment to creating and maintaining Complete Streets that provide safe, comfortable, and convenient travel along and across streets (including streets, roads, highways, bridges, and other portions of the transportation system) through a comprehensive, integrated transportation network that serves all categories of users, including pedestrians, bicyclists, persons with disabilities, motorists, movers of commercial goods, agricultural vehicles, products and equipment, residents, workers and visitors, users and operators of public transportation, seniors, children, youth, and families.
- **Context Sensitivity**. In planning and implementing street projects, departments and agencies of Napa County shall maintain sensitivity to local conditions in both residential and business districts as well as urban, suburban, and rural areas. Improvements that will be considered, where applicable, include sidewalks, shared use paths, bicycle lanes, bicycle routes, paved shoulders, street trees and landscaping, planting strips, accessible curb ramps, crosswalks, refuge islands, pedestrian signals, signs, street furniture, bicycle parking facilities, public transportation stops and facilities, transit priority signalization, and other features assisting in the provision of safe travel for all users, such as those features identified in the *Napa Countywide Bicycle Plan* (Whitlock & Weinberger Transportation, Inc. 2012). For each proposed street project, the Project Manager shall determine which improvements are applicable, based on consultation with relevant plans as described in section B.1 of this policy. The determination of applicability of all such improvements will take into account the potential level of demand for each mode of transportation, as well as physical and environmental constraints which affect the project corridor. The determination by the Project Manager shall be approved by the Public Works Director or the Road Commissioner.
- **Complete Streets Routinely Addressed by All Departments**. All relevant departments and agencies of Napa County shall work towards making Complete Streets practices a routine part of everyday operations, approach every relevant project, program, and practice as an opportunity to improve streets and the transportation network for all categories of users, and work in coordination with other departments, agencies, and jurisdictions to maximize opportunities for Complete Streets, connectivity, and cooperation. The following projects provide opportunities: system expansion or new construction, pavement preservation projects, restriping, installation of overhead and/or underground utilities, and construction or significant remodeling of county-operated building facilities.

NAPA COUNTY TRANSPORTATION AND PLANNING AGENCY

The Napa County Transportation and Planning Agency (NCTPA) serves as the countywide transportation planning body for the incorporated and unincorporated areas of Napa County. Because the County does not have a congestion management agency, NCTPA works with the MTC to prepare the Napa County portion of the RTP, which is a long-range development plan to allocate State and Federal transportation funds. *Napa's Transportation Future* (NCTPA 2009) was adopted as a long-range guide for decision-making and funding of County roadways, transit, and bicycle facilities.

Facilities that are included in this transportation analysis and that are part of *Napa's Transportation Future* include SR 29, SR 121, SR 221 and Silverado Trail.

CITY OF NAPA

The City of Napa's *General Plan, Envision Napa 2020* (City of Napa 2011) includes the following three major transportation objectives:

- develop a transportation infrastructure that provides for an acceptable traffic flow and provides access to all destinations;
- create a citywide transportation system that allows users to choose from a variety of safe transportation options including an adequate system of streets, transit, pedestrian and bicycle facilities; and
- minimize the negative effects of additional automobile traffic and other transportation.

The following policies are included in *Envision Napa 2020*:

- The City shall ensure that traffic levels of service will not exceed midrange LOS D at all signalized intersections on arterial and collector streets with the following exceptions, where midrange LOS E will be permitted. Only those locations that are included in the project study area are listed:
  - Downtown Napa within the area bounded by Soscol Avenue, First Street, California Boulevard and Third Street.
  - Silverado Trail between Soscol Avenue and First Street.
- The City shall ensure that all new development and redevelopment will meet adopted level of service for transportation facilities unless findings are made that achieving other specific public goals found in this General Plan outweigh this requirement.
- The City shall focus on signalized intersections when evaluating street system level of service.
- When reviewing projects, the City shall monitor stop-controlled intersections using level of service and the *Highway Capacity Manual* as a guideline, applying Caltrans signal warrant evaluation as indicated and requiring mitigation as necessary.

3.9.2 ENVIRONMENTAL SETTING

ROADWAY SETTING

REGIONAL ROADWAYS

SR 29 is a four-lane highway that runs in a north-south direction between SR 12-121 to just north of the Redwood Road/Trancas Street interchange. North of Redwood Road/Trancas Street and south of SR 12-121, SR 29 is designated as a Rural Throughway. The closest access to the project site from the north is via the ramps at SR 121 (Imola Avenue), or directly to SR 221 (Napa-Vallejo Highway) via a signalized intersection at SR 29 for travel to and from the south.

SR 221 (Napa-Vallejo Highway) is an approximately three mile long, four-lane, north-south Rural Throughway that extends from SR 29 to the south to SR 121-Imola Avenue to the north, where it becomes Soscol Avenue. SR 221 is divided by a landscaped median for most of its length and is designed for relatively high-speed vehicle traffic, with posted speed limits ranging between 40 and 55 mph.

SR 121 extends east-west between SR 128 east of the study area and Sonoma County to the southwest of the study area where it terminates at its junction with SR 37. The roadway is called Imola Avenue between SR 29 and SR 221 (Napa-Vallejo Highway). Imola Avenue has four lanes and a posted speed limit of 35 mph, with sidewalks and Class II bicycle facilities on some segments.

Silverado Trail is a two-lane road that runs north-south between Soscol Avenue and SR 29 in Calistoga. Turn lanes are provided at some locations, but there are no bike lanes or sidewalks in the study area, though bike lanes are proposed between Soscol Avenue and Trancas Avenue, and exist north of Trancas Avenue to the city of Calistoga. The posted speed limit varies from 35 to 55 mph. Between Trancas Avenue and Soscol Avenue (in the

City of Napa), which is also designated as SR 121, the surrounding properties are predominantly residential, but there are some commercial areas, particularly where it intersects with Soscol Avenue and First Street.

LOCAL ROADWAYS

Soscol Avenue is one of the primary north-south arterials in the City of Napa, connecting Trancas Street to Imola Avenue along the eastern edge of downtown. Soscol Avenue is designated as SR 121-SR 221 between Imola Avenue and Silverado Trail and becomes SR 221 (Napa-Vallejo Highway) south of Imola Avenue. Soscol Avenue has two travel lanes in each direction, with sidewalks and Class II bicycle facilities along its entire length. The posted speed limit is 40 mph.

Third Street lies at the southern edge of the Downtown area, and directly serves the existing County government facilities, including the existing jail, offices, and the court system. The geometrics of Third Street vary substantially. It has one lane in each direction between California Boulevard and Church Street. Between Church and Randolph Streets it is part of a one-way couplet, with two westbound lanes on Third Street and eastbound traffic diverted to two lanes on Fourth Street. Eastbound traffic returns to Third Street at Randolph Street, and from there to Soscol Avenue there are two lanes in each direction through downtown. From Soscol Avenue to Silverado Trail, Third Street returns to the two lane, two-way configuration. The posted speed limit ranges between 25 and 30 mph.

Coombs Street runs north-south from Imola Avenue to First Street. The posted speed limit is 30 mph, but changes to 25 mph in the downtown area. There are sidewalks on both sides of the roadway.

Main Street runs north-south from Pueblo Avenue to Fifth Street. The posted speed limit is 30 mph north of the downtown area and 25 mph within the downtown area. There are sidewalks on both sides of the roadway.

Magnolia Drive-College Way is an east-west road that is used to access to Napa State Hospital to the east and Napa Valley Community College to the west. The speed limit is 25 mph. Sidewalks are provided on both sides of Magnolia Drive and a multi-use path runs parallel to College Way.

Streblow Drive runs east-west and provides access to Napa Valley Community College, Napa Municipal Golf Course, and John F Kennedy Memorial Park. The speed limit is 25 mph with pedestrian and bicycle access available via the River-to-Ridge Trail that runs parallel to Streblow Drive.

Basalt Road runs east-west, and goes under SR 221 just south of the project site. A “dog-leg” connects Basalt Road to the east side of SR 221.

Kaiser Road travels in an east-west direction and provides four lanes and center left-turn lanes between SR 221 and Syar Industrial Way. This section of Kaiser Road provides access to a number of light industrial and office uses.

Napa Valley Corporate Way is an east-west four-lane roadway. It has landscaped medians and left-turn lanes at intersections. There are no sidewalks on this facility. The posted speed limit is 25 mph. Napa Valley Corporate Way provides access to industrial and office uses.

Anderson Road generally runs north-south and intersects SR 221 at its northerly terminus. The road has no sidewalks. Anderson Road provides access to residential and winery uses.

STUDY INTERSECTIONS

The study area was determined in conjunction with City and County staff, and includes the following eleven existing intersections.

1. Coombs Street/Third Street
2. Main Street/Third Street
3. Soscol Avenue/Third Street
4. Soscol Avenue/Silverado Trail
5. Soscol Avenue-SR 221/SR 121-Imola Avenue
6. Napa-Vallejo Highway (SR 221)/Magnolia Drive-College Way
7. Napa-Vallejo Highway (SR 221)/Streblow Drive
8. Napa-Vallejo Highway (SR 221)/Project Access
9. Napa-Vallejo Highway (SR 221)/Kaiser Road
10. Napa-Vallejo Highway (SR 221)/Napa Valley Corporate Way-Anderson Road
11. Napa-Vallejo Highway (SR 221)-Soscol Ferry Road/SR 29

Coombs Street/Third Street is a signalized, four-legged intersection with permissive left-turn phasing on all approaches. There are crosswalks and pedestrian crossing phases on all four approaches.

Main Street/Third Street is a four-legged, signalized intersection with protected left-turn phasing for Third Street and permitted left-turn phasing on Main Street. A right-turn overlap operates on the northbound Main Street approach. Crosswalks with pedestrian crossing phases are present on all four approaches.

Soscol Avenue/Third Street has four legs and is signalized, with protected left-turn phasing on all approaches. Pedestrian facilities include crosswalks and pedestrian crossing phases on all approaches.

Soscol Avenue/Silverado Trail is a tee intersection, with the terminating Silverado Trail approach entering on the east side at a skewed angle. Right turns from northbound Soscol Avenue have a free turn, and thus do not affect intersection operation except that they must stop for pedestrians. Left turns from southbound Soscol Avenue are a permitted movement. Crosswalks and pedestrian crossing phases are present on the north and east legs of the intersection.

Soscol Avenue-SR 221/SR 121-Imola Avenue is a signalized, four-legged intersection with protected left-turn phasing on all approaches. Right turns on all but the westbound approach pass outside median islands, and are therefore not controlled by the traffic signal. The eastbound SR 121 to southbound SR 221 movement also has a separate receiving lane, so this movement was not considered in evaluating the intersection's operation. Pedestrian crossing facilities are provided on the north and east legs of the intersection, though pedestrians must cross right-turn lanes without pedestrian phasing between the islands at the northwest and southeast corners and the sidewalk.

SR 221/Magnolia Drive-College Way is a four-legged, signalized intersection. It has protected left-turn phasing on SR 221 and split phasing on Magnolia Drive-College Avenue. Crosswalks and crossing phases for pedestrians are available on the north and east legs of the intersection.

SR 221/Streblow Drive is a signalized tee intersection, with Streblow Drive terminating on the west side of the intersection. Protected left-turn phasing is provided for movements from SR 221, including a southbound left-turn pocket and phase that is available for u-turns. The only pedestrian crossing at this intersection is on the south side, though the crossing phase does not extend across the right-turn pocket on the southwest corner.

SR 221/Project Access is an unsignalized tee intersection, with the stop-controlled access connecting on the east side of SR 221. SR 221 has an acceleration lane to serve left-turns outbound from the stop sign. There are no existing pedestrian facilities at this location.

SR 221/Kaiser Road is a tee intersection, with Kaiser Road terminating as the west leg of the intersection. Left-turns from SR 221 are protected. There are no pedestrian facilities existing at this intersection.

SR 221/Napa Valley Corporate Way-Anderson Road is a signalized, four-legged intersection with protected left-turn phasing on SR 221 and split phasing for Napa Valley Corporate Way-Anderson Road. This intersection has no existing pedestrian facilities.

SR 221-Soscol Ferry Road/SR 29 has protected left-turn phasing on all four approaches to this signalized intersection. The northbound SR 29 approach has a free right turn that operates outside the influence of the traffic signal, so this movement was not included in the analysis.

The locations of the study intersections and the existing lane configurations and controls are shown in Exhibit 3.9-1.

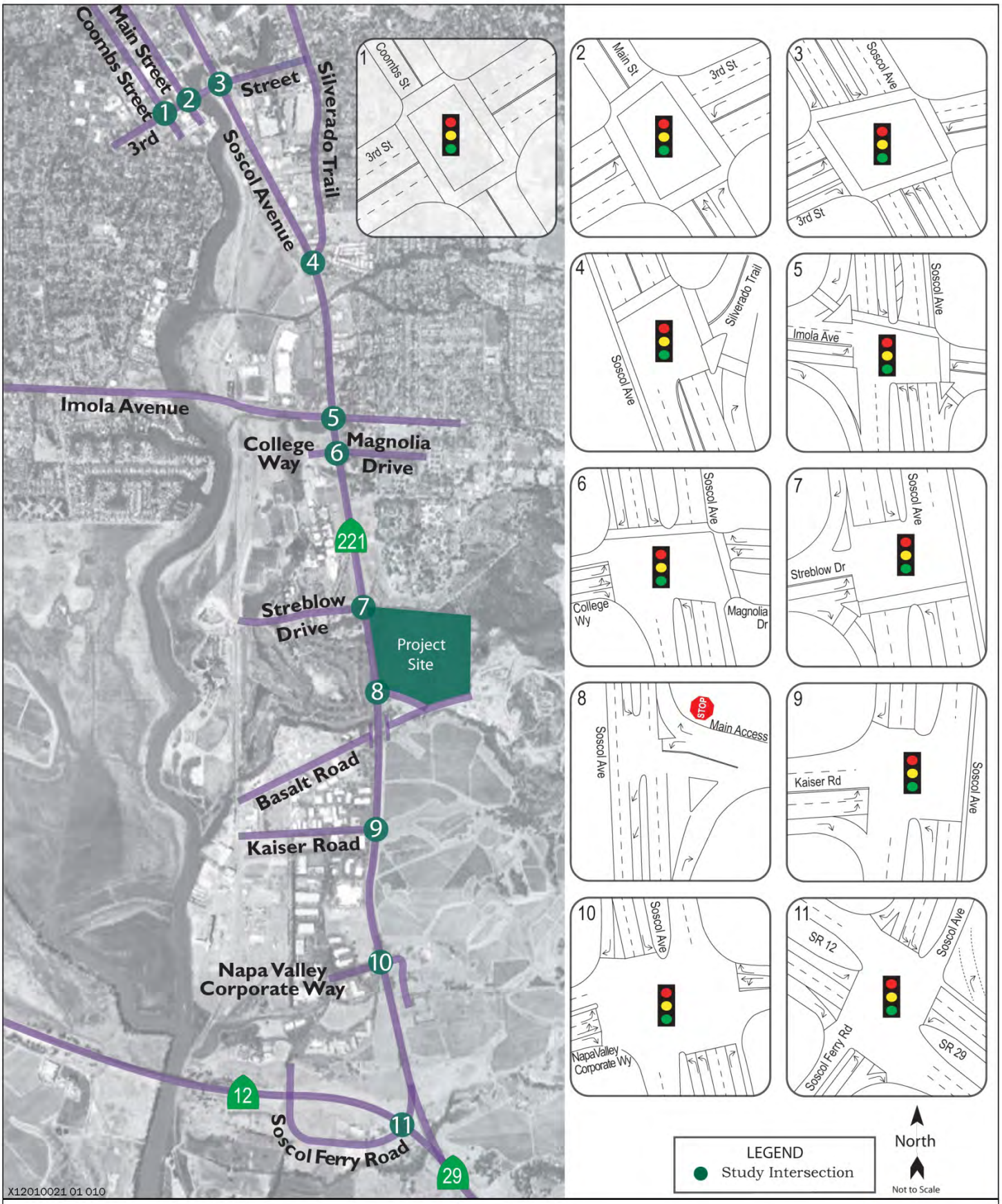
EXISTING CONDITIONS

INTERSECTION OPERATION

Operating conditions during the weekday a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

Traffic counts used for the analysis were obtained from several sources, including the *Downtown Napa Specific Plan Draft EIR* (ESA 2012), *Metropolitan Transportation Commission Program for Arterial System Synchronization (PASS) for City of Napa and Caltrans*, (TJKM Transportation Consultants 2012), and the *Traffic Impact Study for Environmental Impact Report (EIR), Napa Quarry Expansion* (Napa County 2013). These traffic volumes are provided in Exhibit 3.9-2.

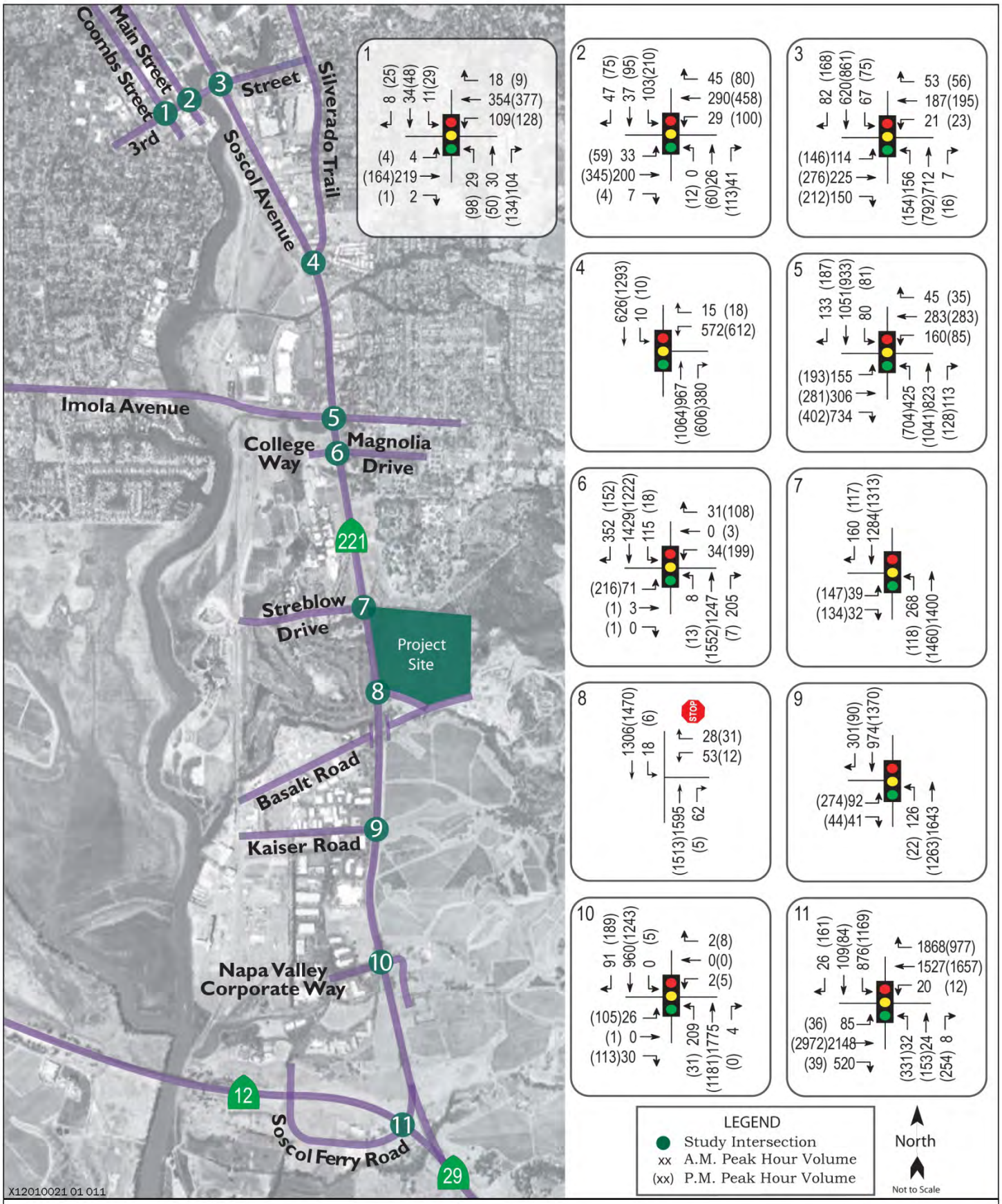
All of the study intersections are currently operating at LOS D or better except the intersections of Soscol Avenue-SR 221/SR 121-Imola Avenue, which is operating at LOS E during the evening peak period, and SR 221-Soscol Ferry Road/SR 29, which is operating at LOS F during both the morning and evening peak periods. Also, the westbound, stop-controlled approach to SR 221 from the project site is currently operating at LOS F during the morning peak hour, but the intersection operates acceptably at LOS A overall. The westbound, stop-controlled approach only serves to provide access to the project site and Syar Napa Quarry. These results are summarized in Table 3.9-1. Copies of the calculations are provided in Appendix E.



Source: Provided by Whitlock & Weinberger Transportation, Inc.in 2013

Exhibit 3.9-1

Existing Lane Configurations



Source: Provided by Whitlock & Weinberger Transportation, Inc.in 2013

Exhibit 3.9-2

Existing Traffic Volumes

Table 3.9-1 Existing Intersection Level of Service Results						
Intersection		Control Type[1]	AM Peak		PM Peak	
			Delay	LOS	Delay	LOS
1.	Coombs Street/Third Street	Signal	11.6	B	13.2	B
2.	Main Street/Third Street	Signal	10.1	B	17.2	B
3.	Soscol Avenue/Third Street	Signal	26.4	C	28.5	C
4.	Soscol Avenue/Silverado Trail	Signal	32.6	C	33.4	C
5.	Soscol Ave-SR 221/SR 121-Imola Ave	Signal	35.5	D	57.5	E
6.	SR 221/Magnolia Drive-College Way	Signal	16.1	B	23.6	C
7.	SR 221/Streblow Drive	Signal	12.2	B	12.0	B
8.	SR 221/Main Access[2]	SSSC	1.5	A	0.4	A
	Westbound (Main Access) Approach		*52.4*	*F*	*22.9*	*C*
9.	SR 221/Kaiser Road	Signal	9.6	A	11.7	B
10.	SR 221/Napa Valley Corp-Anderson	Signal	8.9	A	10.9	B
11.	SR 221-Soscol Ferry Road/SR 29	Signal	118.3	F	>120[3]	F

Notes: [1] SSSC = Side-Street Stop-Controlled
[2] Delay is reported in seconds per vehicle for the overall intersection and in *italics* for the stop-controlled approach.
[3] Calculated delays in excess of 120 seconds are not considered an accurate representation of intersection performance, other than to note that the intersection experiences long delays. Some intersection delays greater than 120 seconds are presented in the table above for comparative purposes only and impact significance determination.
Source: Data provided by Whitlock & Weinberger Transportation, Inc. in 2013

ALTERNATIVE MODES OF TRANSPORTATION

Existing Pedestrian Facilities

Pedestrian facilities within the project area include sidewalks as well as mixed-use paths shared with bicycles. Sidewalks are provided on:

- both sides of Third Street throughout the study area,
- both sides of Soscol Avenue from the northern city limit to Imola Avenue,
- the north side of Imola Avenue,
- the east side of SR 221 from Imola Avenue to College Way,
- the north side of Kaiser Road, and
- both sides of Magnolia Drive.

Pedestrians are allowed access along College Drive via the mixed-use path connector and along Streblow Drive via the River-to-Ridge trail.

There are no sidewalks along SR 221 in the vicinity of the project site.

Existing Bicycle Facilities

The *Highway Design Manual* (Caltrans 2006) classifies bikeways into three categories:

- *Class I Multi-Use Path*: a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- *Class II Bike Lane*: a striped and signed lane for one-way bike travel on a street or highway.
- *Class III Bike Route*: signing only for shared use with motor vehicles within the same travel lane on a street or highway.

In the project area, bicycle facilities provide a network to access important regional destinations, such as Downtown Napa, Napa Valley Community College, Napa State Hospital, and parks and other open space. A Class I mixed-use path north of and running parallel to College Way connects Class II bike lanes on SR 221 to the Napa River/Bay/Vine Trail. The Napa River/Bay/Vine Trail runs north-south along the riverfront from north of Imola Avenue to John F. Kennedy Memorial Park. The Napa River/Bay/Vine Trail also connects to the east-west River-to-Ridge trail at Streblow Drive. Class II bike lanes are striped on Kaiser Road beginning at its intersection with SR 221 and terminating at Syar Industrial Way. Bicyclists may ride on the shoulders of SR 221 to Imola Avenue. At Imola Avenue, Class II bike lanes are provided on Soscol Avenue to the northern Napa city limit. Third Street has Class II bike lanes from Main Street to its terminus. Bicyclists ride in the roadway and/or on sidewalks along all other streets within the project study area.

Table 3.9-2 summarizes the planned bicycle facilities in the project vicinity, as contained in the *NCPTA Countywide Bicycle Plan Update* (Whitlock & Weinberger Transportation, Inc. 2012), and shown in Exhibit 3.9-3.

Table 3.9-2 Proposed Future Bicycle Facilities

Corridor	Begin Point	End Point
Class I		
Napa River/Bay/Vine Trail	Southern Napa city limit	Kaiser Rd
Napa River/Bay/Vine Trail	Kaiser Rd	Existing Napa River/Bay Trail in Kennedy Park
Skyline Path (along Imola Ave to Skyline Park)	SR 121/221 (Napa-Vallejo Hwy)	Skyline Wilderness Park
Class II		
Kaiser Rd	Proposed Napa River/Bay/Vine Trail	Napa city limit
SR 29/221 (Napa-Vallejo Hwy)	American Canyon city limit	Kaiser Rd
Class III		
3rd Ave	Coombsville Rd	North Ave
3rd Ave	3rd Ave/North Ave	Hagen Rd

Source: Whitlock & Weinberger Transportation, Inc. 2012

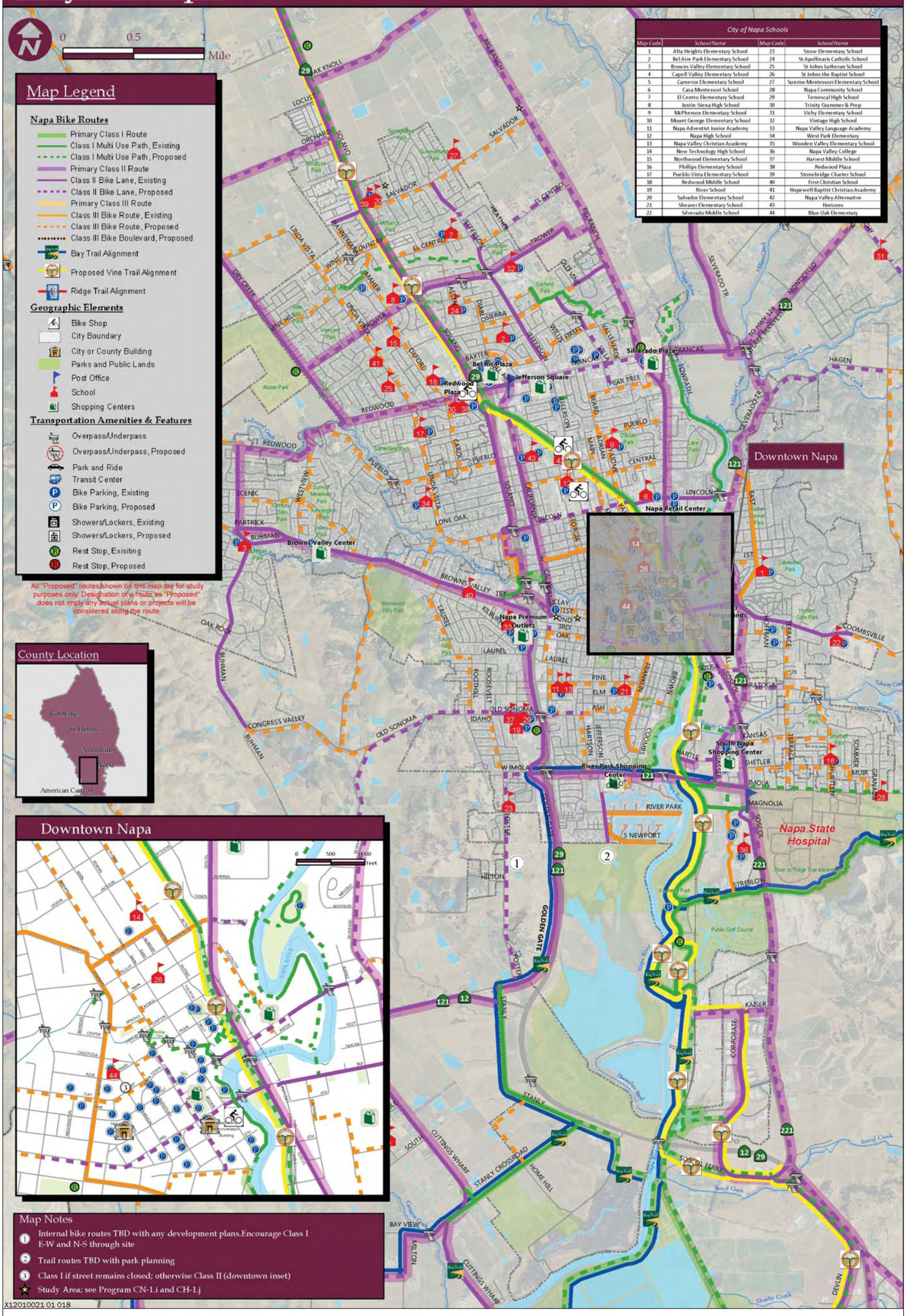
Existing Transit Services and Facilities

Transit service in Napa County is provided by the VINE, a fixed-route bus service providing service to the cities of Calistoga, St. Helena, Napa, American Canyon, the Town of Yountville, and other parts of Unincorporated Napa County (Vine Transit 2013). Since 2001, VINE fixed-route and paratransit operators in this region have been under the jurisdiction of the NCTPA. In general, VINE operates on weekdays from 5:20 a.m. to 9:25 p.m., on Saturdays from 6:30 a.m. to 8:40 p.m., and on Sundays from 8:30 a.m. to 7:00 p.m.

VINE Route 11 provides service along SR 221 near the project site, ultimately traveling from the City of Vallejo to the Redwood Park and Ride in the City of Napa. Weekday service runs every half hour between 5:30 a.m. and 7:30 p.m. in the southbound direction and between 7:00 a.m. and 9:00 p.m. in the northbound direction. Weekend service runs hourly from approximately 9:00 a.m. to 5:00 p.m. in both directions. VINE Route 11 connects to all other VINE routes at the Soscol Gateway Transit Center near Soscol Avenue and Third Street, and also to the Vallejo Transit system at the York Transit Center in Vallejo, which provides transportation to the East Bay and San Francisco. The bus stops for Route 11 nearest the project site are located approximately three-quarters of a mile away on Kaiser Road at Enterprise Way.

City of Napa

Napa Countywide Bicycle Plan



City of Napa Schools			
Map Code	School Name	Map Code	School Name
1	Alta Heights Elementary School	23	Snow Elementary School
2	Bel Aire Park Elementary School	24	St Apollinaris Catholic School
3	Browns Valley Elementary School	25	St Johns Lutheran School
4	Capell Valley Elementary School	26	St Johns the Baptist School
5	Carneros Elementary School	27	Sunrise Montessori Elementary School
6	Casa Montessori School	28	Napa Community School
7	El Centro Elementary School	29	Temescal High School
8	Justin-Siena High School	30	Trinity Grammer & Prep
9	McPherson Elementary School	31	Vichy Elementary School
10	Mount George Elementary School	32	Vintage High School
11	Napa Adventist Junior Academy	33	Napa Valley Language Academy
12	Napa High School	34	West Park Elementary
13	Napa Valley Christian Academy	35	Wooden Valley Elementary School
14	New Technology High School	36	Napa Valley College
15	Northwood Elementary School	37	Harvest Middle School
16	Phillips Elementary School	38	Redwood Plaza
17	Pueblo Vista Elementary School	39	Stonebridge Charter School
18	Redwood Middle School	40	First Christian School
19	River School	41	Hopewell Baptist Christian Academy
20	Salvador Elementary School	42	Napa Valley Alternative
21	Shearer Elementary School	43	Horizons
22	Silverado Middle School	44	Blue Oak Elementary

Source: Provided by Whitlock & Weinberger Transportation, Inc.in 2013

Exhibit 3.9-3

Napa County Bicycle Plan

ASCENT ENVIRONMENTAL

Route 29 provides weekday service between Calistoga and the El Cerrito del Norte Bay Area Rapid Transit (BART) Station, with connections to other VINE routes via the Soscol Gateway Transit Center and connections to San Francisco and Oakland via BART. Southbound service is provided between 6:30 a.m. and 5:30 p.m. with headways of one to two hours. Northbound service is provided between 8:00 a.m. and 6:30 p.m. with headways between one-half hour and two hours. No weekend service is provided. The bus stops for Route 29 nearest the project site are located at the Napa Valley College, approximately one mile away from the project site.

In addition, a planned VINE Route 20 would provide service along SR 221 near the project site, ultimately traveling from the City of Napa at the Soscol Gateway Transit Center to the cities of Fairfield and Suisun City in Solano County. The nearest bus stops to the project site would be shared with the existing VINE Route 11 bus stops.

VINE GO Paratransit Service is the region's paratransit provider, which operates Monday through Sunday. This is an on-call service providing curb-to curb service for older adults and the disabled.

The County is working with the NCTPA on a plan to expand transit service to the Dey Labs site, which is proposed for acquisition and reuse by the County's Health and Human Services Agency. The Napa Pipe developer has also committed to a mitigation measure that will require expanded transit services to that site.

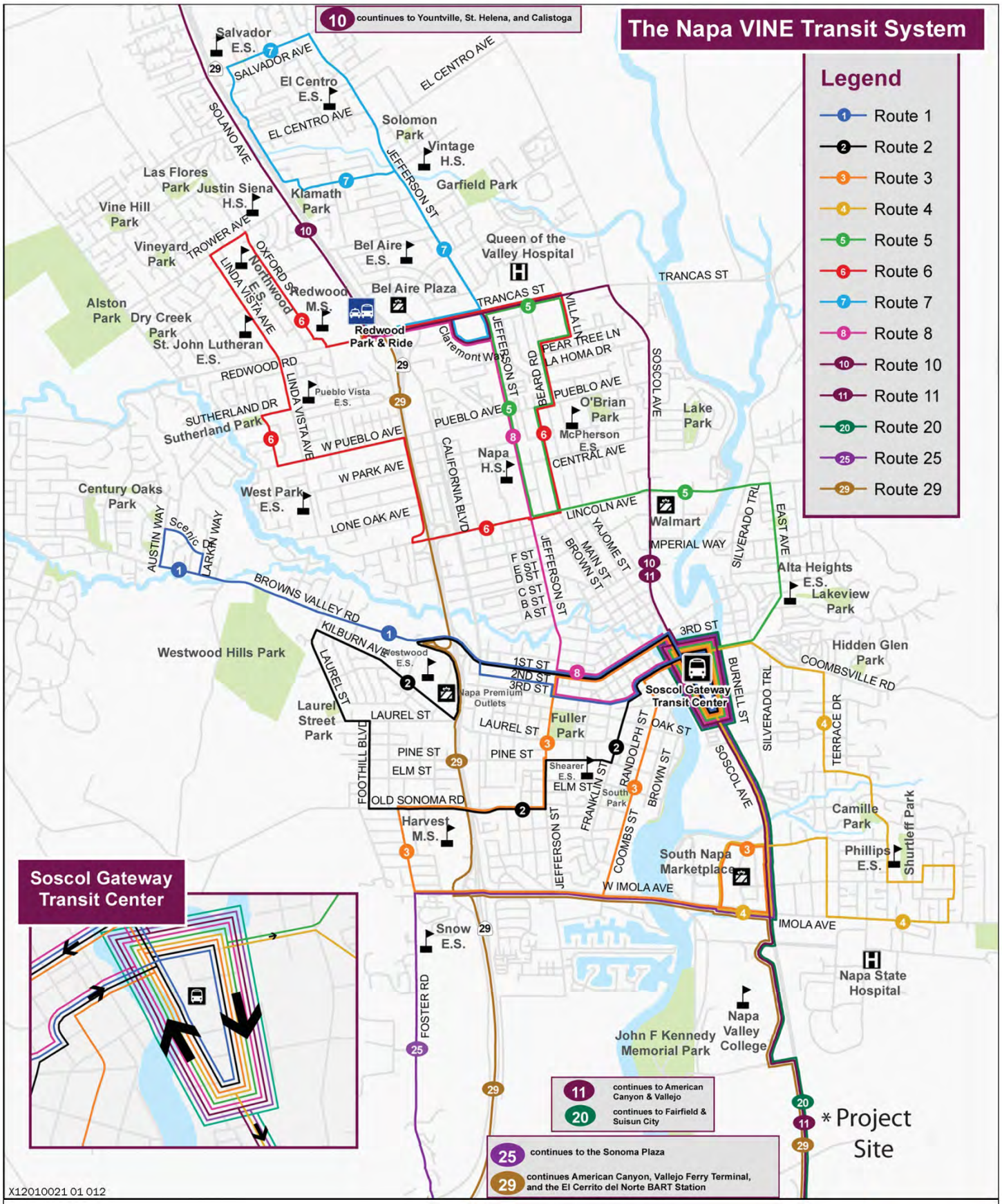
The fixed-route bus lines in the VINE transit system are shown in Exhibit 3.9-4.

FUTURE CONDITIONS

Future projected traffic volumes for the year 2030 were obtained from the Solano Transportation Authority who maintains the joint Napa County/Solano County 2010–2030 Travel Demand Forecasting Model. These data were provided in the form of segment volumes, which were translated to turning movement volumes at study intersections using the "Furness" method. The Furness method is an iterative process that employs existing turn movement data, existing link volumes and future link volumes to project likely turning future movement volumes at intersections.

The model is calibrated on a regional basis, and as such the configuration or base volumes of some study intersections in the model do not accurately represent existing conditions. Where this occurred, adjustments were made to the model output to represent existing conditions. When these adjustments were made, the incremental growth in traffic presented in the model was maintained.

Not all study intersections are included in the model, so where that occurred, future traffic volumes were estimated based on growth at nearby intersections and regional growth trends presented in the model. The model-generated future volumes were compared to future volumes projected for the *Napa Pipe Transportation Analysis Sensitivity Analysis* (Mitchell, Crosley, and Foletta, pers. comm., 2013). This qualitative analysis was intended to determine whether the projections were sufficiently robust (i.e., large enough) to account for pending projects and revealed that with the additional trips associated with development included in the Napa Pipe Project, a limited increase in volume would be expected at the study intersections. It is, therefore, unlikely that the operational results achieved using the model-generated volumes would differ substantially from the conclusions arrived at in the Napa Pipe Project EIR (Napa County 2009). Two intersections that are expected to differ substantially are SR 221/Kaiser Road and Soscol Avenue-SR 221/SR 121-Imola Avenue, where the added trips due to the Napa Pipe Project and other development not envisioned when the model was created increase volumes beyond what was projected based on the land uses from the General Plan. Because Soscol Avenue-SR 221/SR 121-Imola is projected to operate deficiently in the future without the additional trips identified in the Napa Pipe Project EIR (Napa County 2009), it is expected that the project would not add substantially to the continued deficient operation at this location. Mitigation measures are identified in the Napa Pipe Project EIR for the intersection of SR 221/Kaiser Road that result in acceptable operation (Napa County 2009).



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Source: Provided by Whitlock & Weinberger Transportation, Inc.in 2013; VINE Transit 2013

Exhibit 3.9-4

Transit Facilities Map

The only planned future traffic improvement in the study area is a flyover from SR 221 to SR 29 that would take traffic southbound on SR 221 over SR 29 to an on-ramp to southbound SR 29; this project is needed to address existing poor operation at that location, which will continue to deteriorate as traffic volumes increase over time. Because funding has not been identified for the flyover, this improvement was not assumed for purposes of the future conditions analysis.

Under projected future volumes, the study intersections of Soscol Avenue-SR 221/SR 121-Imola Avenue and SR 221-Soscol Ferry Road/SR 29 would operate with excessive delays without any capacity improvements. These results are tabulated in Table 3.9-3; copies of the calculations are provided in Appendix E. Future volumes are indicated in Exhibit 3.9-5.

Table 3.9-3 Future Intersection Level of Service Results

Intersection	Control Type[1]	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
1. Coombs Street/Third Street	Signal	11.8	B	14.4	B
2. Main Street/Third Street	Signal	11.8	B	20.5	C
3. Soscol Avenue/Third Street	Signal	28.1	C	38.8	D
4. Soscol Avenue/Silverado Trail	Signal	37.3	D	105.0	F
5. Soscol Ave-SR 221/SR 121-Imola Ave	Signal	104.8	F	>120	F
6. SR 221/Magnolia Drive-College Way	Signal	43.3	D	76.1	E
7. SR 221/Streblow Drive	Signal	37.2	D	22.8	C
8. SR 221/Main Access[2]	SSSC	17.5	B	0.7	A
Westbound (Main Access) Approach		*>120*[3]	*F*	*83.2*	*F*
9. SR 221/Kaiser Road	Signal	35.0	C	58.8	E
10. SR 221/Napa Valley Corp-Anderson	Signal	34.9	C	31.6	C
11. SR 221-Soscol Ferry Road/SR 29	Signal	>120[3]	F	>120[3]	F

Notes: [1] SSSC = Side-Street Stop-Controlled
[2] Delay is reported in seconds per vehicle for the overall intersection and in *italics* for the stop-controlled approach.
[3] Calculated delays in excess of 120 seconds are not considered an accurate representation of intersection performance, other than to note that the intersection experiences long delays. Some intersection delays greater than 120 seconds are presented in the table above for comparative purposes only and impact significance determination.
Source: Data provided by Whitlock & Weinberger Transportation, Inc. in 2013

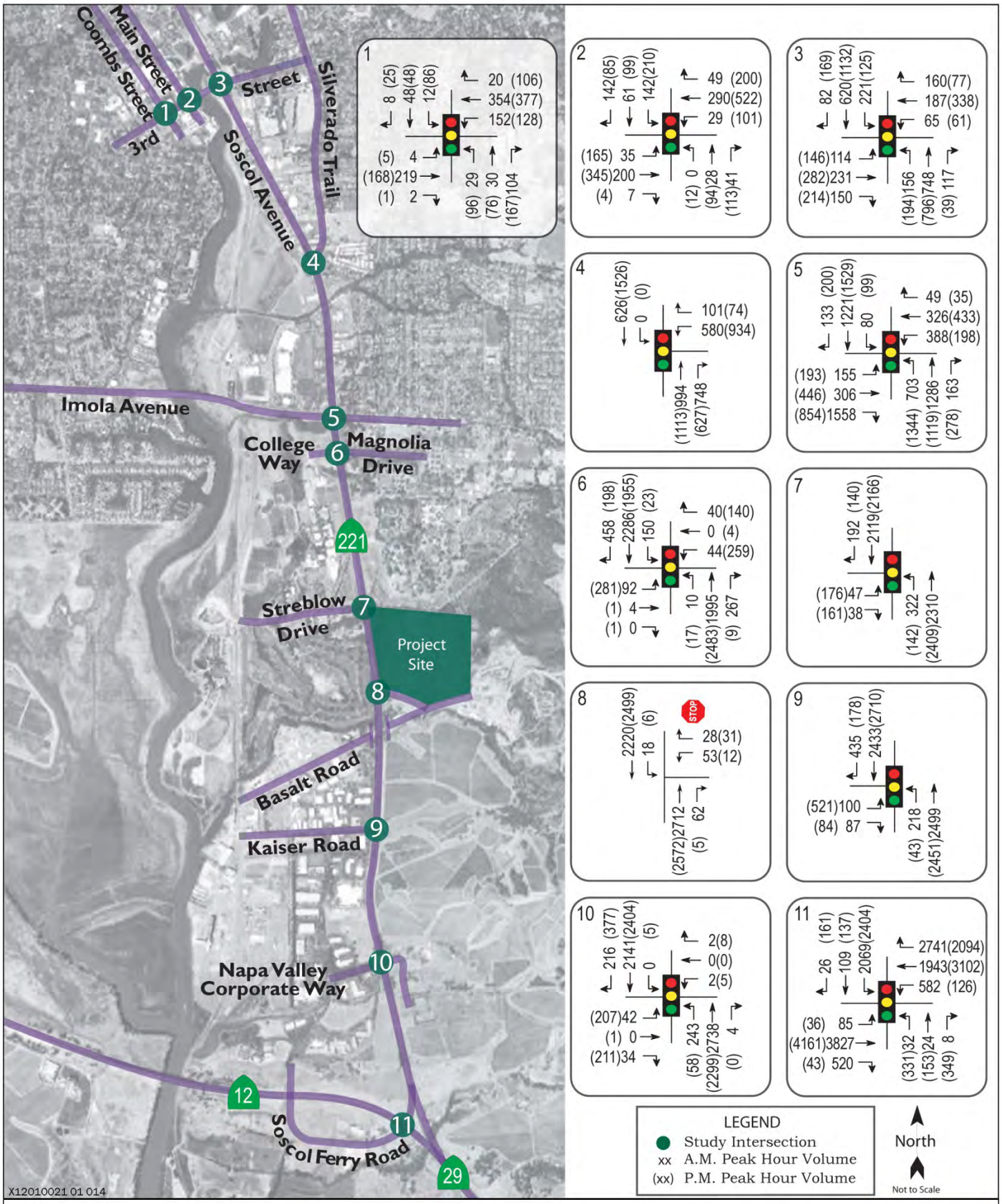
3.9.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

METHODS AND ASSUMPTIONS

INTERSECTION OPERATION

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, LOS A represents free flow conditions and LOS F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

To provide consistency with other recent evaluations performed for the County of Napa, the study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM; Transportation Research Board 2000). This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.



Source: Provided by Whitlock & Weinberger Transportation, Inc.in 2013

Exhibit 3.9-5

Future Project Trips

The Levels of Service for the intersection of the Project Access with SR 221, which has side-street stop control, were analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The study intersections that are currently controlled by a traffic signal, or may be in the future, were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using optimized signal timing.

The ranges of delay associated with the various levels of service are indicated in Table 3.9-4.

Table 3.9-4 Intersection Level of Service Criteria

LOS	Two-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Source: Transportation Research Board 2000

TRIP GENERATION

Standard trip generation rates published by the Institute of Transportation Engineers in the *Trip Generation Manual,* 9th Edition (2012) have generally been found to be inadequate for evaluating traffic impacts when the number of surveys is relatively low or the site has unique characteristics that do not correspond to standardized rates. There have been only a few published trip generation surveys of correctional facilities, and jails are unique in terms of their number of beds, staff, deliveries, and visitors. Therefore, a site-specific trip generation estimate was prepared for the proposed project. The trip generation estimate was based on the following information:

- Total daily staff added (by shift) for the Jail and the Staff Secure Facility;
- Daily service vehicle and delivery vehicle trips;
- Daily visitor vehicle trips; and
- Staff Secure Facility program provider trips and inmate trips.

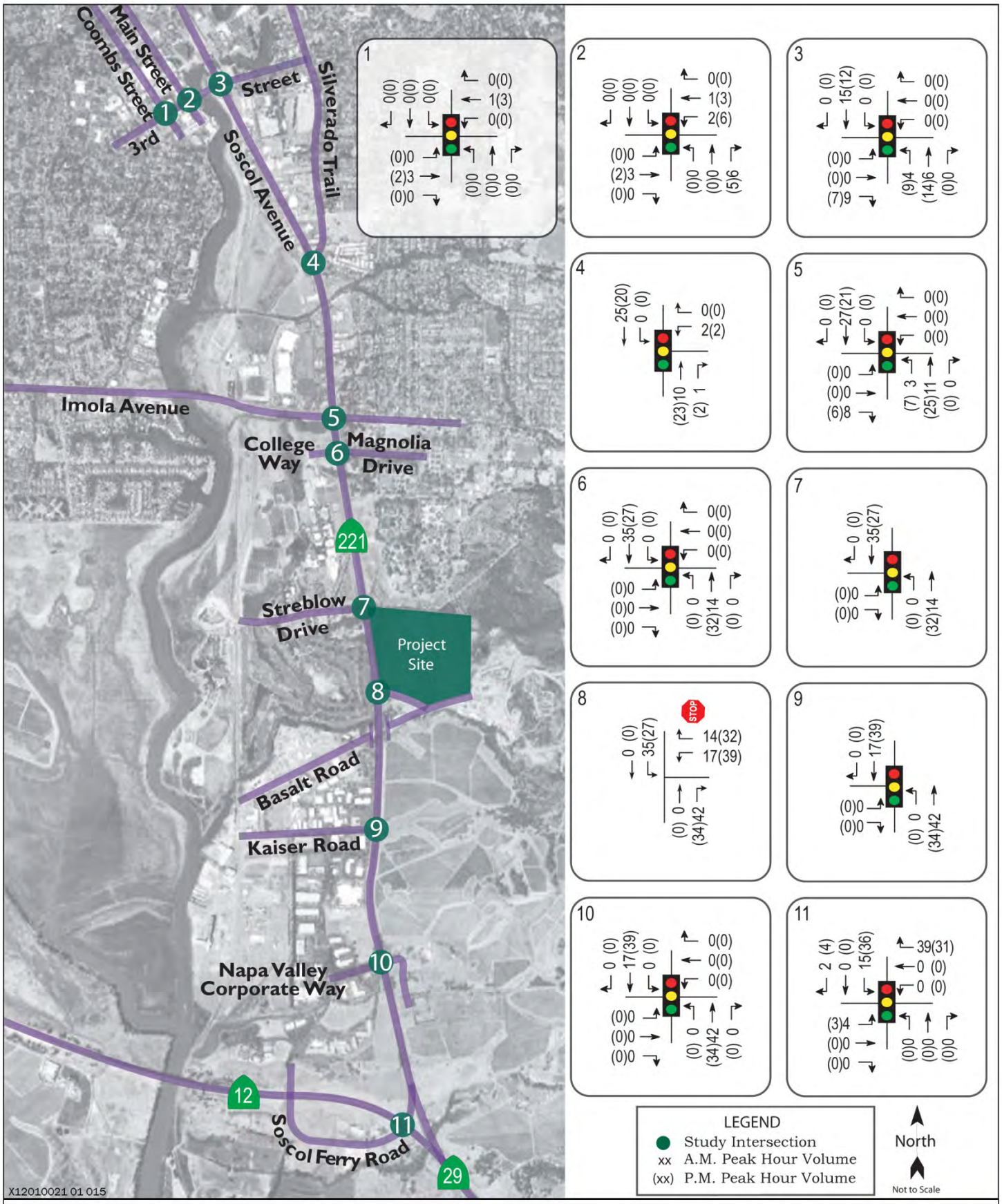
The project is proposed as a phased effort, with Phase I including 366 beds and associated support staff and facilities, and Phase II including an expansion to 526 beds, with a minor increase in staffing.

Table 3.9-5 summarizes the breakdown of staff by shift and the estimated trip generation based on staff in and out of the project during the studied peak hour periods for the 366-bed Phase I project. The estimated trips listed in Table 3.9-5 account for additional trips that would occur due to visitors, employees, deliveries etc. during the peak periods (Exhibit 3.9-6). The trip generation table includes all new trips that were listed in the program documents, for all trip purposes, and are shown as peak trips if they lead to travel during peak hours (a.m. or p.m.). Trips to and from the courts generally occur during the middle of the day and outside of peak hours. Assumptions for each of the trip types are noted in the table and associated notes.

Table 3.9-5 Estimated Phase I Trip Generation (366 Beds)

Trip Type	Number of Staff/ Visitors/Deliveries	Daily Trips	AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
Employee Trips								
Jail Custody Operations Day Shift (6:00 a.m. – 6:00 p.m.)	25	50						
Jail Custody Operations Night Shift (6:00 p.m. – 6:00 a.m.)	17	34				17		34
Jail Custody Operations Business, Administrative, and Support Shifts (8:00 a.m. – 5:00 p.m.)	41	82	41		41		41	41
Staff Secure Facility Administrative (8:00 a.m. – 5:00 p.m.)	6	12	6		6	6		6
Staff Secure Facility Security Team A/C (Days) (6:00 a.m. – 6:00 p.m.)	9	18						
Staff Secure Facility Security Team B/D (Nights) (6:00 p.m. – 6:00 a.m.)	8	16				8		8
Employee Trip Total	**106**	**212**	**47**	**0**	**47**	**31**	**41**	**89**
Staff Secure Facility Program Providers	2	4	1	1	2	1	1	2
Staff Secure Facility Inmate Trips[1]	5	10	3	3	6	3	3	6
Jail Visitor Trips[2]	78	156	20	20	40	20	20	40
Staff Secure Facility Visitor Trips[2]	18	36	5	5	10	5	5	10
Jail Delivery and Service Vehicles[3]	7	14	1	1	2	1	1	2
Staff Secure Facility Delivery and Service Vehicles[4]	1	4	1	1	2	1	1	2
Project Totals	**217**	**436**	**77**	**30**	**109**	**61**	**71**	**151**

Notes:
1 Staff Secure Facility Inmate Trips are assumed to occur in vans or other multi-passenger vehicles, with three vehicles each making a round-trip during each peak hour.
2 Visitors include business and professional visitors, volunteers/service providers, and inmate family visits. It is assumed one-quarter of all visitor trips occur during each peak hour.
3 Delivery and Service vehicle trips for the Jail are assumed to have one delivery during each peak hour. All other deliveries would occur throughout the day outside of peak hours.
4 Delivery and Service vehicle trips for the Staff Secure Facility are assumed to be proportional based on the ratio of residents to the jail residents.
Sources: Napa County 2012 (Table 5); Goble, pers. comm., 2013; Data provided by Whitlock & Weinberger Transportation, Inc. in 2013



Source: Provided by Whitlock & Weinberger Transportation, Inc.in 2013

Exhibit 3.9-6

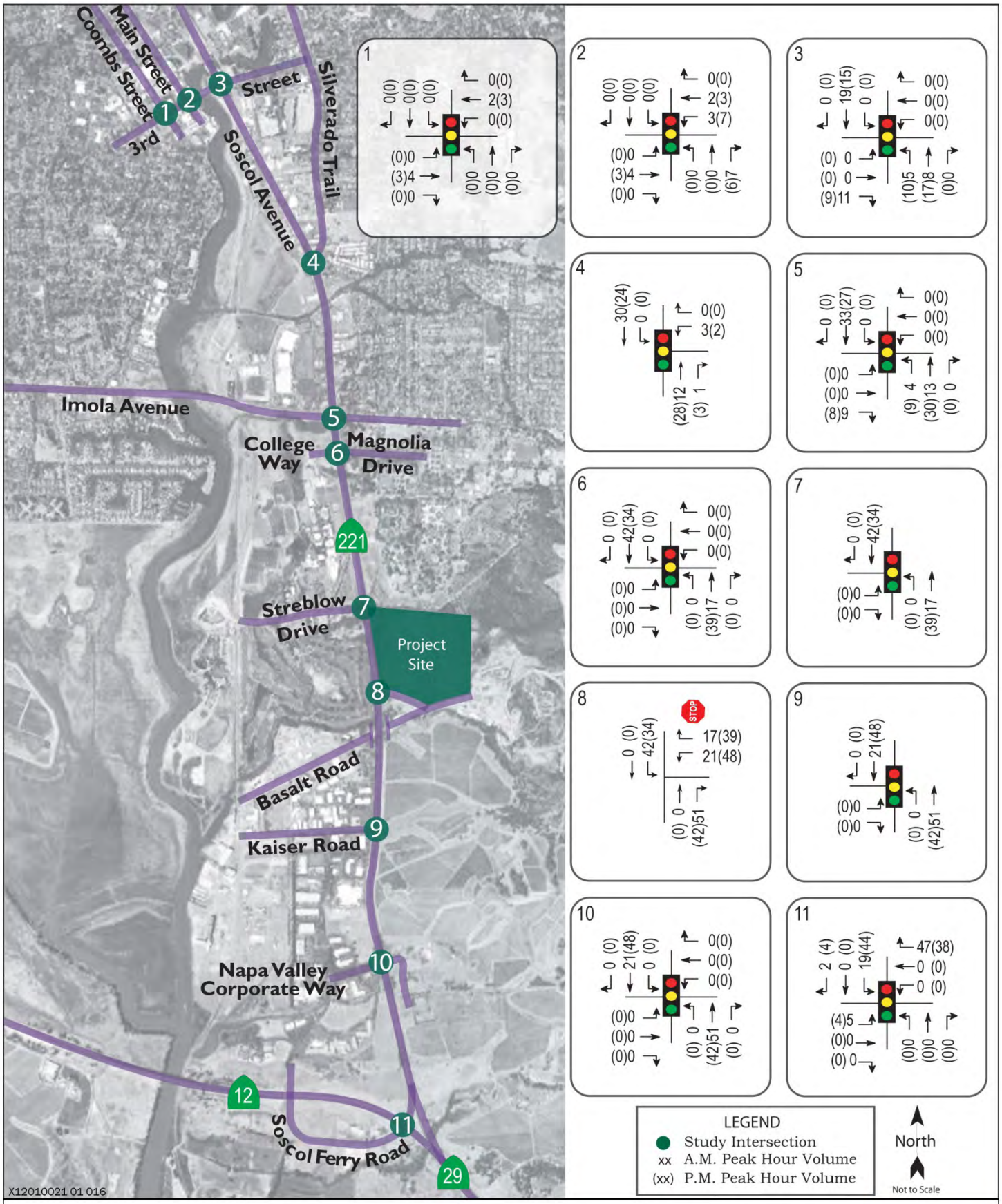
Phase I Project Trips

Similarly, trips associated with the expanded 526-bed jail that would comprise Phase II of the project were estimated based on the anticipated staffing levels, deliveries, visitors and inmate trips. These results are shown in Table 3.9-6 (Exhibit 3.9-7).

Table 3.9-6 Estimated Phase II Trip Generation (526 Beds, includes Phase 1 trips)

Trip Type	Number of Staff/ Visitors/ Deliveries	Daily Trips	AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
Employee Trips								
Jail Custody Operations Day Shift (6:00 a.m. – 6:00 p.m.)	34	68						
Jail Custody Operations Night Shift (6:00 p.m. – 6:00 a.m.)	23	46				23		23
Jail Custody Operations Business, Administrative, and Support Shifts (8:00 a.m. – 5:00 p.m.)	49	98	49		49		49	49
Jail Administrative Day Shift (Sheriff Lt) (6:00 a.m. – 6:00 p.m.)	1	2						
Jail Administrative Night Shift (Sheriff Lt) (6:00 p.m. – 6:00 a.m.)	1	2				1		1
Staff Secure Facility Administrative (8:00 a.m. – 5:00 p.m.)	6	12	6		6	6		6
Staff Secure Facility Security Team A/C (Days) (6:00 a.m. – 6:00 p.m.)	9	18						
Staff Secure Facility Security Team B/D (Nights) (6:00 p.m. – 6:00 a.m.)	8	16				8		8
Employee Trip Total	**131**	**262**	**55**	**0**	**55**	**38**	**49**	**87**
Staff Secure Facility Program Providers	2	4	1	1	2	1	1	2
Staff Secure Facility Inmate Trips[1]	5	10	3	3	6	3	3	6
Jail Visitor Trips[2]	110	220	28	28	55	28	28	55
Staff Secure Facility Visitor Trips[2]	18	36	5	5	10	5	5	10
Jail Delivery and Service Vehicles[3]	9	18	1	1	2	1	1	2
Staff Secure Facility Delivery and Service Vehicles[4]	2	4	1	1	2	1	1	2
Project Totals	**277**	**554**	**93**	**38**	**132**	**76**	**87**	**164**

Notes:
1 Staff Secure Facility Inmate Trips are assumed to occur in vans or other multi-passenger vehicles, with three vehicles each making a round-trip during each peak hour.
2 Visitors include business and professional visitors, volunteers/service providers, and inmate family visits. It is assumed one-quarter of all visitor trips occur during each peak hour.
3 Delivery and Service vehicle trips for the Jail are assumed to have one delivery during each peak hour. All other deliveries would occur throughout the day outside of peak hours.
4 Delivery and Service vehicle trips for the Staff Secure Facility are assumed to be proportional based on the ratio of residents to the jail residents.
Sources: Napa County 2012 (Table 6); Goble, pers. comm., 2013; Data provided by Whitlock & Weinberger Transportation, Inc. in 2013



Source: Provided by Whitlock & Weinberger Transportation, Inc.in 2013

Exhibit 3.9-7

Phase II Project Trips

Although the site is currently occupied by a building materials supplier, no deduction was made to account for trips associated with this existing development that would be eliminated to make way for the project. The County's model includes minimal assumed development at this site, so no deductions were taken from the future volumes to account for any assumed future development. The analysis conservatively treats all of the project-related trips as new.

TRIP DISTRIBUTION

Because the project results in the relocation of an existing, operating jail facility, the trip distribution was based on the residency locations of the existing work force as well as consideration of the likely origin of delivery and visitor trips. Based on these considerations, the trip generation assumptions indicated in Table 3.9-7 were applied.

Project trips were assigned to the street network and study intersections based on the distribution assumptions indicated.

Table 3.9-7 Trip Distribution Assumptions

Origin/Destination	Percent of Trips
SR 29 (south of SR 221)	50%
Soscol Avenue (north of 3rd Street)	20%
Imola Avenue (SR 121)	10%
3rd Street (existing jail location)	8%
SR 29 (via SR 221 south of the project site)	5%
3rd Street (west of Coombs)	4%
Silverado Trail	3%

Source: Data provided by Whitlock & Weinberger Transportation, Inc. in 2013

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, a transportation and traffic impact is considered significant if implementation of the proposed project would do any of the following:

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

The specific criteria used to determine whether an impact would be significant are described below in the "Applied Thresholds of Significance" section.

TRAFFIC OPERATION

The study area includes intersections that fall under various jurisdictions. The policies for each of these agencies are provided below.

Caltrans

Caltrans is responsible for the maintenance and operation of State routes and highways. Within the project study area, Caltrans' facilities include SR 29, SR 221 (Napa-Vallejo Highway), and SR 121 (Imola Avenue, Soscol Avenue and Silverado Trail). Caltrans maintains a volume monitoring program and reviews local agencies' planning documents to assist in its forecasting of future volumes and congestion points. The *Guide for the Preparation of Traffic Impacts Studies* (Caltrans 2002) is intended to provide a consistent basis for evaluating traffic impacts to State facilities. According to this document, Caltrans strives to maintain service levels on State facilities at the transition between LOS C and LOS D. In cases where this level of service is not feasible the lead agency should consult with Caltrans to establish an appropriate level of service threshold. Please see the discussion below under "City of Napa" for policies developed by the City of Napa related to Caltrans facilities. If an existing state highway facility is operating worse than the appropriate target LOS, the existing Measures of Effectiveness (MOE) should be maintained.

Napa County

The following policies are included in the *Napa County General Plan* (2008):

- **Policy CIR-16:** The County shall seek to maintain an adequate level of service on roads and at intersections as follows. The desired level of service shall be measured at peak hours on weekdays.
  - The County shall seek to maintain an arterial LOS D or better on all county roadways, except where maintaining this desired level of service would require the installation of more travel lanes than shown on the Circulation Map.
  - The County shall seek to maintain a LOS D or better at all signalized intersections, except where the level of service already exceeds this standard (i.e., LOS E or F) and where increased intersection capacity is not feasible within the existing right-of-way.
  - No single level of service standard is appropriate for unsignalized intersections, which shall be evaluated on a case-by case basis to determine if signal warrants are met.

City of Napa

The City's adopted *Policy Guidelines, Traffic Impact Analysis for Private Development Review* (City of Napa 2008) expands upon *Envision Napa 2020* and provides general guidelines for assessing the potential traffic impacts of new developments proposed within the City of Napa. The City uses the following level of service criteria for unsignalized or stop-controlled intersections:

- For signalized intersections on arterial and collector streets, LOS will not exceed midrange LOS D. The following locations are exceptions where midrange LOS E will be permitted:
  - Downtown Napa within the area bounded by Soscol Avenue, First Street, California Boulevard, and Third Street
  - Silverado Trail between Soscol Avenue and First Street
- For traffic signals on State highway facilities, the following criteria shall be used in a collaborative effort between the City of Napa and Caltrans District 4:

- Through the use of the Napa TMP (Transportation Management Plan) Traffic Model, which was cosponsored by the City of Napa, Caltrans, NCTPA and Napa County Flood Control and Water Conservation District (NCFCWCD), the State highway intersections operating at less than appropriate target level of service per Caltrans criteria have been identified as a preliminary reference.
  - Highway 121-Imola Avenue/Soscol Avenue – LOS F
  - Highway 12-29/Napa Vallejo Highway – LOS F
- For unsignalized intersections, the minimum acceptable level of service recommended by the policies is midrange LOS E.
- For unsignalized intersections, a low-volume movement may have delays that yield LOS E or F but may still be considered as having "acceptable operation" by considering both total delay and level of service (defined in terms of average control delay). An intersection traffic movement at a stop-controlled approach can be deemed to have acceptable operation under the following conditions:
  - Total delay less than 4.0 vehicle-hours for single lane movement with low volume.
  - Total delay less than 5.0 vehicle-hours for multilane movement with low volume.

APPLIED THRESHOLDS OF SIGNIFICANCE

To avoid the complexities and confusion associated with using slightly different significance criteria for each jurisdiction, the County, in conjunction with the City, developed the following significance criteria that were applied in the Napa Pipe EIR (Napa County 2009). Because this project likewise has intersections in various jurisdictions, these policies as set forth in the Napa Pipe EIR were applied in this analysis.

TRAFFIC/INTERSECTION IMPACTS

A significant traffic impact would occur if the project would:

- At a signalized intersection, degrade the AM or PM peak hour level of service from an acceptable LOS D or better to LOS E or F.
- At a signalized intersection, increase traffic volumes at an intersection already operating at LOS E or F by more than 50 vehicles per hour in the AM or PM peak hour.
- At an unsignalized intersection, degrade the AM or PM peak hour level of service from an acceptable LOS D or better to LOS E or F and the worst-case approach would experience total delay of more than 4.0 vehicle-hours (for a single lane approach) or more than 5.0 vehicle hours (for a multi-lane approach);
- At an unsignalized intersection, increase traffic volumes at an intersection already operating at LOS E or F by more than 50 vehicles per hour in the AM or PM peak hour.

An intersection impact can be mitigated to a less-than-significant level if an infrastructure improvement or traffic volume reduction results in the intersection operating at an acceptable LOS D or better. If an intersection is currently operating at an unacceptable LOS E or worse, the improvement must, at a minimum, return the intersection to its existing operating conditions to achieve a less-than-significant classification.

BICYCLE CIRCULATION

An impact on bicycle facilities would be considered significant if it:

- Is inconsistent with goals to have facilities that encourage greater use of bicycles for recreation, commuting and shopping.
- Results in substantial conflicts for bicyclists or would adversely affect nearby bicycle facilities.

- Is inconsistent with goals to develop and maintain a safe, integrated bicycle route network for residents and visitors, connecting key destinations to neighborhoods, neighborhoods to each other and provide adequate bicycle access to the project site.
- Exacerbates an already substandard bicycle condition in the project area.

Pedestrian Circulation

An impact on pedestrian facilities would be considered significant if it:

- Is inconsistent with goals to provide an interconnected pedestrian network providing safe access to the project site, between residential areas, public uses, and shopping and employment centers.
- Results in substantial conflicts for pedestrians or would adversely affect nearby pedestrian facilities.
- Exacerbates an already unsafe pedestrian condition in the project area.

Transit

An impact on transit facilities would be considered significant if it:

- Is inconsistent with goals to develop and maintain an efficient and convenient transit system providing alternatives to the use of the personal automobile to residents, workers and visitors to alleviate congestion and enhance mobility.
- Causes a transit demand above the levels able to be adequately provided by local transit operators or agencies, or has other adverse impacts on transit operations.

Access and Circulation

An impact associated with site access and circulation would be considered significant if it:

- Creates an on-site circulation system that would be inadequate for the volumes and types of traffic expected.
- Includes vehicular access points that are not designed to appropriate design standards.

Parking

A significant parking impact would occur if the proposed parking supply is inadequate to serve the expected demand.

The project-specific County parking standards are based on conservative peak demand and are intended as guidelines. They will not be used in determining the significance of an impact.

Construction

A construction impact to the circulation system would be significant if it adversely affected transportation circulation or infrastructure conditions. Impacts specific to construction would be significant if:

- The construction activity causes substantial adverse effects to vehicle, pedestrian, and bicycle circulation.
- The construction activity causes substantial adverse effects to pavement conditions.

ISSUES OR POTENTIAL IMPACTS NOT DISCUSSED FURTHER

The project would not result in any changes to air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. Further, there are no towers or other structures that could potentially affect air transport. Therefore, this issue is not discussed further in this DEIR.

IMPACT ANALYSIS

Impact 3.9-1	Existing Plus Project Intersection Level of Service Impacts. With implementation of the 366-bed project under existing plus project conditions, three intersections (Soscol Avenue/Imola Avenue, SR 221/Main Access, and SR 221-Soscol Ferry Road/SR 29) would experience further degradation of existing adverse operating conditions. This would be a ***significant*** impact. This impact could be reduced to a less-than-significant level at SR 221/Main Access through implementation of Mitigation Measure 3.9-1b. The impact could be mitigated at Soscol Avenue-SR 221/SR 121-Imola Avenue and SR 221-Soscol Ferry Road/SR 29 through implementation of Mitigation Measures 3.9-1a and -1c, but implementation of the improvements called for is uncertain, and therefore the impacts would remain significant and unavoidable. With implementation of the 526-bed project under existing plus project conditions, the same three intersections (Soscol Avenue/Imola Avenue, SR 221/Main Access, and SR 221-Soscol Ferry Road/SR 29) would experience further degradation of existing adverse operating conditions such that the intersection of SR 221/Main Access would experience unacceptable LOS E operation during the p.m. peak period in addition to the a.m. peak period, resulting in a ***significant*** impact. This impact could be reduced to a less-than-significant level through implementation of Mitigation Measures 3.9-1a, 3.9-1b, and 3.9-1c; however, the impact would remain significant and unavoidable at Soscol Avenue-SR 221/SR 121-Imola Avenue and SR 221-Soscol Ferry Road/SR 29 because implementation of the mitigation is uncertain.

Upon adding trips associated with either the 366-bed or 526-bed project to existing traffic levels, all of the study intersections are expected to continue operating at the same levels of service as they do under existing conditions except SR 221/Main Access, which would experience deteriorated operation during the p.m. peak hour. It should be noted that with the addition of project-related traffic volumes, average delay at the intersections of Main Street/Third Street, SR 221/Magnolia Drive-College Way and SR 221/Streblow Drive is expected to decrease during the a.m. and/or p.m. peak hours. While this is counter-intuitive, this condition occurs when a project adds trips to movements that are currently underutilized or have delays that are below the intersection average, resulting in a better balance between approaches and lower overall average delay. The project adds traffic only to the through movement, which has an average delay that is lower than the average for the intersection as a whole, resulting in a slight reduction in the overall average delay.

The intersections of Soscol Avenue-SR 221/SR 121-Imola Avenue, SR 221-Soscol Ferry Road/SR 29 and SR 221/Main Access (westbound approach) would continue to operate at LOS E or LOS F under both the 366-bed and 526-bed design options during either the a.m. peak period or both peak periods, which is unacceptable based on the standards applied. Because the project under both design options would contribute more than 50 peak hour trips to these intersections, it would further exacerbate these unacceptable operating conditions and this would be a **significant** impact requiring mitigation. These results are indicated in Table 3.9-8.

Table 3.9-8 Existing Plus Project Intersection Level of Service Results

Intersection	Control Type[1]	Existing Without Project				Existing plus 366 Beds				Existing plus 526 Beds			
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Coombs Street/ Third Street	Signal	11.6	B	13.2	B	11.6	B	13.2	B	11.6	B	13.2	B
2. Main Street/ Third Street	Signal	10.1	B	17.2	B	12.1	B	15.6	B	12.1	B	15.6	B
3. Soscol Avenue/ Third Street	Signal	26.4	C	28.5	C	26.9	C	28.7	C	26.9	C	28.7	C
4. Soscol Ave/ Silverado Trail	Signal	32.6	C	33.4	C	34.8	C	36.1	D	34.9	C	36.5	D
5. Soscol Ave-SR 221/ SR 121-Imola Ave	Signal	35.5	D	**57.5**	**E**	38.6	D	**62.8**	**E**	38.8	D	**63.3**	**E**
6. SR 221/Magnolia Dr-College Way	Signal	16.1	B	23.6	C	15.2	B	25.8	C	15.2	B	26.0	C
7. SR 221/ Streblow Drive	Signal	12.2	B	12.0	B	12.1	B	10.9	B	12.1	B	10.9	B
8. SR 221/ Main Access[2]	SSSC	1.5	A	0.4	A	2.7	A	1.4	A	3.1	A	1.8	A
Westbound (Main Access) Approach		***52.4***	***F***	*22.9*	*C*	***68.7***	***F***	*34.7*	*D*	***74.2***	***F***	***38.5***	***E***
9. SR 221/ Kaiser Road	Signal	9.6	A	11.7	B	9.5	A	9.9	A	9.5	A	10.0	A
10. SR 221/Napa Valley Corp-Anderson	Signal	8.9	A	10.9	B	9.0	A	10.9	B	9.0	A	10.9	B
11. SR 221-Soscol Ferry Road/SR 29	Signal	118.3	F	>120[3]	F	**>120[3]**	**F**	**>120[3]**	**F**	**>120[3]**	**F**	**>120[3]**	**F**

Notes: [1] SSSC = Side-Street Stop-Controlled
[2] Delay is reported in seconds per vehicle for the overall intersection and in *italics* for the stop-controlled approach.
[3] Calculated delays in excess of 120 seconds are not considered an accurate representation of intersection performance, other than to note that the intersection experiences long delays. Some intersection delays greater than 120 seconds are presented in the table above for comparative purposes only and impact significance determination.
Bold text indicates unacceptable operation; Shaded cells indicate significant impacts
Source: Data provided by Whitlock & Weinberger Transportation, Inc. in 2013

Mitigation Measure 3.9-1a. Soscol Avenue-SR 221/SR 121-Imola Avenue

The County will pay its proportional share to the City towards potential future improvements at Soscol Avenue-SR 221/SR 121-Imola Avenue, which is calculated as 2.49% for Phase 1(366 beds) and an additional 0.50% (or a total of 2.99%) with the addition of Phase 2 trips (526 beds). As identified in the Napa Pipe Impact Transportation Analysis Sensitivity Analysis (Mitchell, Crosley, and Foletta, pers. comm., 2013), the improvements needed to achieve acceptable operation include an additional left-turn lane on the eastbound approach and an exclusive right-turn lane on the westbound approach. Because the intersection is operating at an unacceptable LOS under existing conditions under the applied standards, the County shall pay its proportional share of the construction of these improvements.

With implementation of Mitigation Measure 3.9-1a, the intersection would operate acceptably at LOS D during the PM peak hour, as shown in Table 3.9-9, and better than under existing conditions, even with the addition of project traffic. Some funding would be available to improve intersection operation at such time that the City

decides to implement improvements, though the timing of such improvements are unknown. While it is possible to construct improvements that would eliminate unacceptable operating conditions, it is unknown when such improvements will be implemented because they are not subject to the County's control. As a result, this impact is considered **significant and unavoidable**.

Table 3.9-9 Mitigated Intersection Level of Service Results –Soscol Avenue-SR 221/SR 121-Imola Avenue[1]

Scenario	Control Type[1]	366 Beds				526 Beds			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Existing plus project	Signal	34.1	C	48.7	D	35.5	D	49.1	D
Future plus project	Signal	105.8	F	205.5	F	107.8	F	207.1	F

Notes:
[1] Mitigation includes installation of an additional left-turn lane on the eastbound approach and exclusive right-turn lane on the westbound approach.
Source: Data provided by Whitlock & Weinberger Transportation, Inc. in 2013

Mitigation Measure 3.9-1b. SR 221/Main Access

Prior to occupancy of the site, the County will fund and signalize the intersection of SR 221/Main Access, including providing protected left-turn phasing on southbound SR 221. To eliminate conflicts between the protected southbound left-turn movement and northbound right turns, the free right-turn lane shall be converted to a standard right-turn lane. Similarly, the westbound right-turn lane shall be converted to a standard turn lane to bring this movement under signal control. Right-turn overlap phasing shall be provided between the southbound left turn and westbound right turn. Adequate right-of-way is available to accommodate this improvement and adequate spacing (i.e., more than 2,000 feet) is available between this signal and the nearest signal.

With implementation of Mitigation Measure 3.9-1b, this intersection would operate at LOS A under both the 366-bed and 526-bed design options, which would be acceptable based on Caltrans standards. Therefore, impacts would be reduced to a **less-than-significant** level, with operation as indicated in Table 3.9-10.

Table 3.9-10 Mitigated Intersection Level of Service Results – SR 221/Main Access[1]

Scenario	Control Type[1]	366 Beds				526 Beds			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Existing plus project	Signal	8.2	A	5.5	A	8.8	A	6.8	A
Future plus project	Signal	36.2	D	15.5	B	37.4	D	17.0	B

Notes:
[1] Mitigation includes installation of a traffic signal and lane modifications.
Source: Data provided by Whitlock & Weinberger Transportation, Inc. in 2013

Mitigation Measure 3.9-1c. SR 221-Soscol Ferry Road/SR 29

The County and Caltrans plan to implement a fly-over overpass at the SR 221-Soscol Ferry Road/SR 29 intersection. This improvement has been planned for completion in 2040 and MTC has set aside $5 million in discretionary funds towards the estimated cost of approximately $30 million. The project's proportional share contribution is 1.34% for the traffic associated with Phase 1, and 1.63% for the entire project, or an additional 0.29% for the Phase 2 trips. The County will fund its share of this improvement.

With implementation of Mitigation Measure 3.9-1c, operations to this intersection would improve to LOS D according to the *Napa Pipe Transportation Analysis Sensitivity Analysis* (Mitchell, Crosley, and Foletta, pers. comm., 2013). However, given the 2040 year of completion, the improvement will not be completed prior to the opening of the proposed project. Therefore, this impact would remain **significant and unavoidable**.

Impact 3.9-2	Future Plus Project Intersection Level of Service Impacts. With implementation of the 366-bed project under future plus project conditions, six intersections (Soscol Avenue-SR 221/SR 121-Imola Avenue, SR 221/Main Access, SR 221-Soscol Ferry Road/SR 29, Soscol Avenue/Silverado Trail, SR 221/Magnolia Drive-College Way, and SR 221/Kaiser Road) would degrade to unacceptable operating conditions and/or further exacerbate existing adverse operating conditions. This would be a ***significant*** impact. This impact could be reduced to a less-than-significant level at SR 221/Main Access, SR 221/Magnolia Drive-College Way, and SR 221/Kaiser Road through implementation of mitigation. However, however, the impact would remain significant and unavoidable at the remaining intersections because the funding and timing of these improvements are uncertain. With implementation of the 526-bed project under future plus project conditions, six intersections (Soscol Avenue-SR 221/SR 121-Imola Avenue, SR 221/Main Access, SR 221-Soscol Ferry Road/SR 29, Soscol Avenue/Silverado Trail, SR 221/Magnolia Drive-College Way, and SR 221/Kaiser Road) would degrade to unacceptable operating conditions and/or further exacerbate existing adverse operating conditions. This would be a ***significant*** impact. This impact could be reduced to a less-than-significant level at SR 221/Main Access, SR 221/Magnolia Drive-College Way, and SR 221/Kaiser Road through implementation of mitigation; however, the impact would remain significant and unavoidable at the remaining intersections even with implementation of mitigation.

Under future plus project conditions, under the 366-bed and 526-bed design options, the project would result in unacceptable operating conditions at the following intersections. These results are shown in Table 3.9-11.

- Soscol Avenue-SR 221/SR 121-Imola Avenue would operate at LOS F during both peak periods without or with the project and the project would exacerbate unacceptable operating conditions at this intersection.
- SR 221/Main Access would operate at LOS F during both peak periods without or with the project and the project would exacerbate unacceptable operating conditions at this intersection. In addition, this intersection would degrade to LOS F overall during the a.m. peak period with project traffic added.
- SR 221-Soscol Ferry Road/SR 29, which is currently operating at LOS F during both peak periods, would continue to do so without or with project traffic added and the project would exacerbate unacceptable operating conditions at this intersection.
- Soscol Avenue/Silverado Trail would operate at LOS F during the p.m. peak period without or with the project and the project would exacerbate unacceptable operating conditions at this intersection.
- SR 221/Magnolia Drive-College Way would operate at LOS E during the p.m. peak period with or without the project and the project would exacerbate unacceptable operating conditions at this intersection.
- SR 221/Kaiser Road would operate at LOS E during the p.m. peak period without or with the project.

As described above, the project under the 366-bed and 526-bed design options would cause one intersection to degrade to unacceptable operating conditions overall and would exacerbate already unacceptable operating conditions at five intersections. This would be a **significant** impact.

Table 3.9-11 Future Plus Project Intersection Level of Service Results

Intersection	Control Type[1]	Future without Project				Future plus 336-Bed				Future plus 526-Bed			
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Coombs Street/ Third Street	Signal	11.8	B	14.4	B	11.8	B	14.4	B	11.8	B	14.4	B
2. Main Street/ Third Street	Signal	11.8	B	20.5	C	11.9	B	20.8	C	11.9	B	20.8	C
3. Soscol Avenue/ Third Street	Signal	28.1	C	38.8	D	34.4	C	39.2	D	34.4	C	39.3	D
4. Soscol Ave/ Silverado Trail	Signal	37.3	D	**105.0**	**F**	39.5	D	**106.1**	**F**	39.7	D	**106.6**	**F**
5. Soscol Ave-SR 221/ SR 121-Imola Ave	Signal	**104.8**	**F**	**221.1**	**F**	**106.6**	**F**	**225.4**	**F**	**108.3**	**F**	**226.5**	**F**
6. SR 221/Magnolia Dr-College Way	Signal	43.3	D	**76.1**	**E**	45.4	D	**79.1**	**E**	45.9	D	**79.8**	**E**
7. SR 221/ Streblow Drive	Signal	37.2	D	22.8	C	32.4	C	23.8	C	32.9	C	24.1	C
8. SR 221/Main Access[2]	SSSC	17.5	C	0.7	D	**>120[3]**	**F**	14.1	B	**>120[3]**	**F**	20.8	**C**
Westbound (Main Access) Approach		***>120[3]***	***F***	***83.2***	***F***	***>120[3]***	***F***	***>120[3]***	***F***	***>120[3]***	***F***	***>120[3]***	***F***
9. SR 221/Kaiser Road	Signal	35.0	C	**58.8**	**E**	36.4	D	**61.6**	**E**	36.7	D	**62.4**	**E**
10. SR 221/Napa Valley Corp-Anderson	Signal	34.9	C	31.6	C	38.1	D	34.3	C	38.9	D	35.0	D
11. SR 221-Soscol Ferry Road/SR 29	Signal	**>120[3]**	**F**	**>120[3]**	**F**	**>120[3]**	**F**	**>120[3]**	**F**	**>120[3]**	**F**	**>120[3]**	**F**

Notes: [1] SSSC = Side-Street Stop-Controlled
[2] Delay is reported in seconds per vehicle for the overall intersection and in *italics* for the stop-controlled approach.
[3] Calculated delays in excess of 120 seconds are not considered an accurate representation of intersection performance, other than to note that the intersection experiences long delays. Some intersection delays greater than 120 seconds are presented in the table above for comparative purposes only and impact significance determination.
Bold text indicates unacceptable operation; Highlighting indicates a significant impact.
Source: Data provided by Whitlock & Weinberger Transportation, Inc. in 2013

Mitigation Measure 3.9-2a. Soscol Avenue-SR 221/SR 121-Imola Avenue

Implement Mitigation Measure 3.9-1a, above.

With implementation of Mitigation Measure 3.9-1a, the intersection will continue to operate at LOS F, but with delay less than under future conditions, as indicated in Table 3.9-9. The timing and funding of any improvements are currently uncertain; therefore, this impact would remain **significant and unavoidable**.

Mitigation Measure 3.9-2b. SR 221/Main Access

Implement Mitigation Measure 3.9-1b, above.

With implementation of Mitigation Measure 3.9-1b, this intersection would operate at an acceptable LOS D or better under both the 366-bed and 526-bed design options (see Table 3.9-10), which would be acceptable based on the applied standards; therefore, impacts would be reduced to a **less-than-significant** level, with operation as indicated in Table 3.9-10.

Mitigation Measure 3.9-2c. SR 221-Soscol Ferry Road/SR 29

Implement Mitigation Measure 3.9-1c, above.

With implementation of Mitigation Measure 3.9-1c, operation of this intersection would improve to acceptable conditions. Improvements have been identified for the intersection in *Plan Bay Area* with a 2040 year of completion, and $5 million of discretionary funding has been planned to assist in covering the cost of the improvements. However, the proposed project is expected to be completed prior to the completion date of the improvements; therefore, this impact would remain **significant and unavoidable**.

Mitigation Measure 3.9-2d. Soscol Avenue/Silverado Trail

The County will pay its proportional share of 7.5% for Phase 1 trips and an additional 1.5% for Phase 2 trips to the City towards the planned future improvements at Soscol Avenue/Silverado Trail. These improvements are described in the City's General Plan to include widening as necessary on southbound Silverado Trail to provide a second left-turn lane together with the right-turn lane. These improvements are anticipated to be implemented by the City, and would be funded through developer fees and proportional share contributions together with other City funding sources. With implementation of the improvements, this intersection would operate at an acceptable LOS under future plus project conditions, based on the City's standards.

With implementation of Mitigation Measure 3.9-2d, the intersection of Soscol Avenue/Silverado Trail would operate acceptably. However, implementation of this mitigation is dependent on the collection of fees from local developers and other funding sources, the timing of which is uncertain. Further, the necessary improvements are under the jurisdiction of and are planned to be implemented by the City. While this improvement would eliminate unacceptable operating conditions, it is unknown if the improvement would be implemented in time for operation of the project in 2018. Because it is unknown whether this improvement would be implemented at the time the project becomes operational, the project could result is a **significant and unavoidable** interim impact.

Mitigation Measure 3.9-2e. SR 221/Magnolia Drive-College Way

At the time the County approves development plans for construction of 366 beds, the County will construct an exclusive left-turn lane to the westbound approach at the SR 221/Magnolia Drive-College Way intersection. There is sufficient right-of-way available for this lane. Additionally, a right-turn overlap phase will be provided between the southbound right turn and eastbound left turn at the intersection of SR 229/Magnolia Drive-College Way. With the added lane and right-turn overlap in place, delay at this intersection would be reduced to levels below existing conditions.

With implementation of Mitigation Measure 3.9-2e, delay at this intersection during the p.m. peak hour would be reduced to a level below conditions without the project, thereby eliminating the project's contribution to increased delay at this intersection and reducing the impact to a **less-than-significant** level, with operation as indicated in Table 3.9-12.

Table 3.9-12 Mitigated Intersection Level of Service Results – SR 221/Magnolia Drive-College Way[1]

Scenario	Control Type[1]	Future plus 366 Beds				Future plus 526 Beds			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Future plus project	Signal	45.3	D	62.4	E	45.8	D	63.1	E

Notes: [1] Mitigation includes installation of a westbound left-turn lane on Magnolia Drive and a right-turn overlap on southbound SR 221.
Source: Data provided by Whitlock & Weinberger Transportation, Inc. in 2013

Mitigation Measure 3.9-2f. SR 221/Kaiser Road

The County will fund its proportional share of 2.4% for Phase 1 trips and an additional 0.5% for Phase 2 trips towards improvements which include constructing either an additional northbound left-turn lane or extending the existing left-turn lane to 500 feet, installing an additional through lane both northbound and southbound, providing free right-turn movements for the southbound and eastbound approaches, and constructing an additional eastbound left-turn lane.

The study intersection at SR 221/Kaiser Road is projected to operate acceptably at LOS B under future plus project conditions for either the 366-bed or 526-bed design options with implementation of Mitigation Measure 3.9-2f as indicated in Table 3.9-13. Therefore, this impact would become **less than significant**.

Table 3.9-13 Mitigated Intersection Level of Service Results – SR 221/Kaiser Road[1]

Scenario	Control Type[1]	Future plus 366 Beds				Future plus 526 Beds			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Future plus project	Signal	12.1	B	13.6	B	12.1	B	13.7	B

Notes: [1] Mitigation includes installation of either an additional left-turn lane or extending the existing left-turn lane to 500 feet, installing an additional left-turn lane both northbound and southbound, providing free right-turn movements for the southbound and eastbound approaches, and constructing an additional eastbound left-turn lane.
Source: Data provided by Whitlock & Weinberger Transportation, Inc. in 2013

Impact 3.9-3 **Construction-Related Traffic Impacts.** Traffic generated during construction of the project would be attributable to trucks and construction workers' trips to and from the site. These trips could result in one or more of the study area intersections operating unacceptably. This would be a ***potentially significant*** impact. This impact would be reduced to less than significant with implementation of a construction management plan.

Traffic generated during construction of the project would be attributable to trucks and construction workers' trips to and from the site. Construction would include four general phases in the following order: demolition/site preparation, grading, utility upgrades and installation, and building construction. Each phase would take place concurrently with the previous and following phase for some period of time. It is anticipated that construction would begin in March 2016 and be completed in approximately 24 months. The new jail is planned to be fully operational by March 2018. The work force would increase from an initial ten workers in March 2016 to a peak of 120 workers during February, March, and April of 2017.

Consideration was given to the potential traffic impacts that would occur during construction. It is estimated that there would be a maximum of 120 construction workers onsite at any one time. Further, it is estimated that there would be seven truck deliveries to the site on a daily basis. Though the peak periods for worker trips and deliveries are likely to be offset from each other temporally, to be conservative it was assumed that both activities would overlap.

Because large trucks move more slowly and take up more space, they are typically assigned a Passenger Car Equivalent (PCE) that represents the number of passenger vehicles that would have the same relative impact. Assuming a PCE of 3.0 vehicles per truck, the seven trucks would be equivalent to 21 vehicles, or 42 daily trips. Though these trips are generally unlikely to occur during the peaks periods, for purposes of the analysis it was assumed that one truck would make a round trip during each of the peak hours.

Many of the 120 construction workers would be expected to travel to and from the site in carpools or vanpools rather than in single-occupant vehicles. Further, not all 120 workers would be expected to arrive or depart during a single hour. It was conservatively assumed that there would be 60 vehicles arriving during the morning peak hour and departing during the evening peak hour, with a total of 240 trips daily associated with the construction workers.

Based on these assumptions, the project would generate the equivalent of 282 daily trips during the height of construction activity, including 66 vehicle trips during each of the peak periods. Although these volumes are less than the numbers of trips that would be generated by the 366-bed project (i.e., 436 daily trips), these trips could result in impacts to the operation of study area intersections. This would be a **potentially significant** impact.

Mitigation Measure 3.9-3. Construction Traffic Management Plan

The County will prepare a construction Traffic Management Plan in consultation with the applicable transportation entities, including Caltrans for state roadway facilities and the City of Napa. The County will implement the construction TMP during project construction. The TMP will address the following, as needed:

- *scheduling for oversized material deliveries to the work site and haul routes, including flagging, scheduling off-peak deliveries, etc.;*
- *the cumulative effect of construction traffic with other concurrent, major construction projects nearby;*
- *daily construction time windows during which construction traffic is restricted; and*
- *other actions to be identified and developed as may be needed by the construction manager/resident engineer to ensure that temporary impacts on transportation facilities are minimized.*

The TMP will include an updated evaluation of current operational characteristics of the roadways. To minimize potential impacts, the TMP will restrict, to the extent feasible, peak-hour trips entering and exiting the project site to 50 peak hour passenger-car equivalents. The TMP would specify temporary mitigations as needed, including but not limited to temporary operational improvements or limiting the hours or amount of construction trips on affected roadway segments.

The construction TMP would reduce the significance of this impact and would substantially improve and manage construction-related traffic conditions on area roadways. Therefore, this impact is concluded to be **less than significant**.

Impact 3.9-4	Pedestrian, Bicycle, and Transit Facilities Impacts. While the project would not conflict with any of the County's plans to implement pedestrian, bicycle, and/or transit improvements in the project area, there are no existing pedestrian, bicycle, or transit facilities located on or in close proximity (i. e., within reasonable walking distance) to the site such that employees or work-release inmates would have access. This would be a ***significant*** impact. This impact could be reduced to a less-than-significant level through implementation of mitigation.

Due to its location in a generally rural area, the project site is not currently served by any existing pedestrian, bicycle, or transit facilities. There is, however, a dirt trail along the River-to-Ridge Trail alignment, which runs along the northerly periphery of the site and would provide connectivity to existing facilities nearby. Additionally, Class II bike lanes are to be provided on SR 221 in the future.

It is reasonable to expect that some of the employees of the site as well as visitors and inmates on the work-furlough program would need access to pedestrian, bicycle, or transit facilities. The gap in existing pedestrian and bicycle facilities, including the need to pave the bike trail along the northern border of the site, would result

in a **significant** impact as it would exacerbate already substandard conditions in the project area for pedestrians and bicyclists.

Mitigation Measure 3.9-4a. Construct Pedestrian and Bicycle Facilities Serving the Site and Connecting to Nearby Facilities

The County will construct pedestrian and bicycle facilities connecting building entrances/parking areas to the nearby River-to-Ridge Trail at SR 221.

Mitigation Measure 3.9-4b. Provide Transit Bus Stop and Associated Amenities on the Project Site

The County will work with NCTPA to ensure transit service to the site prior to building occupancy. Also, to encourage transit usage by employees, visitors and inmates on work-furlough programs, the County will construct a transit stop on the project site within the parking area. The stop shall include amenities such as benches and a shelter. Upon implementation, the site would have transit connectivity to the region via the Soscol Gateway Transit Center.

Because adequate sidewalks, bicycle trail connections, and transit bus stops would be provided to allow employees, visitors, and work-release inmates to access off-site areas, implementation of Mitigation Measures 3.9-4a and 3.9-4b would reduce the project's impacts on these facilities to a **less-than-significant** level.

Impact 3.9-5	Access and Circulation Impacts. The site circulation would be adequate to accommodate the volumes and types of traffic expected and to meet emergency response needs; however, sight lines could be inadequate if the driveway is located too near either SR 221 or Basalt Road. This would be a ***significant*** impact. This impact could be reduced to a less-than-significant level through implementation of Mitigation Measure 3.9-5.

The new jail design would not have internal vehicular circulation other than into and out of the vehicle sallyport for the admission and transport of inmates to and from the jail on a daily basis. All other vehicle traffic to and from the jail would either be parked in an adjacent parking lot or would involve delivery trucks with food and institutional supplies making deliveries to an exterior loading dock located on an exterior wall of the facility. Garbage and recycle trucks would only come to an outside trash compactor or recycle bins.

The emergency access route would include ingress and egress via the intersection at SR 221/Main Access, which would need to be signalized per Mitigation Measure 3.9-1b. Fire trucks would have sufficient ground access to all exterior sides and walls of the structure.

The site's primary driveway is located along "Project Access," an approximately 700-foot-long street that connects SR 221 to Basalt Road. This short roadway is used by truck traffic traveling between the Syar Napa Quarry and SR 221. To maximize sight lines to both SR 221 and Basalt Road, the project driveway should be located as near to halfway between the two ends of the roadway as possible.

The site circulation would be adequate to accommodate the volumes and types of traffic expected and to meet emergency response needs; however, sight lines could be inadequate if the driveway is located too near either SR 221 or Basalt Road. This would be a **significant** impact.

Mitigation Measure 3.9-5. Locate Project Driveway as near the Midpoint of Project Access as Feasible

The project driveway will be located as near the midpoint of Project Access, the roadway connecting SR 221 to Basalt Road, as feasible.

With implementation of Mitigation Measure 3.9-5, this impact would be reduced to a **less-than-significant** level as sight lines to conflicting traffic streams would be maximized (see Exhibit 3.9-8).

Impact 3.9-6	Parking Impacts. The project would provide adequate parking areas onsite to accommodate all staff and visitor vehicles for the 366-bed and 526-bed options. This would be a *less-than-significant* impact.

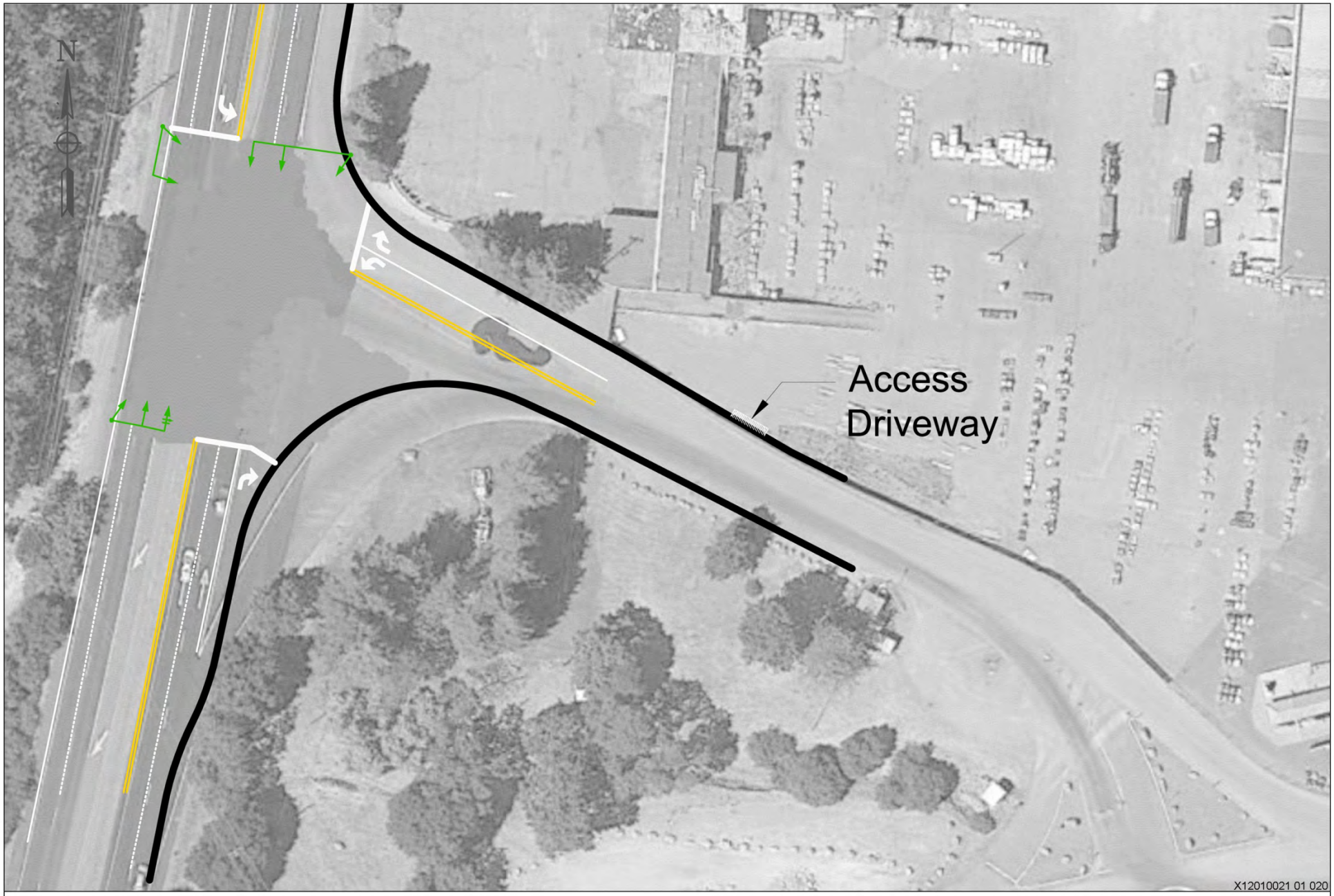
PARKING DEMAND

Standard parking demand rates published by the Institute of Transportation Engineers in *Parking Generation* (2010) do not include surveys of correctional facilities. As jails are unique in terms of their number of beds, staff, deliveries, and visitors, a site-specific parking demand estimate was prepared for the proposed project. The parking demand estimate was based on the following information:

- Total daily staff added (by shift) for the Jail and the Staff Secure Facility,
- Daily service vehicle and delivery vehicle trips,
- Daily visitor vehicle trips, and
- Staff Secure Facility program provider trips and inmate trips.

The project is proposed to be phased, with Phase I including 366 beds and associated support staff and facilities, and Phase II including an expansion to 526 beds, which results in a minor increase in staffing. Section 18.110.030 of the Napa County Code does not contain any categories for parking requirements that would be applicable to the proposed jail project, so parking demand was estimated based on site-specific data.

Table 3.9-14 summarizes the parking demand for all users under the 366-bed and 526-bed options, respectively. The estimated parking demand accounts for parking demand associated with staff, visitors, employees, and deliveries throughout the day, including assumptions for parking needs during shift change times. Assumptions used in the parking demand analysis are indicated in the table and associated notes. As shown in Table 3.9-14, the proposed supply of 195 onsite parking spaces would adequately serve the parking demand of 167 spaces for the 366-bed option. In evaluating the 526-bed option, which reflects full build-out of the project, consideration was given to the potential for some trips to be made by other modes, including transit, walking, and biking. It was assumed that 10% of daytime staff and 10% of visitors would make the trip via some mode other than automobile, thereby reducing the parking demand. Under the applied assumptions, the proposed supply of 195 spaces is adequate to meet the projected demand for 194 spaces. This would be a **less-than-significant** impact.



Source: Received from W-Trans in 2013; adapted by Ascent Environmental in 2013

Exhibit 3.9-8

Proposed Signalized Intersection

Table 3.9-14 Estimated Project Parking Demand				
Trip Type	Number of Daily Staff/ Visitors/ Deliveries	Parking Demand with 366 beds	Number of Daily Staff/ Visitors/ Deliveries	Parking Demand with 526 beds
Jail Custody Operations Day Shift (6:00 a.m. – 6:00 p.m.)	25	25	34	33[1]
Jail Custody Operations Night Shift (6:00 p.m. – 6:00 a.m.)	17[2]	17[2]	23[2]	23[2]
Jail Custody Operations Business Shift (8:00 a.m. – 5:00 p.m.)	9	9	11	10[1]
Jail Administrative (8:00 a.m. – 5:00 p.m.)	12	12	13	12[1]
Jail Support (8:00 a.m. – 5:00 p.m.)	20	20	25	22[1]
Jail Administrative Day Shift (Sheriff Lt) - *only with 526 beds* (6:00 a.m. – 6:00 p.m.)	0	0	1	1
Jail Administrative Night Shift (Sheriff Lt) - *only with 526 beds* (6:00 p.m. – 6:00 a.m.)	0	0	1	1
Staff Secure Facility Administrative (8:00 a.m. – 5:00 p.m.)	6	6	6	6
Staff Secure Facility Security Team A/C (Days) (6:00 a.m. – 6:00 p.m.)	9	9	9	8[1]
Staff Secure Facility Security Team B/D (Nights) (6:00 p.m. – 6:00 a.m.)	8[1]	8[1]	8[1]	8[1]
Employee Trip Total	**106**	**106**	**131**	**131**
Staff Secure Facility Program Providers	2	2	2	2
Staff Secure Facility Inmate Vehicles	5[3]	5[3]	5[3]	5[3]
Jail Visitors	78[4]	40[4]	110[4]	50[4]
Staff Secure Facility Visitors	18[4]	10[4]	18[4]	9[4]
Jail Delivery and Service Vehicles	7[5]	2[5]	9[5]	2[5]
Staff Secure Facility Delivery and Service Vehicles	2[6]	2[6]	2[6]	2[6]
Project Totals	**218**	**167**	**277**	**194**

Notes:
1 Ten percent of daytime staff assumed to arrive via alternative modes (e.g., transit, bicycling, or walking).
2 Need one space per employee to accommodate overlap
3 Staff Secure Facility Inmate Trips are assumed to occur in vans or other multi-passenger vehicles, with three vehicles during a peak hour. Assume five vans for parking.
4 Visitors include business and professional visitors, volunteers/service providers, and inmate family visits. It is assumed one-quarter of all visitor trips occur during a peak hour, with 10% of these trips assumed to be via alternative modes
5 Delivery and Service vehicle trips for the Jail are assumed to result in one delivery during each peak hour. All other deliveries would occur throughout the day outside of peak hours.
6 Delivery and Service vehicle trips for the Staff Secure Facility are assumed to be proportional based on the ratio of residents to the jail residents.
Sources: Napa County 2012 (Table 6); Goble, pers. comm., 2013

Mitigation Measure

No mitigation is required.

Impact 3.9-7	Safety Impacts. The proposed project will be constructed to meet current design standards and criteria, so is not expected to result in any adverse safety impacts from hazardous design features; however, the project could result in conflicts at the intersection of Project Access and Basalt Road due to the movement of large trucks to/from the Syar Napa Quarry and project-related traffic. This would be a ***significant*** impact. This impact could be reduced to a less-than-significant level through implementation of Mitigation Measure 3.9-7.

The proposed project would be required to be designed to meet all of the standards established by the County as well as more stringent correctional facility standards. Further, installation of a traffic signal at the intersection of SR 221/Main Access (Mitigation Measure 3.9-1b) would increase safety by providing controlled access to SR 221 for site-generated traffic as well as for traffic from Basalt Road.

Consideration was given to potential safety concerns relative to conflicts between large trucks from the quarry and site-generated traffic between Basalt Road and SR 221. Under either current or proposed future expanded operation at the Syar Napa Quarry, trucks would continue to use the short connector roadway identified as "Project Access" that connects SR 221 with Basalt Road. With the current configuration trucks can make the westbound right turn at a higher speed than would be safe given the distance to the Project's main driveway available sight distance, and the potential for conflict. This results in a safety concern relative to the intersection of Basalt Road/Project Access, if the intersection is not reconfigured. This would be a **significant** impact.

Mitigation Measure 3.9-7. Reconfigure the Intersection of Project Access and Basalt Road

The intersection of Project Access and Basalt Road will be reconfigured to reduce the radius of the right turn from westbound Basalt Road to Project Access.

With implementation of Mitigation Measure 3.9-7, this impact would be reduced to a **less-than-significant** level because truck travel speeds would be reduced, providing adequate reaction time for drivers entering and exiting the project site.

3.10 UTILITIES AND SERVICE SYSTEMS

This section evaluates the adequacy of existing and planned future utilities and service systems to serve the proposed Napa County Jail Project. This section addresses:

- water supply, distribution, and treatment;
- wastewater collection, conveyance, and treatment;
- solid waste collection and disposal; and
- electricity and natural gas supply.

The analysis provided in this section is based on consultation with the City, Pacific Gas and Electric (PG&E), the Napa Sanitation District (NSD), and information from numerous sources including:

- The City of Napa 2010 Urban Water Management Plan (UWMP),
- Napa Sanitation District Collection System Master Plan (CSMP) Report, and
- Existing utility data from the Napa County Jail.

Storm drainage and surface and groundwater quality are addressed in Section 3.6, "Hydrology and Water Quality."

As described in Section 2.4.6, "Utilities and Service Systems," of the Project Description, approval from the Napa County Local Area Formation Commission (LAFCO) would be needed for the City of Napa and the NSD to provide water and sewer services, respectively, to the project site. Establishing these services could be accommodated either through a sphere of influence amendment and annexation or outside service extension agreement.

3.10.1 REGULATORY SETTING

FEDERAL

There are no federal plans or programs that address utilities and service systems and that would apply to the project.

STATE

WATER

The following State regulations are applicable to the project as they relate to water supply.

- **California Water Code**: The California Water Code outlines the general state authority and responsibilities over water in California.
- **Urban Water Management Planning Act**: The Urban Water Management Planning Act requires water suppliers to document water supplies available during normal, single dry, and multiple dry water years during a 20-year projection period, and to document the existing and projected future water demand during a 20-year projection period.
- **Senate Bills (SB) 610 and 221**: SB 610 (now CEQA Guidelines Section 15155) amended the Water Code requirements within the CEQA process and broadened the types of information required in a UWMP. SB 610 requires the preparation of water supply assessments (WSA) for large developments (i.e., more than 500 dwelling units or nonresidential equivalent) proposed under the jurisdiction of a County or City lead agency.

California Water Code Part 2.10 - Water Code Part 2.10 clarifies the roles and responsibilities, under CEQA, of the lead agency and the water supplier (i.e., the public water system) with respect to describing current and future supplies compared to current and future demand. It also defines the projects for which a WSA must be prepared as well as the responsibilities of the lead agency related to the WSA. As noted in the below impact analysis, project water consumption is below the threshold for which a WSA is required; nevertheless, this EIR provides the same information typically used in a WSA to evaluate whether the proposed project would have impacts related to water supply.

ELECTRICITY AND NATURAL GAS

California Building Code Title 24, Part 6, establishes building energy efficiency standards for new construction (including requirements for new buildings, additions, alterations, nonresidential buildings, and repairs). Energy efficiency standards were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.

SOLID WASTE

The California Waste Management Act of 1989 requires state, county, and local governments to substantially decrease the volume of waste disposed at landfills by the year 2000 and beyond. The act requires each county to submit an Integrated Waste Management Plan to the California Integrated Waste Management Board that includes an adopted Source Reduction and Recycling Element from each of its cities as well as a county-prepared Source Reeducation and Recycling Element for the unincorporated area. The element identifies existing and future quantities and types of solid waste, an inventory of existing disposal sites, a determination of the plan's economic feasibility, enforcement programs, and implementation schedule.

LOCAL

The project is subject to the *Napa County General Plan* (2008) policies. Guidance associated with utilities is addressed in the Conservation Element, as follows.

- **Policy CON-60:** The County shall promote cost-effective water conservation and water efficiency measures that reduce water loss, waste, and water demand through the following measures:
  a) Taking a leadership role in water conservation efforts, by monitoring and publicly reporting on the County's water use, using low flow fixtures, drought-tolerant landscaping, drip irrigation, recycled water use where available and appropriate, periodic water use "audits" and other strategies to conserve water at all County owned and operated facilities.
  b) Requiring the use of water conservation measures in areas served by municipal supplies to improve water use efficiency and reduce overall demand including, but not limited to, working cooperatively with all water providers and with developers to incorporate water conservation measures into project designs (e.g., as recommended by the California Urban Water Conservation Council), and coordination with water providers to continue to develop and implement water drought contingency plans to assist County citizens and businesses in reducing water use during periods of water shortages and emergencies.
  c) Seeking cooperative partnerships with government agencies, non-profit organizations, private industry groups, and individuals in furthering water conservation strategies in Napa County.
- **Policy CON-67:** The County shall promote and encourage "green building" design, development, and construction through the achievement of Leadership in Energy and Environmental Design (LEED) standards

set by the U.S. Green Building Council, the Green Point Rated system standards set by Builditgreen.org, or equivalent programs. Actions in support of this policy shall include:

a) Audit current County practices to assess opportunities and barriers to implementation of current sustainable practices.

b) Amend the County Code as necessary to remove barriers to and encourage "green" construction.

c) Develop new County buildings as "green buildings," utilizing sustainable construction and practices.

d) Encourage all new large development projects and major renovation of existing facilities to be based on Green Building Council standards utilizing sustainable construction and practices to achieve a minimum LEED rating of Silver, or comparable level on the Green Point Rated system per standards set by Builditgreen.org or other comparable updated rating systems.

e) Support state and federal incentive programs that offer rebates and cost sharing related to the implementation of "green building" standards and LEED certification.

- **Policy CON-68:** The County shall promote research and the development and use of advanced and renewable energy technology through the following actions:

  a) Use expedited permit processing or other incentives as promotion mechanisms.

  b) Assist in securing grants to support the implementation of photovoltaic, wind, and other renewable energy technologies to provide a portion of the County's energy needs.

  c) Encourage the use of renewable energy resources in residential, commercial, industrial, and agricultural projects and uses.

- **Policy CON-72:** The County shall seek to reduce the energy impacts from new buildings by applying Title 24 energy standards as required by law and providing information to the public and builders on available energy conservation techniques, products, and methods available to exceed those standards by 15% or more.
- **Policy CON-86:** The County shall implement the 2002 Napa County Countywide Integrated Waste Management Plan, consistent with California Integrated Waste Management Act (Public Resources Code section 40000 et seq.) requirements, including the plan's Summary Plan, Siting Element, Source Reduction and Recycling Element (SRRE); Household Hazardous Waste Element (HHWE) and Non-Disposal Facility Element (NDFE).

NAPA SANITATION DISTRICT MANAGEMENT AND PLANNING

NSD is managed through five master plan documents: the *Wastewater Treatment Plant (WWTP) Master Plan*, the *Collection System Master Plan* (CSMP), the *Strategic Plan for Recycled Water Use*, the *Supervisory Control and Data Acquisition Master Plan*, and the *Financial Master Plan*. In addition, NSD's Capital Improvement Program (CIP), is a ten-year plan that identifies capital projects and equipment purchases, provides a planning schedule, and identifies options for financing the plan. The CIP links planning efforts to the capital budget.

NSD updates its Ten-Year CIP annually. During the 2012/13 fiscal year, the 10-Year CIP was amended by the NSD Board of Directors. Included in the list of capital projects are replacements and rehabilitations of existing capital assets. In May 2013, the Fiscal Year 2013/14 budget was approved by the NSD Board of Directors.

In December 2011, the NSD Board adopted Resolution Number 11-025, which allows a developer to mitigate for increased wastewater flows to the system as a result of project implementation through funding and designing an inflow/infiltration (I/I) reduction project, or contributing financially to a larger planned NSD I/I project.

3.10.2 ENVIRONMENTAL SETTING

WATER

The project would be served by the City of Napa. The following discussion is largely extracted from the *City of Napa UWMP 2010 Update* (City of Napa 2011), and addresses various issues associated with the existing and future water supplies and demands available to the City of Napa.

EXISTING AND FUTURE WATER SUPPLIES AND DEMANDS

The City of Napa currently meets its demands by supplying water from three major sources:

- Lake Hennessey,
- Milliken Reservoir, and
- State Water Project (SWP) water delivered through the North Bay Aqueduct (NBA).

Lake Hennessey and Milliken Reservoir are two local surface water reservoirs that are supplied from tributaries of the Napa River. SWP water is supplied through an agreement with the Napa County Flood Control & Water Conservation District (NCFCWCD), the SWP contract administrator for several municipalities in Napa County. Water from these three sources is delivered to the City of Napa distribution system from three separate water treatment plants. Hennessey Water Treatment Plant (WTP) treats the Lake Hennessey supply. Milliken WTP treats Milliken Reservoir water. SWP water is treated at the Edward I. Barwick Jamieson Canyon WTP, southeast of the City.

The following describes the three existing sources and the quantities of supplies available through 2035. Other potential supplies are also discussed, including long-term opportunities.

Lake Hennessey

Lake Hennessey is the major local water source for the City of Napa system. Located approximately 13 miles north of the City, Lake Hennessey was formed in 1946. Subdivision development by the 1940s proved taxing to the older Milliken Reservoir, which had served as the City's single water source for more than two decades. To assuage demands on Milliken, the City constructed Conn Dam, allowing storage of water from Conn Creek, an upvalley tributary of the Napa River. The resulting reservoir, Lake Hennessey, became the City's primary source for the next several decades until supplemented by SWP entitlements in the late 1960s.

The City's water rights to Lake Hennessey are secured through a license with the State Water Resources Control Board (SWRCB), Division of Water Rights. The license authorizes the City to divert and store up to 30,500 acre feet per year (afy) from Conn Creek for beneficial use. Lake Hennessey has an approximate storage capacity of 31,000 acre feet (af). Storage capacity represents the static volume of a reservoir at spillway elevation assuming no inflow or outflow, and is indicative of the absolute maximum yield in a wet year. Lake Hennessey's storage capacity is much greater than its average annual inflow of 19,692 af. Its tributary watershed area is about 35,000 acres.

Raw water from Lake Hennessey flows into a cylindrical concrete intake tower and is pumped up to the Hennessey WTP. Hennessey WTP began operation in 1981 and has a nominal treatment capacity of 20 million gallons per day (mgd). Treated water from the plant is conveyed into a buried 5.0 million gallon concrete clearwell tank. This treated water is delivered to the distribution system through the 36-inch diameter Conn Transmission Main. The Conn Line is approximately 20 miles long and runs parallel to Conn Creek, Highway 128, and Highway 29. It travels along easements and right-of-ways before meeting the Jamieson Line in northwest Napa (City of Napa 2011).

Milliken Reservoir

The City of Napa began offering water service in 1923 following its purchase of the privately-owned Municipal Water Works. This purchase coincided with the construction of Milliken Dam, which allowed storage of water from Milliken Creek, a tributary of the Napa River. The resulting Milliken Reservoir served as the City's sole water source until Lake Hennessey was created in the 1940s. Located approximately five miles northeast of the City, Milliken Reservoir is now a secondary source of supply used only in the high-demand summer period when turbidity levels in the reservoir can be effectively treated at the Milliken WTP.

The Milliken watershed covers an area of roughly 6,000 acres. As with Lake Hennessey, the City's water rights to Milliken Reservoir are secured through a license with the SWRCB. It authorizes the City to divert and store up to 2,350 afy of water from Milliken Creek for beneficial use. Milliken Reservoir has an approximate average annual inflow of 3,656 afy. The storage capacity of Milliken Reservoir is limited to 1,390 af due to seismic stability concerns by the State Division of Safety of Dams. The City of Napa UWMP 2010 update assumes a maximum yield for Milliken Reservoir of only 700 af in all but critical single-dry years. A critical single-dry year is generally considered to have the lowest average runoff for a watershed since 1903.

Raw water is currently not taken directly from the reservoir, but is instead released into Milliken Creek by a manually operated valve system at the base of the dam. About two miles downstream, a diversion dam directs water into a 16-inch diameter above ground raw water line. That line runs approximately one mile south to the Milliken WTP. This treatment facility was constructed in 1976 and has a treatment capacity of 4.0 mgd. Treated water is stored in a 2.0 million gallon clearwell tank located above the treatment plant site. The treated water is delivered to the distribution system via the Milliken Transmission Line. Approximately three miles long, the line serves customers in the Silverado Resort/Hillcrest areas before its joins the main system at the intersection of Silverado Trail and Monticello Road. The City also holds a permit for direct diversion of 7.74 cubic feet per second from Milliken Creek for the period of November through March. However, due to treatment plant limitations the water is unable to be treated to meet water quality regulations and therefore currently cannot be used to meet customer demands (City of Napa 2011).

State Water Project

In 1966, 20 years after the addition of Lake Hennessey and more than 40 years after the creation of Milliken Reservoir, the City added a third source of supply by sub-contracting with NCFCWCD for imported surface water from the SWP. The NCFCWCD acts as the SWP contract administrator on behalf of municipalities in Napa County. The SWP diverts water from the Sacramento-San Joaquin Delta at the Barker Slough Pumping Plant east of Fairfield and conveys it approximately 21 miles via the NBA to Cordelia Forebay to serve contractors in Napa and Solano Counties. From there, SWP water is pumped an additional six miles to the NBA Terminal Reservoirs, two, 5 million gallon raw water storage tanks installed by DWR in 2008. The majority of this water represents SWP entitlements for the City of Napa and the City of Calistoga, both of which are treated at the Edward I. Barwick Jamieson Canyon WTP. The remainder is City of American Canyon SWP entitlement treated at Jamieson, conveyed via pipeline to the adjacent American Canyon WTP, or delivered as raw water to American Canyon irrigation customers.

The original 1966 agreement with NCFCWCD provided the City of Napa with gradually increasing annual allotments of SWP water, known as "Table A" entitlements, reaching a maximum of 12,500 af by 1990. The agreement was modified in 1982 as a result of DWR efforts to encourage implementation of water conservation programs. The modified agreement reduced the City's short-term Table A entitlement, but increased its final overall entitlement to 18,800 AF by 2021. In 2009, the SWP contract was amended to accelerate the entitlement schedule, with the City granted its full 2021 entitlement of 18,800 beginning in 2010.

In 2000, the City obtained an additional 1,000 afy of SWP water in a transfer agreement between NCFCWCD and the Kern County Water Agency (KCWA). Negotiated on behalf of five cities in Napa County, the agreement established terms for the permanent purchase of 4,025 afy SWP entitlement from KCWA. Napa and St. Helena

purchased the largest shares of this total at 1,000 af each. The remaining agencies accepted lesser shares ranging from 500 af to 925 af. The City of Napa subsequently purchased the City of St. Helena's 1,000 af KCWA entitlement in 2006. This entitlement transfer agreement between the two cities requires that St. Helena purchase a minimum of 400 af from Napa each year at retail rates. The minimum annual purchase increases to 600 af if the SWP allocation as of April 15 is 30% or higher, and St. Helena has the option to purchase up to 200 af more if the April 15 SWP allocation reaches 50%.

In 2009, the City signed a water transfer agreement with the Town of Yountville, obtaining Yountville's total SWP Table A entitlement of 1,100 afy, along with its NBA conveyance capacity. This agreement requires the City to sell up to 25 af to Yountville at retail rates for emergency and fire flow needs only. There is no minimum sales requirement as there is for the St. Helena agreement. These recent additional SWP Table A purchases from other Napa County agencies help to ensure more reliable supplies are available for City of Napa customers in times of drought.

The City's complete current Table A entitlements are shown in Table 3.10-1. These amounts represent the absolute maximum annual yields of Table A water. Actual deliveries are determined by DWR depending on each year's hydrologic conditions. A full 100% of the entitlement would typically be available only during wet years. Because the St. Helena and KCWA transfers did not include NBA conveyance capacity, total actual supplies could be limited to 19,900 afy.

All of the City's SWP raw water is processed at the Edward I. Barwick Jamieson Canyon WTP. Originally constructed in 1968, the plant was upgraded in 1988 to provide a rated treatment capacity of 12 mgd. In early 2011, the City completed an improvement project that increased plant treatment capacity to 20 mgd. Treated water is stored in a 5.0 million gallon clearwell tank on site. The Jamieson Transmission Line delivers the potable water to the City. It consists of a 42-inch diameter line that runs parallel to Jamieson Canyon Road to Highway 29, which then splits into 36-inch and 24-inch lines near the intersection of Highways 29 and 221 as it joins the rest of the distribution system (City of Napa 2011).

City of Napa Water Supply Projections

Table 3.10-1 shows total available water supplies for the City of Napa from 2010 through 2035. The table includes quantities available from known sources and assumes maximum yield for local reservoirs and full entitlements for SWP water. Supplies are considered constant at 51,600 afy unless additional NBA conveyance capacity is purchased (City of Napa 2011).

Table 3.10-1 Total Water Supplies to City of Napa 2010–2035 (AFY)

Water Supply Source	2010	2015	2020	2025	2030	2035
Lake Hennessey	31,000	31,000	31,000	31,000	31,000	31,000
Milliken Reservoir	700	700	700	700	700	700
State Water Project Table A	19,900	19,900	19,900	19,900	19,900	19,900
Total	**51,600**	**51,600**	**51,600**	**51,600**	**51,600**	**51,600**

Source: City of Napa 2011

CITY OF NAPA WATER DEMAND

Future City water demands from 2015 to 2035 are projected in Table 3.10-2. The data reflect normal year conditions. The total demand projections are determined through assumed population increases from the best available source: Association of Bay Area Governments Projections 2009. The City demand consists of service area gross water use, agricultural irrigation, and normal year retail sales to the City of St. Helena under the SWP Transfer Agreement.

Table 3.10-2 City of Napa Projected Water Demand 2015–2035 (AFY)					
	2015	2020	2025	2030	2035
Service Area Water Use	13,995	13,403	13,360	13,491	13,622
Agricultural Irrigation	300	300	300	300	300
St. Helena Retail	600	600	600	600	600
Total City Demand	**14,895**	**14,303**	**14,260**	**14,391**	**14,522**
Source: City of Napa 2011					

WATER SUPPLY RELIABILITY

The year-to-year reliability of water supplies from Lake Hennessey, Milliken Reservoir, and the SWP depends on various legal, environmental, water quality, and climatic factors. Climate in the form of annual precipitation and runoff in the affected watersheds is the critical factor used in projecting the future reliability of City of Napa sources. Definitions of terms used in the following discussion are provided below.

- *Average (Normal) Water Year* – A year in the historical sequence that most closely represents median runoff levels and patterns.
- *Multiple-Dry Year Period* – A period generally considered to have the lowest average runoff for a consecutive multiple year period (three years or more) for a watershed since 1903.
- *Single-Dry Year* – A critical year generally considered to have the lowest average runoff for a watershed since 1903.
- *Average Year* – Based on historical data, amount of water that can be supplied from reservoir storage during a normal year.
- *Reliable Yield* – Based on historical data, annual amount of water that can be guaranteed from reservoir storage during multiple-dry years.
- *Firm Yield* – Based on historical data, amount of water that can be guaranteed from reservoir storage during a critical single-dry year.
- *Probability of Exceedence* – The probability that a given reservoir yield could be exceeded in a given year, based on statistical analyses of the historical data. By definition, the firm yield would have a probability of exceedence of 100%, while the maximum yield would have a probability of exceedence of 0%.
- *Depletion* – Annual drawdown from reservoir storage during drought conditions.

State Water Project Reliability

The ability of the SWP to deliver water to its contractors in any given year depends on a number of factors, including rainfall, size of snowpack, runoff, water in storage, and pumping capacity in the Delta. Biological opinions on threatened and endangered fish species are new factors affecting SWP deliveries. The actual delivery, or yield, varies from year to year and is described as a percentage of the contractual entitlement. For the City of Napa, annual SWP deliveries are a percentage of Table A water. While 100% of this entitlement may be available in wet years, lesser amounts are delivered in normal, single-dry, and multiple-dry years.

The City's UWMP 2010 employs data from *The State Water Project Delivery Reliability Report 2009*, issued by DWR in August 2010. This is the most recently published SWP Delivery Reliability Report. The projections in the 2009 Report are based on very conservative assumptions, which make them very useful from a long-range urban water supply planning perspective. While recent rulings in various legal actions may lead DWR to increase its SWP projections in its next scheduled report, the 2009 Report remains the best available information for Napa to use concerning the long-term delivery reliability of its SWP supplies.

The Current Conditions case takes into account biological opinions issued in 2008 and 2009 regarding threatened and endangered species in the Delta. The Future Conditions case adds in the effects of climate change assumed for the Year 2029. For the purposes of supply reliability projections in UWMP 2010, the City of Napa is using Current Conditions data up through 2025 and Future Conditions data for the years beyond 2025. The normal, multiple-dry, and single-dry year delivery percentages can be looked upon as the average, reliable, and firm yields of the SWP source. Its firm yield of 7–11%, based on the 1977 critical year, is much more conservative than the 20% estimate used in UWMP 2005. Delivery percentages for the multiple-dry year condition (32–34%) are slightly lower than the 40% assumption in UWMP 2005. The average yield of 60% is significantly lower than the 76% assumed for normal years in UWMP 2005.

The probabilities of exceedence in Tables 3.10-3 and 3.10-4 were derived from the SWP yield curves of CALSIM II model projections. The percent exceedences show that the water year data are not normally distributed (i.e., the median is not equal to the average). Consequently, the normal or average year SWP delivery is not exceeded 50% of the time. It is exceeded 61–65% of the time in these cases.

Table 3.10-3 State Water Project Reliability Assumptions Current Conditions (2015–2025)

Water Year Type	Projected SWP Delivery (percent of entitlement)	Base Year (s)	Probability of Exceedence (percent)
Normal Year	60%	1922 – 2003	65%
Multiple-Dry Years	34%	1920 – 1934	89%
Single-Dry Years	7%	1977	100%

Source: City of Napa 2011

Table 3.10-4 State Water Project Reliability Assumptions Future Conditions (2025–Foreseeable Future)

Water Year Type	Projected SWP Delivery (percent of entitlement)	Base Year (s)	Probability of Exceedence (percent)
Normal Year	60%	1922 – 2003	61%
Multiple-Dry Years	32%	1920 – 1934	90%
Single-Dry Years	11%	1977	100%

Source: City of Napa 2011

For normal years through 2035, the City can expect about 13,140 af from the SWP. Through 2025, it can expect 7,446 af annually during multiple-dry year, and 7,008 af in multiple-dry years after 2025. For a critical single-dry year (e.g., 1977), the City may see deliveries as low as 1,533 af through 2025, increasing to 2,409 af in later years. These SWP delivery estimates are conservatively low in that they assume no carryover water, Article 21 water, or any of the other supplemental categories. Water supply categories are described as follows (City of Napa 2011).

SWP Table A: The Table A amounts determine the maximum water a contractor may request each year from DWR. Table A amounts may also be used as a factor to allocate other available water supplies to each contractor. “Table A” or “Table A water” represents a portion or all of the annual Table A requested by the SWP water contractors and approved for delivery by DWR, based on hydrologic conditions, current reservoir storage, and combined requests from the SWP water contractors. DWR is not always able to deliver the quantity of water requested by contractors. In these cases, and under certain conditions, a lesser amount is allocated and delivered according to the long-term water supply contracts by prorating the amount in proportion to each SWP water contractor’s maximum Table A amount (West Yost 2005).

Carryover Water: "Carryover water" is SWP water that is allocated to an SWP contractor and approved for delivery to that contractor in a given year, but not used by the end of the year. (Note that SWP water deliveries are managed by calendar year, January 1–December 31, while hydrology is measured by water year, October 1–September 30.) This water is exported from the Banks Pumping Plant, but instead of being delivered to the contractor, it is stored in the SWP's share of San Luis Reservoir, when space is available, for the contractor to use in the following year. Carryover water is like a water savings account that allows water managers' flexibility in tough times—such as if the next year is a drought year and the contractor's allocation of SWP water is small. Carryover water was designed to encourage the most effective and beneficial use of water and to avoid obligating the contractors to use or lose the water by December 31 of each year (West Yost 2005).

With advance notice, SWP contractors can carry over water when they submit their initial request for Table A water, or within the last 3 months of the delivery year. They might do this for various reasons, such as local wet conditions or exchange and transfer arrangements. Storage for carryover water no longer becomes available to the contractors if it interferes with storage of SWP water for project needs (West Yost 2005).

Article 21: Article 21 water (so named because it is described in Article 21 of the water contracts) is water that SWP contractors may receive on a short-term basis in addition to their Table A water, if they request it. Because most SWP contactors often cannot meet their full demands with Table A water, Article 21 water should not be viewed as "surplus" or "extra" water. In fact, Article 21 water is used by many SWP contractors to help meet demands when allocations are less than 100%. Article 21 water is available to an SWP contractor only if the following conditions are met:

- "Excess water" is flowing through the Delta—that is, when releases from SWP and CVP reservoirs and unregulated flows into the Delta exceed Sacramento Valley water diversions, Delta exports, and flows needed to meet Delta water quality and flow requirements. If this scenario occurs, it is usually during December through May.
- The contractor is able to use the surplus water, such as by offsetting the use of groundwater that would otherwise occur, or can store it in its own system. (That is, the water will not be stored in an SW facility, such as San Luis Reservoir.)
- Delivering this water would not interfere with Table A allocations, other SWP deliveries, or SWP operations.

SWP contractors requesting Article 21 water receive this water in the same proportion as their Table A water. Article 21 water becomes available only during wet months of the year, generally December through March. Unless the SWP contractor has facilities to routinely store or manage the Article 21 water it receives, such water is not likely to contribute significantly to local water supply reliability (West Yost 2005).

Water Quality: This water quality designation is water that DWR delivered to flush out the NBA in 2009, due to extreme taste and odor issues relating to Campbell Lake. This is not a typical water delivery.

Turnback Pool: SWP contractors may offer the portion of their allocated Table A water within the current year that exceeds their needs in a "turnback pool," where another contractor may purchase this water. DWR sets the price for water offered in turnback pools, which are established in February and March. Contractors that sell their extra Table A water in a turnback pool receive payments from contractors that buy water through the turnback pool (West Yost 2005).

Yuba Accord Dry Year: The Yuba Accord includes three separate but interrelated agreements that are aimed to result in enhancement of fisheries protection on the lower Yuba River, increase certainty of local supply reliability, and provide DWR and Reclamation with increased operational flexibility for protection of Delta fisheries resources through the EWA Program, and provision of supplemental water supplies to state and federal water contractors.

Table 3.10-5 provides an overview of the different categories of SWP deliveries to the City of Napa from 2008 to 2011.

Table 3.10-5 State Water Project Deliveries to City of Napa 2008–2011 (AFY)

Water Supply Category	Total Water Available	Total Water Delivered
2008		
SWP Table A (100% = 15,600 AF)	5,460	1,436
Carryover	6,136	6,136
Article 21	949	949
Turnback Pool A Purchase	17	17
SWPCA Dry-Year Purchase	209	531
Yuba Accord Dry-Year	273	247
	13,347	**9,316**
2009		
SWP Table A (100% = 16,950 AF)	6,780	1,266
Carryover	4,161	4,161
Water Quality	97	97
Article 21	432	432
Turnback Pool A-B Purchase	10	10
2009 DWR Drought Water Bank	1,714	1,714
Yuba Accord Dry-Year	140	140
	13,334	**7,820**
2010		
SWP Table A (100% = 21,900 AF)	10,950	5,454
Carryover	4,699	2,437
Article 21	1,562	1,562
Turnback Pool A-B Purchase	8	153
2010 Dry Year Water Program	0	
Yuba Accord Dry-Year	0	
	17,219	**9,606**
2011		
SWP Table A (100% = 21,900 AF)	17,520	7,104
Carryover	663	663
2010 Article 14B	165	165
Article 21	0	
Turnback Pool A-B Purchase	0	
2011 Dry Year Water Program	0	
Yuba Accord Dry-Year	0	
	18,348	**7,932**

Source: Miller, pers. comm., 2013

Local Reservoir Reliability

Water year types do not necessarily coincide between local reservoirs and the SWP. For example, a normal rainfall year in the Lake Hennessey watershed area may occur the same year as a dry year for the SWP watershed area. For UWMP 2010, the City is assuming that dry years occur in both the SWP and local

watersheds at the same time. This makes for a more conservative estimate of supply reliability. Estimated reservoir yields for Lake Hennessey and Milliken Reservoir for the different water year conditions are shown in Table 3.10-6.

Table 3.10-6 Local Reservoir Supply Reliability (AFY)

Source	Normal Year	Multiple-Dry Years	Single-Dry Year
Lake Hennessey	17,500	10,417	5,000
Milliken Reservoir	700	700	400
Total Local Reservoirs	18,200	11,117	5,400

Source: City of Napa 2011

While the local reservoir yields are substantially decreased under the dry year conditions, additional drawdown of the reservoirs would be employed to supplement supplies during an actual drought. For the single-dry year case, it was assumed that each reservoir would be drawn down 25% following a normal year. However, because the drought conditions would be unknown throughout a portion of the year, the source quantity would be less overall. Beginning the year following a single dry year, conservation efforts could be put in place, allowing for a greater source quantity. For the multiple-dry year case, it was assumed that reservoir drawdown would be 50% over six years following a normal year. For Milliken, the annual depletion would be spread evenly over the six years at 8.33%. For Lake Hennessey, an initial depletion of 25% would be followed by five years at 5% to simulate the impacts of starting a multi-year drought with a single-dry year (City of Napa 2011).

The storage depletion estimates are summarized in Table 3.10-7.

Table 3.10-7 Estimated Local Reservoir Depletion for Single and Multi-Year Drought Conditions (AFY)

Source Reservoir	Single- Dry Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Lake Hennessey	6,500	6,500	1,300	1,300	1,300	1,300	1,300
Milliken	100	33	33	33	33	33	33
Total	6,600	6,533	1,333	1,333	1,333	1,333	1,333

Source: City of Napa 2011

Total Supply Reliability

The total water supplies from SWP yields, the local reservoir yields, and the assumed local reservoir depletion amounts for normal, single-dry, and multiple-dry water years through 2025 are provided in Table 3.10-8. Table 3.10-9 estimates reliable supplies for the years after 2025, employing the SWP Future Conditions reliability data and its climate change effects. In Tables 3.10-8 and 3.10-9, the single-dry year case is clearly the most critical, with reliable supplies just 43–46% of normal year supplies. The latter stages of a multiple-dry year period are expected to still have about 62–63% of normal year supplies available.

Table 3.10-8 Reliability of Supplies through 2025 for Three Different Water Year Conditions (AFY)								
Source	Normal Year	Single-Dry Year	Multiple-Dry Years					
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
SWP Deliveries	13,140	1,533	7,446	7,446	7,446	7,446	7,446	7,446
Local Reservoir Yields	18,200	5,400	11,117	11,117	11,117	11,117	11,117	11,117
Local Reservoir Depletion		6,600	6,533	1,333	1,333	1,333	1,333	1,333
Total Reliable Supply	31,340	13,533	25,096	19,896	19,896	19,896	19,896	19,896
% of Normal	100%	43%	80%	63%	63%	63%	63%	63%
Source: City of Napa 2011								

Table 3.10-9 Reliability of Supplies Post-2025 for Three Different Water Year Conditions (AFY)								
Source	Normal Year	Single-Dry Year	Multiple-Dry Years					
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
SWP Deliveries	13,140	2,409	7,008	7,008	7,008	7,008	7,008	7,008
Local Reservoir Yields	18,200	5,400	11,117	11,117	11,117	11,117	11,117	11,117
Local Reservoir Depletion		6,600	6,533	1,333	1,333	1,333	1,333	1,333
Total Reliable Supply	31,340	14,409	24,658	19,458	19,458	19,458	19,458	19,458
% of Normal	100%	46%	79%	62%	62%	62%	62%	62%
Source: City of Napa 2011								

Tables 3.10-10 and 3.10-11 provide project supply and demand during normal and single-dry water years, respectively. Table 3.10-12 shows project supply and demand starting in 2015 and continuing through 2035 in 5-year increments.

Table 3.10-10 Projected Supply and Demand Normal Years (AFY)					
	2015	2020	2025	2030	2035
Total Supply	31,340	31,340	31,340	31,340	31,340
Total Demand	14,895	14,303	14,259	14,391	14,522
Difference (Supply minus Demand)	16,445	17,037	17,081	16,949	16,818
Difference as % of Supply	52%	54%	55%	54%	54%
Difference as % of Demand	110%	119%	120%	118%	116%
Source: City of Napa 2011					

Table 3.10-11 Project Water Supply and Demand Single-Dry Year (AFY)					
	2015	2020	2025	2030	2035
Total Supply	13,533	13,533	13,533	14,409	14,409
Total Demand	14,395	13,803	13,759	13,891	14,022
Difference (Supply minus Demand)	-862	-270	-226	518	387
Difference as % of Supply	-6%	-2%	-2%	4%	3%
Difference as % of Demand	-6%	-2%	-2%	4%	3%
Source: City of Napa 2011					

Table 3.10-12 Projected Annual Water Multiple-Dry Year Scenarios (AFY)			
	2015	**2016**	**2017**
Total Supply	25,096	19,896	19,896
Total Demand	14,895	14,779	14,587
Difference (Supply minus Demand)	10,201	5,117	5,309
Difference as % of Supply	+41%	26%	+27%
Difference as % of Demand	68%	35%	36%
	2020	**2021**	**2022**
Total Supply	25,096	19,896	19,896
Total Demand	14,303	14,143	14,172
Difference (Supply minus Demand)	10,793	5,753	5,724
Difference as % of Supply	43%	29%	29%
Difference as % of Demand	75%	41%	40%
	2025	**2026**	**2027**
Total Supply	25,096	19,458	19,458
Total Demand	14,259	14,286	14,312
Difference (Supply minus Demand)	10,387	5,172	5,146
Difference as % of Supply	43%	27%	26%
Difference as % of Demand	76%	36%	36%
	2030	**2031**	**2032**
Total Supply	24,658	19,458	19,458
Total Demand	14,391	14,417	14,480
Difference (Supply minus Demand)	10,267	5,041	4,978
Difference as % of Supply	42%	26%	26%
Difference as % of Demand	71%	35%	34%
	2035	**2036**	**2037**
Total Supply	24,658	19,458	19,458
Total Demand	14,522	14,585	14,574
Difference (Supply minus Demand)	10,136	4,873	4,884
Difference as % of Supply	41%	25%	25%
Difference as % of Demand	70%	33%	34%
Source: City of Napa 2011			

As shown in Tables 3.10-10, 3.10-11, and 3.10-12, water supplies to the City of Napa are expected to be adequate, except for during a single-dry year scenario. Single-dry year scenarios are anticipated to not provide adequate water supply because the City is not able to predict quantities of water from rainfall that would fill the reservoirs. A multiple dry-year scenario would begin the year following a single-dry year scenario, allowing time for implementation of water conserving policies (see discussion below regarding the City's Water Shortage Contingency Plan).

RECENTLY ADOPTED WATER SUPPLY ASSESSMENT

Napa County approved the Revised Water Supply Assessment (WSA) for the Napa Pipe Project in May 2013. Potable water demands of the Napa Pipe Project were projected to be approximately 300 AFY, plus 25 AFY for a potential future school. The Napa Pipe Project would demand approximately 150 AFY of non-potable water.

As described in the Napa Pipe WSA, the City's projected water supplies available during normal and multiple dry water years will meet the projected water demands associated with the Napa Pipe Project, in addition to the City's existing and planned future uses including agricultural and manufacturing uses, for the first 20 years of the Project. During those years, delivering water to the Napa Pipe Project is not expected to affect the availability of water to other existing or planned future water customers of the City.

While reliance on use of only Table A water from the SWP poses risk of the City experiencing a water supply deficit during a single dry, the WSA found that the City is likely to have access to SWP supplies other than Table A entitlement that would eliminate or significantly mitigate any water shortage. In particular, carryover water is expected to be available in a single dry year and could potentially eliminate any water supply deficit and create a surplus. In addition, the City would likely be able to acquire dry year supplies through DWR or an independent water transfer. The City has used water from each of these sources in the past to avoid a water shortage, and is likely to do so in the future, either with or without implementation of the Napa Pipe Project. As a result of these sources, the WSA concluded that the City will have sufficient water supplies to serve the Napa Pipe Project even in single dry years (Brownstein Hyatt Farber Schreck 2013).

WATER DEMAND AT THE EXISTING COUNTY JAIL

The City of Napa provides water to the existing County Jail. Table 3.10-13 provides the annual water consumption from 2007 through 2011. According to the County, the average generation rate per inmate during this time period was 90 gallons per inmate per day (gpid) (Cahill, pers. comm., 2013).

Table 3.10-13 Annual Water Consumption at Existing Napa County Jail 2007-2011

Year	Million Gallons per Year
2007	17.2
2008	11.8
2009	11.4
2010	10.6

Source: Cahill, pers. comm., 2013

WATER SHORTAGE CONTINGENCY PLAN

The City of Napa *Water Shortage Contingency Plan* (WSCP) was certified in 1991. Since certification, it has been shown to reduce demand by over 31%. The WSCP provides specific criteria for triggering various stages of action, and prioritizes the use of available water as: 1) health and safety; 2) commercial and industrial; 3) existing landscaping; 4) new demand; and 5) agriculture. Restrictions that may be invoked as a result of a shortage include: operation of decorative fountains, the use of hoses without shut-off nozzles; hosing down pavement and driveways; draining and filling swimming pools; withdrawal of water from hydrants except for firefighting; serving water to restaurant patrons except on request; and daytime watering of landscapes. Under sever water shortage, restrictions become greater and may include: allocations of water for individual customers at varying percentages of historical usage; a requirement for the City's 50 largest users to submit a water conservation plan; and potential establishment of a special block rate structure to address drought-related water purchase and administration expenses (City of Napa 2011).

GLOBAL CLIMATE CHANGE AND WATER SUPPLY

In recent years, scientific consensus has begun to accept that Earth's climate is changing and this consensus has broadened to consider increasing concentrations of greenhouse gases, attributable to anthropogenic activities, as a primary cause of global climate change. The United Nations Intergovernmental Panel on Climate Change predicts that changes in Earth's climate will continue through the 21st century and that the rate of change may increase significantly in the future because of human activity. An extensive background on global climate change including modeling and trends is found in Section 3.4, "Greenhouse Gas Emissions."

Today, the issue of global climate change has begun to play an increasing role in scientific and policy debates over multiple issue areas. Of particular concern are the existing and potential future effects of global climate change on hydrologic systems and water management (e.g., domestic water supply, agricultural water supplies, flood control, and water quality). There is evidence that global climate change has already had an effect on California's hydrologic system; for example, historical data indicate a trend toward declining volumes of spring and summer runoff from the Sierra Nevada.

California water planners and managers have been among the first groups in the nation to seriously consider the implications of statewide and regional climate change (rather than global-scale changes) on the reliability and safety of their systems. The California Water Plan (Bulletin 160) first briefly addressed climate change in 1993 (DWR 1994). This analysis has most recently been expanded and refined in the 2005 update of the California Water Plan, which explores a wide range of climate impacts and risks, including risks to water resources (Kiparsky and Gleick 2005, Roos 2005). The 2005 update also describes efforts that should be taken to quantitatively evaluate climate change effects for the next update of the California Water Plan (DWR 2005). For post-2025 reliability, discussed above, the City has taken into account potential climate change impacts on SWP deliveries by using the Future Conditions data from the 2009 SWP Delivery Reliability Report.

WATER DEMAND AND FACILITIES AT THE PROJECT SITE

The project site is located within the City's water service area, but outside the City limits and the City's sphere of influence. Existing water demands are provided by on-site wells. As shown in Exhibit 3.10-1, the nearest potential water connection to the project site is an abandoned fire service location on the east side of SR 221 across from the project site.

Water consumption at the existing jail averages approximately 90 gallons per day per inmate (Cahill, pers. comm., 2013).

WASTEWATER

The project would be served by the NSD. NSD is an independent special district covering approximately 12,450 acres, consisting of the City of Napa and unincorporated portions of southern Napa County. The existing facilities at NSD consist of six pump stations, 267 miles of pipeline, 260 miles of sewer laterals, and a wastewater treatment plant located at 15 Soscol Ferry Road. The WWTP has a permitted average dry weather capacity of 15.4 mgd (NSD 2011). The WTTP provides tertiary treatment, the effluent of which is used for recycled water in Napa and the surrounding area. NSD also can store effluent in the oxidation ponds and discharge it to the Napa River (in winter months only) after suspended solids removal and disinfection (NSD 2011). The closest interceptor is located approximately 0.5 mile to the west of the project site.

EXISTING WASTEWATER FLOWS

The WWTP influent flows and loads include wastewater generated from residential, commercial, and industrial sources within the service area. Table 3.10-14 shows historic flows at the NSD WWTP.

Table 3.10-14 Historic Flow at the Napa Sanitation District Wastewater Treatment Plant 2006–2008 (Million Gallons)				
Item	2006	2007	2008	Average
Average Dry Weather Flow (ADWF)	7.03	6.78	6.55	6.79
Source: NSD 2011				

While the capacity of the WWTP (i.e., 15.4 mgd ADWF), is greater than demands (i.e., 6.55 mgd ADWF in 2008), the plant experiences capacity constraints at the influent pumping station. Under the existing conditions, the influent pumping station's firm capacity of 25 mgd, is substantially less than the current peak flows of 60 mgd. To address this issue, in 2007 NSD completed the CSMP (NSD 2007), which identifies how NSD could resolve capacity constraint and what remaining capacity is available before significant upgrades are required. According to the CSMP, the WWTP is capable of treating the following flows (NSD 2011):

- Average Dry Weather Flow: 6.7 mgd,
- Peak Dry Weather Flow: 12.4 mgd, and
- Peak Wet Weather Flow: 86.4 mgd.

The WWTP is capable of meeting existing flow demands.

NSD has recently implemented a variety of I/I projects to reduce the volumes of influent received at the WWTP during wet weather events to free up capacity for development 66-inch main located adjacent to the Southern Pacific railroad track, approximately 0.6 mile from the project site (see Exhibit 3.10-1). NSD staff has indicated that the main located near the project site is currently at capacity for wastewater flows (Damron, pers. comm., 2013).

NPDES Discharge Requirements

NSD operating permit from the SFRWQCB allows discharge without a limit on flow rate between November 1 and April 30. Normally, NSD either recycles or stores water during the summer period. Occasionally, late spring rains and cooler weather require NSD to discharge effluent as an emergency discharge between May 1 and October 30 when regular discharge to the river is prohibited. Under these circumstances, NSD must notify SFRWQCB. NSD's capital improvement programs is planned to include various WWTP modification that would be implemented over the next 20 years (2030) (NSD 2011). Currently, NSD meets NPDES discharge requirements (Healy, pers. comm., 2013).

WASTEWATER FLOW AT THE EXISTING NAPA COUNTY JAIL

NSD provides sewer service to the existing Napa County Jail. According to the County, generation rates for wastewater were approximately 90 gpd per inmate, which can be broken down into 38 gpid grey water and 52 gpid inmate waste. Wastewater flow rates from 2006–2010 are shown in Table 3.10-15.

Table 3.10-15 Wastewater Flow at the Existing Napa County Jail 2006–2010		
Year	Million Gallons per Year	Average Gallons per day [1]
2006	12,335,980	33,852
2007	12,823,545	35,133
2008	17,767,470	48,545
2009	11,834,760	32,424
2010	11,528,160	31,584
Notes: [1] Determined by dividing gallons per year by number of days in the year. Source: Cahill, pers. comm., 2013		