ENVIRONMENTAL ASSESSMENT

SANTA YNEZ BAND OF CHUMASH INDIANS
CAMP 4 FEE-TO-TRUST

AUGUST 2013

LEAD AGENCY:

U.S. Department of the Interior
Bureau of Indian Affairs
Pacific Region Office
2800 Cottage Way, Room W-2820
Sacramento, CA 95825-1846

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INTRODUCTION

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared for the United States (U.S.) Bureau of Indian Affairs (BIA) to support an application from the Santa Ynez Band of Chumash Indians (hereafter, "Tribe") for land to be placed into federal trust (Proposed Action). The BIA is the federal agency that is charged with reviewing and approving tribal applications to take land into federal trust status. The land proposed for trust acquisition, which is known as the Camp 4 site and is currently owned in fee by the Tribe, consists of approximately 1,411.1 acres plus rights of way in Santa Barbara County, California and is located within the Tribal Consolidation Area (project site). **Figure 1-1** shows the regional location of the project site, and **Figure 1-2** shows the project site in relation to the Tribe's Reservation and the Tribal Consolidation Area. The Santa Barbara County assessor's parcel numbers (APNs) for the project site are shown in **Table 1-1** and on **Figure 1-3**. For ease of reference, the parcels are referred to throughout this EA by the designated parcel numbers 1 through 5. As a result of the Proposed Action, the Tribe would be able to provide new tribal housing and supporting infrastructure (Project Alternatives) for tribal members.

TABLE 1-1
PROJECT SITE PARCELS

Parcel	APN(s)	Area (Acres)
1	141-121-051 141-140-010	194.9
2	141-140-010	683.3
3	141-230-023 141-140-010	257.7
4	141-240-002 141-140-010	260.5
5	141-230-023	14.7
Right of Ways	N/A	21.9
	Total Area:	1433.0

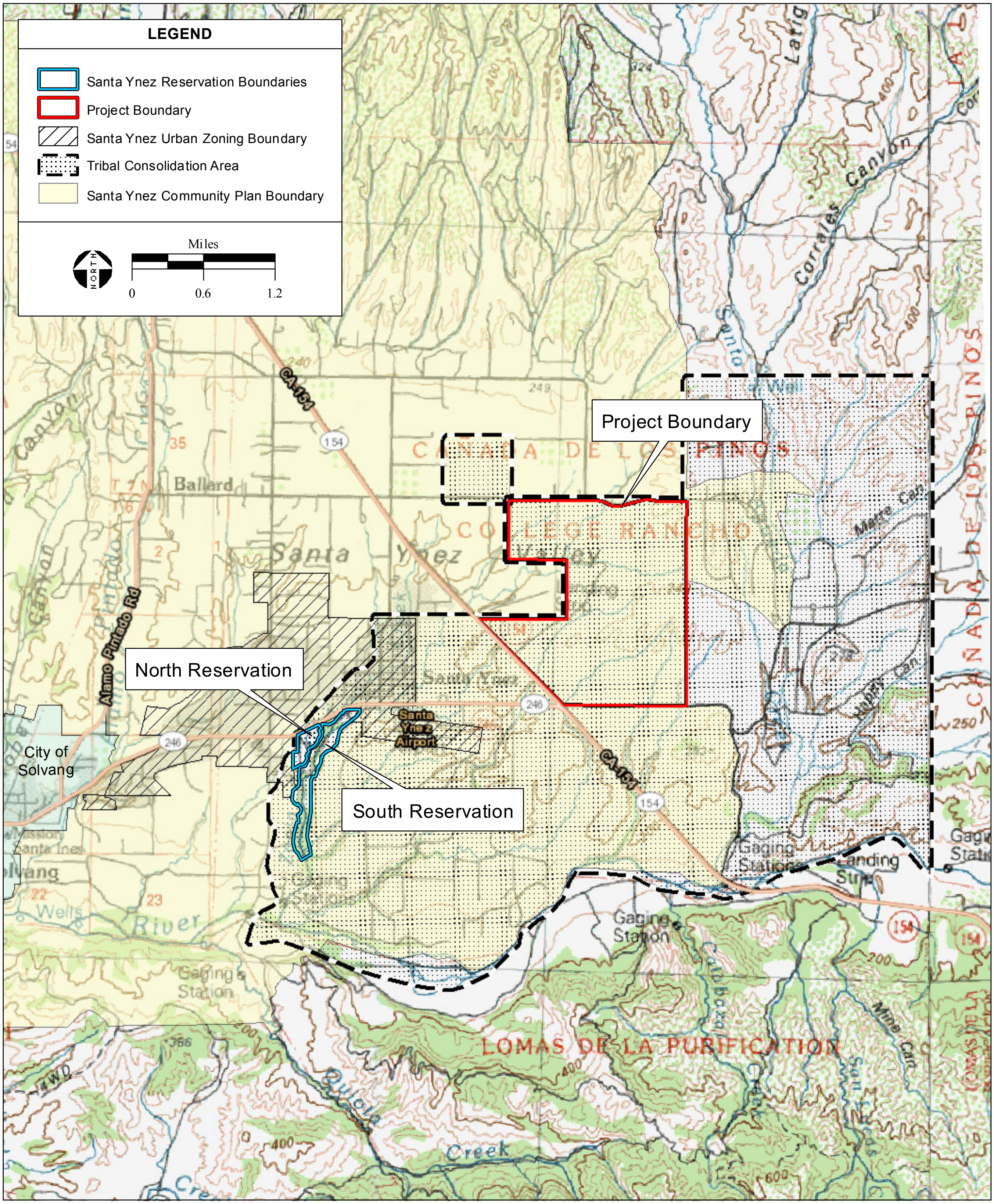
SOURCE: Summit Project Management, 2011/AES

This document has been completed in accordance with the requirements set forth in the National Environmental Policy Act (NEPA) of 1969 [42 United States Code (USC) §4321 et seq.], the Council on Environmental Quality (CEQ) Guidelines for Implementing NEPA, and the BIA's Indian Affairs NEPA Guidebook [59 Indian Affairs Manual (IAM) 3-H]. **Section 2.0** of this EA provides a detailed description of the Project Alternatives.

SOURCE: Streetmap World, 2011; AES, 2011

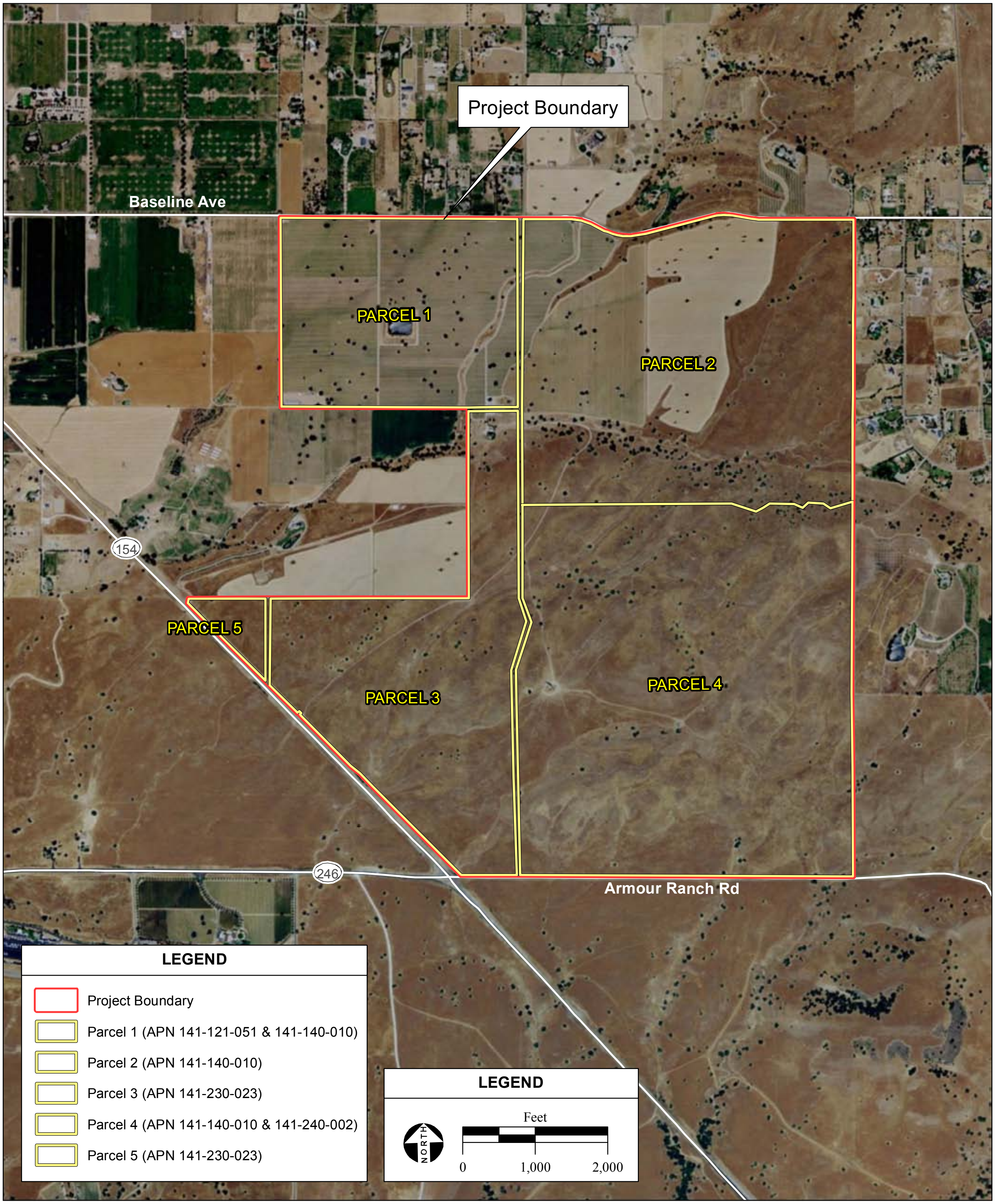
Santa Ynez Camp 4 EA / 201551 ■

Figure 1-1
Regional Location



SOURCE: "Santa Maria, CA" USGS 100k Topographic Quadrange, T7N, R 31W & T6N, R29W, Unsectioned Area of Santa Ynez Valley, Mt. Diablo Baseline & Meridian; Santa Barbara County GIS Data, 2012; AES, 2012

Figure 1-2
Site and Vicinity



SOURCE: Santa Barbara County GIS Data, 2012; Santa Ynez Band of Chumash Indians, 2011; NAIP Aerial Photograph, 6/17/2009; AES, 2012

Figure 1-3
Aerial Parcel Map

Section 3.0 provides a description of the existing environmental conditions on and in the vicinity of the project site. **Section 4.0** provides an analysis of the potential environmental consequences associated with the Project Alternatives. This EA also includes a discussion of impact avoidance and mitigation measures for the Project Alternatives (**Section 5.0**). Consistent with the requirements of NEPA, the BIA will review and analyze the environmental consequences associated with the Proposed Action and Project Alternatives, and either determine that a Finding of No Significant Impact (FONSI) is appropriate, request additional analysis, or request that an Environmental Impact Statement (EIS) be prepared.

1.2 LOCATION AND SETTING

The proposed trust parcels addressed in this EA are located within an unincorporated area of Santa Barbara County, east of the Town of Santa Ynez, 3.95 miles east of the City of Solvang, and 22.2 miles northwest of the City of Santa Barbara, California. The project site is within the “Santa Ynez Valley Planning Area” of Santa Barbara County and occurs in Section 8, Township 6 North, Range 30 West on the “Santa Ynez,” California U.S. Geological Survey (USGS) 7.5-Minute Topographic Quadrangle. Pursuant to 25 CFR 151.2(h), the Tribe submitted a Proposed Tribal Consolidation and Acquisition Plan (Consolidation and Acquisition Plan) to the Secretary of the Interior in March 2013, identifying the lands shown in **Figure 1-2** as the Tribal Consolidation Area. According to the land acquisition policy defined in 25 CFR 151.3(a)(1), land may be acquired in trust status for a tribe when the property is located within a Tribal Consolidation Area and given the same level of scrutiny as land acquisition on or adjacent to a tribe's reservation. The Tribe's Consolidation and Acquisition Plan was approved on June 17, 2013 by the Regional Director of the Pacific Region of the BIA, pursuant to the authority delegated by part 209, Chapter 8, of the Department of the Interior’s Departmental Manual (209 DM 8), 230 DM 1, and part 3, 3 IAM 4. Therefore, the trust application for the proposed trust parcels constitutes a request for land acquisition within an approved Tribal Consolidation Area under the authority granted to the federal government under 25 CFR 151.3(a)(1). The approved Consolidation and Acquisition Plan is included as **Appendix M**.

Regional access is provided by State Route 154 (SR-154) and State Route 246 (SR-246). SR-154 extends in a general northwest direction adjacent to the western boundaries of Parcels 3 and 5, providing access to the project area from Santa Barbara to the southeast and from Highway 101 approximately 5.7 miles northwest of the project site. SR-246 runs in a general west to east direction, originating in Lompoc approximately 26 miles east of the project site, terminating at the intersection with SR-154 at the southwest corner of the project site. SR-246 becomes Armour Ranch Road east of the intersection along the southern boundary of the project site. Site access is provided from the west via a gated unimproved roadway from SR-154, from the north via two main gated unimproved roadways from Baseline Avenue, and from the south via a gated entrance from Armour Ranch Road. No site access is provided from the eastern boundary of the project site.

The project site contains a vineyard operation covering approximately 240 acres (Parcel 1 and a portion of Parcel 2), an operating horse stable (Parcel 1), and a ranch house with a barn (northeast corner of Parcel 3).

The remainder of the project site is undeveloped pastureland consisting of rolling hills and elevated stream terraces used for cattle grazing.

The project site is bordered on the north and east by agricultural land and rural residences, on the west by agricultural land and oak savannah, and on the south by oak savannah. Surrounding land uses consist of agricultural fields, low-density rural residences, and undeveloped pasture lands.

1.3 PURPOSE AND NEED

The Tribe's purpose for taking the 1,411.1 acres plus rights of way of land into trust is to fulfill the purpose of the Consolidation and Acquisition Plan by providing housing within the Tribal Consolidation Area to accommodate the Tribe's current members and anticipated growth. The Tribal Consolidation Area constitutes the area historically held for the Tribe by the Roman Catholic Church. This geographical area was subject of the 1897 Quiet Title Action brought by the Roman Catholic Church (Bishop of Monterey) and encompasses approximately 11,500 acres of the College Rancho. These lands are part of the Tribe's ancestral territory and comprise most of its historic territory. These lands where once part of the lands of Mission Santa Ines and part of the subsequent Rancho Canada de los Pinos recognized by the U.S. government as well as being near an individual land grant made to a Santa Ynez Chumash Indian by Mexican Governor Micheltorena. All these lands within the approved Tribal Consolidation Area were considered to have been the property of the Santa Ynez Mission Indians by the Spanish and Mexican governments and the Catholic Church. After California statehood, the Catholic Church carried forward this theory of land tenure by the Santa Ynez Chumash.

The proposed trust land would enable the Tribe to provide housing for its existing tribal members and continue to provide housing for descendants as they come of age. The current Reservation lands are highly constrained due to a variety of physical, social, and economic factors. A majority of the lands held in Trust for Santa Ynez are located in a flood plain. This land is not suitable for much, if any, development because of flooding and drainage problems. The irregular topography and flood hazards are associated with the multiple creek corridors which run throughout the property resulting in severe limitations of efficient land utilization. The current reservation has a residential capability of approximately 26 acres or 18% of the Reservation and an economic development capability of approximately 16 acres or 11% of the Reservation. The remaining 99 acres or 71% of the Reservation is creek corridor and sloped areas which are difficult to impossible to develop. Therefore, the size of the usable portion of the Santa Ynez Reservation amounts to approximately 50 acres, much of which has already been developed.

The Tribe has a population of 136 tribal members and approximately 1300 lineal descendants which it must provide for. Currently, only about 17% of the tribal members and lineal descendants have housing on tribal lands. All current land assignments on the existing Reservation shall continue to be maintained unchanged as it is difficult to cancel any existing land assignment on the Reservation. Article VIII of the Articles of Organization of the Tribe expressly states that only the General Council composed of all adults members of the Tribe over the age of 18 can veto or cancel an existing land assignment on the Reservation. This trust land acquisition is an integral part of the Tribe's efforts to bring tribal members and lineal descendants back to the Tribe, accommodate future generations, and create a meaningful opportunity for those tribal members and lineal descendants to be a part of a tribal community revitalization effort that rebuilds tribal culture, customs and traditions In order to meet these goals, the Tribe needs additional trust land to provide housing for tribal members and lineal descendants who currently are not accommodated with tribal housing.

Based on these constraints, the Tribe is unable to provide adequate housing for its current members, and will be unable to provide housing for future tribal members on the existing Reservation, risking the Tribe’s ability to provide for future generations and maintain its cultural foundations within its ancestral lands.
The trust transfer of the Camp 4 lands would further the purpose and goals of the Consolidation and Acquisition Plan by providing necessary housing within the Tribal Consolidation Area for its current members and future generations and thereby would protect the Tribe’s heritage and culture by ensuring existing and future generations are afforded the ability to live under tribal governance as a community within the Tribe's ancestral and historic land holdings. Secondarily, the trust acquisition of the proposed trust land would also allow full tribal governance over its existing agricultural operations on the property; thereby allowing the Tribe to continue to build economic self sufficiency through diversified tribally-governed commercial enterprises. Under the Proposed Action, the tribal government would be able to fully exercise its sovereignty over its own future growth.

1.4 OVERVIEW OF THE ENVIRONMENTAL PROCESS

This EA is intended to satisfy the environmental review process of 59 IAM 3-H, 40 CFR § 1501.3, and 40 CFR § 1508.9. The EA has been released for a 30-day comment period. Comments will be considered by the BIA, and either a Finding of No Significant Impact (FONSI) will be prepared, or additional environmental analysis will be conducted. After the NEPA process is complete, the BIA may issue a determination on the Tribe’s fee-to-trust application.

1.5 ENVIRONMENTAL ISSUES ADDRESSED

In accordance with NEPA, and based on a review of the approximately 1,433 acre project site, the following environmental issue areas are evaluated in this EA:

- Land Resources;
- Water Resources;
- Air Quality and Climate Change;
- Biological Resources;
- Cultural Resources;
- Socioeconomic Conditions / Environmental Justice;
- Transportation and Circulation;
- Land Use;
- Public Services;

- Noise;
- Hazardous Materials; and
- Visual Resources.

1.6 REGULATORY REQUIREMENTS AND APPROVALS

The following direct and indirect federal actions may occur as a result of the Proposed Action:

- Transfer of land into federal trust status for the Tribe by the Secretary of the Interior as lands within an approved Tribal Consolidation Area;
- Consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act (FESA), if endangered species may be impacted by the Proposed Action;
- Consultation with the State Historic Preservation Office (SHPO) under Section 106 of the National Historic Preservation Act (NHPA);
- Consultation with the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA), if any waters of the U.S. may be impacted by the project; and
- National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity in compliance with the U.S. Environmental Protection Agency (EPA).

SECTION 2.0

PROJECT ALTERNATIVES

The Project Alternatives are described in this section. This section also summarizes the protective measures and Best Management Practices (BMPs) incorporated into each alternative to reduce potential adverse impacts to environmental resources.

2.1 SELECTION OF ALTERNATIVES FOR DETAILED EVALUATION

Section 1502.14 of the Council on Environmental Quality's (CEQ's) Regulations for Implementing NEPA states that lead agencies are required to evaluate all reasonable alternatives and discuss the reasoning as to why additional alternatives were eliminated from detailed study. For the Proposed Action (Alternative A), the only reasonable alternatives are to either take no action or take the requested parcels located within the Tribe's Tribal Consolidation Area into trust on behalf of the Tribe to alleviate the existing shortage of developable land and associated housing on the Tribe's Reservation. Other potential alternatives to the Proposed Action, such as a reduction in the number of parcels taken into trust or alternative locations do not meet the definition of "reasonable" under CEQ's Regulations for Implementing NEPA. As shown in the Tribe's various concept plans under consideration for development on the project site **(Appendix N)**, all requested parcels are integral to meeting the purpose and need; as stated above in **Section 1.3**. To take fewer parcels into trust would not provide acreage for housing assignments; circulation; multiple access and egress points for residential safety; agriculture operations to diversify tribally-governed commercial enterprises; open space, recreation, and conservation in accordance with Tribal environmental ordinances; and associated utility infrastructure to support each of the designated land uses. Because the purpose and need would not be met, such an alternative is not considered reasonable and therefore is not evaluated within the Environmental Assessment (EA). There are no other available comparable lands that would provide a sufficient land base to support the proposed land uses to meet the purpose and need of the Proposed Action that are within the Tribe's Tribal Consolidation Area. In addition, lands outside the Tribe's Tribal Consolidation Area would not meet the purpose and need and would constitute an Off-Reservation trust acquisition request. Therefore, alternative locations for the trust acquisition are not evaluated within the EA.

To meet the purpose and need for the trust acquisition, the Tribe is considering nine concept plans for development on the project site (**Appendix N**):

- Five acre assignments;
- One acre assignments in the northeastern corner of project site;
- One acre assignments in the northeastern corner of project site with an expanded vineyard;
- One acre assignments in three clusters in the northeastern, central, and south-central portions of the project site;

- One acre assignments in three clusters in the northeastern, central, and south-central portions of the project site with a setback off Armour Ranch Road;
- One acre assignments in the southeastern corner of the project site;
- One acre assignments in the northwester corner of the project site with the vineyard moved to the east of the existing vineyard;
- One acre assignments in the northwestern corner of the project site with the vineyard moved to the southwestern portion of the project site; and
- One acre assignments clustered in the central portion of the project site.

These concept plans were presented to Tribal members at a meeting held on October 30, 2012 and presented to the community during a town hall meeting on January 21, 2013. The public meeting presentation is included as **Appendix N**. The five-acre concept plan was selected to be evaluated in detail within the EA as Alternative B; being the only concept plan identifying five-acre assignments and comparatively different from the remaining eight concept plans. Although eight one-acre concept plans are being assessed by the Tribe, based on the similarities in the developments, one layout (Concept Plan Option M.0.1) was selected as the representative layout to be evaluated in detail within the EA as Alternative B. This layout includes the largest distance between assignment clusters and therefore covers a majority of the area that could be developed once a concept plan is approved by the Tribe for development. Section 1502.14 of the CEQ's Regulations for Implementing NEPA states that a lead agency should present environmental impacts of proposed alternatives in a comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker. Alternatives considered must include those that offer substantial environmental advantages over Alternative A and which may be feasibly accomplished in a successful manner considering economic, environmental, social, technological, and legal factors. The various one-acre assignment concept plans included in **Appendix N** all provide similar environmental advantages over Alternative A. Inclusion of all eight one-acre concept plans as fully-evaluated alternatives within the EA would result in a high level of redundancy, would not provide the contrast in alternatives as required by CEQ, and would not further educate the decision makers as to the environmental impacts of the Proposed Action. Therefore, each variation of the one-acre concept plan has not been individually subject to detailed analysis in the EA. In addition, the potential that implementation of the other one-acre concept plans would result in significant environmental impacts not identified under Alternative B is minimal; and therefore each one-acre concept plan does not warrant individual assessments within the EA. All regulatory and permitting requirements and mitigation identified under Alternative B would be implemented if a one-acre residential assignment concept plan were selected by the Tribe for development.

2.1.1 ALTERNATIVES EVALUATED IN DETAIL

The alternatives to be evaluated in detail in this EA consist of:

Alternative A – 1,433± acre (1,411.1 acres plus rights of way) trust land acquisition within a Tribal Consolidation Area and assignment of 143 five-acre residential lots for tribal members. The residential lost assignments and access roadways would cover approximately 793 acres of the project site. The project site would include 300 acres of vineyards (256 existing acres with 44 acres dedicated for expansion), 206 acres of open space/recreational, 98 acres of riparian corridor and 33 acres of oak woodland conservation, and 3 acres of Special Purpose Zone- Utilities;

Alternative B – Identical trust land acquisition and development of 143 one-acre residential lots for tribal members. The residential lost assignments and access roadways would cover approximately 194 acres of the project site. The project site would include 775 acres of open space/recreational, 30 acres of tribal community facilities (including 80,000 square feet of tribal facilities), and the same acreages of vineyard, riparian corridor and oak woodland conservation, and utilities land uses as proposed under Alternative A; and

Alternative C (No Action Alternative) – No federal action or proposed development.

A summary of project components under the two development alternatives (A and B) is provided in **Table 2-1** and detailed descriptions of the project components are provided in **Sections 2.2** and **2.3**. The No Action Alternative is described in **Section 2.4** and a comparison of the project alternatives evaluated in detail in the EA is presented in **Section 2.5**.

TABLE 2-1
SUMMARY OF PROJECT DEVELOPMENT ALTERNATIVES

Project Components	Alternative A	Alternative B
Land Taken into Trust	1,433± acres	1,433± acres
Residential Development	143 five-acre lots (793 acres)	143 one-acre lots (194 acres)
Designated Tribal Land Uses	300 acres of Agriculture (existing and future), 206 acres of Open Space/Recreational – General/Trails, 98 acres of Resource Management Zone – Riparian Corridors, 33 acres of Resource Management Zone – Oak Woodland, and 3 acres of Special Purpose Zone- Utilities	300 acres of Agriculture (existing and future), 775 acres of Open Space/Recreational – General/Trails, and 30 acres of Special Purpose Zone -Tribal Community Facilities 98 acres of Resource Management Zone – Riparian Corridors, 33 acres of Resource Management Zone – Oak Woodland, and 3 acres of Special Purpose Zone- Utilities
Water Source	Groundwater	Groundwater
Wastewater Treatment	Onsite WWTP	Onsite WWTP

Source: AES, 2012

2.2 ALTERNATIVE A – FIVE-ACRE ALLOTMENTS

Alternative A consists of two main components: (1) the placement of 5 parcels totaling approximately 1,433 acres (the five parcels encompass a total of four assessors parcel numbers: APN 141-121-051, APN 141-140-10, APN 141-230-023 and APN 141-240-002) into federal trust status for the Tribe; and (2) the development of 143 five-acre residential plots with the remaining acreage dedicated to agriculture, open space/recreational, conservation of riparian corridors and oak woodland, and development of utilities. Development of the site would include domestic water connections, a wastewater treatment plant (WWTP), and supporting roads and infrastructure. Alternative A is described in more detail below.

2.2.1 Land Trust Action

Alternative A consists of the fee simple conveyance of five parcels totaling 1,433± acres (referred to as the Camp 4 site) into federal trust status for the benefit of the Tribe. This trust action would shift civil regulatory jurisdiction over the 1,433± acres from the State of California (State) and Santa Barbara County (County) to the Tribe and the Bureau of Indian Affairs (BIA). The State and County would continue to exercise criminal jurisdiction under Public Law 280 and the Tribe would assert jurisdiction for the law enforcement activities identified under the Tribal Law Order Act of 2010. Federal laws, such as the Clean Water Act (CWA) and the Endangered Species Act (ESA), would continue to apply to tribal trust lands.

2.2.2 Residential Development

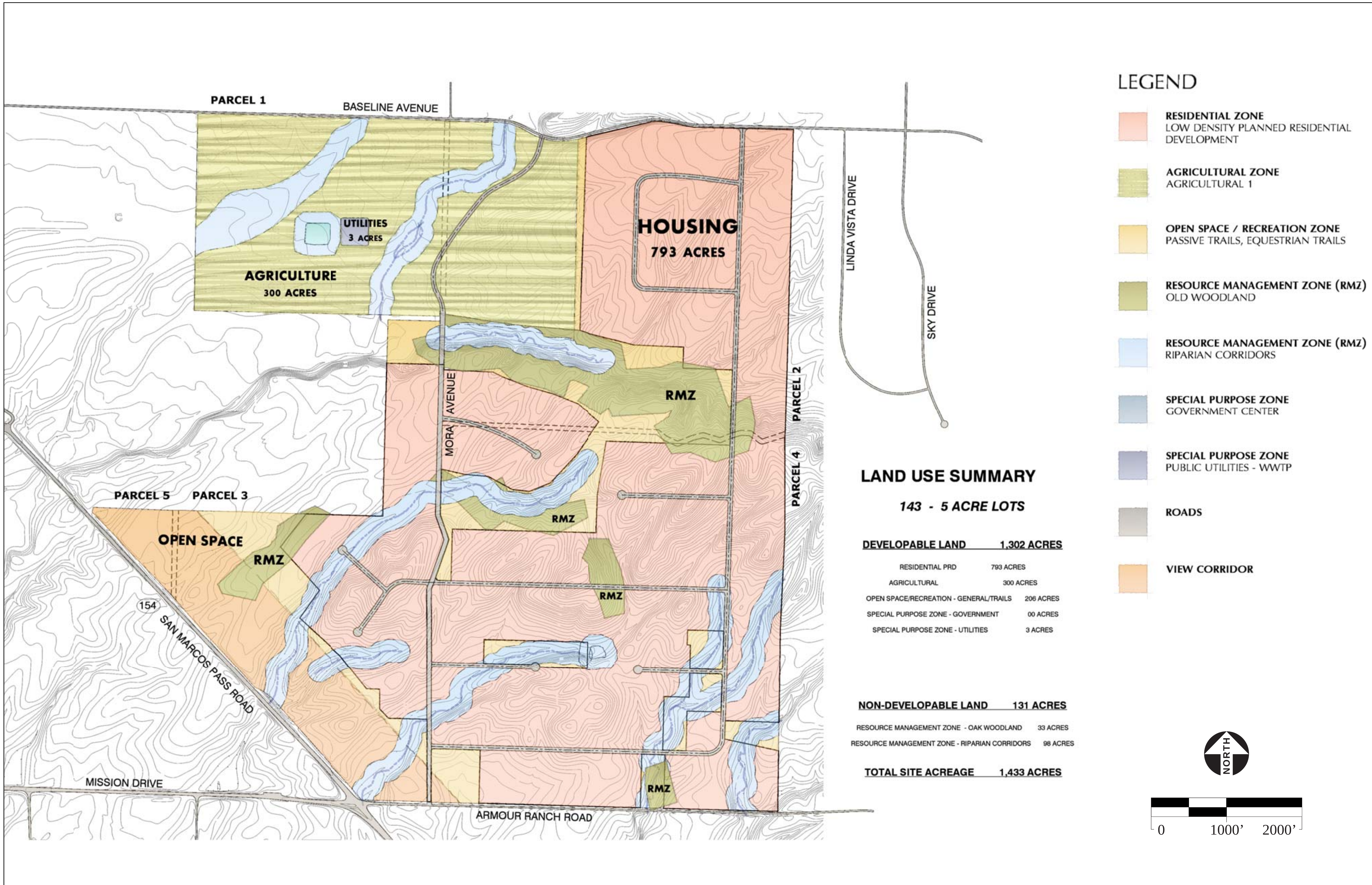
Under Alternative A, the Tribe would develop residential plots on Parcels 2, 3, and 4 of the project site (refer to **Figure 1-3**), supplementing the tribal housing on existing trust land. As discussed in **Section 1.3**, all current land assignments on the existing Reservation shall continue to be maintained unchanged as it is difficult to cancel any existing land assignment on the Reservation. The proposed housing would consist of up to 143 five-acre residential plots with construction of single-family detached houses of varying sizes ranging from 3,000 to 5,000 square feet. The housing development would be phased over time as needed. Development on each five-acre plot would include approximately 0.35 acres of disturbance for building pad development, driveway construction, utility installations, and landscaping. Additionally, new domestic water connections, improved access roads, driveways, a new wastewater treatment plant, and utilities would also be constructed to support the residences. A site plan identifying the proposed residential plots is shown in **Figure 2-1**.

2.2.3 Designated Tribal Land Uses

In addition to the proposed residential development, the Tribe would designate the following land uses on the subject property. No gaming would occur on the subject property.

Agricultural

The Tribe would continue operating an existing 256-acre vineyard located on Parcel 1 and a portion of Parcel 2 (**Figure 1-3**). An additional 44 acres would be designated for agricultural use on Parcel 2 to allow for expansion of the existing vineyard operation. The vineyard is currently in operation and includes a storage reservoir, existing access roadways, and a processing/shipping area. No winemaking facilities are currently located on the project site, and there are no plans to develop a winery on the project site. Various structures are located within the agricultural lands including an old abandoned house and operational horse stables.



SOURCE: Summit Project Management, 2014; AES, 2014

Figure 2-1
Alternative A Site Plan

OPEN SPACE/RECREATIONAL – GENERAL/TRAILS

Approximately 206 acres of the project site would be designated as open space and recreation. Passive trails would be designated for pedestrian use and equestrian trails would be developed to provide recreation for residents and guests in coordination with the horse stables located on the existing agricultural lands. The open space areas will be utilized for runoff control and will include the development of detention basins and vegetated swales. A description of storm water control features is provided in **Section 2.1.8**. The open space/recreational area adjacent to State Route (SR) 154 would be utilized as a viewshed protection zone. No residential development is planned within the zone adjacent to SR-154 to protect the viewshed of the scenic highway.

RESOURCE MANAGEMENT ZONE – RIPARIAN CORRIDORS

In accordance with the Tribe's commitment to conservation, 98 acres of riparian corridors would be protected from development and, where necessary, enhanced in accordance with tribal ordinances. These riparian corridors would be protected/enhanced to ensure adequate stormwater drainage is provided within the project site and to reduce the potential impact from development of the residential plots. These areas would be protected even where located on a specified residential plot (**Figure 2-1**). A qualified biologist would develop a Riparian Corridor Improvement Plan (Riparian Plan) for these areas. The Riparian Plan would provide for re-establishment of native vegetation in areas were invasive plant species have overwhelmed native vegetation. Where possible, the Riparian Plan will incorporate planting of California Like Oak trees to stabilize stream banks, provide canopy and shading, and ensure the sustainable future of the California Live Oak on the Reservation.

RESOURCE MANAGEMENT ZONE – OAK WOODLAND

In accordance with tribal ordinances, approximately 33 acres of oak woodland would be protected from development. Within the oak woodland management zone cutting, trimming, and pruning of the oaks would be monitored and controlled, and ground disturbance would be limited within the dripline of any oak tree within the zone, in accordance with the Tribe's *Tribal Ordinance Regarding Oak Tree Preservation for the Santa Ynez Band of Chumash Indians*.

SPECIAL PURPOSE ZONE- UTILITIES (WWTP)

To support the development of residential plots, a central tertiary WWTP would be developed on three acres of the agricultural lands. The tertiary WWTP is described in more detail in **Section 2.1.6**.

2.2.4 PUBLIC SAFETY AND FIRE PROTECTION SERVICES

Police and security services would be provided primarily by the tribal security force and supplemented by the County Sheriff's Department and federal law enforcement as called for under 18 United States Code (U.S.C.) 1162. Once taken into trust, the Tribe would conduct law enforcement activities in accordance with the jurisdictional duties identified under the Tribal Law Order Act of 2010. The County, Solvang/Santa Ynez

Sheriff Substation provides general public safety and law enforcement service for the project area. The Sheriff Substation is located in Solvang, approximately three miles from the project site. It provides 24-hour service to the Santa Ynez Valley and Solvang area. The County Fire Department (Fire Department) provides structural fire protection services to the project area. The Fire Department protects primarily residential areas, and responds to calls for structural fires as well as medical emergencies. The Chumash Wildland Fire Department (CWFD) provides wildland fire protection services through the region, and nationally when needed.

2.2.5 WATER SUPPLY

Implementation of Alternative A would result in an increased water demand of 380 acre-feet per year (AFY). To meet increased demands, the Tribe would develop an on-site water supply system using groundwater. Two new groundwater wells with a target rated capacity of 750 gallons per minute (gpm) would be developed and located in reasonable proximity to the proposed residential developments in the center or southern portion of the project site. The Tribe would install an onsite domestic water storage tank as well as the appropriate water distribution pipelines to the proposed tribal residences. Water quality would be no less stringent than Federal Safe Drinking Water Act standards. Inspections of the water supply system and water quality by the U.S. Environmental Protection Agency (USEPA) would ensure compliance with applicable safe drinking water standards. Tertiary treated wastewater would be utilized to meet the irrigation water demands of the vineyard operation, common area landscaping, and other irrigated uses as feasible. The existing agriculture storage reservoir would be used to meet the recycled water storage requirements. Proposed water facilities are discussed in more detail in **Appendix C**. The agricultural irrigation demands at the vineyard (265 AFY; increased to 300 AFY at full build out of Alternative A) would be met through mixing groundwater from the existing agricultural wells and recycled water from the WWTP as described below.

2.2.6 WASTEWATER TREATMENT AND DISPOSAL

A new tertiary WWTP would be constructed on Parcel 1 (**Figure 2-1**) adjacent to the existing reservoir within the vineyards. The proposed WWTP would treat wastewater to or exceeding tertiary standards under Chapter 3, Division 4, Title 22, California Code of Regulations (CCR), Section 60304, et seq. (Title 22). The WWTP would be sized to accommodate the proposed wastewater generation rates of Alternative A. The tertiary-treated effluent would be disposed of via spray irrigation for the existing agricultural operations, common area landscaping, and other irrigated uses as feasible on the project site. Drainage control would be installed along the perimeter of spray irrigation areas to prevent comingling with stormwater runoff. Spray irrigation runoff would be collected and disposed of via discharge to the WWTP. The proposed WWTP and related facilities are discussed in more detail in **Appendix C**. In general terms, wastewater facilities would include a tertiary WWTP, sewer lift stations, conveyance systems, emergency storage, runoff/spill control, and a recycled water reservoir. The sewer lift stations would be developed within the residential areas as needed. The existing water reservoir located on Parcel 1 would be repurposed to store tertiary-treated effluent from the WWTP, and enlarged if necessary, and the tertiary-treated effluent would be used for irrigation. The existing water reservoir is currently lined and prior to use as a tertiary-treated effluent reservoir, the lining would be inspected and repaired if necessary. The proposed wastewater treatment system would produce tertiary treated effluent meeting or exceeding EPA requirements and would be operated pursuant to USEPA regulations.

2.2.7 ROADWAYS

Existing access roads would be improved and new roads constructed to provide access to the proposed residences and existing agricultural operations. **Figure 2-1** presents the internal roadway structure that would be developed to provide access to the proposed residential parcels. The rural roadways would be 24-feet wide two-lane asphalt travel ways, with gravel shoulders that would be constructed using standards comparable to Santa Barbara County requirements. Signage would be provided for the new roadways. Crossing of potential Waters of the U.S. would be limited to the extent feasible; however, span bridges would be utilized where necessary , with foundations constructed outside the mean high water mark. Access and egress from the project site would be provided from one existing easement onto Armour Ranch Road and two existing easements onto Baseline Avenue.

2.2.8 GRADING AND DRAINAGE

Construction would involve grading and excavation for building pads and roadways. Cut and fill would be balanced to the extent feasible; however, some structural grade fill may be imported to meet engineering requirements. Stormwater runoff generated from development of the residential units and associated roadways would be conveyed by a combination of open channels, storm drains, and culverts. A drainage plan has been developed for Alternative A and is included as **Appendix D**. The drainage plan includes the use of several features designed to reduce surface runoff volumes and filter surface runoff prior to release into the existing on-site natural drainage channels. Runoff from the project site would be directed into vegetated swales, which would serve as energy dissipaters and filtering mechanisms for runoff generated on-site prior to release into the on-site drainage channels. Stormwater would be detained on-site within detention basins prior to discharging off the subject property at rates equivalent to pre-development conditions.

2.2.9 PROJECT CONSTRUCTION

The project components would be constructed after the 1,433± acre project site has been placed into federal trust for the Tribe. It is assumed that construction of the project would begin in 2014 and would be phased over approximately 4 to 9 years as new tribal homes are needed. Construction would involve earthwork, placement of concrete foundations, steel and wood structural framing, masonry, electrical and mechanical work, building finishing, and paving, among other construction trades. A worksite safety plan would be prepared for construction.

2.2.10 PROTECTIVE MEASURES AND BEST MANAGEMENT PRACTICES

Protective measures and best management practices (BMPs) have been incorporated into the project design to eliminate or substantially reduce environmental impacts from Alternative A. These measures and BMPs are discussed below.

WWTP

- Sodium hypochlorite, caustic soda and/or citric acid would be stored in the chemical room of the WTTP. The storage and metering facilities would be located inside a chemical spill containment area, sized to contain 150 percent of the storage volume in case of an unintentional release.
- The sodium hypochlorite would be stored in a 55-gallon drum and the citric acid would be stored as dry material and then in a 50-gallon mixing tank when needed.
- The WTTP would incorporate an active odor control system such as a packaged biofilter with an active carbon absorption unit.
- All treated effluent storage dimensions will be designed to hold 100-year rainfall event precipitation amounts, which is approximately 1.5 times greater than that estimated to be required for normal rainfall years.
- Spray drift from the spray disposal irrigation areas would be monitored daily during operation by qualified personnel. Spray drift shall not be allowed to migrate outside of the irrigation area.
- Spray irrigation would cease when winds exceed 30 miles per hour.
- Disposal of treated wastewater to irrigation areas shall be adjusted based on weather conditions in order to prevent surface runoff.
- The Tribe would adopt standards equivalent to the landscape irrigation standards in the State Water Resources Control Board Recycled Water Policy (as referenced in Resolution No. 2009-0011).
- Potential groundwater impacts from irrigation and effluent storage will be minimized through treatment of effluent through nitrogen and salinity reduction processes.
- Operation and maintenance of the wastewater utility from house service laterals, through the wastewater and effluent system, to treatment and disposal will be by the Tribe utilizing contract services. Individual residents will have no responsibility regarding operation and maintenance of any aspect of the wastewater treatment and conveyance systems. The residents' sole responsibility would be to follow Tribal guidance on what should and should not be flushed down sinks and toilets. Community education shall be promoted to reduce needless contaminants to wastewater.
- The effluent storage basins and irrigation areas would be located and designed so that they are well-drained and readily accessible.
- Implementation of the following measures would be incorporated during design and operation of the wastewater and effluent system to minimize chances of system failures:
    - Solvent welded plastic house services;
    - Above grade cleanouts;
    - Dual (redundant) discharge pumps;
    - High water alarms;
    - Maintaining records of pumping, inspections, and other maintenance activities;

- Flushing of solvent, paint, paper towels, diapers, feminine hygiene products, cigarette butts, pesticides, and fertilizer would be discouraged by recurring outreach notices to the residents. The frequency of the noticing would be based on the results of ongoing system inspections.

LAND RESOURCES

- All structures would meet the Tribe's building ordinance, which meets or exceeds International Building Code (IBC) requirements.
- Non-corrosive materials and/or protective coatings shall be used for buried facilities constructed in corrosive soils.

WATER RESOURCES

- Areas outside of buildings and roads would be kept as permeable surfaces to the extent practicable; either as vegetation or high infiltration cover, such as mulch, gravel, or turf block. Pedestrian pathways would use a permeable surface where possible, such as crushed aggregate or stone with sufficient permeable joints (areas between stone or brick if used).
- Existing native vegetation would be retained where possible.
- Roof downspouts would be directed to splash blocks and not to underground storm drain systems.
- Runoff from rooftops and other impervious areas would be directed to vegetated areas to help treat and infiltrate stormwater prior to leaving the site.
- Runoff from roadways would filter though rock-lined swales and bio-swales.
- Permanent energy dissipaters would be included for drainage outlets.
- Rock rip-rap energy dissipaters would be installed at the point of release of concentrated flow.
- High water-demand plants would be minimized in landscaping plans. Native and drought-tolerant plant species (trees, shrubs, and ground cover) landscaping would be emphasized.

AIR QUALITY

The following measures would reduce project-related greenhouse gas emissions associated with climate change:

- Buildings would be sited to take advantage of shade, prevailing winds, and sun screens to the extent feasible to reduce energy use.
- Buildings would be designed to include efficient lighting and lighting control systems.
- Energy efficient heating and cooling systems as well as appliances would be installed in residences and community and governmental facilities.
- Solar or other alternative power systems would be utilized where feasible.

BIOLOGICAL RESOURCES

- Native trees would be preserved to the maximum extent feasible in accordance with the Tribe's *Tribal Ordinance Regarding Oak Tree Preservation for the Santa Ynez Band of Chumash Indians*.
- All identified wetland areas and California Live Oak would be avoided to the maximum extent feasible.

- Preservation of existing Resource Management Zones (RMZs) would result in maintaining other significant native vegetation as well; i.e. coastal sage scrub.

PUBLIC SERVICES

- Structural fire protection would be provided through compliance with tribal ordinances no less stringent than applicable International Fire Code requirements. The Tribe would ensure that appropriate water supply and pressure is available for emergency fire flows.

VISUAL RESOURCES

- Signage for all streets, community and governmental facilities, and the residential community would be subtly incorporated into the landscape.
- Lighting would only occur at street intersections and residential areas. The lighting would consist of pole-mounted lights, limited to 18 feet tall, with cut-off lenses and down cast illumination to the extent feasible.

GREEN BUILDING

The Tribe proposes to incorporate the "Build it Green" 2005 Green Building Guidelines for New Home Construction along with the Leadership in Energy and Environmental Design (LEED) for Homes criteria for all the residential units on the project site (U.S. Green Building Council, 2010). The above-noted BMPs and protective measures would aid the Tribe in achieving these standards. In addition, the following measures would be implemented:

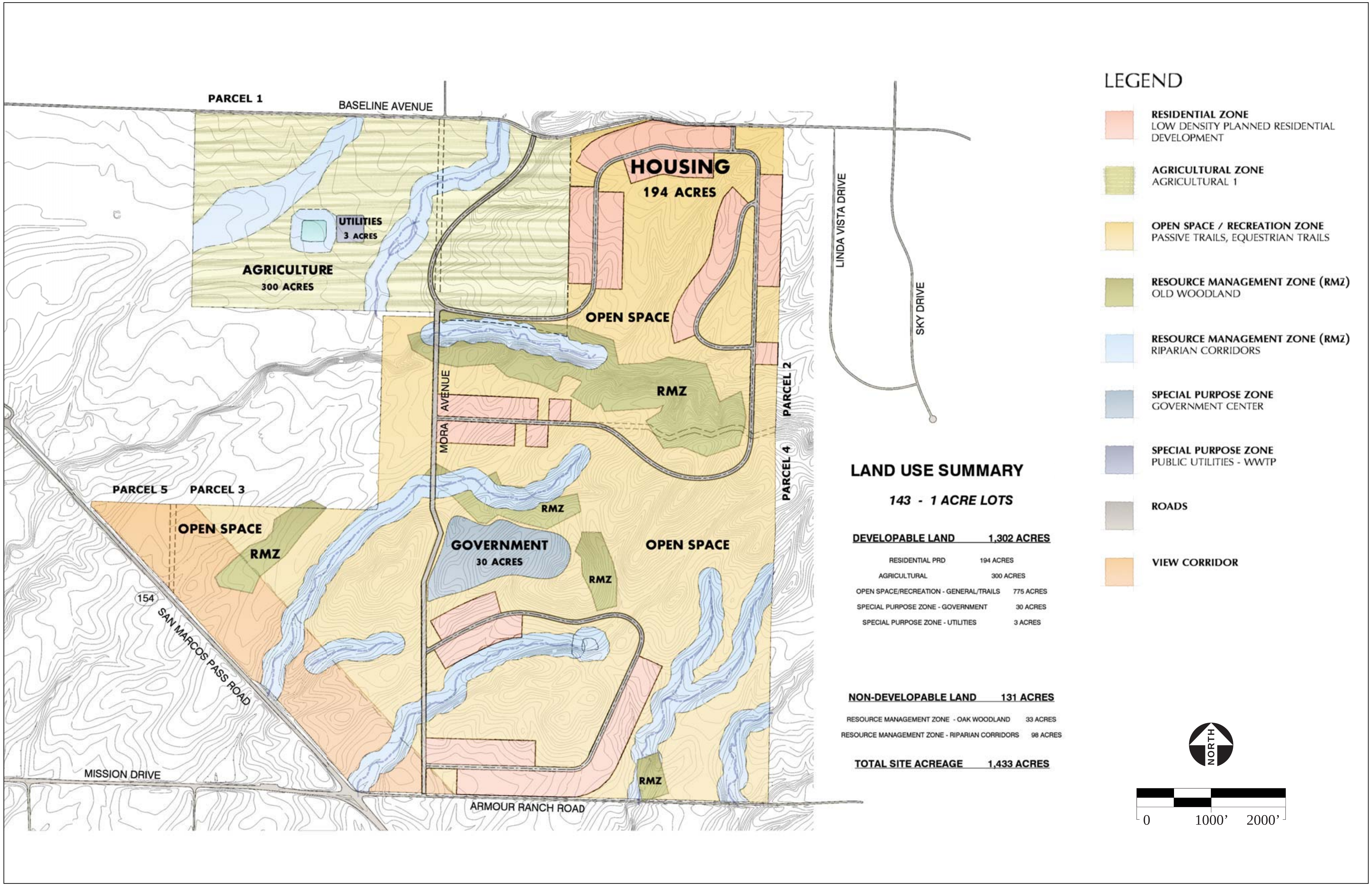
- Individual homes would have limited personal planting areas with a portion of the watering needs satisfied from captured rainwater or reclaimed water.
- Indoor plumbing would use the highest efficiency fixtures and fittings available.
- All homes would be designed for efficient use of energy and natural resources and would be sized below the median standard based on the LEED for Homes rating system. Each plan would be oriented to maximize access to solar energy and natural daylight. Operable windows would be placed to provide efficient natural ventilation, taking advantage of prevailing breezes.
- All appliances and heating, ventilation, and air conditioning (HVAC) equipment would be Energy Star Certified for optimal performance.
- During construction, all waste material would be separated and sorted into individual bins for recycling.
- At least 75 percent of the residences built would be single story to minimize visual effects.
- Building envelopes would be designed to maximize performance of HVAC, lighting, and other energy systems. Equipment and appliances would meet or exceed California state, Title 24 energy requirements.
- HVAC equipment would have no chlorofluorocarbon (CFC) refrigerants.
- To the extent possible, building materials with recycled content would be specified for use during construction.

- Building and landscape elements would be designed to give preference to materials that are produced regionally or within 500 miles of the project.
- Wood materials and products used in construction would be specified to be Forest Stewardship Council (FSC) certified from suppliers who practice responsible and sustainable forest management.
- During construction, on-site absorptive materials would be protected from moisture damage.
- All paints, coatings, adhesives and sealants used on the interiors of buildings would have a low Volatile Organic Compound (VOC) limits to reduce odor and harmful indoor air contaminants.
- Carpets, cabinets, and other interior finishes would be selected, in part, on minimizing their potential to off-gas or adversely affect indoor air quality.

2.3 ALTERNATIVE B – REDUCED DEVELOPMENT INTENSITY

Alternative B would involve placing the 1,433-acre Camp 4 site into federal trust status for the benefit of the Tribe; however, under Alternative B, the residential parcel lot sizes would be reduced from 5 acres to 1 acre, decreasing the residential acreage from approximately 793± acres to approximately 194± acres (**Figure 2-2**). Development on each one-acre plot would include approximately 0.25 acres of disturbance for building pad development, driveway construction, utility installations, and landscaping. Additionally, new domestic water connections, improved access roads, driveways, a new WWTP, and utilities would also be constructed to support the residences. A site plan identifying the proposed residential plots is shown in **Figure 2-2**. With the decrease in residential development intensity, Alternative B would increase open space and recreation land uses from 206 acres under Alternative A to 775 acres under Alternative B. In addition, approximately 30 acres of the project site would be reserved for approximately 80,000 square feet of tribal community facilities.

The tribal facilities would include development of a banquet/exhibition hall designed with an agriculture/equestrian theme, associated administrative spaces, a tribal office complex, and a tribal community space including ceremony room and gymnasium. A breakdown of the components of the proposed tribal facilities is displayed in Table 2-2. These facilities would be open to tribal members and their guests for tribal events, functions, and ceremonies. The facilities would also be open to tribal residents of the site as a gathering place for socializing and recreation. The banquet/exhibition facilities would occasionally be made available to the public for the purposes of hosting exhibitions, business meetings, conferences, or events by appointment. No gaming would occur on the subject property. It is anticipated that the tribal development would include office space for up to 75 tribal employees and result in up to 100 events per year being held at the facilities. Approximately 400 parking spaces would be provided for the facilities. As with Alternative A, this trust action would shift civil regulatory jurisdiction over the 1,433± acres from the State and the County to the BIA and the Tribe for land held in trust for the Tribe by the federal government.



SOURCE: Summit Project Management, 2014; AES, 2014

Figure 2-2
Alternative B Site Plan

TABLE 2-2
TRIBAL COMMUNITY DEVELOPMENT — ONSITE FACILITIES

Usage	Square Footage (sf)
Community Center	34,280
Community Center Administrative Support	3,110
Tribal Office Complex	12,025
Tribal Community Space	11,480
Circulation (Misc. at 30%)	18,269
Total Development	**79,164**

The remaining land uses and project components under Alternative B are identical to that proposed under Alternative A including: the construction of 143 residences ranging from 3,000 to 5,000 square feet, domestic water connections, and a WWTP. Public services, water supply, wastewater treatment and disposal, and roadway improvements would all be provided for Alternative B as described for Alternative A. Project construction protective measures and BMPs would be identical to those described for Alternative A, with additional BMPs implemented for the tribal community facilities. Water demands and wastewater generation for Alternative B would be greater with the development of the tribal facilities. The proposed WWTP and water facilities are discussed in more detail in **Appendix C**. A grading and drainage plan for Alternative B is included in **Appendix D**.

2.3.1 PROTECTIVE MEASURES AND BEST MANAGEMENT PRACTICES

Alternative B would incorporate the BMPs listed under Alternative A, in addition to supplemental BMPs to reduce environmental effects associated with the tribal community facilities. These additional BMPs are discussed below.

PUBLIC SERVICES

- The tribal community facilities would be equipped with an early detection system that ensures an initial response to any fire alarm (automatic, local, or report). This would rely on automatic sprinkler systems in the occupied areas and smoke detection, along with automatic sprinkler systems, in the areas of the facility that are normally unoccupied, such as storerooms and mechanical areas.

GREEN BUILDING

- Upon completion, the tribal community facilities would have trash enclosures for separation of recyclable materials and newspapers.
- The tribal community facilities would meet all Americans with Disabilities Act (ADA) accessibility requirements. Pathways would meet required slopes and roadway crossings would include textured paving and indicators for the visually impaired.

2.4 ALTERNATIVE C – NO ACTION

Under the No-Action Alternative, the 1,433± acre project site would not be placed into trust for the benefit of the Tribe and the property would not be developed as identified under Alternatives A and B. The Tribe would retain ownership of the properties in fee title, and jurisdiction would remain with Santa Barbara County. The existing vineyard would continue to operate on the project site.

If no additional land is taken into trust for the benefit of the Tribe, then tribal housing and community facilities would continue to be confined to the existing Reservation. To provide the 143 homes and additional facilities that will be needed to support tribal members and their families in the coming years; the density of development on the existing Reservation would increase substantially and would likely include the construction of several multi-level structures. Additionally, Alternative C would not address the Tribe's Tribal Consolidation Area, which was established to aid the Tribe in acquiring additional lands to providing ample housing and government services to its members.

2.5 COMPARISON OF THE PROJECT ALTERNATIVES

Alternatives A and B include the development of residential housing units with the continued use of the vineyard. Options for supplying domestic water and for the treatment and disposal of wastewater would be identical for these two alternatives. However, while Alternative A entails development of the residential units on five-acre lots, Alternative B would include residential development on one-acre lots as well as the development of tribal community facilities. Under Alternative C, the No-Action Alternative, no development or change in use would occur on the property for the foreseeable future.

Impacts to land resources would be proportionally greatest under Alternative A, due to the larger project footprint needed for construction requiring 180,000 cubic yards of cut and 190,000 cubic yards of fill. This would require additional site grading compared to Alternative B. However, under both alternatives cut and fill volumes on the project site would be balanced, with the potential for a minor volume of import of engineered fill to meet building codes. The No-Action Alternative would have no effect on land resources, as no changes in land use are anticipated.

Water resources would be impacted to a greater extent under Alternative B. This alternative would result in a greater area of impermeable surfaces than Alternative A due to the development of the tribal community facilities. However, with the implementation of the grading and drainage plan incorporated as **Appendix C** of the EA, impacts from both alternatives would be minimized. Water demands for Alternative B would be slightly higher than Alternative A due to the services anticipated to be provided within the Tribal community center (offices, recreation, banquet, etc.); however, water for both purposes would be drawn from the same aquifer under both alternatives. Under the No-Action Alternative drainage patterns would remain unchanged from existing conditions and the existing wells would continue to be used for agricultural production.

For both Alternatives A and B, wastewater treatment would be provided from a centralized WWTP. As with water demand, Alternative B would generate greater quantities of wastewater, and therefore would result in greater potential impacts to groundwater quality and a need for more infrastructure construction and maintenance compared to Alternative B. No impacts to water resources would result from Alternative C. Construction and operational emissions of criteria air pollutants (CAPs) and greenhouse gases (GHGs) would be slightly higher under Alternative B; however, the air basin is currently classified as attainment/unclassified for all designated CAPs and therefore emissions from either alternative would not result in adverse impacts to the regional air basin. Under Alternative C, no new impacts to air quality would occur.

Impacts to biological resources would be greater under Alternative A due to the size of the assignments. Under Alternative A, approximately 330.11 acres of critical habitat for a protected species would be removed from designation. Under Alternative B, approximately 65.28 acres of the critical habitat would be removed from designation. Both alternatives would adversely impact water of the U.S., special-status species, protected oak trees, and migratory birds without the implementation of mitigation. However, with the incorporation of mitigation measures, implementation of the project alternatives would not result in jeopardy to and would facilitate the recovery of special status species and sensitive habitats. No impacts to biological resources would occur under Alternative C, because this alternative involves no new development or changes in land use.

The implementation of Alternative B would result in similar impacts to cultural resources as those identified under Alternative A, although to a lesser degree due to smaller housing lot sizes. As with Alternative A, long-term management goals would favor formal evaluation of eligibility prior to implementing Alternative B; as development at cultural resource locations would result in adverse impacts. The No-Action Alternative would not result in impacts to cultural resources.

No adverse impacts to socioeconomic conditions or environmental justice would result from the implementation of either project alternative. Alternative A would provide a beneficial socioeconomic impact for the Tribe by easing a housing shortage and ensuring continued economic diversification and self-sufficiency; Alternative B would also extend these benefits to the Tribe, but to a greater degree by providing 30 acres of additional tribal community facilities. Alternative C would result in no change to existing socioeconomic conditions.

Alternative B would generate the greatest number of daily vehicle trips, due to the development of the Tribal community facilities. Impacts to the local transportation network from this alternative would therefore be proportionally greater than Alternative A, although both alternatives result in a similar adverse impact to the intersection of SR-246/SR-154. With the implementation of mitigation measures, operation of this intersection would continue to operate under acceptable conditions after implementation of either alternative. Alternative C would generate no new vehicle trips, and would therefore cause no impacts to local transportation and circulation networks.

Development of Alternatives A and B would result in the construction of low-density residential housing, a centralize WWTP, and extension of other utilities, and continued agricultural production on the existing vineyard. Both alternatives are compatible with the surrounding land uses, and similar residential densities currently occur in the project vicinity. Implementation of Alternative B would result in maintaining a greater acreage of the existing open space on the project site compared to Alternative A. Alternative C would have no impact on local land use.

Alternative A would have minimal impacts on solid waste, electricity, natural gas, telecommunications, law enforcement, fire protection and emergency medical services, public schools, and parks and recreation. Alternative B would have a proportionately greater impact on solid waste, electricity, natural gas, telecommunications, law enforcement, fire protection and emergency medical services due to operation of the Tribal community facilities. Alternative C would have no impact on public services and utilities.

Neither of the project alternatives would have any impact on municipal water supply and wastewater treatment facilities, as both Alternatives A and B would use domestic water supplied from on-site wells on the project site, and would accomplish wastewater treatment using a centralized system with disposal via recycled water irrigation and storage. Alternative C would not result in an increase in demand for municipal water supply or wastewater treatment.

Impacts related to construction noise would be slightly greater under Alternative B compared to Alternative A. However, implementation of either alternative would result in noise generation below applicable thresholds. No noise-related impacts would occur under Alternative C.

Impacts related to hazards and hazardous materials and agricultural production would be nearly identical under either alternative. No new impacts related to hazards or hazardous materials would occur under Alternative C, although if current land uses continue, the use of agricultural fertilizers, pesticides, and mechanical farm equipment would also continue.

Alternative B would involve the construction of a similar residential development of reduced intensity compared to Alternative A. The visual character of both alternatives would be compatible with the neighboring East Baseline/Rancho Estates. Increased visual buffers of open space would be positioned between neighboring properties and roadways under Alternative B. No visual impacts would occur under Alternative C.

While both Alternatives A and B meet the Tribe's objectives of obtaining lands under Tribal jurisdiction within the Tribal Consolidation Area, Alternative B would result in additional beneficial socioeconomic impacts to the Tribe through the development of additional tribal community facilities. While the No-Action alternative would not result in any of the environmental effects identified for Alternatives A or B, this alternative would not meet the Tribe's objectives of providing a sufficient number of housing units for Tribal families within the Tribal Consolidation Area. Despite the proportionately greater overall effects on the environment of Alternatives A or B, none of the identified impacts would be significant and unavoidable, following implementation of protective measures and mitigation recommended in this document.

SECTION 3.0

DESCRIPTION OF AFFECTED ENVIRONMENT

This section presents relevant information concerning existing resources and other values that may be affected by the Project Alternatives. In accordance with the National Environmental Policy Act (NEPA) and the Bureau of Indian Affairs' (BIA) implementing guidelines (59 IAM 3-H), the existing conditions described herein provide the baseline for determining the environmental effects identified in **Section 4.0**. Existing setting descriptions are provided the following resource and issue areas:

- Land Resources
- Water Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Socioeconomic Conditions / Environmental Justice
- Transportation and Circulation
- Land Use
- Public Services
- Noise
- Hazardous Materials
- Visual Resources

3.1 LAND RESOURCES

The following describes the existing land resources conditions, including topography, seismicity, soils, and soil hazards that occur within the project site and general vicinity.

3.1.1 GEOLOGICAL SETTING

The project site is located within the Transverse Mountain Ranges Geomorphic Province. The Traverse Mountain Ranges extends 310 miles in an east to west direction in contrast to the main fault structure of California and associated south to north trending ranges. The project site is located north of the Santa Ynez Mountain Range, the western-most sub-range of the Traverse Range (Dibblee, 1988), within the Monterey Formation.

3.1.2 TOPOGRAPHY

The project site is situated within a relatively flat valley between the Santa Ynez Mountain and Coastal Mountain ranges. The project site is comprised of two distinct topographical features consisting of a relatively flat valley and rolling hills. The valley is located along the northern portion of the project site where the existing vineyard is located and consists of a gradually increasing eastern slope. In contrast, the remainder of the project site is characterized by rolling hills that exhibit southwestern sloping, decreasing in elevation creating lowlands at the intersection of SR-154 and Amour Ranch Road. The rolling hills influence the drainage patterns on the project site. Elevations on the project site range between approximately 661 feet above mean sea level (amsl) in the southwestern corner of the existing vineyard and 852 amsl along the eastern area of the central portion of the site.

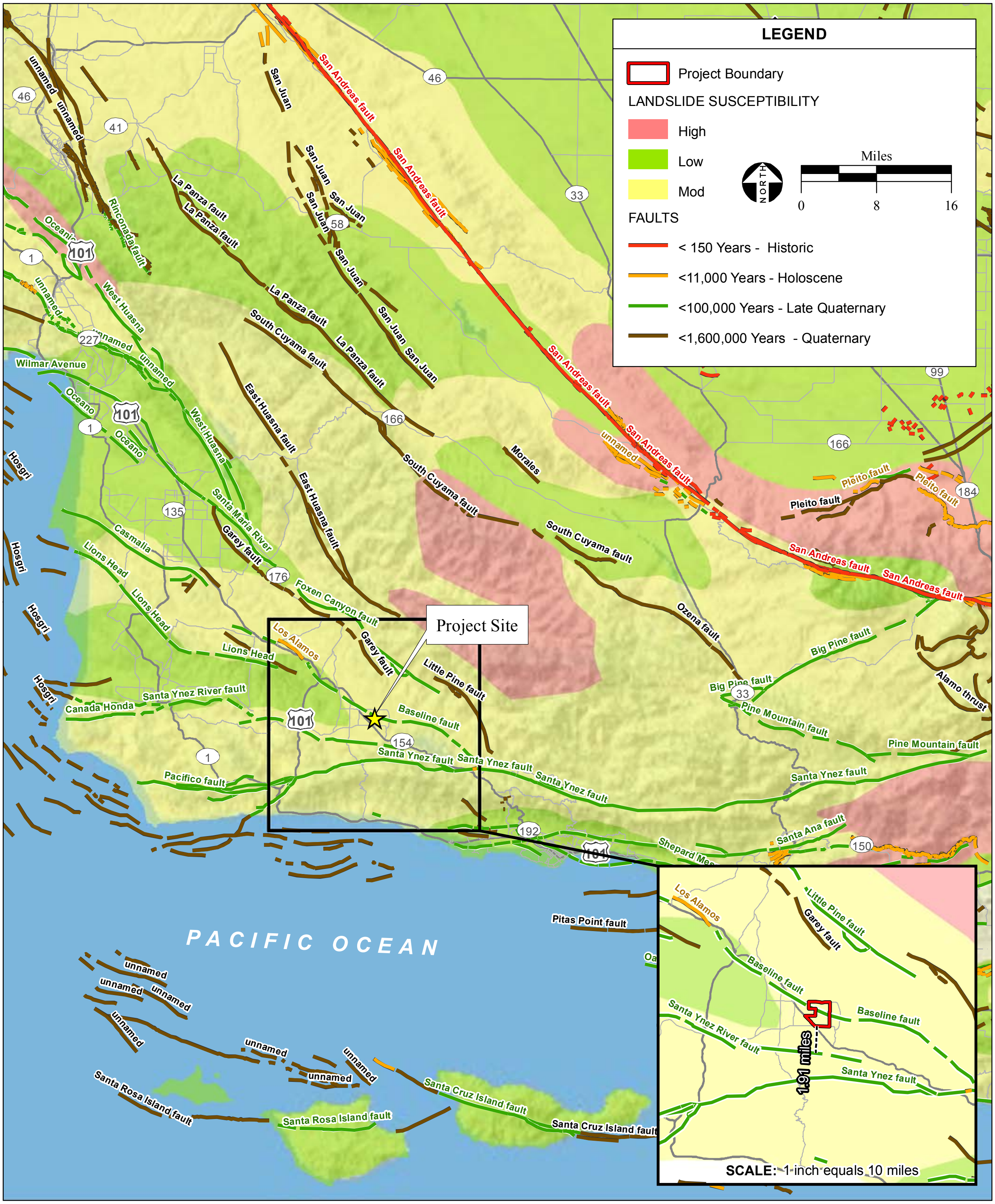
3.1.3 SEISMIC CONDITIONS

Figure 3-1 identifies potentially active faults and their relative distances to the project site. For this analysis, potentially active faults are faults that have shown signs of seismic activity during the last 1.6 million years. The Baseline Fault, which runs directly through the northern portion of the project site, is designated as a potentially active fault (Santa Barbara County, 2009). This thrust slip fault is an extension of the Los Alamos Fault to the northwest and is predicted to be capable of a 6.9 maximum magnitude fault rupture (USGS, 2012). The Santa Ynez fault is located approximately 1.91 miles south of the site. As shown on **Figure 3-1**, the USGS has determined that the last known movement along these faults occurred during the "late-Quaternary" period, between 15,000 and 100,000 years ago.

The Modified Mercalli intensity (MMI) scale is commonly used to measure earthquake effects due to ground shaking. MMI values range from I (earthquake not felt) to XII (damage nearly total) (**Table 3.1-1**). MMI values ranging from IV to X could cause moderate to significant structural damage. The damage level represents the estimated overall level of damage that will occur for various MMI levels (Bolt, 1988). CGS, in coordination with USGS, creates models of seismic hazard based on the physical and mechanical properties of the Earth's crust. Based on these models, the CGS determines the peak horizontal ground acceleration, the fastest measured change in speed for a particle at ground level. Shaking intensity at a particular site can vary depending on the overall magnitude of the earthquake, the distance from the epicenter, and the type of geologic material. According to CGS, the project site is located within an area of moderate potential shaking intensity (ground shaking motion of 0.44 percent force of gravity) with an MMI value of VIII or IX (CGS, 2011; Bolt, 1988).

3.1.4 SOIL TYPES AND CHARACTERISTICS

A Soil Resource Report (NRCS, 2011a) was compiled for the project site and is included as **Appendix A**. The project site contains a total of 10 soil types, which are summarized in **Table 3.1-2** and depicted on **Figure 3-2**.



SOURCE: USGS Earthquake Hazards Program, 2007; AES, 2012

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Figure 3-1
Seismic Hazards

TABLE 3.1-1
MODIFIED MERCALLI INTENSITY SCALE

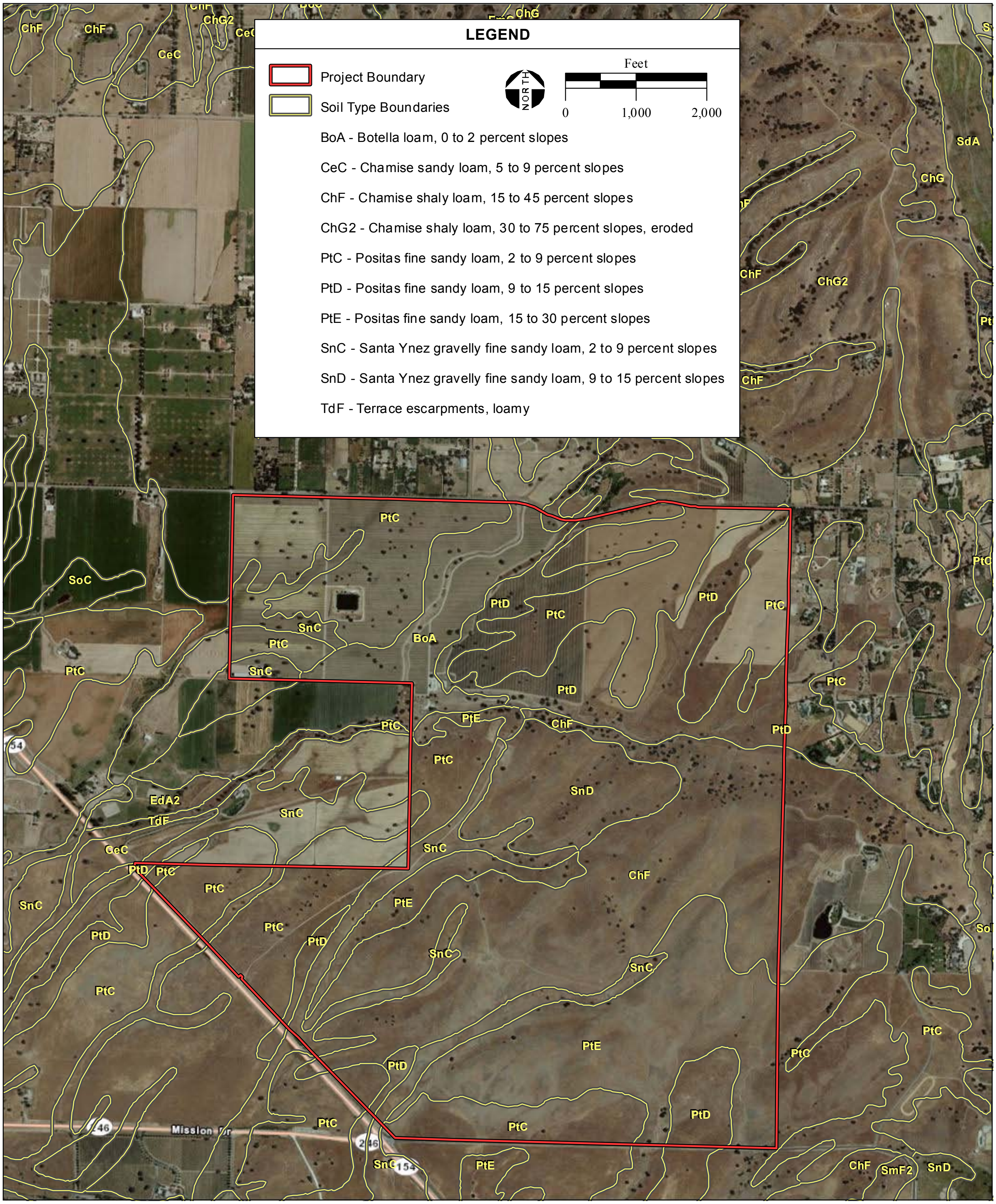
Intensity Value	Intensity Description	Average Peak Acceleration[a]
I.	Not felt except by a very few persons under especially favorable circumstances.	< 0.0015*g*
II.	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	< 0.0015*g*
III.	Felt quite noticeably indoors, especially on upper floors of buildings, but many persons do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration similar to a passing of a truck. Duration estimated.	< 0.0015*g*
IV.	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	0.015*g*-0.02*g*
V.	Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.	0.03*g*-0.04*g*
VI.	Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.	0.06*g*-0.07*g*
VII.	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving cars.	0.10*g*-0.15*g*
VIII.	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	0.25*g*-0.30*g*
IX.	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.50*g*-0.55*g*
X.	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 0.60*g*
XI.	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 0.60*g*
XII.	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 0.60*g*

Note: [a] *g* is gravity = 980 centimeters per second squared.
Source: Bolt, 1988

TABLE 3.1-2
PROJECT SITE SOILS

Map Unit Symbol	Map Unit Name	Occurs on Parcels	Slope Range	Erosion Hazard	Drainage Class	Flooding Occurrence	Percent of Total Project Site (Approximate)
BoA	Botella loam, 0 to 2 percent slopes	1-3	0-2 %	Moderate	Well Drained	None	5.6 %
CeC	Chamise sandy loam, 5 to 9 percent slopes	5	5-9 %	Slight	Well Drained	None	0.001%
ChF	Chamise shaly loam, 15 to 45 percent slopes	2-4	15-45 %	Slight	Well Drained	None	21.4 %
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	2	30-75 %	Slight	Well Drained	None	0.1 %
PtC	Positas fine sandy loam, 2 to 9 percent slopes	1-5	2-9 %	Moderate	Well Drained	None	30.2 %
PtD	Positas fine sandy loam, 9 to 15 percent slopes	1-5	9-15 %	Moderate	Well Drained	None	13.4 %
PtE	Positas fine sandy loam, 15 to 30 percent slopes	2-4	15-30 %	Moderate	Well Drained	None	15.8 %
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	1, 3, 5	2-9 %	Slight	Moderately Well Drained	None	7.8 %
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	2	9-15 %	Slight	Moderately Well Drained	None	5.7 %
TdF	Terrance escarpments, loamy	3	n/r	n/r	n/r	n/r	0.003 %

Source: NRCS, 2011a



SOURCE: USDA NRCS Soil Survey of Santa Barbara County, 2004-2009; NAIP Aerial Photograph, 6/17/2009; AES, 2012

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Figure 3-2
Soils Map

3.1.5 Soil Hazards

Soil Erosion

Soil erosion is the wearing and removal of soil materials from the ground surface and the transportation of these soil materials resulting in deposition elsewhere. Mechanisms of soil erosion include storm water runoff and wind, as well as human activities, such as changes in drainage patterns and removal of vegetation. Factors that influence erosion include physical properties of the soil, topography (slope), and annual rainfall and peak intensity. The United States Department of Agriculture (USDA) rates the erosion potential of a map unit by taking all of the above into consideration. The ratings range from “slight” to “very severe.” The erosion hazard ratings of the 10 soils within the project site are provided in **Table 3.1-2**. As shown therein, approximately 65 percent of the project site contains soils with an erosion hazard rating of moderate, while the remaining soils have a slight erosion hazard (NRCS, 2011a).

Corrosivity

The portion of the project site proposed for development (Parcels 2 through 4) contains soils that are corrosive to steel and/or concrete (NRCS, 2011a; **Appendix A**).

Liquefaction

Liquefaction involves soils that become highly saturated and lose their cohesive strength and subsequently act as a liquid, rather than a solid mass. Soils comprised of sands and inland fill in areas with high groundwater tables or substantial rainfall are subject to liquefaction during intense seismic shaking events. Although various soil types on the project site are comprised of sands, the area receives moderate annual rainfall levels and static groundwater levels for wells at the site are greater than 100 feet below ground surface (refer to **Section 3.2.2**); therefore, the soils found on the project site are not at risk of liquefaction.

Landslides

Landslides are defined as rock falls, topples, slides, spreads, and debris flows, which are more commonly referred to as mudslides. Landslides can occur as a result of seismic events, periods of heavy rainfall, dramatic changes in groundwater levels, or unstable disturbed slopes created during construction activities. As shown in **Figure 3-1** the project site is in an area of moderate landslide susceptibility.

3.1.6 Mineral Resources

Mining in Santa Barbara County is limited to three major classes of mineral resources: mineral fuels (petroleum and natural gas); one metallic mineral (mercury); and the non-metallic minerals diatomite, limestone, phosphate, rock, sand, and gravel. Of the minerals, fuels account for over 50 percent of mining activities while commercial mercury mining has not been conducted within the County in recent years. According to the Santa Barbara County Comprehensive Plan, there are no mineral resources of importance to the County or Mineral Resource Zones (considered valuable by the State of California) within project boundaries (Santa Barbara County, 2011b).

3.2 WATER RESOURCES

The following section describes the existing surface water, drainage, flooding, groundwater, and water quality conditions in the area surrounding the project site.

3.2.1 SURFACE WATER, DRAINAGE, AND FLOODING

WATERSHEDS AND HYDROLOGY

The project site is located within the Santa Ynez Hydrologic Unit (HU) which is characterized by a broad flat valley containing marine terraces, rolling hills, and rugged mountains. The Santa Ynez HU contains five major hydrologic areas (HA): Lompoc, Santa Rita, Buelton, Los Olivos, and the Headwater. The project site is located in the Los Olivos HA, which encompasses the drainage watershed of the Santa Ynez River from the headwaters at Cachuma Lake to Solvang. The Santa Ynez River, located approximately 2 miles south of the project site, is one of the largest rivers on the Central Coast of California. Approximately 90 miles long, the Santa Ynez River drainage basin covers approximately 900 square miles. It flows east to west through the Santa Ynez Valley until it terminates at the Pacific Ocean. Zanja de Cota Creek, a tributary of the Santa Ynez River, is located approximately one mile to the west of the project site. Zanja de Cota Creek is the major water feature in the Los Olivos HA. Originating northeast of State Route (SR) 154, the creek flows southwest approximately seven miles until its confluence with the Santa Ynez River.

The project area watershed includes a mixture of land uses including rural residential, agriculture, and open space. Tributary drainages and creeks within the project area watershed are either ephemeral or have minor base flows associated with agricultural or landscape irrigation runoff and flow into tributaries of the Zanja de Costa Creek (or percolate into the ground prior to reaching a tributary). Water resources on the project site include eight ephemeral drainages, a manmade basin located on the northwestern portion of the project site, a vernal pool, and several seasonal wetlands. Surface water resources are further addressed under waters of the U.S. in **Section 3.4**.

DRAINAGE

The Santa Ynez area received 20.54 inches of average annual precipitation from March 1, 1950 to November 25, 2011, with the majority of rain falling between December and March (WRCC, 2012). The total watershed contributory to the project is approximately 9.25 square miles and drainage enters the project site from seven locations (**Appendix D**). Slopes on the project site range from one to four and a half percent. Approximately 95 percent of the project site is overlain by type D soils. Type D soils are identified as having very slow infiltration rates and high runoff potential. The remaining five percent of the project site is mapped with soil type B, which has moderate infiltration rates. Drainage flows on the site are influenced by several ephemeral drainages and seasonal wetland swales. There is also a manmade water storage basin located on Parcel 1 that is used by the vineyard operation. There are eight points of off-site discharge under existing conditions. Runoff from the northern and western portion of the project site (Parcels 1, 2, 5, and the north and western portions of Parcel 3) discharges onto adjacent private properties to the north/northwest of the project site.

Runoff from the remaining area of Parcel 3 and the northwest portion of Parcel 4 flows into an existing culvert beneath Highway 154 to the southeast. The remaining area of Parcel 4 drains into culverts beneath Armour Ranch Road to the south.

FLOODING

Executive Order 11988 pertaining to floodplain management states that each federal agency shall "provide leadership and shall take action to reduce the risk of flood loss." In order for each agency to carry out its responsibility, the order requires that each agency determine whether a project is located within a floodplain and consider alternatives to a project's location within a floodplain. If a project must reside on a floodplain, the agency must minimize any potential impacts.

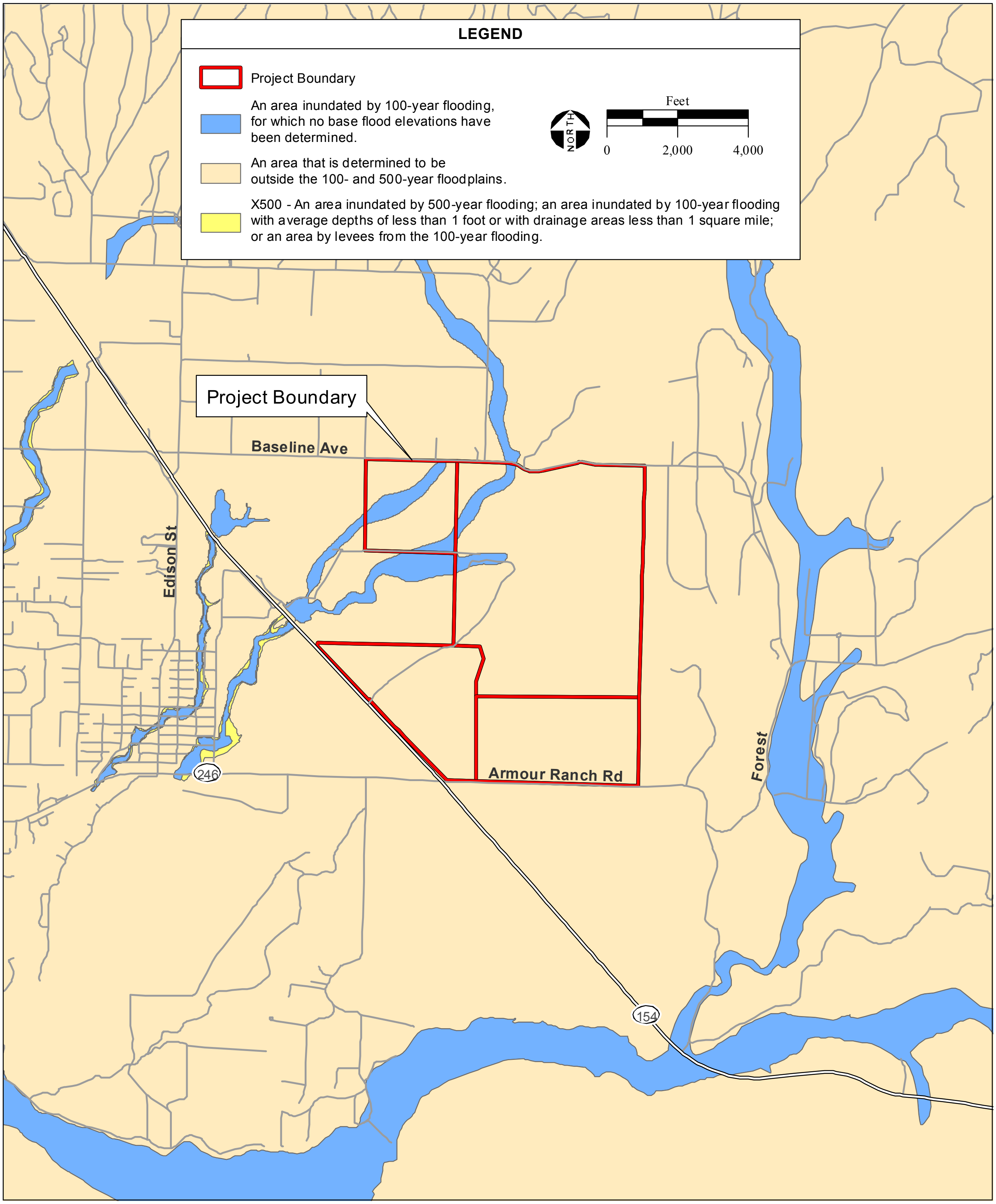
The Federal Emergency Management Agency (FEMA) is responsible for predicting the potential for flooding in most areas. FEMA routinely performs this function through the issuance of Flood Insurance Rate Maps (FIRMs), which depict various levels of predicted flood inundation. The project site is included within FIRM numbers 06083C0814F, 06083C0820F, and 06083C1085F which identify that the riparian corridors on Parcels 1 and 2 within the existing vineyard and within the northern most portion of Parcel 3 are designated as Zone A, or areas subject to inundation by the one percent annual chance flood event (**Figure 3-3**). There are no habitable structures within the Zone A designated areas on the project site. The remaining parcels (Parcels 3, 4, and 5) are located in Zone X, which is defined as an area that is determined to be outside the 100- and 500-year floodplains (FEMA, 2011).

3.2.2 GROUNDWATER

GROUNDWATER SUPPLY

The project site lies within the Santa Ynez Uplands Groundwater Basin (Uplands Basin), one of several south coast basins situated along a narrow alluvial plain between the San Rafael Mountains to the north and east, the Santa Ynez Mountains to the south, and the Pacific Ocean to the west (**Appendix C**). The Uplands Basin is part of the larger Santa Ynez River Groundwater Basin and consists of unconsolidated deposits covering approximately130 square miles north of the Santa Ynez River. Groundwater levels are influenced by riparian underflow in local tributaries to and from the Santa Ynez River, precipitation, and irrigation using surface water from Lake Cachuma and the State Water Project (Tetra Tech, 2010). Four communities (unincorporated Santa Ynez, Los Olivos, and Ballard and the City of Solvang), scattered residential development, farms, and ranches are the main water users of the Uplands Basin.

The Upland Basin consists of unconsolidated deposits of sand, silt, clay, and gravel underlain by consolidated, relatively impermeable bedrock of Tertiary age or older (Tetra Tech, 2010). The Paso Robles Formation is the principle water bearing unit of the basin with a maximum thickness of approximately 1,500 feet. The formation consists of poorly consolidated gravel, sand, silt, and clay. The surface of the basin is overlain with Pleistocene marine terrace deposits and recent alluvial deposits along riparian creekbeds. The Pliocene-age Careaga Formation lies underneath the Paso Robles Formation as the unconsolidated fine to



SOURCE: FEMA FIRM Data, 2005; FEMA Q3 Flood Data, 1996; AES, 2013

Figure 3-3
FEMA Flood Zones

medium grained marine sand and silt (DWR, 2004). Although it contains waterbearing units, this formation is generally only utilized in the southern margins of the basin where it has been uplifted to shallow depths (**Appendix C**). The Uplands Basin has a surface area of 83,200 acres (County of Santa Barbara, 1994). Groundwater flow in the Uplands Basin is generally north to south, with natural seepage into creeks and drainages. The California Department of Water Resources estimates the storage capacity of the Upland Basin at about 10 million acre feet (af), and the available water in storage is estimated to be approximately 900,000 af (DWR, 2004). The Uplands Basin is in a state of overdraft by about 2,000 AFY based on 2001 estimates (**Appendix C**). However, groundwater levels in U.S. Geological Survey monitored wells to the north, east, and west of the project site have risen since the mid- 1990s due to increased importation of supplemental water that offsets pumping in the basin.

The Paso Robles and Careaga Formations have been folded into a series of northwest-trending anticlines and synclines in the project area. Of these features, the San Lucas Anticline brings consolidated nonwater-bearing rocks to or near the ground surface south of the project site's southern boundary. Water bearing zones of the Paso Robles Formation become increasingly thick and both the Paso Robles and the Careaga Formation become increasingly deep from south to north across the project site to the roughly east-west trending Baseline fault that crosses the northern half of the project site (**Appendix C**).

Municipal Water Supply

The Santa Ynez Valley is a relatively flat agricultural area that includes the communities of Los Olivos, Ballard, Santa Ynez, and Solvang. Until the 1950s, local groundwater supplied all water needs. Water in the vicinity of the project site is supplied by either private groundwater wells or service connections to the Santa Ynez River Water Conservation District, Improvement District #1. Municipal Water supply is further addressed under Public Services in **Section 3.9**. Presently, water needs for the project site are met entirely through groundwater resources.

Existing Wells

Irrigation for the project site is provided by three on-site wells (**Appendix C**). Two active wells are used for irrigation (Well #2 and #3) of the 256 acre vineyard and one ranch/domestic well (Ranch House Well) provides water for the ranch house and for stock watering (**Appendix C**). Well #3 produces between 900 to 1,200 gallons per minute (gpm). During a four-hour pump test in November 1984, the static water level was 137 feet depth. Well #2 is located approximately one half mile east of Well #3 and is a total depth of 740 feet with perforation depth intervals from 290 to 520 feet, 550 to 620 feet, and 660 to 730 feet. In December 1999, the static water level for Well #2 was measured at 178 feet depth. Water is pumped from these wells into a lined reservoir for irrigation located on Parcel 1 (**Appendix C**). The total depth of the Ranch House Well is at 505 feet and static water level in July 2005 was measured at 105 feet depth. An eight-inch diameter well is located within the north-central portion of Parcel 4; however, the well was observed to be dry in March 2012 (**Appendix C**).

3.2.3 WATER QUALITY

SURFACE WATER QUALITY

The Clean Water Act (CWA) (33 USC 1251-1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The U.S. Environmental Protection Agency (EPA) is delegated as the authoritative body under the CWA. Important sections of the CWA are as follows:

- *Sections 303* and *304* provide for water quality standards, criteria, and guidelines. Section 303(d) requires states to identify impaired water bodies and develop total maximum daily loads (TMDLs) for the contaminant(s) of concern.
- *Section 401* (Water Quality Certification) requires an applicant for any federal permit that proposes an activity that may result in a discharge to waters of the U.S., to obtain certification that the discharge will comply with other provisions of the Act.
- *Section 402* establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the U.S. Each NPDES permit contains limits on pollutant concentrations of wastes discharged to surface waters to prevent degradation of water quality and protect beneficial uses.
- *Section 404* regulates the discharge of dredged and fill material into waters of the U.S. The U.S. Army Corps of Engineers (USACE) requires that a permit be obtained if a project proposes placing structures within, over, or under navigable waters and/or discharging dredged or fill material into waters below the ordinary high-water mark. The USACE has established a series of nationwide permits (NWPs) that authorize certain activities in waters.

Antidegradation Policy

The federal antidegradation policy (40 CFR Part 131.6) is designed to protect water quality and water resources. The policy directs states to adopt a statewide policy that includes the following primary provisions: (1) existing instream uses and the water quality necessary to protect those uses shall be maintained and protected; (2) where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. Each state must also develop procedures to implement its anti-degradation policy through water quality management processes. Each state's anti-degradation policy must include implementation methods consistent with the provisions outlined in 40 CFR 131.12 (EPA, 1994).

Complying with the anti-degradation provision of the CWA, the Central Coast Regional Water Quality Control Board (CCRWQCB) has established general water quality objectives for all inland surface waters under state jurisdiction to protect designated beneficial uses. The Water Quality Control Plan for the Central Coast Region (Basin Plan) outlines these surface water quality objectives which are summarized in **Table 3.2-1**. **Table 3.2-2** lists the specific water quality objects outlined in the Basin Plan by parameter for surface waters under state jurisdiction within the Cachuma sub-area of the Santa Ynez River.

TABLE 3.2-1
CCRWQCB INLAND SURFACE WATER GENERAL QUALITY OBJECTIVES

Property/Constituent	Water Quality Objective
Bacteria	In waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.
Biostiumulatory Substances	Water shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
Chemical Constituents	Where wastewater effluents are returned to land for irrigation uses, regulatory controls shall be consistent with Title 22 of the California Code of Regulations and other relevant local controls
Color	Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses. Coloration attributable to materials of waste origin shall not be greater than 15 units or 10 percent above natural background color, whichever is greater
Dissolved Oxygen	For waters not mentioned by a specific beneficial use, dissolved oxygen concentration shall not be reduced below 5.0 mg/l at any time. Median values should not fall below 85 percent saturation as a result of controllable water quality conditions.
Floating Materials	Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.
Oil and Grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
Other Organics	Waters shall not contain organic substances in concentrations greater than the following: Methylene Blue Activated Substances 0.2 mg/l Phenols 0.1 mg/l PCB's 0.3 mg/l Phthalate Esters 0.002 mg/l
pH	For waters not mentioned by a specific beneficial use, the pH value shall not be depressed below 7.0 or raised above 8.5.
Pesticides	No individual pesticide or combination of pesticides shall reach concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life. For waters where existing concentrations are presently nondetectable or where beneficial uses would be impaired by concentrations in excess of nondetectable levels, total identifiable chlorinated hydrocarbon pesticides shall not be present at concentrations detectable within the accuracy of analytical methods prescribed in Standard Methods for the Examination of Water and Wastewater, latest edition, or other equivalent methods approved by the Executive Officer.
Radioactivity	Radionuclides shall not be present in concentrations that are harmful to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life.

Property/Constituent	Water Quality Objective
Sediment	The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Settleable Materials	Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.
Suspended Materials	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
Tastes and Odors	Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.
Temperature	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.
Toxicity	All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in, human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, toxicity bioassays of appropriate duration, or other appropriate methods as specified by the Regional Board. Survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality conditions, shall not be less than that for the same water body in areas unaffected by the waste discharge or, when necessary, for other control water that is consistent with the requirements for "experimental water" as described in Standard Methods for the Examination of Water and Wastewater, latest edition. As a minimum, compliance with this objective shall be evaluated with a 96-hour bioassay. In addition, effluent limits based upon acute bioassays of effluents will be prescribed where appropriate, additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available, and source control of toxic substances is encouraged. The discharge of wastes shall not cause concentrations of unionized ammonia (NH3) to exceed 0.025 mg/l (as N) in receiving waters.
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increase in turbidity attributable to controllable water quality factors shall not exceed the following limits: 1. Where natural turbidity is between 0 and 50 Jackson Turbidity Units (JTU), increases shall not exceed 20 percent. 2. Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 JTU. 3. Where natural turbidity is greater than 100 JTU, increases shall not exceed 10 percent. Allowable zones of dilution within which higher concentrations will be tolerated will be defined for each discharge in discharge permits.

Source: CCRWQCB, 2006

TABLE 3.2-2
GENERAL WATER QUALITY OBJECTIVES FOR THE SANTA YNEZ SUB-BASIN

SUB-AREA	Total Dissolved Solids (mg/l)	Chlorides (mg/l)	Sulfates (mg/l)	Boron (mg/l)	Sodium (mg/l)
Cachuma Reservoir	600	20	220	0.4	50

Source: CCRWQBC, 2011

The Santa Ynez River, located approximately 2 miles south of the project site, is on California's 2010 list for impaired water bodies [Section 303(d) of the CWA]. From Cachuma Lake to the City of Lompac, the Santa Ynez River is listed for total dissolved solids, sodium, temperature, and sedimentation/siltation (CASWB, 2010). Sources of contamination may include agriculture, resource extraction, flow regulation and modification, natural resources, and urban runoff. According to the State Water Board, Total Maximum Daily Load limitations will be completed by 2021.

Zanja De Cota Creek, located west of the project site, is not listed on California's 2010 list for impaired water bodies. As it flows through the Tribe's Reservation approximately 2 miles to the southwest, water quality samples are collected on a monthly basis by the Tribe. This water quality data is used to evaluate the overall ecosystem health and help identify potential sources of pollution in the creek. According to the Tribe, routine monitoring of Zanja De Cota Creek has indicated that water quality meets Tribal standards during dry weather conditions. During rainfall events, the water quality of the creek becomes temporarily impaired due to polluted stormwater runoff.

GROUNDWATER QUALITY

In order to protect drinking water supplies under the mandate of the Safe Drinking Water Act of 1974, the USEPA defines National Primary Drinking Water Regulations (primary standards). These are legally enforceable standards that apply to public water systems. These standards are established to protect human health by limiting the levels of contaminants in drinking water. The EPA also defines National Secondary Drinking Water Regulations (secondary standards).

The CCRWQCB has established general water quality objectives for all groundwaters under state jurisdiction to protect designated beneficial uses. The water quality objectives that govern off-Reservation groundwater quality are summarized in **Table 3.2-3**.

The Basin Plan provides specific groundwater quality objectives of state waters for the Central Coast region, including its sub-basin and sub-areas. **Table 3.2-4** lists the specific groundwater quality objects by parameter for the Santa Ynez Sub-basin (HU) and Sub-Area.

Groundwater quality problems most frequently encountered in the Central Coastal Basin pertain to hardness (CCRWQBC, 2011). With regards to the Uplands Basin, groundwater quality data is not consistently available to accurately assess the overall trends related to groundwater quality (County of Santa Barbara, 1994). Portions of the Uplands Basin have severe septic water problems due to interleaving of impermeable clays and silts with saturated sands and gravels within surface quaternary terrace deposits. This has led to instances of septic system failure and the contamination of surface and near surface waters by septic system effluent, and has also led to significant nitrate contamination of the main groundwater body to the southern portion of the basin.

TABLE 3.2-3
CCRWQCB GROUNDWATER QUALITY OBJECTIVES

Property/Constituent	Water Quality Objective
Tastes and Odors[1]	Groundwaters shall not taste or order producing substances in concentrations that adversely affect beneficial uses.
Radioactivity[1]	Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life; or result in the accumulation of radionuclides in the food web to an extent which present a hazard to human, plant, animal, or aquatic life.
Bacteria[2]	The median concentration of coliform organisms over any seven-day period shall be less than 2.2 100/ml.
Chemical Constituents[2]	Groundwaters shall not contain concentrations of organic chemicals in excess of the limiting concentrations set forth in the California Code of Regulations, Title 22, Chapter 15, Article 5.5, Section 64444.5, Table 5, and listed in Table 3-1.
Radioactivity[2]	Groundwaters shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Chapter 15, Article 5.5, Section 64444.5, Table 4.
Organic Chemicals[2]	Groundwaters shall not contain concentrations of organic chemicals in excess of the limiting concentrations set forth in California Code of Regulations, Title 22, Chapter 15, Article 5.5, Section 64444.5, Tables 2 and 3.

1Indicates General Objectives

2 Indicates objectives for Municipal and Domestic Supply

Source: CCRWQCB 2006

TABLE 3.2-4
GENERAL GROUNDWATER QUALITY OBJECTIVES FOR THE SANTA YNEZ SUB-BASIN

SUB-AREA	Total Dissolved Solids (mg/l)	Chlorides (mg/l)	Sulfates (mg/l)	Boron (mg/l)	Sodium (mg/l)	Nitrogen (mg/l)
Santa Ynez	600	50	10	0.5	20	1

Source: CCRWQBC, 2011

Water quality samples were obtained at Well #2 on December 22, 1999; no other water quality results were available for the onsite supply wells. The samples were analyzed for general minerals as well as general physical and inorganic chemicals. At the time, no analytes were present in concentrations above the primary or secondary standards for drinking water.

3.3 AIR QUALITY

The following describes existing air quality conditions, including greenhouse gases (GHG) that occur within the project site and general vicinity. Impacts of the project alternatives relating to GHG emissions are discussed in the cumulative analysis in **Section 4.4**.

3.3.1 REGULATORY CONTEXT

CLEAN AIR ACT

The Federal Clean Air Act (CAA) was enacted for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. Basic components of the CAA and its amendments include national ambient air quality standards (NAAQS) for major air pollutants and state implementation plans (SIPs) to ensure country-wide NAAQS compliance. Regulation of air pollution is achieved through both the NAAQS and emissions limitations for individual sources of air pollutants established through permitting requirements. The EPA is the federal agency responsible for identifying criteria air pollutants (CAPs) for which NAAQS are established, updating and revising the NAAQS, and approving and overseeing SIPs as they relate to compliance with the CAA. The EPA has identified six CAPs that are both common indicators of regional air quality and detrimental to human health. The six CAPs are ozone, carbon monoxide (CO), particulate matter (≤ 10 microns and ≤ 2.5 microns in diameter [PM_{10} and $PM_{2.5}$]), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. The NAAQS, appropriate metrics, and violation criteria for the six CAPs are presented in **Table 3.3-1**.

TABLE 3.3-1
NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Standards		Violation Criteria
		parts per million (ppm)	micrograms per cubic meter (μg/m³)	
Ozone	8 hours	0.075	157	If exceeded on more than 3 days in 3 years.
CO	8 hours	9	10,000	If exceeded on more than 1 day per year.
PM_{10}	24-hour	N/A	150	If exceeded on more than 1 day per year.
$PM_{2.5}$	24-hour	N/A	35	If exceeded on more than 1 day per year.
NO_2	Annual	0.053	100	If exceeded.
	1-hour	0.100	N/A	If exceeded on more than 3 days in 3 years.
SO_2	1-hour	0.075	N/A	If exceeded on more than 1 day per year.
Lead	Quarter	N/A	1.5	If exceeded on more than 1 day per year.

Source: SBCAPCD, 2011.

Federal General Conformity

Under the General Conformity Rule of the CAA, recently updated in 2010, the lead agency with respect to a federal action is required to demonstrate that a proposed federal action conforms to the applicable SIP(s) before the action is taken. There are two phases to a demonstration of general conformity:

1) The Conformity Review process, which entails an initial review of the federal action to assess whether a full conformity determination is necessary, and

2) The Conformity Determination process, which requires that a proposed federal action be demonstrated to conform to the applicable SIP(s).

The Conformity Review requires the lead agency to compare estimated emissions attributable to the federal action to the applicable general conformity *de minimis* threshold(s) for all CAPs for which the applicable air basin or region is in nonattainment for the applicable NAAQS. If the emission estimate(s) from step one is below the applicable *de minimis* threshold(s), then a General Conformity Determination is not required under the CAA (40 CFR Part 93). If emission estimates are greater than *de minimis* levels, the lead agency must conduct a Conformity Determination.

Federal Class I Areas

Title 1, Part C of the CAA was established, in part, to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value. The CAA designates all international parks, national wilderness areas, and memorial parks larger than 5,000 acres and national parks larger than 6,000 acres as "Class I areas." The CAA prevents significant deterioration of air quality in Class I areas under the Prevention of Significant Deterioration (PSD) program. The PSD Program protects Class I areas by allowing only a small increment of air quality deterioration in these areas by requiring assessment of potential impacts on air quality related values of Class I areas.

Any major source of emissions within 100 kilometers (km) (62.1 miles) from a federal Class I area is required to conduct a pre-construction review of air quality impacts on the area(s). A "major source" for the PSD program is defined as a facility that will emit (from direct stationary sources) 250 tons per year (tpy) of regulated pollutant. For certain industries, these requirements apply to facilities that emit (through direct stationary sources) 100 tpy or more of a regulated pollutant. Mobile sources (i.e. vehicle emissions) are by definition not stationary sources and are therefore not subject to the PSD program.

Federal Hazardous Air Pollutant Program

Title III of the CAA requires the EPA to promulgate National Emissions Standards for Hazardous Air Pollutants (NESHAPs). The NESHAPs may differ between regional sources and area sources of hazardous air pollutants (HAPs). Major sources are defined as stationary sources with potential to emit more than 10 tpy of any HAP or more than 25 tpy of any combination of HAPs (all other non-major sources are considered area sources under the NESHAPs program). The emissions standards were promulgated in two phases. In the first phase (1992–2000), the EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable for major sources. For area sources, the standards were based on generally available control technology. In the second phase (2001–2008), the EPA promulgated health risk–based emissions standards necessary to address risks remaining after implementation of the technology-based NESHAP standards.

In addition to standards for stationary sources of HAPs, the CAA also requires the EPA to promulgate vehicle or fuel standards to include reasonable controls for toxic emissions, addressing at a minimum benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 of the CAA requires the use of reformulated gasoline in selected U.S. cities (those with the most severe ozone nonattainment conditions) to further reduce mobile-source emissions. NESHAP regulations are also commonly used to ensure the emission of HAPs (such as asbestos) are reduced or eliminated during construction through a permitting process.

CLIMATE CHANGE

Federal

In 2002, President George W. Bush established a national policy goal of reducing the GHG emission intensity (tons of GHG emissions per million dollars of gross domestic product) of the U.S. economy by 18% by 2012. No binding reductions were associated with the goal. Rather, the EPA administers a variety of voluntary programs and partnerships with GHG emitters, in which the EPA partners with industries producing and utilizing GHGs to reduce associated emissions.

Clean Air Act

In *Massachusetts et al.* vs. *Environmental Protection Agency et al.* (April 2, 2007), the US Supreme Court ruled that the CAA authorizes the EPA to regulate CO_2 emissions from new motor vehicles. The Court did not mandate that the EPA enact regulations to reduce GHG emissions, but found that the only instances where the EPA could avoid taking action were if it found that GHGs do not contribute to climate change or if it offered a “reasonable explanation” for not determining that GHGs contribute to climate change. On December 15, 2009, the EPA issued a final endangerment and cause finding (74 FR 66496), stating that high atmospheric levels of GHGs “are the unambiguous result of human emissions, and are very likely the cause of the observed increase in average temperatures and other climatic changes.” The EPA further found that “atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202 of the Clean Air Act.” The finding itself does not impose any requirements on industry or other entities.

U.S. Environmental Protection Agency

On December 7, 2009, EPA Administrator Lisa Jackson signed a Final Action, under Section 202(a) of the CAA, finding that six key well-mixed greenhouse gases constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to the climate change problem. The following are the most recent regulatory actions taken by the EPA:

- On July 23, 2009, the EPA published a final “rule which proposes to establish the criteria for including sources or sites in a Registry of Recoverable Waste Energy Sources (Registry),” as required by the Energy Independence and Security Act of 2007. Waste energy can be used to produce clean electricity. The clean electricity produced by waste energy would reduce the need for non-renewable forms of electricity production, thus reducing GHG emissions.

- On September 15, 2009, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) proposed a new national program that would reduce GHG emissions and improve fuel economy for all new cars and trucks sold in the United States. The EPA proposed the first national GHG emissions standards under the Clean Air Act, and NHTSA proposed an increase in the Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act.

- In response to the FY2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110–161), the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. Signed by the Administrator on September 22, 2009, the rule requires that suppliers of fossil fuels and industrial GHGs, manufacturers of vehicles and engines outside of the light duty sector, and facilities that emit 25,000 metric tons or more of GHGs per year to submit annual reports to the EPA. The rule is intended to collect accurate and timely emissions data to guide future policy decisions on climate change.

- On September 30, 2009, the EPA proposed new thresholds for GHGs that define when CAA permits under the New Source Review and title V operating permits programs would be required.

- In February, 2010 The CEQ Chair released a memorandum, *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*. The memorandum provides guidance on how project-related GHG emission should be analyzed in NEPA documents. The Draft Guidance provides that a NEPA climate change analysis shall provide quantification and mitigation to reduce GHG emissions. The guidance also provides that 25,000 metric tons of GHG emissions per year may be a helpful guideline to assist lead agencies in making informed decisions on climate change impacts resulting from a project subject to NEPA. The guidance notes that the 25,000 metric tons is not an indicator of a threshold of significant effects, but rather, it is an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving emissions of GHGs.

State

California has been a leader among the states in outlining and aggressively implementing a comprehensive climate change strategy that is designed to result in a substantial reduction in total statewide GHG emissions in the future. California's climate change strategy is multifaceted and involves a number of state agencies implementing a variety of state laws and policies. A brief summary of these laws and policies is provided below.

Assembly Bill 1493 (AB 1493)

Signed by the Governor in 2002, AB 1493 requires that the California Air Resources Board (CARB) adopt regulations requiring a reduction in GHG emissions emitted by cars in the state. AB 1493 is intended to apply to 2009 and later vehicles. On June 30, 2009, the EPA granted a CAA waiver, which the state needs in order to implement AB 1493.

Executive Order S-3-05 (EO S-3-05)

EO S-3-05 was signed by the Governor on June 1, 2005. EO S-3-05 established the following statewide emission reduction targets:

- Reduce GHG emissions to 2000 levels by 2010,
- Reduce GHG emissions to 1990 levels by 2020, and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

EO S-3-05 created a "Climate Action Team" (CAT) headed by the California EPA and including several other state agencies. The CAT is tasked by EO S-3-05 with outlining the effects of climate change on California and recommending an adaptation plan. The CAT is also tasked with creating a strategy to meet the emission reduction target required by the EO. In April 2006, the CAT published an initial report that accomplished these two tasks.

Assembly Bill 32 (AB 32)

Signed by the Governor on September 27, 2006, AB 32 codifies a key requirement of EO S-3-05, specifically the requirement to reduce statewide GHG emissions to 1990 levels by 2020. AB 32 tasks CARB with monitoring state sources of GHGs and designing emission reduction measures to comply with the law's emission reduction requirements. However, AB 32 also continues the CAT's efforts to meet the requirements of EO S-3-05 and states that the CAT should coordinate overall state climate policy.

In order to accelerate the implementation of emission reduction strategies, AB 32 requires that CARB identify a list of discrete early action measures that can be implemented relatively quickly. In October 2007, CARB published its expanded list of early action measures that it estimated could be implemented and would serve to meet about a quarter of the required 2020 emissions reductions (CARB, 2007). In order to assist CARB in identifying early action measures, the CAT published a report in April 2007 that updated its 2006 report and identified strategies for reducing GHG emissions (CAT, 2007). In its October 2007 report, CARB cited the CAT strategies and other existing strategies that may be utilized in achieving the remainder of the emissions reductions. AB 32 requires that CARB prepare a comprehensive "scoping plan" that identifies all strategies necessary to fully achieve the required 2020 emissions reductions. Consequently, CARB released its scoping plan to the public in early December 2008, and approved the scoping plan on December 12, 2008.
The scoping plan calls for an achievable reduction in California's carbon footprint. Reduction of GHG emissions to 1990 levels are proposed, which equates to cutting approximately 30 percent of emissions estimated for 2020, or about 15 percent of today's levels. The scoping plan relies on existing technologies

and improving energy efficiency to achieve the 30 percent reduction in GHG emission levels by 2020. The scoping plan provides the following key recommendations to reduce GHG emissions:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a state-wide renewable energy mix of 33 percent;
- Developing a state-wide cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long term commitment to AB 32 implementation.

Executive Order S-01-07 (EO S-01-07)

EO S-01-07 was signed by the Governor on January 18, 2007. It mandates a statewide goal to reduce the carbon intensity of transportation fuels by at least 10 percent by 2020. This target reduction was identified by CARB as one of the AB 32 early action measures identified in its October 2007 report.

Senate Bill 97 (SB 97)

Signed by the Governor on August 24, 2007, SB 97 requires that the Governor's Office of Planning and Research (OPR) prepare California Environmental Quality Act (CEQA) guidelines for evaluating the effects of GHG emissions and for mitigating such effects. The Natural Resources Agency adopted these guidelines in December 2009.

Although CEQA does not apply to the Proposed Action, the methodology for analyzing climate change impacts in this document is consistent with the CEQA Guidelines addressing GHGs.

Local

In September 2011, Santa Barbara County completed a Climate Action Study, which contains climate action strategies for reducing GHG emissions in the County (Santa Barbara County, 2011a). The County's GHG reduction strategies were developed to assist the State in meeting its goals set forth by AB 32. **Table 3.3-2** provides the County's GHG reduction strategies that pertain to Alternative A.

TABLE 3.3-2
SANTA BARBARA GHG REDUCTION STRATEGIES

Measures	Potential Actions
Energy Efficiency	Increase Utility Energy Efficiency Programs Reduce/promote reduction of energy consumption
Renewable Portfolio Standard	Achieve a 33 percent renewable portfolio standard
Green Buildings	Adopted Green Building Code Transit oriented planning Exceed Title 24 standards
Recycling and Waste	Increase diversion from landfills
Sustainable Forests	Promote urban forests Make land use decisions that conserve forest lands
Water	Increase water recycling Reuse urban runoff
Transportation	Transit oriented planning

Source: Santa Barbara County, 2011a.

3.3.2 EXISTING AIR QUALITY

The project site is located in the South Central Coast Air Basin (SCCAB), which includes Santa Barbara, San Luis Obispo, and Ventura counties. The project site is currently under the jurisdiction of the Santa Barbara County Air Pollution Control District (SBCAPCD); however, once the project site is taken into trust the jurisdiction would shift to the EPA.

REGIONAL METEOROLOGY

The climate and topography of a region commonly dictates a region's air quality. Surface and upper-level wind flow varies both seasonally and geographically in Santa Barbara County and inversion conditions common to the area can affect the vertical mixing and dispersion of CAPs. Santa Ana winds, which are northeasterly warm winds, occur primarily during the fall and winter months. Upper-level winds are generally from the north and northwest throughout the year, but southerly and easterly winds occur in the morning during the winter. Maximum summer temperatures average approximately 70 degrees Fahrenheit (^{o}F), while minimum winter temperatures average approximately 30^{o}F. Surface temperature inversions (up to 500 feet) are frequent in the winter and subsidence inversions (1,000-2,000 feet), inversions that result in an increase in temperature with height and are directly related to the stability of the atmosphere, occur frequently during warmer months. The terrain and change in orientation of the coastline from north-to-south to east–to-west at Point Conception (located approximately 20 miles south of the project site) can cause counterclockwise circulation eddies to form east of Point Conception dispersing inland air pollutants.

REGIONAL AIR QUALITY

NAAQS Designations

As shown in **Table 3.3-3**, the SCCAB is in attainment or is unclassified for all CAPs under the current NAAQS designation. Since the initial designation, the EPA lowered the federal 8-hour ozone standard from 0.080 to 0.075 parts per million (ppm) and sent notice to the SBCAPCD that the SCCAB may be designated “marginal” nonattainment based on 2008-2010 monitoring data. CARB forwarded a recommendation to EPA in October 2011, that SCCAB be designated as “attainment” based on 2009-2011 monitoring data. The EPA made a final ruling on April 30, 2012 concurring with CARB and the SBCAPCD and designated the SCCAB as unclassified/attainment for 8-hour ozone NAAQS.

TABLE 3.3-3
SCCAB ATTAINMENT STATUS

Pollutant	NAAQS
Ozone	Attainment
PM_{10}	Attainment
$PM_{2.5}$	Attainment
CO	Attainment/ Unclassified
NO_2	Attainment/ Unclassified
SO_2	Attainment/ Unclassified
Lead	Attainment

Source: SBCAPCD, 2011.

Pollutants of Concern

Pollutants of concern are CAPs that are present in quantities exceeding the NAAQS in the applicable air basin or region and air pollutants that are not designated as CAPs, such as CAP precursors (NOx and ROG), yet can be temporarily present in high concentrations in a localized region of the SCCAB. No CAPs exceed the NAAQS in the SCCAB and since the EPA’s final ruling regarding the designation of 8-hour ozone, no CAP precursors would be temporarily present in high concentration in the SCCAB. Therefore, pollutants of concerns are not present in the SCCAB. **Table 3.3-4** summarizes estimated 2008 emissions of CAPs from major categories of air pollutant sources in Santa Barbara County

Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are a group of pollutants of concern. HAPs are a specific group of airborne chemicals designated by the EPA. Sources of HAPs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least 40 different HAPs. The most important, in terms of health risk, is diesel particulate matter (DPM), benzene, formaldehyde, 1,3-butadiene, and acetaldehyde.

TABLE 3.3-4
SANTA BARBARA COUNTY EMISSIONS INVENTORY

Stationary and Mobile Sources	ROG	CO	NOX	SOX	PM	PM10	PM2.5
	Tons per Day						
Fuel Combustion	0.53	6.48	7.16	0.2	0.38	0.37	0.37
Waste Disposal	0.11	0.06	0.01	0.02	0.06	0.02	0.01
Cleaning and Surface Coatings	4.99	-	-	-	0	0	0
Petroleum Production and Marketing	4.16	0.3	0.07	0.28	0.02	0.02	0.02
Industrial Processes	0.26	0.08	0.03	3.7	1.05	0.54	0.11
Solvent Evaporation	6.37	-	-	-	-	-	-
Miscellaneous Processes	4.22	31.97	2.11	0.02	36.3	20.72	7.24
On-road Motor Vehicles	9.15	93.88	15.75	0.06	0.64	0.63	0.43
Other Mobile Sources	8.47	42.7	64.85	29.32	5.16	4.97	4.79
Total Santa Barbara County	**38.26**	**175.46**	**89.98**	**33.59**	**43.61**	**27.28**	**12.98**

Source: CARB, 2010.

HAPs are less pervasive in the urban atmosphere than CAPs, but are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. There are hundreds of different types of HAPs, with varying degrees of toxicity. Currently, there are over 188 HAPs listed by the EPA.

The majority of the estimated health risk from HAPs can be attributed to relatively few compounds, the most important being DPM (CARB, 2005). Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are particulate matter that includes carbon. Diesel exhaust also contains a variety of harmful gases and over 40 other cancer-causing substances.

FEDERAL CLASS I AREAS

The federal Class I area, San Rafael Wilderness, is located approximately 18 miles northeast of the project site.

CLIMATE CHANGE

The impacts of climate change could be both global (such as more erratic weather patterns, more frequent droughts, and rising sea level) and regional. Climate change has the potential to reduce the snow pack in the mountains, increase drought periods, reduce water tables, increase seawater intrusion, and reduce or reconfigure the coastline in California (IPCC, 2007). Development projects typically result in an increase in GHG emissions due to increases in mobile sources (trips generated), area sources (facility components or operations that directly emit GHGs), and indirect sources related to electrical power consumption.

Carbon Dioxide Equivalent

Carbon dioxide equivalent (CO_2e) is a method by which emissions of individual GHGs are normalized in relation to heat-capturing abilities. As shown in **Table 3.3-5**, CO_2 is used as the baseline for GHG inventories and is given a CO_2e value of 1. Other GHGs are assigned a CO_2e ratio based on their ability to trap heat in comparison with that of CO_2. For example, CH_4 has the ability to capture 21 times more heat than CO_2, and therefore is given a CO_2e value of 21. To calculate total GHG emissions for a source, estimated emissions for each GHG are multiplied by the corresponding CO_2e value and then the converted values are summed for a total CO_2e emissions rate. Establishing a comparable total emissions rate provides a means for comparing emissions sources and presenting the relative overall effectiveness of emission reduction measures for reducing project contributions to global climate change.

TABLE 3.3-5
GREENHOUSE GAS CO_2 EQUIVALENT

Gas	CO_2e Value	Gas	CO_2e Value
CO_2	1	HFCs/PFCs[1]	6,500
CH_4	21	SF_6[1]	23,900
N_2O	310		

NOTES: CO_2e =Carbon dioxide equivalent
[1] High-global warming potential pollutants
CH_4 = methane; N_2O = nitrous oxide; HFCs/PFCs = hydroflourocarbons perflourocarbons; SF_6 = sulfur hexafluoride
Source: IPCC, 2007; AES, 2007a/b.

Sensitive Receptors

Sensitive receptors are generally defined as land uses that house or attract people who are susceptible to experience adverse impacts from air pollution emissions and, as such, should be given special consideration when evaluating air quality impacts from projects. Sensitive receptors include facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent homes, parks and recreational facilities, and residential areas are examples of sensitive receptors.

Land uses in the immediate vicinity of the project site consist of agriculture, open space and residences. Residences border the northern and eastern boundary of the project site. The closest residence is approximately 100 feet north of the agricultural portion of the project site. The nearest residential receptor to where construction activities would occur is located approximately 200 feet east of the eastern property boundary. The nearest school, Valley Lutheran Church Pre-school, is located approximately one mile west of the vineyard on the project site. The Santa Ynez Charter School is located approximately one mile west of the southeastern boundary of the project site. The nearest hospital to the project site is the Santa Ynez Valley Cottage Hospital, located approximately 3.5 miles west of the project site.

3.4 BIOLOGICAL RESOURCES

The following describes the existing biological resources, including habitat and waters of the U.S., which occur within the project site and general vicinity. The assessment of the existing biological resources is based upon the results of biological field surveys, which were conducted to document the existing habitat types onsite and to assess the potential for occurrence and/or presence of federally listed species and/or their habitats.

3.4.2 REGULATORY SETTING

FEDERAL

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) enforce provisions stipulated within the federal Endangered Species Act (FESA) of 1973 (16 USC § 1531 et seq.). Threatened and endangered species on the federal list (50 CFR § 17.11, 17.12) are protected from take, defined as direct or indirect harm, unless a Section 10(a)(1)(B) permit is granted or a Biological Opinion (BO) with incidental take provisions is rendered. Pursuant to the requirements of FESA and NEPA, the BIA must determine whether any federally listed species may be present on the project site and determine whether a proposed project will have a potentially significant impact upon such species. Under FESA, habitat loss is considered an impact to the species. In addition, the BIA is required to determine whether a project is likely to jeopardize the continued existence of any species that is proposed for listing under the FESA or to result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC § 1536[3], [4]). Therefore, project-related impacts to these species, or their habitats, would require mitigation.

Migratory Bird Treaty Act

Most bird species, especially those that are breeding, are considered migratory, or are of limited distribution, are protected under federal and/or state regulations. Under the Migratory Bird Treaty Act of 1918 16 U.S.C. 703-712, migratory bird species and their nests and eggs on the federal list [50 Code of Federal Regulations (C.F.R.) 10.13] are protected from injury or death.

Wetlands and Other Waters of the U.S.

Any project that involves working in navigable and other waters of the U.S., including the discharge of dredged or fill material, must first obtain authorization from the USACE under Section 404 of the Clean Water Act. The EPA issues a Clean Water Act Section 401 Water Quality Certification on Trust Land in conjunction with the Section 404 permit as part of the permitting process. In addition, the EPA issues General Construction NPDES permits that require that all projects over one acre in size comply with the terms and conditions described within the NPDES permit.

TRIBAL ORDINANCE REGARDING OAK TREE PRESERVATION

Valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), and canyon live oak (*Quercus chrysolepis*) are protected under the Tribal Ordinance Regarding Oak Tree Preservation for the Santa Ynez Band of Chumash Indians (Oak Tree Ordinance) (Santa Ynez Band of Chumash Indians, 2000). The ordinance requires that there shall be no loss of oak trees from the Reservation, unless they pose a threat to human health or impede development of Tribal facilities. The Oak Tree Ordinance states that there shall be no cutting, trimming, or pruning of oaks and there shall be no digging within the dripline of any oak and that care shall be taken when using heavy equipment around the dripline to prevent compaction of the root zone. Further, oak trees are to be planted to stabilize streambanks, provide canopy and shading, and to insure the sustainable future of the oak trees on the Reservation.

3.4.1 ENVIRONMENTAL SETTING

METHODOLOGY

A list of regionally occurring federally listed species in the vicinity of the project site was compiled based upon a review of pertinent literature, aerial photographs, site topographic maps, a map of special status species reported within five miles of the project site, a map of USFWS-designated critical habitat for federally listed species in the vicinity of the project site, informal consultation with the USFWS, and lists of regionally occurring special status species. The lists of regionally occurring special status species include:

1. USFWS letter of listed and candidate species that may occur in the vicinity of the project site, Santa Barbara County, California (USFWS, 2011);
2. California Native Plant Society (CNPS) list, dated March 19, 2012, of reported occurrences of special status plants within the Santa Ynez and Los Olivos U.S. Geographical Survey (USGS) 7.5-minute topographic quadrangles (quads), and
3. California Department of Fish and Game's California Natural Diversity Database (CNDDB) list, dated March 2, 2012, of reported occurrences of special status species within the Santa Ynez and Los Olivos quads (CDFG, 2003).

The USFWS, CNDDB, and CNPS lists are provided in **Appendix E** as well as a Biological Assessment prepared to initiate consultation with the USFWS under Section 7 of the FESA.

An AES biologist and botanist conducted biological surveys and informal delineations on September 12, 13, and 14, 2011. A follow-up site survey conducted by AES on July 16-17, 2013, indicating no major changes occurring on the project site since the original survey. The biological surveys consisted of walking and/or driving throughout the project site to characterize terrestrial and aquatic habitat types and evaluate their potential to support regionally occurring federally listed species. Terrestrial habitats were classified, where applicable, using California Wildlife Habitat Relationships (CWHR; 2005). The nomenclature described in the plant communities was based on the *Jepson Manual-Higher Plants of California* (Hickman, 1993). Wetlands potentially subject to USACE jurisdiction under Section 404 of the CWA were informally delineated using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, 1979). Potentially jurisdictional waters of the U.S. other than wetlands were determined using the USACE's regulations (33 CFR Part 328). Aerial photographs were used to document preliminary boundaries of habitat types during the fieldwork. All visible plants and wildlife were noted and identified to the lowest possible taxon necessary to determine rarity and listing status. Lists of all plants and wildlife observed during the 2011 and 2012 biological surveys are provided in **Appendix E**.

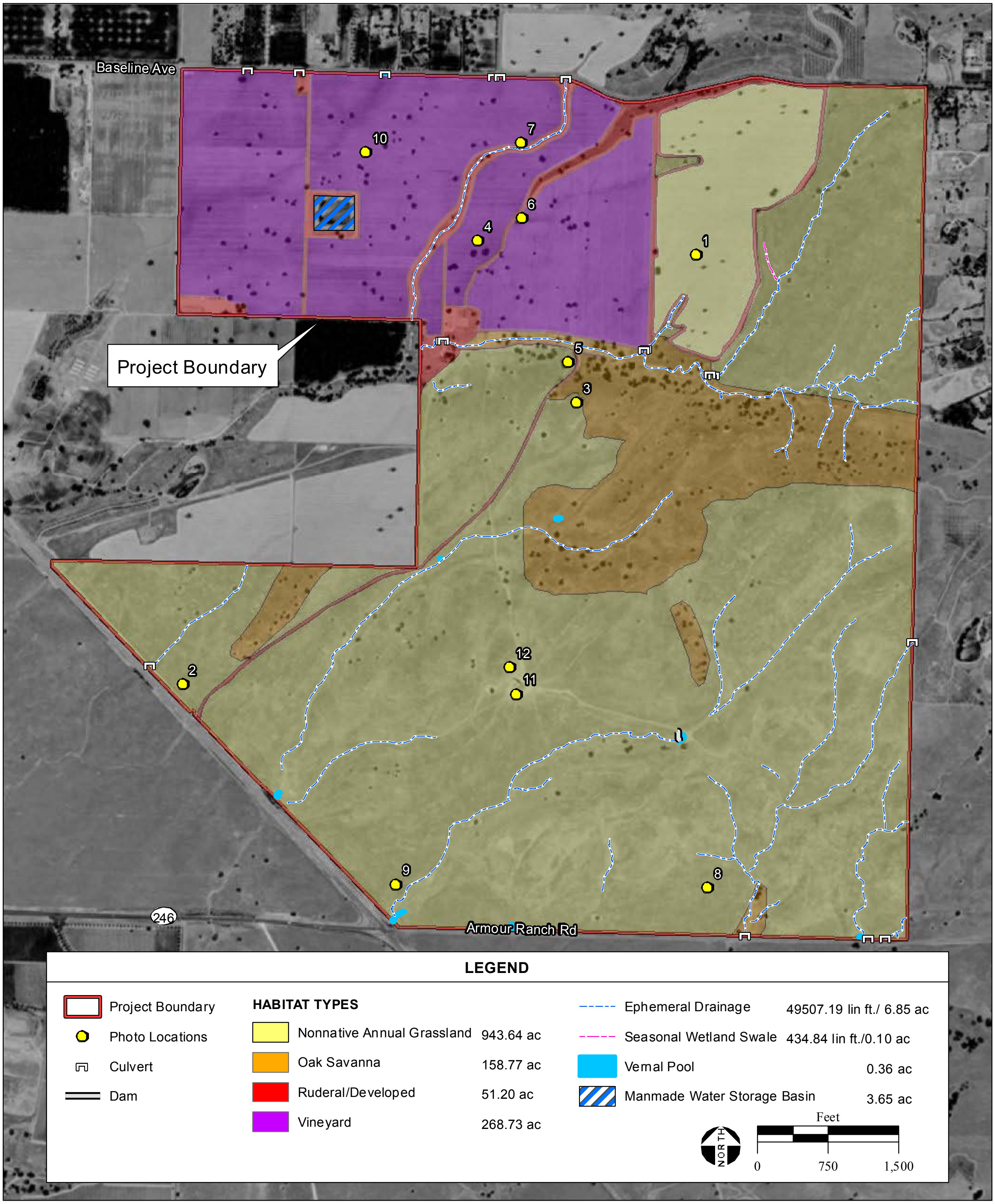
AES botanists conducted focused botanical surveys on March 7, 8, and 9, 2012 and April 23, 24, and 25, 2012. Botanical inventories were conducted in accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG Protocols) (CDFG, 2009). All plants observed within the project site were documented during the botanical inventories (**Appendix E**).

Global Positioning System (GPS) technology, a Trimble Geo XT™ receiver, was used to locate and map preliminary boundaries of waters of the U.S. during the 2011 and 2012 fieldwork. The geographic coordinate system used to reference the data was Universal Transverse Mercator (UTM–Zone 10), North American Datum (NAD83) in meters. Potential wetland boundaries were mapped at a level of accuracy of less than one meter. Habitat boundaries were identified during the biological surveys on an aerial photograph. Environmental Systems Research Institute (ESRI) shape files were generated based on the habitat boundaries, potentially jurisdictional waters of the U.S., and other sensitive biological resources mapped within the project site. Geographic analyses were performed using Geographic Information System (GIS) software (ArcView 3.3 GIS, ESRI, Inc.). The ESRI data and GIS software were used to calculate the acreages of habitat types and wetland features.

A list of regionally occurring federally listed species was compiled based on the USFWS, CNDDB, and CNPS lists. The potential for each of the regionally occurring federally listed species to occur on the project site was subsequently evaluated based on the results of the biological surveys and the focused botanical surveys; review of applicable literature; and proximity of known occurrences of special status species within five miles of the project site. The distribution and habitat types for each federally listed species and the potential for each species to occur on the project site are included in a list provided in **Appendix E**. Several regionally occurring federally listed species were eliminated from consideration either because the project site lacks suitable habitat or the project site occurs outside of the known elevation range or geographical distribution of the species. Federally listed species without the potential to occur within the project site are not discussed further.

HABITAT TYPES

Four terrestrial and five aquatic habitat types occur within the project site. The four terrestrial habitat types that occur within the project site are nonnative annual grassland, oak savanna, vineyard, and ruderal/disturbed areas. The five aquatic habitat types that occur within the project site are ephemeral drainage, seasonal wetland swale, vernal pool, manmade storage basin, and stock pond. A habitat map of the project site is shown in **Figure 3-4**. Representative photographs of the biological communities are shown in **Figures 3-5a** and **b**. The locations identifying where the photographs were taken within the project site are mapped on the



SOURCE: Santa Ynez Band of Chumash Indians, 2011; NAIP Aerial Photograph, 6/17/2009; AES, 2012

Figure 3-4
Habitat Map

PHOTO 1: View northwest of nonnative annual grassland. Photograph taken from the northeastern portion of the project site.

PHOTO 2: View north of nonnative annual grassland. Photograph taken from the western portion of the project site.

PHOTO 3: View north of oak savanna surrounded by nonnative annual grassland. Photograph taken from the central portion of the project site.

PHOTO 4: View northwest of vineyard. Photograph taken from the north-central portion of the project site.

PHOTO 5: View north of ruderal/disturbed areas. Photograph taken from the west-central portion of the project site.

PHOTO 6: View west of ruderal/disturbed areas and vineyard. Photograph taken from the north-central portion of the project site.

SOURCE: AES, 2012

Figure 3-5a
Site Photographs

PHOTO 7: View north of ruderal/disturbed areas and ephemeral drainage. Photograph taken from the northern portion of the project site.

PHOTO 8: View southeast of nonnative annual grassland, oak savanna, and ephemeral drainage. Photograph taken from the southwestern portion of the project site.

PHOTO 9: View southwest of vernal pool. Photograph taken from the southwestern portion of the project site.

PHOTO 10: View west of manmade basin. Photograph taken from the northwestern portion of the project site.

PHOTO 11: View south of ephemeral drainage just south of levee. Photograph taken from the south-central portion of the project site.

PHOTO 12: View southeast of vernal pool that formed as a result of construction of the manmade levee. Photograph taken from the south-central portion of the project site.

SOURCE: AES, 2012

Figure 3-5b
Site Photographs

habitat map (**Figure 3-4**). **Table 3.4-1** summarizes the habitat types by acreages. Dominant vegetation observed within the habitat types are discussed in detail below.

TABLE 3.4-1
SUMMARY OF HABITAT TYPES ON THE PROJECT SITE

	Habitat Type	Acres[1]
Terrestrial Habitats	Nonnative Annual Grassland	943.64
	Oak Savanna	158.77
	Vineyard	268.73
	Ruderal/Developed	51.20
Aquatic Habitats	Ephemeral Drainage	6.85
	Seasonal Wetland Swale	0.10
	Seasonal Wetland	0.36
	Manmade Storage Basin	3.65
	TOTAL	1,433.30

[1]GIS calculations may not reflect exact acreage due to rounding.

Nonnative Annual Grassland

Nonnative annual grassland occurs throughout the majority of the project site. Dominant vegetation is comprised of predominately understory herbaceous vegetation including soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), Bermuda grass (*Cynodon dactylon*), barnyard grass (*Echinochloa crus-gali*), foxtail barley (*Hordeum murinum*), wild oat (*Avena fatua*), English plantain (*Plantago lanceoleta*), filaree (*Erodium cicutarium*), field bindweed (*Convolvulus arvensis*), doveweed (*Croton setigerus*), bur clover (*Medicago polymorpha*), pigweed (*Amaranthus retroflexus*), prickle grass (*Crypsis alopecuroides*), horseweed (*Conyza canadensis*), common dandelion (*Taraxicum officianale*), wild mustard (*Brassica nigra*), short pod mustard (*Hirschfeldia incana*), and spring vetch (*Vicia sativa*). Overstory vegetation includes sparsely occurring individual blue oak (*Quercus douglasii*) trees interspersed throughout the nonnative annual grassland.

Oak Savanna

Oak savanna occurs in the central and southern portions of the project site. Dominant overstory vegetation is predominately comprised of blue oak. Dominant understory vegetation includes those identified within the nonnative annual grassland.

Vineyard

Vineyard occurs within the northern portion of the project site. The vineyard is comprised of a monoculture of grape (*Vitis* sp.) vines established on trellises in rows. Overstory vegetation includes individual valley oak (*Quercus lobata*) and coast live oak (*Quercus agrifolia*) trees. Understory vegetation is comprised of opportunistic nonnative weedy species that have established in sparse locations between the rows and along the perimeter of the vineyard.

Ruderal/Developed

Ruderal/developed areas occur within the project site. Ruderal/developed areas include residential houses and associated out buildings, equipment storage areas, graded roads, and along road cuts. Vegetation within the ruderal areas consists of various weedy upland grasses and forbs including ripgut brome, barnyard grass, Bermuda grass, field bindweed, geranium, pigweed, Jimsonweed (*Datura discolor*), Italian thistle (*Carduus pycnocephalus*), yellow star-thistle (*Centaurea solstitialis*), eleochaeris (*Eleocharis macrostachya*), prickly lettuce (*Sonchus oleraceus*), and tocalote (*Centaurea melitensis*).

Ephemeral Drainage

Ephemeral drainages occur in several locations throughout the project site. Ephemeral drainages are those that flow only in direct response to precipitation, and whose channel is at all times above the water table. None of the ephemeral drainages contained water during the September 2011, March 2012, or April 2012 biological surveys of the project site.

The ephemeral drainages consist of well-defined, highly scoured beds and banks comprised of cobble substrate and predominately weedy species including English plantain, yellow star-thistle, horseweed, foxtail barley, ripgut grass, wild mustard, and common knotweed (*Polygonum arenastrum*). Overstory vegetation includes scattered blue oak trees.

Seasonal Wetland Swale

A seasonal wetland swale occurs in the northeastern portion of the project site. A swale is a broad, shallow channel with vegetation covering the side slopes and bottom. The seasonal wetland swale did not contain water during the September 2011, March 2012, or April, 2012 surveys of the project site. Dominant vegetation includes Italian ryegrass (*Lolium multiflorum*), and curly dock (*Rumex crispus*).

Seasonal Wetland

Seasonal wetlands occur within the project site. The seasonal wetlands did not contain water and were sparsely vegetated during the September 2011 or March 2012 surveys of the project site. The seasonal wetlands were saturated to inundated during the April 2012 surveys. Understory vegetation includes doveweed, vinegar weed (*Trichostema lanceolatum*), skunkweed (*Navarretia squarrosa*), Italian ryegrass, clover (*Trifolium depauperatum*), popcorn flower (*Plagiobothrys stipitatus* var. *micranthus*), toad rush (*Juncus bufonius),* and peppergrass (*Lepidium nitidum* var. *nitidum*).

Manmade Storage Basin

A manmade storage basin occurs within the northwestern portion of the project site. The manmade storage basin is a concrete-lined feature and constructed in uplands to store irrigation water for the surrounding vineyard. The manmade storage basin lacks vegetation.

Stock Pond

A manmade stock pond occurs within the southeastern portion of the project site. An earthen dam was constructed to form the stock pond. The majority of the stock pond was devoid of vegetation except for isolated doveweed plants. The stock pond did not contain water during the September 2011 or March 2012 surveys of the project site, however, was inundated during the April 2012 surveys of the project site.

WILDLIFE

Wildlife observed within the project site during the September 2011, March 2012, and April 2012 biological surveys include: coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), western fence lizard (*Sceloporus occidentalis*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), turkey vulture (*Cathartes aura*), American crow (*Corvus brachyrhynchos*), and northern mockingbird (*Mimus polyglottos*). A complete list of wildlife species observed within the project site is included in **Appendix E**.

Wildlife Corridors

Wildlife corridors provide physical connections that allow wildlife to move between patches of suitable habitat in undisturbed landscapes, as well as environments fragmented by urban development. Wildlife corridors are essential to the regional ecology of a species because they provide avenues of genetic exchange and allow animals to access alternative territories as dictated by fluctuating population densities. Wildlife corridors connect two or more habitat patches that would otherwise be fragmented or isolated from one another. Riparian corridors surrounding perennial streams are considered wildlife corridors because they provide food, water, and cover, and often link other habitats.

The project site is bound by roads on all sides. Land uses surrounding the project site include residential development to the north and east, nonnative annual grassland to the southeast, south, and southwest, and agricultural crops to the west. Although the project site lacks riparian vegetation, the ephemeral drainage that extends in a southwestern direction through the vineyard is comprised of highly incised three and ten-foot high banks with shrubby upland vegetation present, which provides cover and a link to other habitats located to the north and southwest of the project site.

OAK TREES

Coast live oak and valley oak occur within the vineyard. Blue oak trees occur within the oak savanna and nonnative annual grassland. The oak trees are protected under the Tribal Oak Tree Ordinance.

WATERS OF THE U.S.

The National Wetlands Inventory (NWI; USFWS, 1976, 1981, 1984, and 2006) map does not identify any wetland features within the project site. A formal delineation has not been conducted within the project site. The ephemeral drainage, seasonal wetland swale, and vernal pools may be considered potentially jurisdictional waters of the U.S., subject to Section 404 of the CWA. The manmade storage basin is not considered a potentially jurisdictional water of the U.S. because it is a concrete-lined feature excavated fully in uplands, and lacks a hydrological connection to any waters of the U.S.

FEDERALLY LISTED SPECIES

Federally listed species evaluated in this EA as required under NEPA include species listed as endangered, threatened, or that are candidates for listing under FESA and migratory birds and other birds of prey protected under the Migratory Bird Treaty Act. Federally listed species with the potential to occur within the project site are discussed in detail below. Federally listed species that have no potential to occur in the project site are not discussed further. A CNDDB map of special status species occurring within five miles of the project site is provided in **Figure 3-6**. A critical habitat map in the vicinity of the project site is provided in **Figure 3-7**.

Federally Listed Plants

The project site does not provide habitat for any federally listed plants. No federally listed plants occur within the project site.

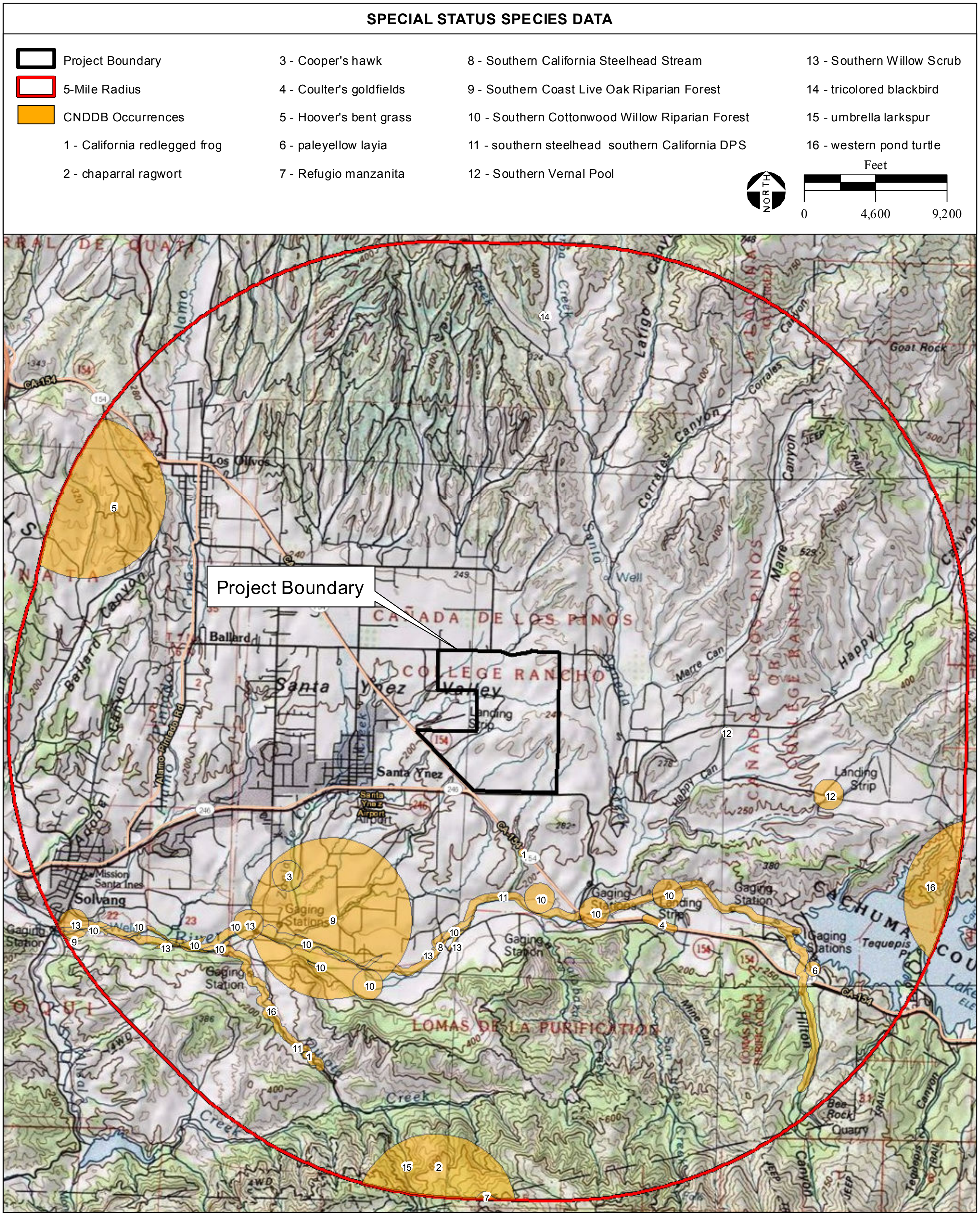
Federally Listed Wildlife

Two federally listed wildlife species have the potential to occur within the project site, vernal pool fairy shrimp (*Branchinecta lynchi*; VPFS) and California red-legged frog (*Rana aurora draytonii*; CRLF). These species are discussed in detail below.

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*; VPFS)
Federal Status – Threatened

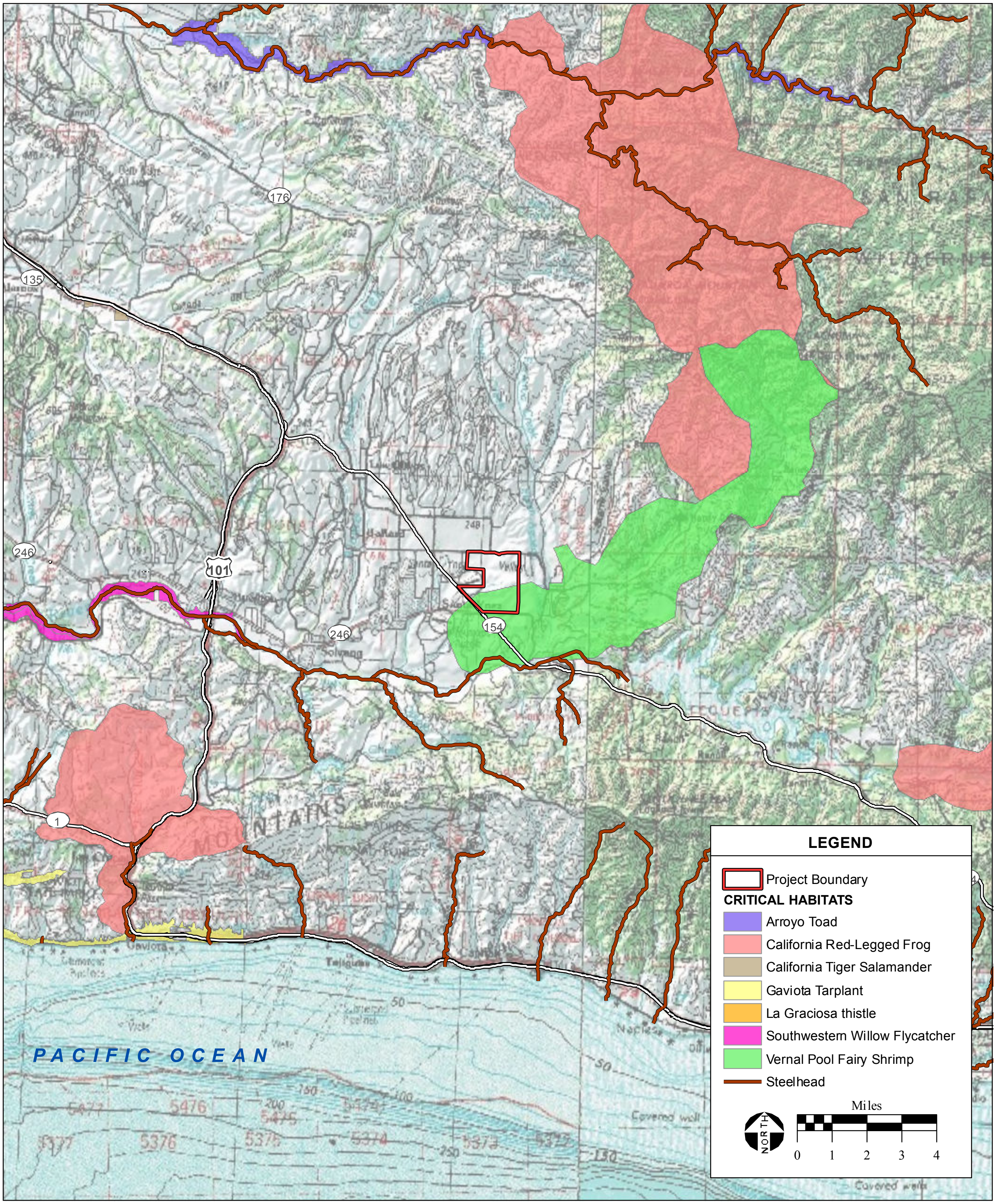
Biology: VPFS inhabit vernal pools of the Central Valley and Coast Ranges from 10 to 290 meters above mean sea level (amsl). VPFS are most commonly found in small swales, earth slumps, or basalt-flow depression basins with grassy or muddy bottoms in unplowed soils, and occasionally in clear depressions less than one meter in diameter in sandstone outcrops surrounded by foothill grasslands. VPFS occur in waters between 4.5 and 23°C, with low to moderate total dissolved solids (48 to 481 parts per million (ppm)), and a pH between 6.3 and 8.5 (Syrdahl, 1993; Eriksen and Belk, 1999). When the vernal pools fill with rainwater, VPFS hatch from eggs (shell-covered dormant embryos) present in the soil from previous years of breeding. Eggs normally hatch when water less than 10°C fills vernal pools. VPFS reach maturity in approximately 18 days under conditions when daytime temperatures reach 20°C, but 41 days are more typical if water remains near 15°C (Gallagher, 1996; Helm, 1998).

Regional Distribution: VPFS are known from Alameda, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kings, Madera, Merced, Monterey, Napa, Placer, Riverside, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Ventura, Yolo, and Yuba counties in California and in southern Oregon (NatureServe, 2011).



SOURCE: California Natural Diversity Database, 9/2011; "Los Olivos, CA" & "Santa Ynez" USGS 7.5 Minute Topographic Quadrangles, T7N, R 31W & T6N, R29W, Unsectioned Area of Santa Ynez Valley, Mt. Diablo Baseline & Meridian; AES, 2013

Figure 3-6
CNDDB 5-Mile Radius



SOURCE: "Santa Maria, CA" USGS 100k Topographic Quadrangle, San Bernadino Baseline and Meridian; USFWS Critical Habitats Surveys, 1977,1994,2002, and 2004-2006; AES, 2013

Figure 3-7
Critical Habitats

There are no CNDDB records for VPFS within five miles of the project site. There is only one documented CNDDB record for VPFS within Santa Barbara County. The record is from 2004 and is mapped approximately 48.3 kilometers (30 miles) north of the project site (CNDDB occurrence number: 359). The record states that an estimated 10,000 VPFS adults were observed within a small swale comprised of rocky, clay soil surrounded by grazed blue oak/grassland.

Recovery Plan: VPFS is covered as a federally listed threatened species under the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (Vernal Pool Recovery Plan) (USFWS, 2005b). The USFWS published the Recovery Plan on December 15, 2005. The Vernal Pool Recovery Plan covers 20 federal threatened or endangered species and 13 special status species that inhabit vernal pool ecosystems in California and southern Oregon (USFWS, 2005b). The southern portion of the project site occurs within the Santa Barbara Vernal Pool Region within the Lake Cachuma core area of the Vernal Pool Recovery Plan (2005b).

Potential to Occur in the Action Area: The project site provides habitat for VPFS within the vernal pools and is located within a core area of the Vernal Pool Recovery Plan. The vernal pools did not contain water during the September 2011, March 2012, and April 2012 biological surveys of the project site. Because of the factors above, VPFS are considered to have the potential to occur within the project site.

California Red-Legged Frog (*Rana aurora draytonii*; CRLF)

Federal Status: Threatened

Biology: CRLF require aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats from sea level to approximately 1,500 meters amsl (75 FR 12816-12959). Breeding aquatic habitats include pools and backwaters within streams, creeks, ponds, marshes, springs, sag ponds, dune ponds, and lagoons. CRLF also breed in artificial impoundments including stock ponds. The breeding period is from November through April. CRLF mate between February and March. The eggs hatch into tadpoles in approximately three weeks. The tadpoles subsequently metamorphose into juveniles between 11 and 20 weeks, which generally occurs between June and September. CRLF use a variety of areas, including aquatic, riparian, and upland habitats. CRLF require a breeding pond, or slow-flowing stream reach or deep pool within a stream with vegetation or other material to which egg masses may be attached. These areas must hold water long enough for tadpoles to complete their metamorphosis into juvenile frogs that can survive outside of water. The CRLF use riparian and upland habitats for foraging, shelter, cover, and nondispersal movement (75 FR 12816-12959). Upland habitats include crevices under boulders or rocks and organic debris, such as downed trees or logs; industrial debris; and agricultural features, such as drains, watering troughs, abandoned sheds, or hay-ricks. Beginning with the first rains of fall, CRLF may make overland excursions through upland habitats during the night. CRLF may move distances up to 1.6 kilometers (one mile) throughout one wet season (USFWS, 2002).

Regional Distribution: CRLF are known from Alameda, Butte, Contra Costa, El Dorado, Fresno, Kern, Los Angeles, Marin, Mariposa, Mendocino, Merced, Monterey, Napa, San Benito, San Bernardino, San Diego, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Siskiyou, Solano, Sonoma, Stanislaus, Tehama, Trinity, Tuolumne, and Ventura counties (NatureServe, 2011).

<u>Recovery Plan</u>: The USFWS published the *Recovery Plan for the California Red-legged Frog* (*Rana aurora draytonii*) (CRLF Recovery Plan) on May 28, 2002 (USFWS, 2002b). The objective of the CRLF Recovery Plan is to reduce any threats to the species and to improve the status of the CRLF populations sufficiently to warrant delisting. The CRLF Recovery Plan designated eight recovery unit boundaries throughout California and 35 Core Areas within each unit boundary. Recovery units are "regions of the species' distribution that are distinct from one another based on ecological characteristics, status of the species, threats to the continued existence of the species, or recovery actions needed within the area." Core Areas are "watersheds, or portions thereof, that have been determined to be essential to the recovery of the CRLF." Core Areas have no legal mandate for protection under FESA and solely rely upon voluntary implementation (USFWS, 2002b). The project site does not occur within any of the recovery unit boundaries for CRLF.

There are two CNDDB records for CRLF within five miles of the project site. The nearest CNDDB record is from 2003 and is approximately 1.13 kilometers (0.7 miles) south of the project site (occurrence number: 769). The record states that one juvenile CRLF was observed within a narrow riparian corridor within a tributary to the Santa Ynez River below a six-foot high impassible waterfall. The other CNDDB record is from 2002 and is approximately 6.12 kilometers (3.8 miles) southwest of the project site (occurrence number: 665). The record states that eight CRLF adults and 27 juveniles were observed on a bank within a small pool within Quiota Creek (CDFG, 2003).

<u>Potential to Occur in the Action Area</u>: The project site does not provide breeding habitat for CRLF as the manmade water storage basin is concrete lined and lacks vegetation and the ephemeral drainages do not hold permanent water long enough for CRLF larvae to develop into adults (USFWS, 2010). The NWI map identifies palustrine, emergent or unconsolidated bottom, seasonally or semi-permanently flooded, excavated or diked/impounded wetland features to the east and west of the project site that may provide habitat for CRLF. The NWI map identifies six of these wetland features within 1.6 kilometers (one mile) to the west of the project site. The NWI map identifies one wetland feature within 1.6 kilometers (one mile) to the east of the project site; however, the aerial photograph provided as **Figure 3-5** identifies approximately four additional wetland features within 1.6 kilometers (one mile) to the east of the project site. Because these features occur on private land, they were not ground-truthed during the biological surveys. Therefore, it is uncertain whether these features lack barriers between the wetland features and potential upland habitat within the project site and/or whether the wetland features are comprised of emergent vegetation required for CRLF to breed. CRLF has to potential to utilize upland habitat within the project site.

Migratory Birds

Migratory birds and other birds of prey, protected under 50 CFR 10 of the Migratory Bird Treaty Act, have the potential to nest within the trees within the nonnative annual grassland, oak savanna, vineyard, and ruderal/developed areas. The nesting season generally extends from March 1 to September 15. No migratory birds or other birds of prey were observed nesting during the 2011, 2012, and 2013 biological surveys of the project site. Migratory birds and other birds of prey have the potential to nest within the project site.

Critical Habitat

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*; VPFS)

The USFWS designated critical habitat for 15 vernal pool species on August 11, 2005 (50 CFR 17) (USFWS, 2005a). The primary constituent elements of critical habitat for VPFS are the habitat components that provide: topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools, providing for dispersal and promoting hydroperiods of adequate length in the pools; depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 18 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction; sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding; and pool structure consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter. The southern portion of the project site occurs within area designated by USFWS as Critical Habitat Unit 31 (**Figure 3-7**).

California Red-Legged Frog (*Rana aurora draytonii*; CRLF)

The USFWS revised the critical habitat designated for CRLF on March 17, 2010 (USFWS, 2010; 75 FR 12816-12959). The USFWS designated approximately 1,636,609 acres of critical habitat within 48 units of 27 counties in California. The project site does not occur within critical habitat for CRLF. The nearest critical habitat units in the vicinity of the project site include SBT-3 and SBT-6. SBT-3 occurs approximately 8.88 kilometers (5.6 miles) northeast of the project site. SBT-6 occurs approximately 8.1 kilometers (5.5) miles south of the project site.

STATE LISTED SPECIES

While one state listed species, the western pond turtle (*Emys marmorata*), may have potential to occur within the project site, these species generally receive no specific protection on land taken into trust by the federal government and are not necessarily afforded protection by FESA. While the nonnative annual grassland in the vicinity of wetland features surrounding the property provides upland habitat for this species and various features on the project site provide marginal habitat (refer to **Appendix E** for habitat requirements), the likelihood of occurrence within the project boundaries is minimal. The nearest recorded occurrence of the western pond turtle is approximately 4 miles southwest of the project site (refer to **Figure 3-6**). While the manmade storage basin within the vineyard provides a ponded water source, the habitat is marginal given the lack of emergent vegetation. In addition, this species was not observed during the September 2011, March 2012, and April 2012 surveys. Considering the western pond turtle is not afforded protection under FESA, minimal suitable habitat is located within the project site, and that the species was not observed during the biological surveys, impacts associated with the western pond turtle are not further addressed within this EA.

3.5 CULTURAL RESOURCES

The following describes the existing cultural and paleontological resource considerations in the general vicinity of the project site. A Phase 1 and Phase 1.5 Archaeological Investigation of Parcels 1-5 was conducted in June 2011 (Archaeological Investigation) (Archaeology Assessment and Management, 2011). The Archaeological Investigation included a records search and intensive field survey to identify and evaluate any prehistoric and historic-period resources within or adjacent to the project site. The Archaeological Investigation is confidential due to the sensitive nature of historic resources. Therefore, the document is included as a confidential appendix to the EA (**Appendix F**) to ensure sensitive information is protected. The cultural resources study is reviewed by the appropriate State and Federal agencies to ensure compliance with Federal regulations. Following is a summary of applicable, non-sensitive information provided in the Archaeological Investigation.

3.5.1 REGULATORY SETTING

NATIONAL HISTORIC PRESERVATION ACT

Section 106 of the National Historic Preservation Act (NHPA) as amended, and its implementing regulations found in 36 CFR Part 800, require federal agencies to identify cultural resources that may be affected by actions involving federal lands, funds, or permitting. The significance of the resources must be evaluated using established criteria outlined in 36 CFR 60.4, as described below.

If a resource is determined to be a *historic property*, Section 106 of the NHPA requires that effects of the federal undertaking on the resource be determined. A historic property is defined as:

> …any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places, including artifacts, records, and material remains related to such a property…(NHPA Sec. 301[5])

Section 106 of the NHPA prescribes specific criteria for determining whether a project would adversely affect a historic property, as defined in 36 CFR 800.5. An impact is considered significant when prehistoric or historic archaeological sites, structures, or objects that are listed, or eligible for listing, in the NRHP are subjected to the following:

- physical destruction of or damage to all or part of the property;
- alteration of a property;
- removal of the property from its historic location;
- change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- neglect of a property that causes its deterioration; and
- transfer, lease, or sale of the property out of federal control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

If the historic property will be adversely affected by development, then prudent and feasible measures to avoid or reduce adverse impacts must be taken. The State Historic Preservation Officer (SHPO) must be provided an opportunity to review and comment on these measures prior to project implementation.

NATIONAL REGISTER OF HISTORIC PLACES (NRHP)

The eligibility of a resource for listing in the NRHP is determined by evaluating the resource using criteria defined in 36 CFR 60.4 as follows: *The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and*

A. That are associated with events that have made a significant contribution to the broad patterns of our history;
B. That are associated with the lives of persons significant in our past;
C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. That have yielded, or may be likely to yield, information important to prehistory or history.

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP.

In addition to meeting at least one of the criteria listed above, the property must also retain enough integrity to enable it to convey its historic significance. The NRHP recognizes seven aspects or qualities that, in various combinations, define integrity (NPS, 1990). These seven elements of integrity are: location, design, setting, materials, workmanship, feeling, and association. To retain integrity a property will always possess several, and usually most, of these aspects.

While most historic buildings and many historic archaeological properties are significant because of their association with important events, people, or styles (criteria A, B, and C), the significance of most prehistoric and some historic-period archaeological properties is usually assessed under criterion D. This criterion stresses the importance of the information contained in an archaeological site, rather than its intrinsic value as a surviving example of a type or its historical association with an important person or event. It places importance not on physical appearance but rather on information potential.

NATIONAL ENVIRONMENTAL POLICY ACT

NEPA requires that federal agencies take all practical measures to "preserve important historic, cultural, and natural aspects of our national heritage" (NHPA, Section 800.8(a)). NEPA's mandate for considering the impacts of a federal project on important historic and cultural resources is similar to that of Section 106 of the NHPA, and the two processes are generally coordinated when applicable. Section 800.8(a) of NHPA's implementing regulations provides guidance on coordination with NEPA.

ANTIQUITIES ACT

Passed in 1906, the Antiquities Act prohibits the collection, destruction, injury, or excavation of "any historic or prehistoric ruin or monument, or any object of antiquity" that is situated on federal land without permission of the appropriate land management agency. The Antiquities Act also provides for the criminal prosecution, including fines and imprisonment, for individuals who commit one or more of the acts described above.

3.5.2 CULTURAL RESOURCES SETTING

ETHNOGRAPHIC OVERVIEW

During the late prehistoric period and early in historic times, the study area was part of a larger territory inhabited by the Inezeno Chumash (Kroeber 1925, King 1984). This group spoke a language known as Samala. The Chumash, who also included a number of groups other than the Inezeno, were an unusually sophisticated group of hunter-gatherer people who occupied the coastline, interior valleys, and offshore islands from Malibu in the south to the vicinity of Estero Bay in the north, and to the edge of the San Joaquin Valley to the east. This part of California is believed to have been their homeland for 10,000 years or more.

At the time of early Spanish exploration of this area, several Chumash villages were located within a few miles of the project site. The closest one was *kalawasaq'* (translated as "shell of the turtle"), located not far away along the Santa Ynez River (Applegate 1975). The project area may, in fact, have been part of the territory of *kalawasaq'*, as this was the closest Chumash settlement. Other villages were located in the foothills to the north and farther upstream along the river. A number of older, pre-contact villages were also located nearby along the river and in tributary drainages such as Santa Agueda Creek. People from these communities must have visited the project area to hunt, gather plant and mineral resources, or just pass through on trails between settlements. During the Spanish Mission Period and subsequent Mexican Rancho Period, the project area was used for grazing livestock and was likely planted in grain and hay crops, practices that have continued up to the present day. There are some archaeological sites in the vicinity of the project, such as those near the location of Mission Period corrals along Santa Agueda Creek that are related to these types of early agricultural activities (Wilcoxon and Lelevre 1984).

The study area falls within the former boundaries of the College Ranch, also known as Canada de los Pinos. The Mexican Government granted this 35,499-acre ranch to the Catholic Church in 1844 to support a seminary or college at Santa Ines Mission, but the project was not successful (Tompkins 1962: 47). Also, after secularization of the Missions in 1834, two large land grants in the Santa Ynez Valley, Ranchos Zaca and Alamo Pintado, were made to Chumash individuals in 1838 and 1843, as soon as they met the qualifications of Mexican citizens. In addition, 16 smaller grants, ranging in size from approximately 16 to 144 acres were made to heads of Chumash households. All of these lands were lost under dubious circumstances. The Catholic Church brought the case of the Santa Inés Chumash before the United States Land Commission in 1853 to validate the 1845 grant of farm lots near the mission. The Church's case was rejected for legalistic reasons involving lost paperwork.

The recent acquisition of the Parker Ranch, which is part of the former College Ranch, is important to the Chumash because from the beginnings of California Statehood in 1850, the Catholic Church maintained that many Church lands were jointly owned by the Church and its neophytes (in this case the Chumash). In a quiet title action beginning in 1897, the Catholic Bishop of Monterey began the process to eliminate any neophyte claims to about 11,500 acres of the College Ranch owned by the Church and to transfer title of the Zanja de Cota Riverbed to the Indian Agent of the Mission Tule (Consolidated) Agency in California. In settlement of this quiet title action, and by implementation of the Mission Indian Act of 1891, and an Executive Order from President Harrison, the Zanja de Cota land was turned into the Santa Ynez Indian Reservation (Armenta 2008).

HISTORICAL OVERVIEW

The early Chumash culture history of the Santa Ynez Valley is not well understood because of a general lack of archaeological excavations in the area and a paucity of dated archaeological sites. However, it is assumed to be roughly similar to that of the better-known Santa Barbara Coast to the south and the Lompoc/Vandenberg Air Force Base region to the west (Applied Earthworks 2001). Initial human occupation of the Santa Ynez Valley probably took place sometime in the Early Holocene Epoch after about 11,500 B.P (before present), or possibly earlier during the late Pleistocene Epoch in what is known as the Paleo Indian Period. Early human occupation dates back before 10,000 B.P. in other parts of Santa Barbara County when nomadic and semi-nomadic hunter-gatherer groups roamed the area. Remains of Late Pleistocene megafauna, the prey of early human hunters, have been found throughout Santa Barbara and San Luis Obispo Counties, with some discoveries in the Santa Ynez Valley. During the Early Holocene, settlement throughout the area becomes progressively more sedentary with subsequent Chumash culture history being subdivided into the Early, Middle and Late Periods, and eventually culminating in the fairly well-known Chumash culture of the Protohistoric and Historic Periods (King 1990, Arnold 2001: 23). This chronology replaced the earlier Santa Barbara coastal sequence of Oak Grove, Hunting People, and Canalino developed by D.B. Rogers (1929).

The outline of local prehistory presented below includes some recent refinements to King's original chronology (op. cit.) There are also some minor differences of opinion among archaeologists on the dates assigned. However, this outline is generally consistent with most of the versions in use today. Much of this chronology was abbreviated and paraphrased from one developed by Hildebrandt in a report on excavations at CA-SBA-3404, a village site in the Los Olivos area of the Santa Ynez Valley (1999).

Late Pleistocene Epoch or Paleo Indian Period (Before 11,500 B.P.)

The people of the Late Pleistocene Epoch, often referred to as Paleo Indians, are the founding human populations of the entire American Continent. Their lifestyle was nomadic with subsistence focused on hunting large game animals associated with the end of last Ice Age. Some opportunistic gathering of plants must also have occurred as they followed the animals from place to place. Numerous archaeological sites from this period have been found throughout the Americas, although few substantial sites have yet been discovered in this region of California. There have been discoveries of a small number of isolated, fluted projectile points, a typical component of their hunting technology and one of the most diagnostic artifacts from this time period (Erlandson et. al. 1987).

Early Holocene or Initial Early Period (11,500 – 5500 B.P.)

The Early Holocene, or Initial Early Period is represented in coastal areas by archaeological sites with shell midden deposits, low frequencies of hunting and fishing-related tools, and numerous hand stones (manos) and millingstones (metates). These are domestic sites that may represent the first known semi-permanent settlements. The sites tend to be concentrated around estuaries, but some have been found in inland areas. Millingstones and hand stones are generally used to grind various types of seeds. Erlandson (1991, 1994) has hypothesized that protein-rich shellfish, in combination with high caloric plant foods such as Chia seed, Pinyon nuts, and seed from other plants produced a balanced diet supporting semi-permanent settlements. Sites in the interior are not as well documented as those along the coast. They seem to be similar in composition, but tend to lack the higher densities of shellfish remains, as might be expected. Other sources of protein, such as small mammals, freshwater fish, or insects, may have been exploited in inland areas.

Terminal Early Period (5500 – 3000 B.P.)

The Terminal Early Period is marked by some major changes in subsistence technology. Mortars and pestles appear for the first time in the local archaeological record, possibly reflecting early use of acorns for food. There is also an increase in hunting-related tools such as large side-notched projectile points. Faunal assemblages on the coast now include some pelagic sea mammals, such as Northern Fur Seal and Dolphins. Some researchers suggest that watercraft of some kind may have been in use at this time to access pelagic resources. There are sites that also show an increase in remains of larger terrestrial animal species. The continued presence of handstones and millingstones indicate that seeds are still important as a food resource.

Middle Period (3000 – 800 B.P.)

There is an acceleration of cultural change once again at the beginning of the Middle Period around 3000 – 2500 B.P. Glassow (1996) notes that residential sites now contain more dense refuse deposits than in the Early Period. He interprets this to mean that communities were occupied for longer periods of time during the annual cycle. Bones of marine mammals and fish occur in higher densities, suggesting increased importance of fishing and sea mammal hunting. Circular shell fishhooks appear about 2500 B.P. with harpoons and plank canoes after about 1700 B.P. These innovations coincide with greater use of the marine environment. King (1990) sees major changes in sociopolitical organization occurring around 3000 B.P. He proposes that there was a change from egalitarian to non-egalitarian society with high status positions inherited at birth. Glassow (1996) and other researchers have argued that interior settlements became involved in elaborate trade networks that moved important seed resources to the coast in exchange for marine resources. Coastal and island populations appear to have increased due to the expansion of offshore fishing.

Late Period (800 B.P. to Establishment of the Spanish Missions)

During the Late Period there was continued intensification of maritime adaptations along the Santa Barbara Channel. This led to the development of large permanent coastal villages and expansion of the trade network between islands, mainland coast, and interior (see Gamble 1995). The development of a medium of exchange ("money") in the form of Olivella shell beads on the Channel Islands facilitated the exchange of food, goods, and other commodities. Stratified society in the form of chiefdoms appears with hereditary leaders and elite religious specialists. The bow and arrow is a major technological addition during this period as it facilitates certain types of hunting and also provides an important offensive and defensive weapon.

Protohistoric (Early Contact) and Historic Chumash

While the coastal areas mentioned above saw development of a more maritime-based culture, the ancestral Chumash of the Santa Ynez Valley must have maintained a more stable culture with subsistence based largely on terrestrial plant and animal resources. Despite these differences in adaptation and the related differences in technology, the rest of the material culture of the interior Chumash tends to rather closely resemble that of the coastal areas during protohistoric times. Annual runs of anadromous fish such as Steelhead and other salmonoid species in the Santa Ynez River may also have been an important component of the interior Chumash resource base (Spanne 1975). The Chumash must have also participated, at least peripherally, in the maritime economy as evidenced by frequent remains of shellfish and fish in archaeological deposits in the Santa Ynez Valley. Maritime resources may have been acquired during periodic visits to the coast to visit kin, or by direct exchange with coastal people.

The development of Chumash culture in this region over thousands of years culminated with the appearance of the highly complex culture of the Chumash during the last few hundred years before Spanish contact. This advanced culture, and the people responsible for its creation have been described in many firsthand accounts by the early Spanish explorers, beginning with Cabrillo in 1542, and continuing through the Spanish Mission Period.

3.5.3 RESULTS OF CULTURAL STUDIES

Documentation of potential cultural resources within the project site was achieved through review of pertinent anthropological literature, historic documents and maps, a records search at the Northwest Information Center (NWIC), consultation with the Tribe, and a field examination of the project site by archaeologists who meet the Secretary of the Interior's professional qualification standards.

RECORDS AND LITERATURE SEARCH

During the preparation of the 2011 Archeological Investigations Report provided as a Confidential Cultural Appendix, bound under a separate cover, a record and literature search conducted for the project area of potential effect (APE) revealed that no archaeological sites had been previously recorded within the project area and only two small archaeological sites were located at a distance of about 0.75 miles. A larger number of sites have been recorded beyond a one-mile radius along the Santa Ynez River and Santa Agueda Creek.

NATIVE AMERICAN CONSULTATION

On April 3, 2012, the State of California Native American Heritage Commission (NAHC) was asked to review the Sacred Lands file for information on Native American cultural resources on the project site (see **Appendix F**). On April 6, 2012, the NAHC responded indicating that it has no knowledge of Native American resources within the project site. However, it did provide a list of individuals and groups to further consult with.

FIELD SURVEYS

During the preparation of the 2011 Archeological Investigations Report, the entire study area of 1,433 acres was surveyed intensively on foot along parallel transects at intervals no greater than 15 meters (approximately 50 feet). When potential cultural materials were encountered, or when a location appeared to be potentially sensitive, the survey interval was reduced to between 2 and 5 meters (approximately 6 to 16 feet). A close examination of the ground surface was accomplished along each of the survey transects. Vegetation-free areas were sought out and carefully observed in order to identify artifacts or other culturally derived materials that might have been present. Steep slopes exceeding 30 percent were generally not surveyed intensively, although they were at times necessarily traversed. Landforms such as benches, knolls, exposures of rock, or any other unusual areas where artifacts might have been present within these areas of steep slope or between transects were also examined. When cultural resources were observed during the survey, they were flagged and preliminarily mapped. Final mapping, photography, and recording were accomplished only after completion of the survey over the entire project area.

The surface visibility generally ranged from locally poor to excellent at the time of the survey. Poor conditions affecting visibility did exist in some pastures that had not been heavily grazed by the livestock. However, the ubiquitous presence of rodent mounds as well as other small patches of exposed soil afforded ample opportunity to inspect the ground surface for cultural materials. Therefore, there were no significant problems encountered that might have substantially affected the results of the investigation.

A total of 16 potential cultural resources were discovered during the intensive field survey. There were no temporally diagnostic artifacts observed during discovery and recording of any of the resources. Consequently, it is not possible to place them within a chronological context. The historic resources did include diagnostic artifacts that allow them to be approximately dated. Record forms, maps, and photographs are compiled in the appendix to the 2011 Archaeological Investigation (**Confidential Cultural Appendix**).

SUMMARY OF FINDINGS

The results of the 2011 Archaeological Investigation and Supplemental Study documented the discovery of 16 potential cultural resources. These include 4 archaeological sites, 9 isolated artifacts, and 3 historic stock troughs. None of these resources appear to be accompanied by especially complex archaeological deposits.

3.5.4 PALEONTOLOGICAL SETTING

REGULATORY BACKGROUND

The Antiquities Act of 1906 (PL 59-209; 16 United States Code 9 (U.S.C.) 431 et seq.; 34 Stat. 225) calls for the protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal land. While neither the Antiquities Act nor its implementing regulations [43 Code of Federal Regulations (C.F.R.) 3] explicitly mention fossils or paleontology, the inclusion of “object[s] of antiquity” in the Act has been interpreted to extend to paleontological resources by many federal agencies. As such, projects involving federal lands require permits for paleontological resource evaluation and mitigation efforts that involve excavation, collection, etc. Additional provisions appear in the Archaeological and Historic Data Preservation Act of 1974, as amended, for the survey, recovery, and preservation of significant scientific, prehistoric, historic, archaeological, or paleontological data, in such cases wherein this type of data might be otherwise destroyed or irrecoverably lost as a result of federal projects.

FOSSIL DISCOVERY

According to the University of California Museum of Paleontology (UCMP) online database, positive identification of microfossils have occurred approximately 3.5 miles northwest of project site within the Monterey formation of the Tertiary period, Miocene Epoch. The findings consist of the positive identification of fossilized diatoms (UCMP, 2012).

3.6 SOCIOECONOMIC CONDITIONS / ENVIRONMENTAL JUSTICE

The following describes the existing socioeconomic conditions and environmental justice considerations in the general vicinity of the project site.

3.6.1 SANTA BARBARA COUNTY

DEMOGRAPHICS

The community of Santa Ynez lies roughly 30 miles northwest of the City of Santa Barbara. The County is bounded by the Pacific Ocean to the west and the Pacific Coastal Range to the east. Travel routes through the County are limited due to the mountainous interior. The County had a population of 423,895 people in 2010. The largest city in Santa Barbara County is the City of Santa Maria with a population of 99,553. The City of Santa Barbara has a population of 88,410 (U.S. Census, 2010a).

Census tracts are a small, relatively permanent statistical subdivision of a county delineated by a local committee of census data users for the purpose of presenting data. Census tracts are designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions at the time of establishment. Therefore, statistics of census tracts provide a more accurate representation of a community's racial and economic composition. The census tracts that were considered in this analysis were those that contained the project area, the nearby community of Santa Ynez, and the Santa Ynez Reservation: Census Tracts 19.05 and 19.06 and Tribal Census Tract T001. **Table 3.6-1** presents the total population of Santa Barbara County, the community of Santa Ynez, and the identified census tracts.

TABLE 3.6-1
MINORITY POPULATIONS WITHIN PROJECT AREA AND VICINITY

Area/ Census Tract	Total 2010 Population	Total Minority Population	Percent Minority
Santa Barbara County	423,895	220,773	52
Santa Ynez	4,418	965	22
19.05	3,231	685	21
19.06	5,870	1,324	23
T001	271	247	91

Source: U.S. Census Bureau, 2010a.

INCOME

As shown in **Table 3.6-2**, the estimated median household income in Santa Barbara County was $60,078 in 2010. The 2010 median household income for the community of Santa Ynez was $98,015, which is approximately 63 percent higher than Santa Barbara County. The median household incomes of Census Tracts 19.05 and 19.06 are approximately 55 and 58 percent higher than Santa Barbara County, respectively. The median household income of Census Tract T001, which encompasses the Santa Ynez Reservation, is approximately 22 percent higher than Santa Barbara County.

TABLE 3.6-2
HOUSEHOLD INCOME WITHIN PROJECT AREA

Area	Median Household Income [1]	Average Household Size [2]	Poverty Threshold [a, 3]
Santa Barbara County	$60,078	2.86	$14,218
Santa Ynez	$98,015	2.54	$14,218
Census Tract 19.05	$92,838	2.42	$14,218
Census Tract 19.06	$94,871	2.5	$14,218
Census Tract T001	$73,125	2.79	$14,218

Notes: a: To be conservative, the poverty threshold is the weighted average threshold for two people.
Source: 1: U.S. Census Bureau, 2010b.
2: U.S. Census Bureau, 2010a.
3: U.S. Census Bureau, 2010c.

HOUSING

The 2010 U.S. Census reported that there were roughly 1,886 housing units in the community of Santa Ynez with approximately 1,741 units occupied (U.S. Census Bureau, 2010d). Owner-occupied housing units made up 76 percent (1,327 units) of the housing stock and renter-occupied housing 24 percent (414 units). The vacancy rate for owner-occupied units was 1.3 percent for owner-occupied units and 11.3 percent for renter-occupied units (California Department of Finance, 2011). Visual observation of the project vicinity indicates that existing residences in the area consist of single-family rural residential homes.

3.6.2 SANTA YNEZ BAND OF CHUMASH INDIANS

The Santa Ynez Band has 136 enrolled tribal members. As described in **Section 1.3**, the Santa Ynez Reservation covers approximately 137 acres and housing development has reached the maximum capacity of 97 residential units. As a result, multiple tribal families share homes in order to maintain residency on the Reservation and cultural ties to the Tribe or live off-Reservation in the surrounding communities. No further residential development is feasible on the Reservation due to land constraints and environmental restrictions.

3.6.3 ENVIRONMENTAL JUSTICE COMMUNITIES

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, as amended, directs federal agencies to develop an Environmental Justice Strategy that identifies and addresses disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. The CEQ has oversight responsibility of the federal government's compliance with Executive Order 12898 and the NEPA. The CEQ, in consultation with the EPA and other agencies, has developed guidance to assist federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed.

According to guidance from the CEQ (1997) and EPA (1998), agencies should consider the composition of the affected area, to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by a proposed action and, if so, whether there may be disproportionately high and adverse environmental effects to those populations. Communities may be considered "minority" under the executive order if one of the following characteristics apply:

- The cumulative percentage of minorities within a Census tract is greater than 50 percent (primary method of analysis).
- The cumulative percentage of minorities within a Census tract is less than 50 percent, but the percentage of minorities is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (secondary method of analysis).

According to EPA, either the county or the state can be used when considering the scope of the "general population." A definition of "meaningfully greater" is not given by the CEQ or EPA, although the latter has noted that any affected area that has a percentage of minorities that is above the state's percentage is a potential minority community and any affected area with a minority percentage double that of the state's is a definite minority community under Executive Order 12898.

Communities may be considered "low-income" under the executive order if one of the following characteristics applies:

- The median household income for a Census tract is below the poverty line (primary method of analysis).
- Other indications are present that indicate a low-income community is present within the Census tract (secondary method of analysis).

In most cases, the primary method of analysis will suffice to determine whether a low-income community exists in the affected environment. However, when a Census tract income may be just over the poverty line or where a low-income pocket within the tract appears likely, the secondary method of analysis may be warranted. Other indications of a low-income community under the secondary method of analysis include limited access to health care, overburdened or aged infrastructure, and dependence on subsistence living.

Minority Communities

Table 3.6-1 displays the minority population of Santa Barbara County, the community of Santa Ynez, and identified census tracts. As shown therein, only the minority population of Census Tract T001, which encompasses the Santa Ynez Reservation, is significantly over 50 percent and is meaningfully greater than the minority population percentage in the general population (Santa Barbara County); therefore, the Santa Ynez Reservation is considered a "minority" community.

Low-Income Communities

Table 3.6-2 displays the median household income and poverty income limit for each identified census tract. As shown therein, none of the census tracts have a median house hold income below the poverty threshold nor are any other indications of a low-income community present; therefore, the community encompassing the project area is not considered "low-income."

3.7 TRANSPORTATION AND CIRCULATION

The following describes the existing transportation and circulation aspects of the roadway network in the general vicinity of the project site. More detailed information is provided in the Traffic Impact Study included as **Appendix I.**

3.7.1 Regulatory Setting

The California Department of Transportation (Caltrans) manages interregional transportation, including management and construction of the state highway system. In addition, Caltrans is responsible for permitting and regulation of the use of state roadways. The project area includes two roadways that fall under Caltrans' jurisdiction, State Route 154 (SR-154) and State Route 246 (SR-246). Caltrans requires that permits be obtained for transportation of oversized loads, transportation of certain materials, and for construction-related traffic disturbances. Caltrans regulations would apply to construction within and immediately adjacent to SR-154 and SR-246.

3.7.2 ENVIRONMENTAL SETTING

The project site is located east of Santa Ynez in south central Santa Barbara County. Neighboring communities include Solvang and Buellton to the east and Los Olivos to the north. Access to the project area is primarily provided by Baseline Avenue and Armour Ranch Road on the existing roadway network.

EXISTING ROADWAY NETWORK

The roadway network in the Santa Ynez Valley consists of two state routes and several local roadways. Roadways in the project area are described below.

U.S. Highway 101 (US-101) is a four-lane north/south oriented freeway. US-101 is the major roadway through Santa Barbara County and is the principal inter-city route along the Pacific Coast. US-101 provides the principal connection between the Santa Ynez Valley, Santa Maria, and San Luis Obispo to the north and the Santa Barbara-Goleta area to the south.

SR-154 is a two-lane north/south oriented state highway under the jurisdiction of Caltrans. SR-154 provides regional access to the Santa Ynez Valley from US-101 to the north of the Los Olivos through the Santa Ynez Valley to the Santa Barbara-Goleta area to the south. SR-154 is divided by a double yellow centerline with passing lanes provided intermittently.

SR- 246 is a two-lane east/west oriented state highway under the jurisdiction of Caltrans. SR-246 provides regional access to the Santa Ynez Valley area between SR-154 to the east and US-101 to the west. SR-246 is used by local drivers as an intra-community route between Santa Ynez, Buellton, and Lompoc.

Edison Street is a two-lane north/south oriented County roadway that extends north from SR-246 to Baseline Avenue across SR-154 and ending approximately one mile north of SR-154. Edison road is the main thoroughfare in Santa Ynez.

Baseline Avenue is a two-lane east/west oriented County roadway that extends east of SR-154 to Happy Canyon Road and west of SR-154 to Alamo Pintado Road. Baseline Avenue is classified by the County as an S-3 roadway (Santa Ynez Valley Community Plan, 2009).

Armour Ranch Road is a two-lane east/west oriented County roadway that extends east of SR-154 at SR-246 and connects with SR-154 approximately two miles south of SR-246 and SR-154 intersection. Armour Ranch Road is classified as an S-3 roadway by the County (Santa Ynez Valley Community Plan, 2009).

ROADWAY OPERATIONS

Methodology

Existing traffic counts were collected using machine traffic counters in March 2012 for roadway segments. Because traffic flow on the study roadway network is most constrained at intersections, turning movements were counted at each study intersections from 7:00 am to 9:00 am and from 4:00 pm to 6:00 pm.

Level of Service

Level of Service (LOS) is a qualitative measure reflecting the traffic operation of the intersection, with LOS A representing best performance, and LOS F the worst. LOS describes the traffic conditions in terms of such factors as speed, travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. **Table 3.7-1** presents the corresponding average total delay per vehicle and a description of vehicular conditions at signalized intersections for each LOS category from A to F. These intersections are evaluated based upon the 2000 Highway Capacity Manual (HCM) methodologies. **Table 3.7-2** provides similar information for unsignalized intersections.

TABLE 3.7-1
LEVEL OF SERVICE FOR SIGNALIZED INTERSECTION

Level of Service	Delay (Sec)	Description
A	<10.0	Free flow. If signalized, conditions are such that no vehicle phase is fully utilized and no vehicle waits through more than one red indication. Very slight or no delay.
B	10.1 to 20.0	Stable flow. If signalized, an occasional approach phase is fully utilized; vehicle platoons are formed. Slight delay.
C	20.1 to 35.0	Stable flow or operation. Drivers occasionally may have to wait through more than one red phase. Acceptable delay.
D	35.1 to 55.0	Approaching unstable flow or operation; queues develop but quickly clear. Tolerable delay.
E	55.1 to 80.0	Unstable flow or operation; the intersection has reached capacity. Congestion and intolerable delay.
F	>80.1	Forced flow or operation. Intersection operates below capacity. Jammed.

Source: **Appendix I** – Associated Traffic Engineers, 2012

TABLE 3.7-2
LEVEL OF SERVICE FOR UNSIGNALIZED INTERSECTIONS

Level of Service	Average Total Delay (seconds/vehicle)	Traffic Condition
A	<10	No Delay
B	>10 – 15	Short Delay
C	>15 – 25	Moderate Delay
D	>25 – 35	Long Delay
E	>35 – 50	Very Long Delay
F	>50	Volume > Capacity

Source: **Appendix I**

Roadway Operations Standards

The following minimum operating criteria have been established by the appropriate jurisdictional agencies for roadways in the project area roadway network:

- Caltrans' has established a LOS D minimal operating standard for state highways and intersections associated with state highways in the project area.
- The County of Santa Barbara has established a LOS B minimal operating standard for County roadways. The County LOS standard is based on the capacity of the roadway.

Existing Intersection Level of Service

Table 3.7-3 presents the study roadway intersections and summarizes the existing AM and PM peak-hour LOS at each study intersection. All of the study intersections currently operate at LOS C or better during both the AM and PM peak hours.

TABLE 3.7-3
EXISTING INTERSECTIONS LEVEL OF SERVICE AND AVERAGE DELAY

Intersection	Traffic Control	AM Peak		PM Peak	
		LOS	Average Delay (sec)	LOS	Average Delay (sec)
SR-154/US-101 SB	Stop Sign	B	11.2	B	10.1
SR-154/US-101 NB	Stop Sign	B	11.7	B	10.3
SR-154/Grand Avenue	Stop Sign	B	14.6	C	16.2
SR-154/Roblar Avenue	Stop Sign	B	15.0	C	17.6
SR-154/Edison Street	Stop Sign	B	11.1	B	13.2
SR-154/Alisal Road	Signal	C	22.1	C	21.6
SR-246/Alamo Pintado Road	Signal	B	19.4	C	22.8
SR-246/Refugio Road	Signal	B	17.3	C	26.8
SR-246/Edison Street	Signal	B	16.7	C	21.4
SR-246/SR-154	Stop Sign	B	10.8	C	14.7

Source: **Appendix I**

Existing Study State Highway Segments Level of Service

Table 3.7-4 presents the study state highway segments and summarizes the existing AM and PM peak-hour LOS at each segment. All of the study area highway segments currently operate at LOS D or better during both the AM and PM peak hours.

TABLE 3.7-4
EXISTING STATE HIGHWAY SEGMENT LEVEL OF SERVICE

Highway Segment	Peak Hour LOS
SR-154 North of Edison Street[1]	LOS D/LOS C
SR-154 South of SR-246-Armour Ranch Road[1]	LOS D/LOS D
SR-246 from SR-154 to Solvang[2]	LOS B-C

[1] North and southbound LOS based on travel speeds and ability to pass using P.M. peak hour flows.
[2] Signalized segments - LOS based on delays at intersections.
Source: **Appendix I**

Existing Study County Roadway Segments Level of Service

Table 3.7-5 presents the study County roadway segments and the existing traffic volumes and acceptable capacity ratings for each study segment. As shown, the County roadway segments carry volumes within their acceptable capacity ratings.

TABLE 3.7-5
EXISTING COUNTY ROADWAYS OPERATIONS

Roadway	Geometry	Existing ADT	Acceptable Capacity[1]
Baseline Avenue e/o Edison Street	2 Lanes	1,600	5,530
Armour Ranch Road e/o SR-154	2 Lanes	700	5,530

ADT = average daily trips.
Per County of Santa Barbara, 70 percent of total roadway capacity equals LOS B.
Source: **Appendix I**

PUBLIC TRANSIT, BICYCLE, AND PEDESTRIAN CIRCULATION

There is currently no public transit system that serves the project site. However, public transit service is located within 1.25 miles west of the project site, with a transit stop at SR-246 and Meadowvale Road. There are no bicycle paths in the vicinity of the project site. According to the Santa Barbara General Plan future class I and II bike facilities are proposed for SR-154 and SR-246. There is currently no pedestrian system that serves the project site.

3.8 LAND USE

The following describes the existing land use and land use planning considerations, including agriculture within the project site and general vicinity.

3.8.1 EXISTING SETTING

The 1,433-acre project site is primarily composed of undeveloped pasture land actively being used for buffalo grazing with a 256-acre vineyard operation, a ranch house and barn, and an operating horse stable. The site is located in unincorporated Santa Barbara County, within the Santa Ynez Valley Planning Area, approximately 1.6 miles northeast of the existing Reservation. Surrounding land uses include low-density rural residential areas to the north, east, and west; and agriculture fields and undeveloped pasture land to the west and south. The Town of Santa Ynez is approximately 0.8 miles west of the project site; the Solvang and Gainey Vineyards are located approximately 0.4 miles southwest of the project site; and the Santa Ynez Valley Airport is located approximately one mile southwest of the project site. The Santa Ynez Airport is an active general aviation airport with over 90 based aircraft and approximately 26,000 annual operations, according to the Federal Aviation Administration (FAA) Airport Master Record for 1997.

NEPA requires an assessment of a federal action's potential affect on locally adopted land use plans as well as plans that have been formally proposed and are being actively pursued by officials of the jurisdiction. Accordingly, adopted and proposed land use and agriculture regulations and plans are discussed below.

TRIBAL LAND CONSOLIDATION AND ACQUISITION PLAN

In June 2013, the BIA approved the Tribe's proposed Land Consolidation and Acquisition Plan. The federal government's land acquisition policy 25 F.R. 151.3 (a)(1) specifically discusses tribal consolidation areas to be affiliated with both Reservation and adjacent lands with respect to acquisition for trust purposes. This plan assists the Tribe in the acquisition of additional land to increase the total tribal land base and provide sufficient acreage for housing, economic development, and government purposes. The approved plan area includes approximately 11,500 acres that were once a part of the Tribe's ancestral territory (Tribal Consolidation Area). Refer to **Section 1.3** for information on the history of this Tribal Consolidation Area. The recovery of additional property within the Tribal Consolidation Area creates an opportunity for the Tribe to return a small portion of its historical territory to the tribal community.

3.8.2 REGIONAL PLANNING DOCUMENTS

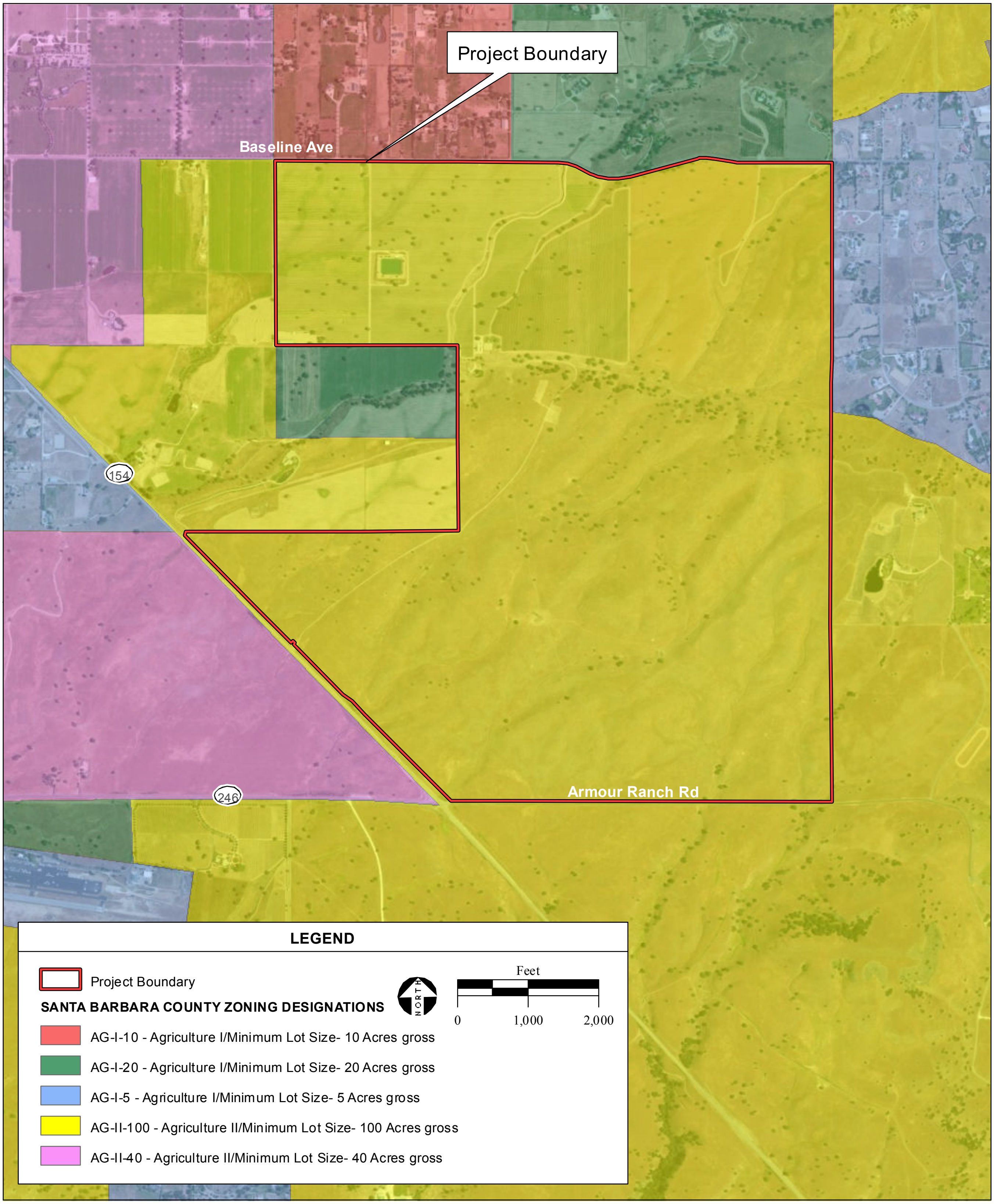
COUNTY OF SANTA BARBARA COMPREHENSIVE PLAN

The Santa Barbara County Comprehensive Plan was adopted in 1991 and republished in May of 2009. According to the Santa Barbara County Comprehensive Plan's Land Use Element, the entire project site is zoned Agricultural II (AG-II-100) (**Figure 3-8**). The AG-II-100 zoning designates areas appropriate for agricultural land uses with a minimum gross lot area of 100 acres on prime and non-prime agricultural lands located within the County's Rural Area, with the intention of preserving land for long-term agricultural use (Santa Barbara County Code 35.21.020). Allowed land uses within AG-II zoned areas that do not require permits include: cultivated agriculture, orchards, vineyards, and grazing (Santa Barbara County Code 35.21.030). Various types of residential land uses such as single-family dwellings, residential accessory uses and structures, and residential agricultural units are considered permitted land uses within AG-II zoned areas (Santa Barbara County Code 35.42.210).

All lands directly adjacent to the project site are zoned for agricultural uses; zoning designations include AG-II-100, AG-II-40, AG-I-20, and AG-I-5. The AG-II-40 designation is similar to AG-II-100, but has a minimum lot size of 40 acres. The Agricultural I (AG-I) zoning designation is applied to land within Urban, Inner Rural, Rural (Coastal Zone only), and Existing Developed Rural Neighborhood areas appropriate for agricultural use, with the intention of establishing standards for supporting agricultural land uses and encouraging agricultural productivity (Santa Barbara County Code 35.21.020). Allowed land uses within AG-I zoned areas are similar to those allowed within AG-II zoned areas as previously discussed.

SANTA YNEZ VALLEY COMMUNITY PLAN

The Final Draft of the Santa Ynez Valley Community Plan was adopted on December 9, 2009. The entire project site is located within the Santa Ynez Valley Community Plan (SYVCP) area. The SYVCP categorizes



SOURCE: Santa Barbara County Planning Dept,10/20/2010; Santa Ynez Band of Chumash Indians, 2011; NAIP Aerial Photograph, 6/17/2009; AES, 2013

Figure 3-8
Zoning Designations

the planning area by three distinctive types: Urban Townships, Inner-Rural Area, and the Rural Area. The project site lies in the Rural Area and is surrounded by rural land and areas classified as Existing Developed Rural Neighborhood to the north, east, and immediate west. Existing Developed Rural Neighborhoods are defined as areas that have been historically developed with smaller sized lots than those located within Inner-Rural and Rural areas. Characterized by large parcels, less development, and large-scale agricultural production, rural land within the SYVCP planning area is considered valuable both for agricultural uses and for maintaining the rural character.

The project site is within an area assigned the Agricultural Commercial (AC) land use designation (**Figure 3-9**), which is intended for commercially farmed areas, privately owned land located within Rural, Inner-Rural, Existing Developed Rural Neighborhoods, or Urban Areas subject to or eligible for a Williamson Act Contract.

The AC classification also includes land uses that are necessary for, or compatible with, agricultural operations. Approximately 19,924 acres within the SYVCP area are designated for AC land use, with 58 existing units and 244 build-out units. Land use designations surrounding the project site include AC and varying Agricultural I and Agricultural II lot size classifications.

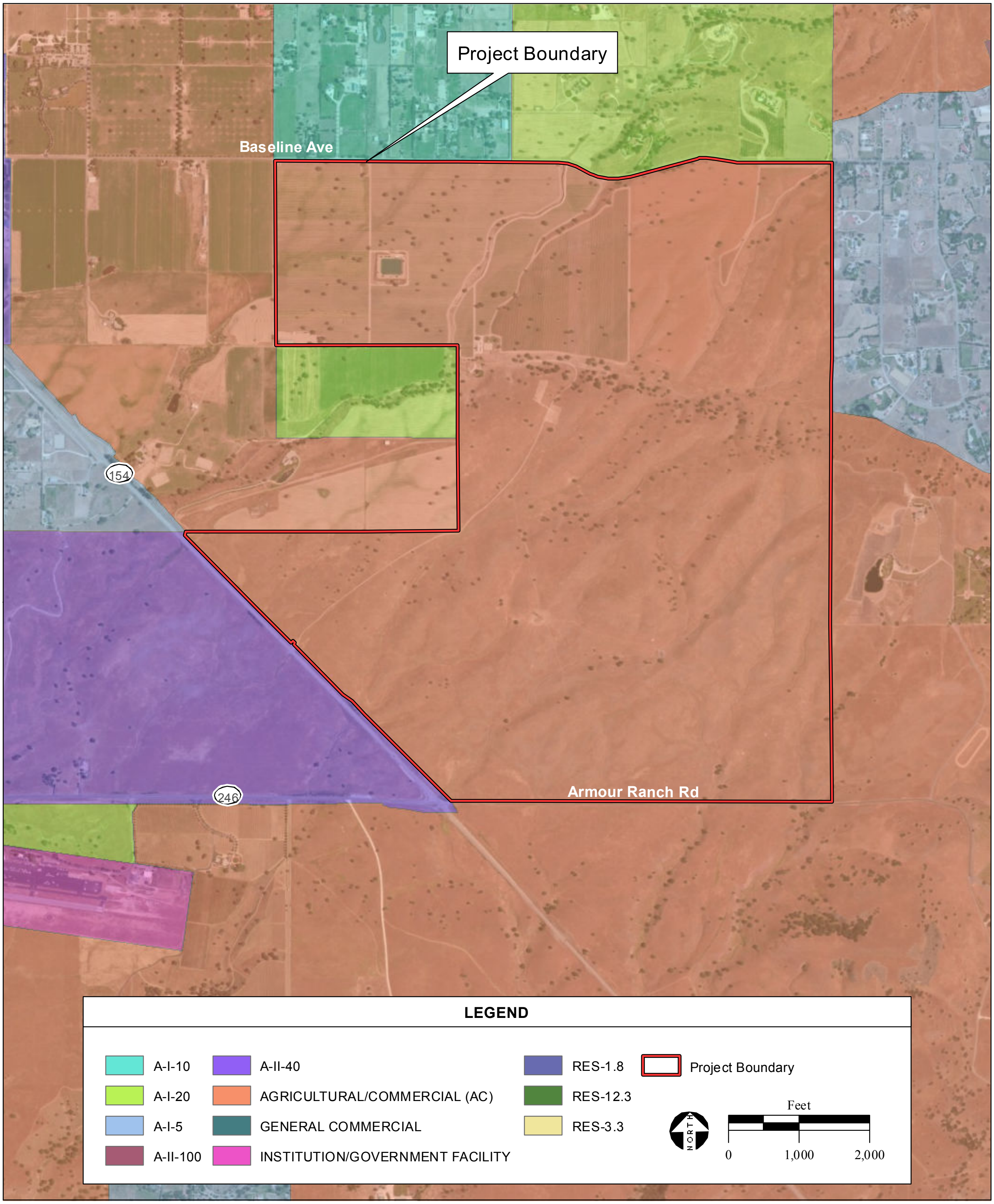
3.8.3 AGRICULTURE

Standards are established within the Santa Barbara County Land Use Code to protect, promote and enhance agricultural land uses by ensuring that residential agricultural units are incidental and supportive of such agricultural land uses (Santa Barbara County Code 35.42.210). Minimum lot sizes for residential agricultural units shall not be less than 100 acres, and shall not exceed one residential dwelling per lot. The total area of the Residential Agricultural Unit is not to exceed 3% of the total parcel size, or two acres, whichever is smaller (Santa Barbara County, 2007). The Santa Barbara County Comprehensive Plan identifies the project site as being primarily composed of lands considered moderately suitable for irrigated crops, orchard, vineyard, or ornamentals; and a small stretch of land considered highly suitable for orchard or vineyard agriculture along the riparian corridor that extends through a portion of the project site.

The SYVCP identifies approximately 43,441 acres within the plan area as being zoned for agricultural uses. Out of the 43,441 acres zoned for agricultural uses, approximately 19,850 acres within the planning area are enrolled in Santa Barbara County’s Agricultural Preserve Program (Williamson Act). Agricultural production is considered a prominent feature of the planning area and contributor to the local economy. Vineyards in particular have expanded within the SYVCP area in the last 10 years and account for approximately 2,152 acres of the County’s total 21,000 acres used for wine grape cultivation.

FARMLAND PROTECTION POLICY ACT

The Agriculture and Food Act of 1981 (Public Law 97-98) contained the Farmland Protection Policy Act (FPPA) (Subtitle I of Title XV, Section 1539-1549). The purpose of the FPPA is to minimize the impact of federal programs on the unnecessary and irreversible conversion of farmland to nonagricultural uses. The



SOURCE: Santa Barbara County Planning Dept,10/20/2010; Santa Ynez Band of Chumash Indians, 2011;
NAIP Aerial Photograph, 6/17/2009; AES, 2013

Figure 3-9
Land Use Designations

Farmland Mapping and Monitoring Program (FMMP), within the California Department of Conservation (CDC), maps activity from the U.S. Department of Agriculture (USDA) on a continuing basis. The FMMP produces maps and statistical data used for analyzing impacts on California's agricultural resources (CDC, 2004). The FMMP's Important Farmland Map for Santa Barbara County includes eight categories, the following occur on the project site (CDC, 2011):

> *Prime Agriculture Land:* Soils which have the best combinations of physical and chemical characteristics for the production of crops. The land must have been used for the production of irrigated crops at sometime during the two updated cycles prior to the mapping date (7 U.S.C. 4201(c)(1)(A)).
>
> *Unique Farmland*: Soils other than prime farmland that are used for the production of specific high value food and fiber crops. These soils have a special combination of physical and chemical characteristics for the production of high quality or high yields of specific crops when treated and managed according to acceptable farming methods (7 U.S.C. 4201(c)(1)(B)).
>
> *Farmland of Local Importance*: Soils other than prime or unique farmland that is of statewide or local importance for the production of crops. The appropriate State or local government determines the important farmland with concurrence from the State Conservationist. In some localities, farmlands of statewide and local importance may include tracts of land that have been designated for agriculture by state law or local ordinance (7 U.S.C. 4201(c)(1)(C)).
>
> *Grazing Land*: Defined in Government Code § 65570(b)(3) as: "…land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock.

Areas designated as Prime Farmland, Unique Farmland, or Farmland of Local Importance are located in the northern portion of the project site; the remainder of the site is classified as grazing land. Surrounding lands to the north, east and south are also classified as prime farmland, unique farmland, farmland of local importance, and grazing land. Land west of the project site is primarily classified as unique farmland, farmland of local importance, grazing land, and urban and built-up land.

The NRCS, an agency of the USDA, fulfills the directives of the Soil and Water Conservation Act (16 USC § 2001-2009) by identifying significant areas of concern for the protection of our resources. NRCS uses a land evaluation and site assessment (LESA) system to establish a Farmland Conversion Impact Rating (FCIR) score. The FCIR is completed on form AD-1006 (NRCS, 2008b). The FCIR form has two components: land evaluation, which rates soil quality up to 100 points, and the site assessment, which measures other factors that affect the farm's viability up to 160 points.

WILLIAMSON ACT

The California Legislature passed the California Land Conservation Act of 1965, better known as the Williamson Act, to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. Under the Williamson Act, private landowners contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses. The vehicle for these agreements is a rolling term 10-year contract (i.e., unless either party files a "notice of nonrenewal," the contract is automatically renewed). In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather than potential market value. A majority of the funding for County and local implementation of the Williamson Act provisions is provided by the State. All of the parcels within the project site are under active Williamson Act contracts (Santa Barbara County, 2009).

Nonrenewal Process

A notice of nonrenewal can be filed by either the local government or the private landowner. Once a notice of nonrenewal has been filed, a nine-year nonrenewal period is initiated. During the nonrenewal process, land use restrictions of the contract remain in effect and the annual tax assessment gradually increases. At the end of the nine-year nonrenewal period, the contract is terminated.

Approximately 550,000 acres of land within Santa Barbara County are enrolled within the Williamson Act (Santa Barbara County, 2011b). The acreage under Williamson Act contract within the project site represents approximately 0.003% of the total County acreage under Williamson Act contracts. Many parcels surrounding the project site are also under active Williamson Act contracts.

Termination Process

To terminate a Williamson Act contract prior to the nine-year nonrenewal process, the private landowner can petition to cancel the contract (CDC, 2009). Only the private landowner can petition to cancel a Williamson Act contract. To approve a tentative contract cancellation, the local government must make one of the following findings:

- That the cancellation is consistent with the purpose of the Williamson Act. Cancellation of a contract is considered consistent with the purpose of the Williamson Act if the local government makes all of the following findings:
    - The cancellation is for land on which a notice of nonrenewal has been served;
    - The cancellation is not likely to result in the removal of adjacent lands from agricultural use;
    - The cancellation is for an alternative use which is consistent with the applicable provisions of the general plan;
    - Cancellation will not result in discontiguous patterns of urban development; and

  - There is no proximate noncontracted land, which is both available and suitable for the use to which it is proposed the contracted land be put, or, that development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land.

- <u>That the cancellation is in the public interest.</u> Cancellation of a contract is considered to be in the public interest if the local government makes both of the following findings:
  - That public concerns substantially outweigh the objectives of the Williamson Act; and
  - There is no proximate noncontracted land that is both available and suitable for the use to which it is proposed the contracted land be put, or, that development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land.

SANTA BARBARA COUNTY RIGHT TO FARM ORDINANCE

The Santa Barbara County Right to Farm Ordinance (Municipal Code Section 3-23, Article V) was adopted to preserve and protect agricultural land and operations within the County of Santa Barbara. The stated purpose and intent of the Right to Farm Ordinance is to "protect agricultural land uses on land designated on the Comprehensive Plan/Coastal Plan, Land Use Maps as A-I or A-II, or on land zoned exclusively for agricultural use from conflicts with nonagricultural land uses that may result in financial hardship to agricultural operators or the termination of their operation."

The ordinance promotes a good-neighbor policy by requiring that users of property adjacent to or near agricultural operations be notified of the inherent potential problems associated with being located near such operations, including noise, odors, dust, operation of machinery, application of fertilizers, soil amendments, seeds and pesticides and other potential effects. The ordinance requires that the County of Santa Barbara Resource Management Department release a notice informing the public of the ordinance and its provisions so that property owners will better understand the potential consequences of being located near agricultural operations. The ordinance states that attendant conditions from properly conducted agricultural operations shall not be considered a nuisance to adjacent property owners and shall be accepted as being a normal and necessary aspect of being located in a rural area (Santa Barbara County Code 3-23, Article V).

Agriculture is considered one of the most valuable industries in Santa Barbara County. According to the 2012 Santa Barbara County Crop Report, the gross agricultural production value for the County was approximately $1,291,008,000. The three primary producers of 2012 were: strawberries, valued at $441,360,224; broccoli, valued at $130,894,229; and wine grapes, valued at $91,107,064 (Santa Barbara County, 2012c). Strawberry cultivation covered approximately 6,657 acres of the County in 2012, while broccoli cultivation covered approximately 27,220 acres and wine grape cultivation covered approximately 20,504 acres.

3.9 PUBLIC SERVICES

The following describes the existing water supply; wastewater service; solid waste; electricity, natural gas, and telecommunications; law enforcements; fire protection; emergency medical; schools; and parks and recreation facilities that occur within the project site and general vicinity.

3.9.1 WATER SUPPLY

There is no municipal water system available in the project area. Water in the vicinity of the project site is supplied by private groundwater wells and in the general vicinity service connections to the Santa Ynez River Water Conservation District, Improvement District #1 (ID1). ID1 currently provides coverage of 10,850 acres to approximately 8,300 customers via 2,500 municipal and industrial connections and approximately 118 agricultural connections (ID1, 2012). ID1 water supplies consist of allotments from the State Water Project, allotments from the Central Coast Water Authority, and through 19 groundwater supply wells. The project site is outside the ID1 service area and there are no existing plans for expansion of the service area.

3.9.2 WASTEWATER SERVICE

There is no municipal wastewater system available in the project area. The nearest WWTP is located within the existing Reservation (two miles from the project site) and the nearest municipal wastewater system is the Santa Ynez Community Services District (SYCSD) sewer system. Wastewater in the immediate vicinity of the project site is disposed of via individual septic tanks and leach fields. The project site is outside of the SYCSD service area and there are no existing plans for expansion of the service area.

3.9.3 SOLID WASTE

The management of non-hazardous solid waste in the County is mandated by state law, including Assembly Bill (AB) 939, and is guided by policies at the state and local levels. In accordance with AB 939, the County is required to divert 50 percent of its total waste stream from landfill disposal.

The County Public Works Department Resource Recovery & Waste Management Division (RRWMD) is responsible for planning and implementing waste collection and recycling programs. Waste collection services are provided by private waste haulers through contractual agreements with the RRWMD.

The nearest transfer station to the project site is the Santa Ynez Valley Recycling and Transfer Station located in Los Olivos, California approximately 5.8 miles to the northwest of the project site. The transfer station can process approximately 220 tons of material per day (Santa Barbara County, 2012d). Average daily intake at the Santa Ynez Valley Recycling and Transfer Station is 50 tons per day (Studley, 2012). Non-recyclable solid waste in the vicinity of the project site is disposed of at the Tajiguas Sanitary Landfill; a County owned and operated facility. The Class III landfill is currently permitted to accept up to 1,500 tons of waste per day. Average daily intake at Tajiguas Sanitary Landfill is currently 650 tons per day (RRWMD, 2012). The landfill is estimated to reach its capacity in the year 2032 (Calrecycle, 2012).

3.9.4 ELECTRICITY, NATURAL GAS, AND TELECOMMUNICATIONS

ELECTRICAL AND GAS SERVICES

Pacific Gas and Electric (PG&E) provides electricity and natural gas services in the project site. Overhead electric lines are located along both sides of Baseline Avenue to the north of the project site. PG&E serves the project vicinity out of its Cabrillo Substation and Santa Ynez switching station.
Natural Gas in the vicinity of the project site is provided by the Southern California Gas Company. Some rural areas, including the project site, do not have access to natural gas service due to lacking infrastructure. Natural gas lines do not currently exist along Baseline Avenue (Southern California Gas Company, 2012).

TELECOMMUNICATIONS

Verizon Residential currently provides local telephone service to County residents. A variety of providers, including Verizon, currently offer long distance telephone services. Underground telephone transmission lines are currently located along the east side of Baseline Avenue.

3.9.5 LAW ENFORCEMENT

California is a Public Law 280 state that allows for state criminal law enforcement jurisdiction on Tribal trust lands; however, this jurisdiction does not include regulatory civil law authority. Depending on the crime (pursuant to Public Law 280 and the Major Crimes Act), the U.S. Marshal may also provide support in specified situations. On Tribal trust lands, the Tribe conducts law enforcement activities in accordance with the jurisdictional duties identified under the Tribal Law Order Act of 2010.

SANTA BARBARA COUNTY SHERIFF'S DEPARTMENT

The Santa Barbara County Sheriff's Department (SBCSD), North County Operations Division, provides law enforcement services to the project site. Local SBCDS stations are located at 140 W. Highway 246 in the City of Buellton and at 1745 Mission Drive in the City of Solvang. These City stations are staffed by the SBCSD deputies through contract with the County. One Deputy from each station patrols each of the cities. Two additional deputies operate out of the Solvang Station and are responsible for patrolling the majority of the unincorporated regions of the Santa Ynez Valley. In addition, a Sergeant or Senior Deputy and a Community Resource Deputy are on duty to provide additional support and work in the Santa Ynez Valley. SBCFD provides search and rescue assistance for incidents in the Santa Ynez Valley. Specialized rescue teams are trained in floods, earthquakes, swift water rescue, vehicle extraction, trench rescue, low angle rescue, and confined space rescue (SBCFD, 2012). Allocation of tribal funds to the Sheriff's Department is included within the Special Distribution Funding provided in the Tribe's existing Tribal-State Gaming Compact with the State of California. In 2012, the Tribe agreed to provide the SBCSD funding of $117,876 for five deputy sheriff positions.

CALIFORNIA HIGHWAY PATROL

The California Highway Patrol (CHP) is the chief law enforcement agency for traffic-related issues on SR-154, which provides access to the project area. The closest sub-station is located at 166 Industrial Way in Buellton.

3.9.6 FIRE PROTECTION

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION

The California Department of Forestry and Fire Protection (CAL FIRE) provides wildland fire protection and, under contract with the BIA, responds to wildfires on Indian reservations in California. The project site and a majority of the surrounding land in the Santa Ynez Valley is designated as High Fire Hazard by the State of California (Calfire, 2012). Per contractual agreements, the Santa Barbara County Fire Department (SBCFD) provides service to state responsibility areas (SRAs) in Santa Barbara County.

LOCAL FIRE DEPARTMENTS

Santa Barbara County Fire Department

The SBCFD provides fire suppression, fire prevention, and life safety services to all unincorporated County areas, including the project site. SBCFD operates three fire stations in the vicinity of the project site (Fire Stations 30, 31 and 32). Station 30 is located in the City of Solvang, Station 31 is located in the City of Buellton, and Station 32 is located at 906 Airport Road at the Santa Ynez Airport. Station 32, located 0.75 miles southwest from the project site, is equipped with one fire truck and a staff of four full-time, trained personnel, including paramedics for emergency medical responses. The fire truck operated by the SBCFD can typically handle small structural fires such as residences.

The SBCFD employs the following two standards with respect to the provision of fire protection services (SBCFD, 2008):

1. A firefighter-to-population ratio of one firefighter on duty 24 hours a day for every 2,000 in population is considered "ideal," although a ratio (including rural areas) of one firefighter per 4,000 population is the maximum population that can be adequately served.
2. The second fire protection standard is a 5-minute response time in urban areas. This incorporates the following NFPA response-time objectives:
    a. One minute (60 seconds) for turnout time
    b. Four minutes (240 seconds) or less, for the arrival of the first-arriving engine company

The level of fire service for the Santa Ynez Valley currently provided by Station 32 falls within the requirements for meeting the population to firefighter ratios (Santa Barbara County, 2009). Allocation of tribal funds to the SBCFD is provided within the Special Distribution Funding in the Tribe's existing 1999 Tribal-State Gaming Compact with the State of California. In 2012, the Tribe agreed to provide SBCFD funding of $501,000 for firefighter/paramedic positions.

Chumash Wildland Fire Department

The Chumash Wildland Fire Department (CWFD) was founded in 2004 as a basic fire training program and provides non-structural wildland fire prevention, detection, and suppression services throughout southern California, and nationally when needed. The CWFD consists of one battalion chief, on captain, two fire apparatus operators, two firefighters, and one firefighter-dispatcher. The crew and equipments, consisting of Type 3 engine, 500-gallon tank wildland fire engine, Type 6 engine, and a heavy-duty truck with a 250-gallan tank, are housed in a temporary building located on the existing Reservation.

3.9.7 EMERGENCY MEDICAL SERVICES

FIRST RESPONSE

SBCFD additionally provides First Responder Emergency Medical Services in the County. SBCFD firefighters are certified Emergency Medical Technicians (EMTs) and Fire Stations 31 & 32 each have a full time firefighter/paramedic assigned during each shift. Paramedics are extensively trained and are qualified to give shots, start intravenous lifelines, and use advanced airway management devices to support breathing, as compared to EMTs, who are more limited in their capabilities and qualifications. SBCFD firefighters are also trained in swift water rescue, vehicle extraction, trench rescue, low angle rescue, and confined space rescue. SBCFD is fully trained and equipped to respond to a medical emergency until an ambulance or helicopter arrives.

EMERGENCY DISPATCH AND TRANSPORT

The Santa Barbara County Emergency Medical Services Agency (EMSA) is the local 9-1-1 public safety dispatch provider for the project site and the surrounding region. EMSA dispatches eight fire departments, including SBCFD.

In accordance with a contractual agreement with Santa Barbara County, American Medical Response (AMR) is the provider of ground ambulance service. AMR provides 18 ALS ambulances, and stations them at six locations throughout the County.

Emergency air transportation is provided by California Shock Trauma Air Rescue (CALSTAR). CALSTAR 7 is based out of the Santa Maria Airport. Response times to the project area for either air transportation service range from approximately 21 to 39 minutes.

LOCAL MEDICAL FACILITIES

The Santa Ynez Valley Cottage Hospital, located 4.5 miles west of the project site, provides emergency room medical services to the Santa Ynez Valley. This hospital is an acute care facility that can accommodate both medical and trauma emergencies. The nearest major trauma center is the Santa Barbara Cottage Hospital in Santa Barbara, California, approximately 55 miles from the project site.

OFFICE OF EMERGENCY SERVICES

Through recent reorganization and funding, the Santa Barbara County Office of Emergency Services (OES) provides multi-jurisdictional support for emergency planning, coordination, and incident response. OES is designated as the lead response agency for the County in the event of a major emergency. OES is located at 4408 Cathedral Oaks Road in the City of Santa Barbara.

3.9.8 SCHOOLS

PUBLIC SCHOOLS

The project site is located within three school districts: College School District, Los Olivos School District, and Santa Ynez High School District (California Department of Education, 2012). The College School District consists of three schools that serve the communities of Santa Ynez. There were 519 students enrolled in the 2010-2011 school year (California Department of Education, 2012). The Los Olivos School District consists of 2 schools that serve the Los Olivos region and had 689 students enrolled in the 2010-2011 school year (California Department of Education, 2012). The Santa Ynez High School District consists of 2 schools that serve the high school population of area surrounding the project site and had 1,073 students enrolled in the 2010-2011 school year (California Department of Education, 2012).

3.9.9 PARKS AND RECREATION

A number of parks and recreational facilities are located in the vicinity of the project site. The parks and recreation facilities closest to the project site include the following:

1. Santa Ynez Park is a County maintained park within the Santa Ynez Township at 3200 Cuesta Street. This 2-acre facility includes picnic areas.
2. City of Solvang Parks are located to the west of the project site within City of Solvang. Three parks are provided totaling approximately 60-acres.
3. The Golf Course at Alisal is located approximately 5.5 miles west of the project site.

The Los Padres National Forest (Los Padres NF) is located approximately 5 miles south east of the project site. The Los Padres NF offers outdoor activities, including trails for bikers, hikers and equestrian riders, camping facilities. The 1.75 million acre Los Padres NF includes 1,257 miles trails for hiking and horseback riding. The NF has 10 congressionally designated wildernesses comprising approximately 875,000 acres, or about 48% of the forest, including the Ventana, Silver Peak, Santa Lucia, Machesna, Garcia, San Rafael, Dick Smith, Sespe, Matilija and Chumash wildernesses (USDA, 2012).

3.10 NOISE

The following describes the existing environmental noise conditions that occur within the project site and general vicinity.

3.10.1 ACOUSTICAL BACKGROUND AND TERMINOLOGY

Sound is defined as any pressure variation in air that the human ear can detect, and is technically described in terms of loudness (amplitude) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels in dB.

Community noise is commonly described in terms of the “ambient” noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq) over a given time period (usually one hour). The Leq is the foundation of the Day-Night Average Level noise descriptor, Ldn, and shows very good correlation with community response to noise.

Table 3.10-1 contains definitions of acoustical terminology used in this section. **Table 3.10-2** shows examples of noise sources, which correspond to various sound levels. The day-night Average Level (Ldn) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were louder than daytime exposures. Because Ldn represents a 24-hour average, it tends to disguise short-term variations in the noise environment. Ldn-based noise standards are commonly used to assess noise effects associated with traffic, railroad, and aircraft noise sources.

EFFECTS OF NOISE ON PEOPLE

The effects of noise on people fall into three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

TABLE 3.10-1
ACOUSTICAL TERMINOLOGY

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ration of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronnewtons per square meter)
A-Weighted Sound Level, dBA	Sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network, which de-emphasizes very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, Leq	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after adding 5 decibels to measurements taken in the evening (7 to 10 pm) and 10 decibels to measurements taken between 10 pm and 7am.
Day/Night Noise Level, Ldn	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Lmax, Lmin	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.

Source: Caltrans, 2009.

TABLE 3.10-2
TYPICAL A-WEIGHTED SOUND LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower at 100 feet	70	vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
Rural daytime		Large business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)

Common Outdoor Activities	Noise Level (dBA)	Common indoor Activities
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Source: Caltrans, 2009.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Human reaction to a new noise can be estimated through comparison of the new noise to the existing ambient noise level within a given environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will likely be judged by the recipients. With regard to increases in A-weighted noise levels, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected
- A 10 dBA change is subjectively heard as approximately a doubling in loudness and can cause adverse response

Generally, most noise is generated by transportation systems, principally motor vehicle noise, but also aircraft noise and rail noise. The level of traffic noise depends on three variables: l) the volume of the traffic, 2) the speed of the traffic, and 3) the number of trucks in the flow of the traffic. Because noise is measured on a logarithmic scale, 70 dBA plus 70 dBA does not equal 140 dBA. Instead, two sources of equal noise added together have been found to result in an increase of 3 dBA. That is, if a certain volume of traffic results in a noise level of 70 dBA the addition of the same volume of traffic, or doubling, would result in a noise level of 73 dBA (Caltrans, 2009). As stated above, three dBA is just perceivable to humans with normal hearing; therefore, if the project doubles the traffic volume there would be a barely audible increase in the ambient noise level.

Stationary point sources of noise, including stationary mobile sources, such as idling vehicles, attenuate (lessen) at a rate of six to nine dBA per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured). Widely distributed noises, such as a large industrial facility or a street with moving vehicles would typically attenuate at a lower rate, approximately four to six dBA per doubling of distance.

3.10.2 REGULATORY ENVIRONMENT

Noise criteria used in this Environmental Assessment (EA) includes the Federal Highway Administration (FHWA) Construction Noise Thresholds for assessment of construction related noise, FHWA Noise Abatement Criteria for the assessment of noise consequences related to stationary sources, and the Federal Interagency Committee on Noise (FICON) for assessment of transportation noise. Environmental consequences due to increased noise levels are evaluated relative to the change in the noise conditions at existing noise-sensitive uses in the project vicinity and on the project site, which would result from the project. These criteria are discussed below.

FEDERAL NOISE

Construction

The FHWA provides construction noise level thresholds in its Construction Noise Handbook, 2006. The FHWA construction noise level thresholds are provided in **Table 3.10-3**.

TABLE 3.10-3
FEDERAL CONSTRUCTION NOISE THRESHOLDS

Noise Receptor Locations and Land-Uses	Daytime (7 am - 6 pm)	Evening (6 pm - 10 pm)	Nighttime (10 pm - 7 am)
		dBA, Leq[1]	
Noise-Sensitive Locations: (residences, Institutions, Hotels, etc.)	78 or Baseline + 5 (whichever is louder)	Baseline + 5	Baseline + 5 (if Baseline < 70) or Baseline + 3 (if Baseline > 70)
Commercial Areas: (Businesses, Offices, Stores, etc.)	83 or Baseline + 5	None	None
Industrial Areas: (factories, Plants, etc.)	88 or Baseline + 5	None	None

Notes: [1] Leq thresholds were empirically determined (FHWA, 2006).
Source: FHWA Construction Noise Handbook, 2006.

Transportation

The transportation noise criteria provided in **Table 3.10-4** are based upon recommendations made in August 1992 by the FICON to provide guidance in the assessment of changes in ambient noise levels resulting from transportation operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by noise. The FICON recommended criteria have been applied to other transportation noise sources, which are similarly described in terms of noise exposure metrics such as dBA, Ldn. This metric is generally applied to transportation noise sources, and defines noise exposure in terms of average noise exposure during a 24-hour period with a penalty added to noise that occurs during the nighttime (refer to **Table 3.10-1**).

TABLE 3.10-4
SIGNIFICANCE OF CHANGES IN TRANSPORTATION NOISE EXPOSURE

Ambient Noise Level Without Project, (dBA, L_{dn})	Increase Required for Significant Impact (dBA, L_{dn})
<60 dB	+5.0 or more
60-65 dB	+3.0 or more
>65 dB	+1.5 or more

Source: Federal Interagency Committee on Noise (FICON), 1992.

Stationary

The FHWA establishes Noise Abatement Criteria (NAC) for various land uses which have been categorized based upon land use activity. Land uses are categorized on the basis of their sensitivity to noise, as indicated in **Table 3.10-5**. **Table 3.10-5** provides standards which may be considered applicable to Alternative A. The project site would fall under Activity Category B, because Alternative A would place new residences in the vicinity of existing residences.

TABLE 3.10-5
FEDERAL NOISE ABATEMENT CRITERIA (HOURLY– DBA SOUNDLEVEL)

Activity Category	Activity Criteria[2] Leq (h), dBA[3]	Evaluation Location	Activity Category Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[4]	67	Exterior	Residential
C[4]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.

Activity Category	Activity Criteria[2] Leq (h), dBA[3]	Evaluation Location	Activity Category Description
E[4]	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, shipyards, utilities (water resources, water treatment, electricity), and warehousing.
G	--	--	Undeveloped lands that are not permitted

Notes: [1] Either Leq(h) may be used on a project.
[2] Hourly A-weighted sound level, decibels (dBA).
[3] The leq() and l10(h) Activity Criteria values are for impacts determination only, and are not design standards for noise abatement measures.
[4] Includes undeveloped lands permitted for this activity category.
Source: FHWA, 2010.

SANTA BARBARA COUNTY NOISE STANDARDS

The Santa Barbara County Comprehensive Plan, Noise Element, 2009 provides the following applicable noise standard policies:

1. In the planning of land use, 65 dB, Day-Night Average Sound Level should be regarded as the maximum exterior noise exposure compatible with noise-sensitive uses unless noise mitigation features are included in project designs.
2. Noise-sensitive land uses should be considered to include:
   a) Residential, including single and multifamily dwellings, mobile home parks, dormitories, and similar uses.
   b) Transient lodging, including hotels, motels, and similar uses.
   c) Hospitals, nursing homes, convalescent hospitals, and other facilities for long-term medical care.
   d) Public or private educational facilities, libraries, churches, and places of public assembly.
3. Noise-sensitive uses proposed in areas where the Day-Night Average Sound Level is 65 dB or more should be designed so that interior noise levels attributable to exterior sources do not exceed 45 dB L_{DN} when doors and windows are closed. An analysis of the noise insulation effectiveness of proposed construction should be required, showing that the building design and construction specifications are adequate to meet the prescribed interior noise standard.
4. Residential uses proposed in areas where the Day-Night Average Sound Level is 65 dB or more should be designed so that noise levels in exterior living spaces will be less than 65 dB LDN. An analysis of proposed projects should be required, indicating the feasibility of noise barriers, site design, building orientation, etc., to meet the prescribed exterior noise standard.

3.10.3 Existing Noise and Vibration Levels

Existing noise levels were measured at locations adjacent to sensitive noise receptors and where project-related noise has the potential to raise the ambient noise level (**Figure 3-10**). Measurement equipment consisted of Quest Sound Pro SE/DL sound level meters. An acoustical calibrator was used to calibrate the sound level meter before and after each use. All noise measurement instruments are Type II and were calibrated prior to and after noise measurements were performed. As shown in **Table 3.10-6**, noise measurements at Sites 1, 2, and 3 where conducted over a 24 hour period and show the ambient noise levels at the sensitive noise receptor nearest the project site and traffic noise from vehicles travelling on SR-154. Noise measurements were conducted for 15-minute at sites A, B, and C. Site A shows the existing ambient noise level at the project site and sites B and C show existing noise levels at the southern portion of the project site. Noise measurement output files are provided as **Appendix J**.

TABLE 3.10-6
SUMMARY OF 24-HOUR AND 15-MINUTE NOISE LEVEL MEASUREMENTS

Site	Date	Start Time	End Time	Noise Source	Receptors	Measured Noise Level Leq, dBA
A	4/5/2012	1:06 PM	1:21 PM	Agriculture/Traffic	Existing Residence	59.8
B	4/5/2012	2:14 PM	2:29 PM	Construction/ Traffic	Existing and Future Residences	56.8
C	4/5/2012	3:14 PM	3:29 PM	Traffic/Airport	Existing Resident	55.4
D	4/25/2012	4:09 PM	4:24 PM	Construction/Traffic	Proposed Future Residences	48.9
E	4/25/2012	3:44 PM	3:59 PM	Construction/Traffic	Proposed Future Residences	42.4
F	4/25/2012	4:27 PM	4:42 PM	Construction/Traffic	Proposed Future Residences	41.3

Source: AES, 2012.

Airport Noise

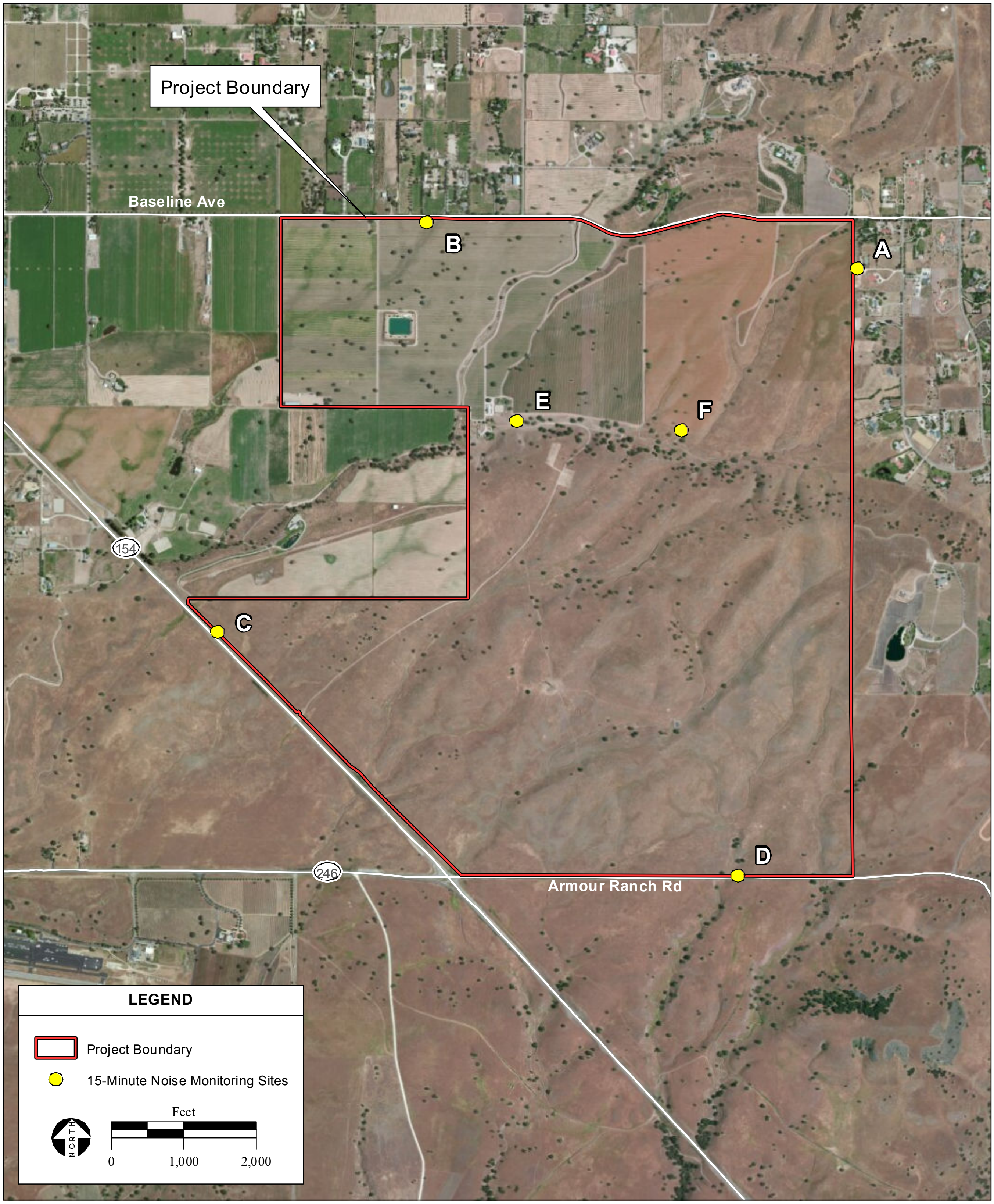
The Santa Ynez Airport is located approximately 0.80 miles from the project site. The project site is located outside the Airport's 60 dBA contour line and the airport traffic pattern area (County, 1993). Vandenberg Air Force Base (VAFB) is located approximately 27 miles northeast of the project site. The project site is not within the sphere of influence of the VAFB (County, 1993).

Sources of Groundborne Vibration

Currently, there are no sources of groundborne vibrations in the vicinity of the project site.

Noise Sensitive Receptors

Noise sensitive land uses are generally defined as land uses with the potential to be adversely affected by the presence of noise. Examples of noise sensitive land uses include residential housing, schools, and health care facilities. Existing noise sensitive receptors in the project area include residential housing.



SOURCE: Santa Barbara County GIS Data, 2012; Santa Ynez Band of Chumash Indians, 2011; NAIP Aerial Photograph, 6/17/2009; AES, 2013

Figure 3-10
Noise Monitoring Sites

Land use in the immediate vicinity of the project site consist of agriculture, open space and residences. Residences border the northern and eastern boundary of the project site. The closes noise sensitive residence is approximately 100 feet north of Baseline Road adjacent to the proposed agricultural land use (refer to **Section 2**, **Figure 2-1**). The nearest sensitive noise receptor to where construction activities would occur are residences located approximately 200 feet east of the eastern property boundary. The nearest school, Valley Lutheran Church Pre-school is located approximately one mile west of the agricultural portion of Alternative A. Santa Ynez Charter School is located approximately one mile west of the southeastern boundary of the project site.

3.11 HAZARDOUS MATERIALS

The following describes the existing hazards and hazardous materials conditions that occur within the project site and general vicinity.

3.11.1 REGULATORY SETTINGS

FEDERAL

At the federal level, the principal agency regulating the generation, transport and disposal of hazardous substances is the EPA, under the authority of Resource Conservation and Recovery Act (RCRA). The USEPA regulates hazardous substance sites under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). Applicable federal regulations are contained primarily in Titles 29, 40, and 49 Code of Federal Regulations (CFR).

The following represent federal laws and guidelines governing hazardous substances.

- Federal Water Pollution Control Act
- Clean Air Act (CAA)
- Occupational Safety and Health Act (OSHA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
- Comprehensive Environmental Response Compensation and Liability Act (CERCLA)
- Guidelines for Carcinogens and Biohazards
- Superfund Amendments and Reauthorization Act Title III (SARA)
- Resource Conservation and Recovery Act (RCRA)
- Safe Drinking Water Act
- Toxic Substances Control Act

LOCAL

Santa Barbara County General Plan

The Santa Barbara County General Plan - Seismic Safety and Safety Element addresses wild land fires within unincorporated areas of the County. The County maintains a contract with CAL FIRE to provide wildland fire protection for state responsibility areas within the County (County of Santa Barbara, 2010). A written guide has been published by CAL FIRE to aid government planners, developers and fire agencies in their fire prevention efforts. The publication (Fire Safe Guides for Residential Development in California) provides guidance in determining the extent of the fire hazard in a particular area based upon three factors, which are; fuel load, weather, and topography. These factors are used to determine a fire hazard severity classification that will then guide local government planners to clarify degrees of fire hazard in wild land areas and specify conditions under which use and development of specific areas can take place. The project site is designated as a High Fire Hazard Severity Zone under state or federal responsibility (CalFire, 2008).

3.11.2 Existing Conditions

A Phase I Environmental Site Assessment (Phase I ESA) was conducted in July 2013 for the project site, including APNs 141-121-051, 141-230-023, 141-240-002, and 141-140-010, and is included as **Appendix H** (AES, 2013). This Phase I ESA was prepared to determine if any Recognized Environmental Conditions (RECs) exist on the site. RECs refer to the presence or likely presence of conditions on a property that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products on the property or into the ground, groundwater, or surface water of the property. This includes hazardous substances and petroleum products. The Phase I ESA was prepared in accordance with the BIA Guidelines (602 DM Chapter 2) and the American Society for Testing and Materials (ASTM) Standard Practice E 1527-05. The ESA included site reconnaissance, review of federal and state regulatory agency records and databases, interviews with property owners and review of historical aerial photographs of the 1,433 acre site. The Phase I ESA revealed no evidence of RECs in connection with the site, and revealed no evidence of RECs associated with nearby properties.

An updated database records search for sites and listings up to 1.0 mile within the project site is included within Appendix D of the Phase I ESA (**Appendix H**) that includes the entire project site. The database searches were conducted for records of known storage tank sites and known sites of hazardous materials generation, storage, or contamination. The database search did not indicate the presence of listed sites within the surrounding area (**Appendix H**). AES performed a reconnaissance inspection of the Subject Property and adjacent properties. The following is a summary of the site reconnaissance conducted on July 16, 2013.

Parcel 1 – A majority of the parcel contains active vineyard agriculture. A vineyard maintenance area is located in the southwestern corner of the parcel. A metal structure covers approximately 15 farm vehicles stored on the site. Three aboveground storage tanks (ASTs) are located within the maintenance area and contain various agricultural supplies and equipment including, but not limited to, ammonia sulfate, sulfur, tools, four-wheel drive vehicles, and gopher bait. Gasoline, diesel, and waste oil tanks are located within secondary containment structures. Groundwater wells and associated infrastructure, including a storage basin is located in the middle of the parcel approximately 1,200 feet northeast of the maintenance area. An AST is located next to the groundwater well system. Large aboveground storage tanks, containing fertilizers and pesticides are located next to the groundwater wells. An operating horse stable, residential structure and barn are located on the southwestern corner of the parcel.

Parcel 2 – The parcel is comprised of vineyard agriculture, with the remainder of the parcel consisting of undeveloped grassland and oak savanna.

Parcel 3 – A ranch house and barn are located in the northernmost portion of Parcel 3, with the remainder of the parcel consisting of undeveloped grassland and oak savanna.

Parcels 4 and 5 are comprised of undeveloped grassland and oak savanna.

3.12 VISUAL RESOURCES

The following describes the existing visual resource conditions that occur within the project site and general vicinity. The assessment of the existing visual resources is based upon the results of a field survey, which was conducted on July 16, 2013.

3.12.1 EXISTING CONDITIONS

The visual characteristics of the project site and surrounding areas are similar to the rest of the inland grazing lands of rural Santa Ynez Valley in Santa Barbara County. The Santa Barbara County Comprehensive Plan (Comprehensive Plan) describes the grazing lands of the Santa Ynez Valley to be recognized by their "beautiful parkland landscape of oak trees and open fields" (Santa Barbara County, 2009). The Santa Ynez Valley Community Plan (SYVCP) designates the project site as rural land intended for agricultural land uses. Approximately half of the land within the SYVCP area is designated as rural land with land uses limited to agriculture and related uses, mineral extraction, low density residential, and public or quasi-public uses (Santa Barbara County, 2009).

The project site is located approximately 0.7 miles east of the Town of Santa Ynez and is visible along its entire length from Baseline Avenue, SR-154, and Armour Ranch Road. The property is also visible from Torrance Avenue. The site is characterized by rolling hills of grazing land, stream terraces, a vineyard, a horse stable, and a ranch house with a barn. The project site is consistent with the generally rural character of the Santa SYVCP. The project site is partially developed with a 256-acre operating vineyard, an associated vineyard maintenance area which is further discussed in **Section 3.11.2**, and a manmade water storage basin (discussed in **Section 3.2.1**) to serve the vineyard. An operating horse stable, and a ranch house with a barn are located in the northern central area of the project site. A portion of the project site is covered by annual grassland, as discussed in **Section 3.4.1**, and is actively being used as grazing land for buffalo. Scenic views of the project site and surrounding areas are included in **Figure 3-11.**

The Comprehensive Plan designation for the project site is Agriculture Zone Two (AG-II-100), which allows all agricultural uses as well as low-density residential housing related to owner- or tenant-operated agricultural uses (Santa Barbara County, 2011c). This designation intends to preserve the rural aesthetic of agricultural areas within the County. Rural roads and highways in this area provide unique views of the surrounding scenery and are valued for visual and aesthetic resources. Specific objectives related to scenic

PHOTO 1: View of onsite vineyard and cattle pasture.

PHOTO 2: View of onsite vineyard and ranch house.

PHOTO 3: View of onsite agricultural production.

PHOTO 4: View of rolling hills topography.

PHOTO 5: View of flat grazing land.

PHOTO 6: View southeast of project site and surrounding residential development.

SOURCE: AES, 2013

Figure 3-11
Site Photographs

highways in the Scenic Highways Element of the County of Santa Barbara's Comprehensive Plan call for the retention of the rural, agricultural character of scenic highways by restricting adjacent land uses and roadside advertising, following guidelines for setbacks, landscaping, and building materials, and undergrounding of utilities where possible. All 32 miles of SR-154 are designated as state scenic highway, including the extent that borders the westerns sides of parcels 3 and 5 of the project site.

Within the SYVCP area, Baseline Avenue and Armour Ranch Road, which border the northern and southern portions of the project site respectively, are also considered scenic rural roads. To protect local aesthetics within the SYVCP area, a Design Control Overlay has been applied to areas valued as scenic and visual resources. The Design Control Overlay is intended to implement well designed and located development to protect scenic features while also protecting property values and rural neighborhood character. Structures that are not visible from public viewing areas and agricultural structures that are less than 1,000 square feet are considered exempt from the Design Control Overlay; all other development under County jurisdiction however, must be reviewed by the County Board of Architectural Review to be determined acceptable within these areas (Santa Barbara County, 2009). Within the project site, parcels 3 and 5 have been assigned the Design Control Overlay. Parcels 1, 2, and 4 contain structures that are not visible from public viewing areas and/or small agricultural maintenance structures.

The area surrounding the project site is dominated by pastoral or rural scenery with views of mountains in the distance and limited views of residential or urban uses. Visual resources surrounding the project site include views of Baseline Avenue, SR-154, Armour Road, neighboring vineyards, and mostly low-density rural residential development.

SECTION 4.0
ENVIRONMENTAL CONSEQUENCES

In this section, environmental consequences are described for Project Alternatives. Resource areas that are analyzed in this section include direct and indirect impacts to land resources, water resources, air quality, biological resources, cultural resources, socioeconomic conditions and environmental justice, transportation and circulation, land use, public services, noise, hazardous materials, and visual resources. Direct impacts are those that are caused by the action and occur at the same time and place, while indirect impacts are caused by the action and occur later in time or further in distance, but are still reasonably foreseeable (Council on Environmental Quality, Regulation 1508.8). Cumulative effects of Alternatives A and B and growth-inducing effects of Alternative A are also assessed in this section for each of these resource areas. Note that, consistent with the CEQ's NEPA Regulations Section 1508.8, the term "effects" is used synonymously with the term "impacts."

4.1 ALTERNATIVE A – FIVE-ACRE ALLOTMENTS

4.1.1 LAND RESOURCES

METHODOLOGY

Alternative A would result in adverse impacts to land resources if construction or operation results in significant alterations to the site topography, significant soil erosion, or limits access to mineral resources of regional significance; or if geological/soil hazards associated with the existing setting would pose limitations to the development of Alternative A.

TOPOGRAPHY

As discussed in **Section 2.2**, no construction activities would occur on Parcel 5, and minimal construction would occur on Parcel 1. The current agricultural and grazing land uses would be maintained on these parcels with the exception of three acres on Parcel 1 which would be developed into a wastewater treatment plant (WWTP). The site for the WWTP is essentially flat; therefore, minimal grading would occur on Parcel 1. As described in **Section 2.2.2**, the area of disturbance on each five-acre plot proposed for Parcels 2, 3, and 4 would be approximately 0.35 acres, which includes disturbance for building pad development, driveway construction, utility installations, and landscaping. Development on each plot would accommodate the topography to preserve the natural aesthetics of the site and limit grading. Various equestrian and passive trails would be designated throughout the 206-acre Open Space/Recreational Zone. These trails would possibly require minor grading along unlevel areas. The remaining Open Space/Recreational Zone, along with the Resource Management Zones, would not require grading; however, earthwork activities would include excavation of the detention basins. As discussed within the Grading and Drainage Feasibility Analysis (Wallace, 2012), included as **Appendix D**, the most extensive grading would be conducted to meet the required design criteria for the interior road network.

The layout of the internal road network for Alternative A was designed to minimize the amount of grading required, maximize slope stabilization, and maximize road safety using the Policy on Geometric Design of Highways and Streets and the Santa Barbara Private Road and Driveway Standards (Wallace, 2012). Figure 2-1 of **Appendix D** depicts limits of cut and fill for the internal road network for Alternative A. The total amount of cut under Alternative A is 180,000 cubic yards and the total amount of fill is 190,000 cubic yards. This results in the need for approximately 10,000 cubic yards of fill material for Alternative A, which would be sourced from the proposed on-site drainage basins. Some structural grade fill may be imported to meet engineering requirements.

Because of the predominantly well-drained soils, extended distance to the water table, consideration of slope stability within the design of the internal road network, and the erosion control measures listed in **Section 5.1**, the construction of Alternative A would not increase the potential for landslides on the site. Although Alternative A would result in less than significant adverse impacts related to topography, the Tribe may implement the additional grading recommendations included within **Appendix D** to further reduce the amount of grading required for the internal road network.

SEISMICITY

The projected earthquake magnitudes for the region indicate that the project site could potentially be exposed to future seismic shaking at levels that could induce damage in ordinary buildings; however surface rupture hazards have not been identified for the Baseline Fault under California's Alquist-Priolo Act. As described in **Section 2.2.10**, all structures would meet the Tribe's building ordinance, which meets or exceeds International Building Code (IBC) requirements. Use of the IBC design and construction standards would allow ground shaking-related hazards to be managed from a geologic, geotechnical, and structural standpoint such that adverse impacts to the health or safety of workers or members of the public would be minimized.

SOILS

The soil types located on the majority of the project site are characterized by gentle slopes and moderately high permeability rates. All of the soil types in the areas proposed for development have erosion hazard ratings of slight to moderate. No development is proposed on areas of the project site containing soils which have not been rated for erosion hazards (refer to **Table 3.1-2**; **Figure 3-2**). General construction activities associated with grading and excavation reduce the integrity of the soil structure, increasing the likelihood of erosion from wind and/or stormwater runoff. With implementation of protective measures for reducing erosion during construction activities in accordance with obtaining coverage under the EPA's NPDES General Construction Permit, which are listed in **Section 5.1**, implementation of Alternative A would result in no significant adverse impacts related to soil erosion.

The soils on the areas of the project site proposed for development on Parcels 2 through 4 are characterized as being moderately to highly corrosive to steel, and are also characterized as being moderately corrosive to concrete (NRCS, 2011a). In anticipation of these soil limitations, project design (**Section 2.2.10**) has incorporated protective measures to minimize adverse impacts relative to soil corrosivity. These measures require non-corrosive materials and/or protective coatings for buried facilities to be used for construction in corrosive soils.

With the implementation of the protective measures listed in **Section 2.2.10** and the mitigation measures listed in **Section 5.1**, development of Alternative A would result in less than significant adverse impacts to land resources.

MINERAL RESOURCES

As stated in **Section 3.1.6**, there are no mineral resources located on or in the vicinity of the project site (Santa Barbara County, 2011a). Construction of the proposed developments on the project site would not result in limited access to mineral resources of regional resources. No adverse impacts to mineral resources would result from the implementation of Alternative A.

4.1.2 WATER RESOURCES

METHODOLOGY

Alternative A would result in adverse impacts to water resources if construction or operation would result in direct adverse impacts to drainage patterns resulting in off-site flooding, floodplain management, and/or cause an exceedance of applicable water quality criteria. For groundwater resources, Alternative A is analyzed to determine if either construction of operation would result in a significant decline in groundwater levels, a significant decline in groundwater recharge rates, and/or cause an exceedance of applicable groundwater quality criteria.

SURFACE WATER, DRAINAGE, AND FLOODING

Alternative A has been designed to avoid the construction of Tribal residences, roads, the wastewater treatment plant (WWTP), and utilities within riparian corridors and oak woodlands located on the project parcels (**Figure 2-1**). As discussed in **Section 2.2.7**, road crossings would occur over seven potential Waters of the U.S. Crossing of potential Waters of the U.S. would be limited to the extent feasible; however, span bridges, culverts, and crossings would be utilized where necessary to allow drainage to flow from the site. Discussion of impacts to surface water features on the project site is included in the discussion of biological resources in **Section 4.1.4**.

Alternative A would minimally increase impervious areas on Parcels 1, 2, 3 and 4 as a result of the construction of Tribal residences, WWTP, utilities, and improvements to and construction of roads and sidewalks. Parcel 5 is designated for open space and recreation, and no changes would occur. Increased impervious surfaces could result in increased peak stormwater flows and localized flooding. A grading and feasibility analysis was performed for Alternative A, which quantified the anticipated increase in stormwater runoff to determine the detention required to reduce peak runoff flows from the development to pre-existing conditions (**Appendix D**).

Drainage on the project site would be surface flow. The proposed development on Parcels 1, 2, 3, and 4 represents a three percent increase in impervious surfaces. This change is minimal and the increase in peak flows on the project site varies between less than 1 cubic feet per second (cfs) to a maximum of 9 cfs compared to existing conditions for 2- to 100-year storm event peak flows (**Appendix D**). Drainage would flow through a total of 21 road crossings prior to being discharged from the project site (**Appendix D**). As noted above, several of these road crossings would pass over potential Waters of the U.S; these may require permits from the U.S. Army Corps of Engineers (USACE). The grading and drainage feasibility analysis for Alternative A recommends the incorporation of seven detention basins within Parcels 2 and 4 into the project design to ensure discharge of stormwater run-off occurs at the same rate as during existing conditions for 2 to 100 year, 24-hour storms (**Appendix D)**. These detention basins would be approximately 100 feet by 400 feet, with depths of up to 15 feet. Basins would be shaped and designed to match the project site's terrain.

Other minor drainage improvements include the incorporation of Low Impact Development (LID) features into the project design. These include: designing roads of minimal paved width to lesson the impermeable area of Alternative A; vegetative swales along unpaved shoulders to help further the velocity of the runoff and allow for sediment to drop out of the flow prior to entering the existing channels, and infiltration planters incorporated into open space and recreation areas. In addition, culverts would be constructed to assure that drainage is not impeded at sites were the proposed access road crosses existing drainage courses. Culvert crossings would be sized to allow a 25-year, 24-hour storm event to drain without creating backwater or flooding of existing and proposed roads. Bridge crossing, basins, and crossing designed in sump conditions would be designed for the 100-year, 24-hour storm events (**Appendix D**).

With the implementation of stormwater drainage improvements recommended in **Appendix D** and the protective measures and Best Management Practices (BMPs) discussed in **Sections 2.2.8,** stormwater flows on the project site post-development would equal existing runoff rates. Thus, Alternative A would result in no significant adverse impacts from stormwater runoff generated as a result of the proposed development on Parcels 2, 3, and 4.

Under Alternative A, a WWTP would be constructed on Parcel 1. Drainage control would be installed along the perimeter of the recycled water irrigation areas to prevent comingling with stormwater runoff. Recycled water runoff would be captured and disposed of via discharge to the WWTP. The existing man-made water reservoir located on Parcel 1 would be re-purposed to store recycled water from the WWTP, and enlarged if necessary to ensure adequate storage is available during the winter months. The WWTP would be constructed next to the existing reservoir on Parcel 1. With implementation of stormwater drainage improvements recommended in **Appendix D**, stormwater flows from the WWTP facility would result in no significant adverse impacts to stormwater drainage on Parcel 1.

Implementation of Alternative A would result in no impact to existing stormwater drainage conditions on project parcels that would remain under agricultural operation (the majority of Parcel 1 and the north western portion of Parcel 2) and those not developed under Alternative A, specifically all of Parcel 5.

Although all Tribal residences, amenities, and the majority of the roads and utilities would be constructed outside the FEMA designated 100-year flood zone, several project components may be located within or adjacent to the Zone A flood hazard area. Currently, the vineyard area is located within the Zone A flood hazard area. However, this land is used for agricultural purposes. The natural permeability of the soil will ensure flooding impacts would be minimal. The proposed WWTP is planned for an area between two forks of the Zone A flood hazard area within Parcel 1. With the implementation of the recommendations identified in **Appendix D** and mitigation measures detailed in **Section 5.2**, adverse impacts to floodplain management due to construction and operation of the WWTP would be reduced through project design and construction timing to a minimal level.

One planned road in the northwestern portion of Parcel 2 is adjacent to the flood area. However, any impacts would be negligible as improvements to access roads would include culverts sized to allow at least 25-year, 24-hour storm events, or bridges, basins, and crossings sized to allow at least 100-year, 24-hour events. These modifications would allow flood water to drain through the project site without generating significant backflow (**Appendix D**). To reduce potential impacts from road construction, mitigation identified in **Section 5.2** would ensure construction activities adjacent to the floodplain are conducted during the dry season. With mitigation, no significant adverse impacts to the floodplain from Tribal roadway improvements would occur.

WATER SUPPLY AND GROUNDWATER

Under the Alternative A, the Tribe would develop an on-site water supply system to meet potable water demands. The three existing wells are reliable for future irrigation use based on their design, location within the project site, and their location within the deepest part of the groundwater basin (**Appendix C**). Although the basin may be in a state of overdraft, altered pumping patterns throughout the County and the importation of supplemental water has resulted in more balanced groundwater conditions; these changes in water use and the rising water table in the project area suggests that the three existing wells can be relied upon for agricultural use (Wallace, 2012). With the use of recycled water for irrigation of the vineyard, agricultural demands for potable water would be reduced.

Potable water supply demands for the residential aspects of Alternative A would be met via connection to two new wells. These two new wells would provide groundwater supply redundancy as well as allow flexible pumping schedules. The net water demand for Alternative A is 335 acre feet per year (afy) (refer to Table 2-4 of **Appendix C**). Peak hour demand for the potable water system is calculated as 655 gpm;

therefore two wells, rated at 750 gpm, would be adequate to supply water for Alternative A. Installation of two new groundwater wells to meet Alternative A water demands could result in significant adverse affects to the groundwater table; however, with the implementation of the mitigation measure identified in **Section 5.2**, the new wells would be developed below the Baseline Fault at a distance that would prevent adverse impacts to neighboring wells. New wells located south of the baseline fault within the central portion of the project site would cause minimal to no off-site impacts as this area constitutes the permeable sands of the relatively unexploited Careaga Formation and there are relatively few wells east and south of the project site.

Water storage for fire, emergencies, and general operations would be required for Alternative A. The location of these storage tanks would be dependent on site topography and the final location of the Tribal residences. These water storage reservoirs would meet current standards for tank design and seismic requirements. The tanks would be sited at locations to allow advantageous gravity flow while ensuring accessibility for maintenance.

Based on the available water from existing wells on the project site, the use of blending groundwater and tertiary treated recycled water from the WWTP to water the existing vineyard and landscaping, the use of storage tanks to ensure adequate water supplies throughout the year, and the balanced groundwater conditions, development of Alternative A with the mitigation measures specified in **Section 5.2** would not result in significant adverse impacts to groundwater resources.

WATER QUALITY

Construction activities and runoff from residential and community facilities could transport debris, oil, sediments, and grease into adjoining surface waters, potentially affecting surface water and groundwater quality. Increased runoff could create scouring and could impact riparian and aquatic habitats and seep into groundwater aquifers. The Tribe is required to adhere to the provisions of the Clean Water Act (CWA). To reduce the effects of increased surface runoff volume and associated pollutants, the Tribe will comply with the terms of the EPA's NPDES Construction General Permit and ensure that BMPs and mitigation measures, including as those listed in **Section 2.2.10** and **Section 5.2,** are used to reduce the risk of soil erosion and polluted discharge. Construction activities could increase the potential for erosion to occur, which could increase silt loads to the ephemeral streams and could also comprise soil integrity increasing the potential for transport of surface contaminants to groundwater resources. The recommended BMPs would significantly reduce erosion and minimize off-site pollutant transport. The Tribe will prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that will include practices that reduce potential surface water contamination during storm events and minimize groundwater contamination. As discussed in **Sections 5.1** and **5.2**, BMPs would be implemented through the SWPPP to reduce potential construction-related adverse impacts to surface and ground waters to a minimal level. Additionally, roadways will be designed with improvements such as culverts, bridges, basins, and crossings to reduce adverse impacts to minimal levels.

Wastewater Treatment and Disposal

The WWTP would be designed to ensure recycled water meets the same requirements as California Code, Title 22, which are indicative of water quality that is acceptable for irrigation of crops, including edible crops. As shown in **Appendix C**, wastewater would be treated using a conventional tertiary filtration process, followed by disinfection (such as the use of ultraviolet rays or chemical disinfectants), ensuring that the final effluent meets the requirements of effluent for unrestricted use. The solids produced by the WWTP would be dewatered and trucked off-site to be disposed at a licensed landfill (**Appendix C**).

Stormwater generated at the WWTP would be self-contained and treated at the facility. Wastewater would typically be generated at a rate of 41,000 gallons per day (gpd) average dry weather flow (ADWF) and, with treatment, would be used to offset irrigation demands on the proposed trust parcels during the irrigation season. Dilution with other well water resources would further reduce the potential for adverse impacts to water quality. Irrigation with recycled water would be limited to the irrigation season for crops or landscaping and would be applied at rates to prevent runoff. BMPs listed in **Section 2.2.10** and mitigation measures listed into **Section 5.2** would ensure irrigation rates are monitored and are appropriate for the time of year to minimize incidental runoff. During the non-irrigation season, recycled water would be stored in the existing water reservoir that located near the WWTP building on Parcel 1. Adverse impacts to surface water and groundwater quality associated with wastewater treatment and disposal would be minimal and would be in full compliance with EPA standards.

4.1.3 AIR QUALITY

METHODOLOGY

Adverse effects to ambient air quality would result if either construction or operation of Alternative A would result in non-conformance to an applicable State Implementation Plan to meet National Ambient Air Quality Standards (NAAQS) or result in emissions of significant levels of hazardous air pollutants (HAPs). Conformity regulations apply to Federal actions that would cause emissions of criteria air pollutants (CAPs) above certain levels to occur in locations designated as non-attainment or maintenance areas for the emitted pollutants.

Climate change is a global issue that is not being caused by any single development project, but by global increases in atmospheric greenhouse gas (GHG) concentrations. Thus, global warming is most effectively addressed on a global or regional level. The County of Santa Barbara has identified strategies and mitigation measures in its 2010 Climate Action Strategy (CAS), which support the States GHG reduction goals. The EPA has developed a GHG Reporting Program, which provided a GHG reporting threshold of 25,000 metric tons (MT) per year. In the absence of a federal significance threshold the 25,000 MT reporting threshold will be used to determine if project-related GHG emissions would exacerbate climate change effects. For the purposes of this analysis, cumulative contributions to climate change associated with Alternative A would not have an adverse effect, if project emissions are less than 25,000 MT and the project complies with the applicable strategies identified in the CAS.

Construction

Construction emissions for Alternative A were estimated using URBEMIS 9.2.4 (URBEMIS), which is the latest version of the air quality model approved by the EPA. URBEMIS provides default values when site-specific inputs are not available. The default values are provided in **Appendix B**. The following site-specific traffic inputs and assumptions were used for the purposes of air quality modeling:

- Construction will occur over a four year period.
- 143 residences will be built.
- The operational year is assumed to be 2017.
- Construction of on-site roads is included in the URBEMIS air quality model through the addition of three pieces of paving equipment and additional grading area.
- 10,000 cubic yards (cy) of fill would be imported to the project site from 15 miles away.
- Fill and soil haul truck would have a capacity of 13 cy.
- Grading would occur on no more than two acres of land per day.

Operation

Project-related CAP emissions were estimated using URBEMIS. Default values were used for the trip length and fleet percentage. The trip generation rates for residential development are provided in the Traffic Impact Study (**Appendix I**). The trip generation rate was derived from the Institute of Transportation Engineers, Trip Generation, 8th Edition. The proposed WWTP is assumed to be 2,000 square feet and is assumed to generate two daily trips.

Climate Change

Two recent federal court decisions [*Massachusetts v. Environmental Protection Agency*, U.S., 1275 S.Ct. 1438, 1462 (2007) and *Center for Biological Diversity v. National Highway Safety Administration*, 508 F.3d 508 (9th Cir. 2007)], the passage of California Assembly Bill 32 (AB 32), and slowly increasing scientific consensus have resulted in general guidance regarding appropriate GHG analysis during the environmental review of proposed projects and alternatives.

California's global warming policies and legislation (most notably Executive Order S-3-05 and AB 32) are intended to be regional approaches to ensure that statewide emissions are reduced substantially in the future. The County of Santa Barbara Climate Action Study (CAS) focuses on County wide action meant to curb emissions by changes in planning or policies rather than changes to individual development projects. However, some of the strategies may be directly applicable to residential projects. Components of Alternative A, state polices, and project mitigation will be compared with the CAS to determine if Alternative A is in compliance with the CAS. Project-related GHG emissions are quantified using URBEMIS air quality model and federal, California, and local emission factors. Quantified project-related GHG emissions will be compared to the applicable federal reporting threshold of 25,000 MT.

AIR QUALITY IMPACTS

Construction Impacts

Construction of Alternative A would emit CAPs, as defined in **Section 3.4**, primarily from the use of construction equipment and grading activities. Although construction would be intermittent over a four year period, it is conservatively assumed, for this analysis, to occur 8-hours a day, 5 days a week over the four year period. Alternative A annual construction emissions for each CAP are provided in **Table 4-1**. As discussed in **Section 3.4** the project site is located in the South Central Coast Air Basin (SCCAB), which is classified as attainment or unclassifiable for all NAAQS, therefore a federal general conformity determination analysis is not required for the any of the alternatives. In accordance with 40 CFR 93, construction of Alternative A would not cause an exceedance of NAAQS. Therefore, construction of Alternative A would not result in an adverse effect associated with the local or regional air quality environment.

TABLE 4-1
MITIGATED (UNMITIGATED) CONSTRUCTION EMISSIONS

Construction Year	ROG	NO_2	CO	SO_2	PM_{10}	$PM_{2.5}$
	tons per year					
2013	1.64 (2.05)	11.46 (11.46)	8.21 (8.21)	0.00 (0.00)	22.45 (54.80)	4.92 (11.89)
2014	2.91 (3.64)	19.17 (19.17)	14.34 (14.34)	0.00 (0.00)	41.05 (100.23)	8.95 (21.66)
2015	2.73 (3.46)	17.62 (17.62)	13.74 (13.74)	0.00 (0.00)	41.01 (100.14)	8.91 (21.59)
2016	1.96 (2.68)	12.33 (12.33)	10.34 (10.34)	0.00 (0.00)	40.73 (99.56)	21.21 (8.72)
2017	0.32 (0.73)	1.61 (1.61)	2.20 (2.20)	0.00 (0.00)	3.43 (8.37)	0.75 (1.81)
Maximum Annual Emissions	2.91 (3.64)	19.17 (19.17)	14.34 (14.34)	0.00 (0.00)	41.05 (100.23)	8.95 (21.66)
***De Minimis* Level**	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***
Adverse Effect?	***No***	***No***	***No***	***No***	***No***	***No***

Source: **Appendix B**

Hazardous air pollutant (HAPs) emissions in the form of diesel particulate matter (DPM) emitted from construction equipment has the potential to increase DPM concentration in the immediate vicinity of the construction site, resulting in an adverse impact if best management practices (BMPs) control measures are not implemented. BMPs provided in **Section 5.3** would reduce DPM emissions from construction equipment by approximately 50 percent, reducing adverse effects to nearby sensitive receptors to minimal levels.

Operational Emissions

Alternative A would result in the generation of CAPs primarily from mobile sources, as well as from stationary sources due to the combustion of natural gas in boilers, stoves, heating units, and other equipment on the project site during operation. Estimated mobile and stationary emissions from operation of Alternative A are provided in **Table 4-2**. URBEMIS output files are provided in **Appendix B**. The project site is in a region of attainment for all CAPs. Under the federal Clean Air Act 40 CFR Part 93, if a region is in attainment for all CAPs, then the region meets the NAAQS and there are no *de minimis levels* or "thresholds" for a project's emissions. Operation of Alternative A would result in minimal HAP emissions DPM from delivery vehicles and other limited heavy equipment use that would increase over existing conditions. These emissions would not result in adverse impacts to sensitive receptors. Alternative A would not result in significant adverse effects associated with the regional air quality environment.

TABLE 4-2
UNMITIGATED OPERATIONAL EMISSIONS

Sources	ROG	NO_2	CO	SO_2	PM_{10}	$PM_{2.5}$
	tons per year					
Area	2.67	0.40	4.34	0.01	0.55	0.53
Mobile	1.33	1.70	14.57	0.02	3.12	0.60
Total Emissions	4.00	2.10	18.91	0.03	3.67	1.13
De Minimis Levels	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***
Adverse Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: **Appendix B**

CLIMATE CHANGE

The Council on Environmental Quality (CEQ) recently provided guidance on integrating analysis of GHGs in NEPA documents. As directed by the CEQ Guidance, this EA considers whether project emissions have individual or cumulative effects on climate change. Given the global nature of climate change impacts, individual project impacts are most appropriately addressed in terms of the incremental contribution to a global cumulative impact (provided in **Section 4.4.3**). This approach is consistent with the view articulated by the *Intergovernmental Panel on Climate* (IPCC) *Change Fourth Assessment Report* (IPCC, 2007). Therefore, refer to **Section 4.4.3** for a discussion and analysis of cumulative impacts related to climate change.

4.1.4 BIOLOGICAL RESOURCES

Biological resources were evaluated based on a comprehensive examination of the existing project site and the anticipated extent of habitats, wetland features, and potential occurrences of federal listed wildlife that would be affected by Alternative A. Adverse impacts to biological resources would be considered significant if Alternative A would:

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

- Conflict with local policies or ordinances protecting biological resources;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means;
- Have a substantial adverse effect on species with special status under the federal Endangered Species Act (FESA);
- Have a substantial adverse effect on habitat necessary for the future survival of such species, including areas designated as critical habitat by the U.S. Fish and Wildlife Service (USFWS) and areas designated as Essential Fish Habitat (EFH) by the National Marine Fisheries Service (NMFS); or
- Result in take of migratory bird species as defined by the Migratory Bird Treaty Act (MBTA) (16 USC §703-712).

ESTABLISHED NATIVE RESIDENT OR MIGRATORY CORRIDORS

Alternative A was designed to avoid the ephemeral drainage that provides a migratory corridor between the northern and western portion of the project site. The Proposed Actions would have no effect on native resident or migratory fish or impede the use of native wildlife nursery sites because no habitat associated with these species occurs within the project site. No mitigation is required.

OAK TREES

Alternative A would adversely affect oak trees protected under the Tribal Ordinance Regarding Oak Tree Preservation for the Santa Ynez Band of Chumash Indians (Oak Tree Ordinance) (Santa Ynez Band of Chumash Indians, 2000) through removal of approximately 70 oak trees within the project site. The measures listed under **Section 5.4** would mitigate for adverse affects to oak trees as the residential units are planned for construction.

HABITAT TYPES

Table 4-3 summarizes the estimated impacts to habitat types by acreages associated with Alternative A. Impacts to habitat types are discussed in further detail under the *Potential Waters of the U.S.* and *Federally Listed Species* headings below.

POTENTIAL WATERS OF THE U.S.

Alternative A would adversely affect potential jurisdictional waters of the U.S., as defined by Section 404 of the Clean Water Act, through the discharge or fill of approximately 2.28 acres of ephemeral drainages, seasonal wetlands, and seasonal wetland swales located within the project site (refer to **Table 4-3**). Implementation of Alternative A would require obtaining a Section 404 permit from the USACE and a Section 401 Water Quality Certification from the USEPA. Adherence to the conditions of these permits would be required. At minimum, the measures listed under **Section 5.4** would mitigate and compensate for adverse affects to potential jurisdictional waters of the U.S.

TABLE 4-3
TERRESTRIAL AND AQUATIC IMPACTS ASSOCIATED WITH ALTERNATIVE A

Habitat	Impact (Acreage)
Nonnative Grassland	711.65
Oak Savanna	130.01
Vineyard	6.78
Ruderal/Developed	15.66
Ephemeral Drainage	2.13
Seasonal Wetland	0.05
Seasonal Wetland Swale	0.10
Total	**866.38**

FEDERALLY LISTED SPECIES

Federally Listed Plants

No potentially occurring federally listed plants occur within the proposed action area. Alternative A would have no impact on these species because they do not occur within the proposed action area. No mitigation is required.

Federally Listed Wildlife

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*; VPFS)

VPFS have the potential to occur and are assumed to be present within the seasonal wetlands. Alternative A may remove approximately 0.10 acres of seasonal wetlands and 0.05 acres of wetland swales within the project site, unless the site design is slightly altered. The 2.13 acres of ephemeral drainages on the project site do not provide adequate habitat for VPFS. No indirect effects would occur to seasonal wetlands since no other seasonal wetlands with hydrological connectivity occur within 250 feet of the seasonal wetlands proposed to be impacted.

A Biological Assessment (**Appendix E**) has been prepared and will be submitted to the USFWS pursuant to Section 7 of the FESA. A Biological Opinion will be obtained from the USFWS prior to impacting seasonal wetlands containing VPFS. Implementation of Alternative A would adversely impact VPFS habitat and mitigation is warranted. With the implementation of the mitigation listed in **Section 5.4,** the potential adverse affects on potential habitat for VPFS would not result in jeopardy and would facilitate their recovery.

California Red-Legged Frog (*Rana aurora draytonii*; CRLF)

The project site does not provide breeding habitat for CRLF. Implementation of Alternative A would have no effect on CRLF breeding habitat because none exists within the proposed action area. Alternative A provides upland habitat within all land located within 5,249 feet of wetland features occurring outside of the eastern and western boundaries of the proposed action area. Alternative A may affect CRLF should it be determined that CRLF occupy the wetland features occurring outside of the project site. The avoidance and minimization measures identified in **Section 5.4**, including preconstruction surveys, biological monitors, and environmental awareness training would ensure that Alternative A would not adversely affect CRLF.

CRITICAL HABITAT

Implementation of Alternative A would impact 330.11 acres of designated critical habitat for VPFS. This would adversely affect VPFS and therefore mitigation is specified in **Section 5.4**.

MIGRATORY BIRDS

Potential nesting habitat for migratory bird species and other birds of prey is present within and in the vicinity of the Alternative A site footprint. Construction activities could result in disturbance of nest sites for migratory birds and other birds of prey through temporary increases in ambient noise levels and increased human activity within the proposed action area. Potential disruption of nesting migratory birds and other birds of prey during construction within the proposed action area could result in the abandonment of active nests. Alternative A could result in take to migratory birds and other birds of prey if nests are determined to be active within trees anticipated for removal. With the incorporation of the mitigation measures identified under **Section 5.4** for nesting birds, including preconstruction surveys and removal of trees outside of the nesting season, adverse affects to nesting birds would be reduced to less than significant.

4.1.5 CULTURAL RESOURCES

For cultural resources, an adverse impact would result if implementation of Alternative A resulted in one or more of the following effects to cultural resources/historic properties that are listed, or eligible for listing, on the National Register of Historic Places (NRHP):

- Physical destruction of or damage to all or part of the resource;
- Alteration of a resource;
- Removal of the resource from its historic location; or
- Change of the character of the resource’s use or of physical features within the resource’s setting that contribute to its historic significance.

The project site contains a total of 16 known cultural resource sites. During the final planning phase of the project, the residential units, associated facilities, and internal roadways would be designed to completely avoid physical destruction, damage, alteration, or removal of the cultural resources. In addition, with the minimal amount of ground disturbance associated with development of each residence (0.35 acres) and the associated driveways and utilities, implementation of Alternative A would not alter the character of each resource’s use or physical features that contribute to the resource’s historical significance. With the implementation of the mitigation listed in **Section 5.4,** adverse affects to cultural resources would be less than significant.

There is a possibility that significant subsurface cultural resources exist within the project site, as archaeological sites may be buried with no surface manifestation. There is also a possibility that an unanticipated discovery of human remains could occur. Development of Alternative A may adversely affect previously unknown subsurface prehistoric or historic archaeological resources, including human remains. This would be a potentially significant impact.

Mitigation measures are presented in **Section 5.5** for the protection and treatment of unanticipated discoveries of archaeological resources and/or human remains. Implementation of these mitigation measures would reduce adverse impacts to cultural resources to minimal levels.

PALEONTOLOGICAL RESOURCES

An impact to paleontological resources would be considered significant if it would directly or indirectly destroy such resources. As described in **Section 3.5.4**, the project region contains known paleontological resources and the geology of the project site is consistent with those areas of known resources. Although no such resources were observed in the course of site reconnaissance visits in 2011 and 2012 by AES staff, geologic formations that underlie the project site have a moderate to high probability of containing paleontological resources. Therefore, mitigation measures are presented in **Section 5.5** for the protection and preservation of unanticipated discoveries of paleontological resources. Implementation of these mitigation measures would reduce adverse impacts to unknown paleontological resources to a minimal level.

4.1.6 SOCIOECONOMIC CONDITIONS / ENVIRONMENTAL JUSTICE

METHODOLOGY

Alternative A was reviewed to determine if implementation would result in adverse effects to the socioeconomic and environmental justice settings of the region. An adverse affect would occur if the implementation of the project alternatives would result in:

- The substantial alteration of the ability of the local economy to perform at existing levels, from the effects of substantial losses to businesses (for example revenues or employees) or governments (for example tax revenues)
- The displacement of substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere;
- The displacement of substantial numbers of people, necessitating the construction of replacement housing elsewhere; or
- Disproportionate and adverse affects to an identified minority or low-income community, or Indian tribe.

SOCIOECONOMIC CONDITIONS

Alternative A would remove the 1,433-acre project site from the County’s property tax rolls, which would result in a loss of tax revenues. For the 2011-2012 tax year, the property taxes for the four County assessor's parcels (five project parcels) that make up the project site totaled $78,304.96. Property taxes for individual County assessor's parcels for the 2011-2012 tax year are listed below (Santa Barbara County, 2012a):

- APN 141-121-051: $38,797.94
- APN 141-140-010: $38,468.34
- APN 141-230-023: $556.18
- APN 141-240-002: $482.50

The County Tax Collector is projected to collect a total of approximately $625 million in property taxes for the entire county 2011-2012 tax year (Santa Barbara County, 2012b). The tax on the project site was approximately 0.01 percent of the County's total tax revenue. In determining impacts to the County's tax base, the 0.01 percent loss in property taxes is de minimis and would not lead to any adverse physical effects, and therefore would not be significant under NEPA. In recognition that a possible Fee-to-Trust transfer of the 1,433 acres would take such land off the property tax rolls, the Tribe has offered a first draft payment-in-lieu of taxes agreement to the County of Santa Barbara; however, to date the County has not accepted this offer.

Because the purpose of the project is to provide housing for Tribal members without current housing assignments on the Reservation (a majority of whom currently live in the surrounding community) and all current land assignments on the existing Reservation willll continue to be maintained unchanged, it is unlikely to change either the population or demographics of the area in a substantial way. The Economic Impact Analysis (EIA) for the project (**Appendix K**) concluded that there are a sufficient number of construction workers available in the area to construct the project and that few people would move into the area as a result of the project. Alternative A would, however, result in a minor, indirect increase in population as people move into the area for construction work or to staff the jobs created indirectly from Alternative A. The project would not significantly affect population or demographics and would not be result in significant adverse impacts.

Alternative A would significantly increase direct employment during the two-year construction period (**Appendix K**). Between 100 and 360 direct construction jobs would be created in the County while the housing units are being constructed. Given the fact that the County lost 3,500 construction jobs between February 2007 and December 2011, "it would be difficult to overstate the importance of construction jobs" in the current economic climate (California Economic Forecast, 2012). Construction employment would end in 2019 shortly after the project is complete. Construction of the project is expected to result in a significant, short-term (four years) beneficial impact to the economy. Alternative A would indirectly generate or induce short-term, employment as project construction workers spend their earnings at local businesses or as a result of construction materials being purchased from local businesses. A total of 13 new retail jobs would be indirectly generated or induced as a result of Alternative A. These indirect jobs would also end after construction is finished and no additional construction dollars enter the economy.

Construction of Alternative A would increase private sector expenditures in the County between $131 million and $179 million depending on the final cost to construct the housing units. A portion of this expenditure would go to purchase of construction materials and the rest would go to wages. Construction of the project is expected to increase total personal income between $82.4 million and $100.0 million from the commencement of construction activities to 2020. During the peak year of construction (2016), Alternative A would generate between $30 million and $37 million in the County economy (California Economic Forecast, 2012). Although the property would be removed from the tax rolls after transfer into federal trust, construction expenditures (including income) would be taxed and generate revenue for local, state, and federal agencies. Construction of Alternative A would generate a short-term (four years) beneficial impact to incomes in the County. Compared with the total income in the area and the County, this would not be more than a moderate beneficial effect.

Environmental Justice

This environmental justice analysis was prepared using guidance from the Council on Environmental Quality (CEQ) for compliance with Executive Order 12898. The intent of this evaluation is to determine whether the BIA's trust acquisition and associated Tribal development of the proposed residences would impose disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

As discussed in **Section 3.6**, the project site is located in a rural area with no identified low-income or minority populations, with the exception of the Tribe. Tribal members would not be subjected to disproportionately high or adverse human health or environmental impacts because the project is for their benefit. Alternative A would not create adverse impacts with regard to environmental justice; therefore, no mitigation measures are warranted. Restoration of tribal sovereignty to the project parcels would be a benefit to the Tribe.

4.1.7 Transportation and Circulation

Methodology

Adverse impacts to the existing transportation network would occur if traffic generated during construction or operation of Alternative A would result in a violation of the significance criteria of the corresponding jurisdictional agency. A Traffic Impact Study (TIS) was developed for Alternative A. This analysis is presented in its entirety within **Appendix I**. Below is a summary of the analysis and results of the Traffic Impact Study including potential impacts to the existing roadway network.

Construction

Traffic impacts resulting from the construction of Alternative A would result from new trips being added to the roadway network from construction worker travel to the site and the delivery of equipment and materials intermittently over the four year development period. These construction-related vehicle trips and associated impacts would be temporary in nature. Construction worker trips are not anticipated to occur during peak hours (except for a slight overlap during the PM peak hour) and would be fewer in number than the new trips anticipated during operation (**Table 4-4**, discussed below). Construction worker arrival times typically peak between 6:30 AM and 7:30 AM, while departure times would peak between 4:00 PM and 5:00 PM. According to the traffic counts discussed in **Section 3.7**, the area-wide morning commute peak hour occurs from 7:30 AM to 8:30 AM; while the area-wide evening commute peak hour occurs from 4:30 PM to 5:30 PM. Trips associated with the delivery and removal of heavy equipment and materials to the site would occur intermittently during construction, as large vehicles would remain on-site during most phases of construction and materials would be stockpiled to reduce costs associated with transportation. When transport of these vehicles and materials occurs, all trucks would comply with applicable Caltrans load limits to reduce potential road degradation. Therefore, due to the temporary and intermittent nature of construction traffic, the limited number of trips expected, and the timing of these trips, construction trips on study intersections or roadways would result in minimal impacts to traffic.

OPERATION

Methodology

Traffic conditions at the time of operation of Alternative A (Near-Term Conditions) were forecast using a list of approved and pending projects located within the Santa Ynez planning area (included in **Appendix I** and summarized in **Section 4.4**, **Table 4-17**). Trip generation rates for the approved/pending projects were estimated using trip generation rates published in *Trip Generation* (Institute of Transportation Engineers, 8th Edition, 2008). The approved/pending project trips were added to the existing traffic levels identified in **Section 3.7**.

Trip Generation

The peak-hour trip generation of Alternative A was estimated using the Institute of Transportation Engineers (ITE) land use category 210 for single family homes from *Trip Generation*. **Table 4-4** presents the estimated average daily trips, AM peak hour, and PM peak hour trip generation rates and associated number of trips that would be generated under Alternative A.

TABLE 4-4
ALTERNATIVE A TRIP GENERATION RATES AND ESTIMATED TRIPS

Land Uses	Size	ADT		A.M. Peak Hour		P.M. Peak Hour	
	Units	Rate	Trips	Rate	Trips	Rate	Trips
Single Family Residential	143	9.57	1,369	0.75	107	1.01	144

Source: **Appendix I-** Associated Traffic Engineers, 2012.

Trip Distribution

The distribution of project traffic for Alternative A was determined by assessing existing travel patterns and the nature of the roadway system serving the project site. The trip distribution is presented in **Appendix I**.

Roadway Operations Standards

Refer to **Section 3.7** for the study intersection and roadway operational standards.

Impacts to Study Roadway Intersections

Table 4-5 summarizes the near-term AM and PM peak-hour LOS at each study intersection after introduction of project-generated traffic. All of the study intersections operate at LOS C or better with project traffic during both the AM and PM peak hours with the exception of SR-264 at SR-154. Mitigation measures provided in **Section 5.7** would improve the intersection operating conditions at SR-264 at SR-154 to LOS B in the AM and LOS C in the PM. With the incorporation of mitigation for the intersection of SR-264/SR-154, the implementation of Alternative A would result in minimal adverse impacts to the study roadway intersections.

TABLE 4-5
ALTERNATIVE A INTERSECTIONS LEVEL OF SERVICE AND AVERAGE DELAY

Intersection	Traffic Control	AM Peak		PM Peak	
		LOS	Average Delay (sec)	LOS	Average Delay (sec)
SR-154/US-101 SB	Stop Sign	B	11.6	B	10.5
SR-154/US-101 NB	Stop Sign	B	11.9	B	10.6
SR-154/Grand Avenue	Stop Sign	C	15.4	C	18.4
SR-154/Roblar Avenue	Stop Sign	C	16.1	C	20.2
SR-154/Edison Street	Stop Sign	B	11.7	C	15.1
SR-154/Alisal Road	Signal	C	21.5	C	22.8
SR-246/Alamo Pintado Road	Signal	B	20.0	C	26.6
SR-246/Refugio Road	Signal	B	16.8	C	28.1
SR-246/Edison Street	Signal	B	17.6	C	23.6
SR-246/SR-154	Stop Sign	B	12.7	**F**	**>50.0**

Bold indicates unacceptable LOS.
Source: **Appendix I.**

Impacts to Study State Highway Segments

Table 4-6 summarizes the near-term AM and PM peak-hour LOS at each state highway segment within the study area after introduction of project-generated traffic. All of the study area highway segments would operate at LOS D or better during both the am and pm peak hours. The implementation of Alternative A would result in minimal adverse impacts to the study state highway roadway segments.

TABLE 4-6
ALTERNATIVE A STATE HIGHWAY SEGMENT LEVEL OF SERVICE

Highway Segment	Peak Hour LOS
SR 154 North of Edison Street[1]	LOS D/LOS C
SR 154 South of SR 246-Armour Ranch Road[1]	LOS D/LOS D
SR 246 from SR 154 to Solvang[2]	LOS B-C

[1] North and southbound LOS based on travel speeds and ability to pass using P.M. peak hour flows.
[2] Signalized segments - LOS based on delays at intersections.
Source: **Appendix I**.

Impacts to Study County Roadway Segments

Table 4-7 summarizes the near-term AM and PM peak-hour LOS at each County roadway segment within the study area after introduction of project-generated traffic. All of the study County roadway segments would operate at LOS D or better during both the am and pm peak hours. The implementation of Alternative A would result in minimal adverse impacts to the study County roadway segments.

TABLE 4-7
ALTERNATIVE A COUNTY ROADWAYS OPERATIONS

Roadway	Geometry	ADT	Acceptable Capacity[1]
Baseline Avenue e/o Edison Street	2 Lanes	1,845	5,530
Armour Ranch Road e/o SR 154	2 Lanes	1,864	5,530

ADT = average daily trips.
[1] County of Santa Barbara determined that 70 percent of capacity equals LOS B.
Source: **Appendix I**.

Bicycle, Pedestrian, and Transit Networks

The project would not generate pedestrian trips, bicycling activity, or transit riders along Baseline Road, Armour Road, SR-154, SR-246, or the other public roads in the area. Existing non-vehicular networks would not be affected by the predicted LOS levels. Thus, no significant adverse impacts are projected to affect these networks as a result of Alternative A.

4.1.8 LAND USE

METHODOLOGY

Following approval of 25 CFR Part 151 Trust Acquisition, all of the project parcels would be exempt from County land use regulations. The only applicable land use regulations on the trust lands are those of the Tribe. The Tribe relies upon the Tribal Council, the governing body of the Tribe, to enact land use regulations for Tribal lands. However, the Tribal Government desires to work cooperatively with local and State authorities on matters related to land use. Additionally, NEPA requires an assessment of the project effects on and compatibility with adopted land use plans. Adverse impacts to land use would result if an incompatible land use within Alternative A would result in the inability of the County to continue to implement existing land use policies. In addition, adverse impacts to land use would result if the implementation of Alternative A resulted in the conversion of a significant percentage of County designated prime agricultural lands or other protected agricultural lands.

LOCAL PLANNING AND LAND USE COMPATIBILITY

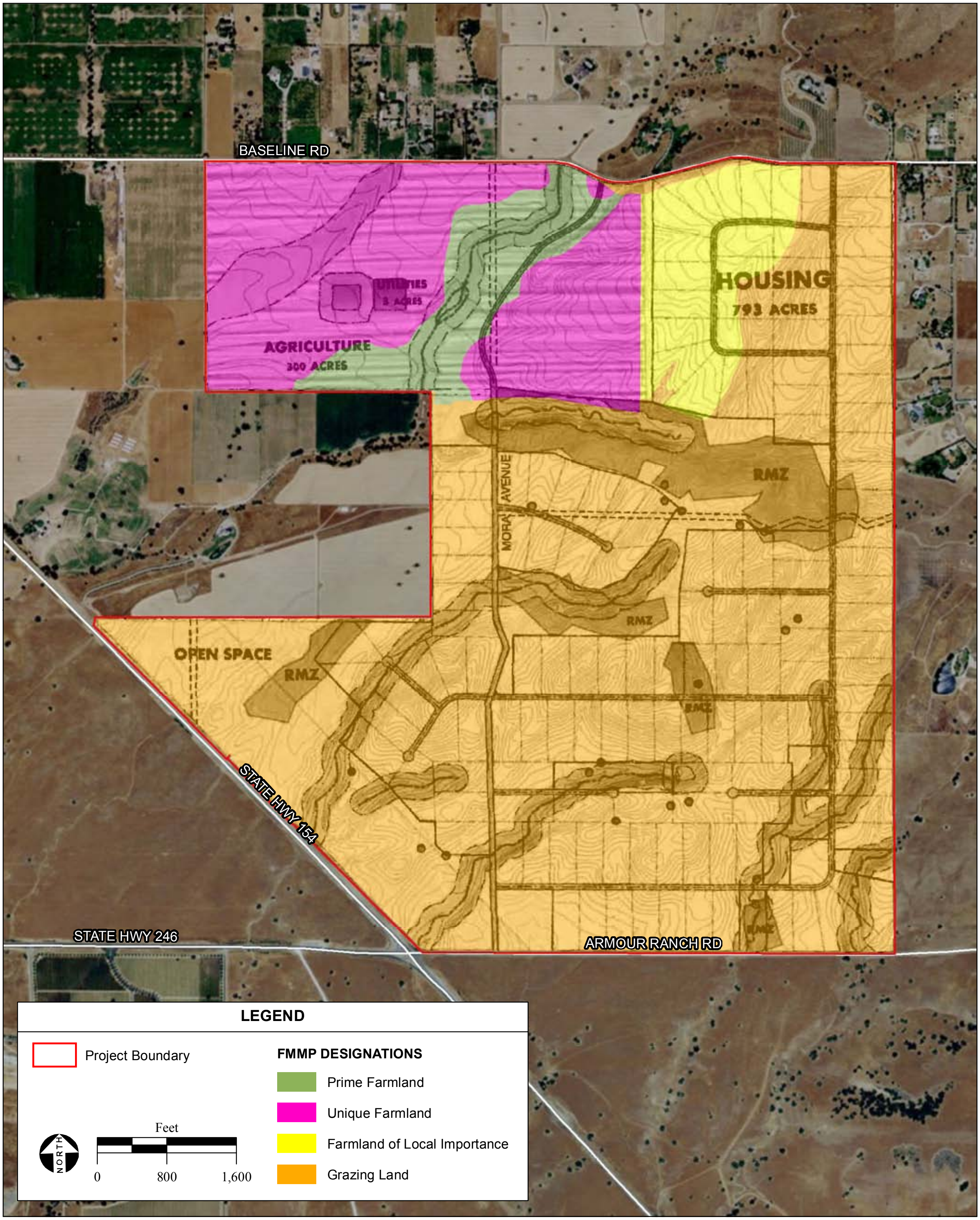
Alternative A would result in the removal of 1,433± acres from County jurisdiction and placement of the land into federal trust for the benefit of the Tribe. Under Alternative A, residential land use and utilities would cover a total of approximately 796 acres. In addition to residential development, areas have been designated by the Tribe for agricultural uses, open space, and resource management zones. Approximately 300 acres would be preserved as agricultural land within Parcels 1 and 2; 131 acres is designated as non-developable resource management zones for protecting oak woodland and riparian corridors on Parcels 2, 3, and 4; and approximately 206 acres is designated as open space/recreation land within Parcels 2, 3, and 4.

Development of tribal housing on the 1,433-acre property would not be consistent with the allowed land uses under the AG-II-100 zoning and AC land use designation identified by the Santa Barbara Comprehensive Plan if it remained under the jurisdiction of the County; however, it would be compatible with the surrounding low density rural residential developments to the north and moderately dense residential development adjacent to the northeastern border of the project site. The dedicated land uses for the remainder of the site (agriculture, open space, and resource management zone) would account for 44 percent of the total land uses on the project site after taken into trust. These land uses would be consistent with the zoning and land uses north, west, and south of the project site. Therefore, implementation of Alternative A would not conflict with surrounding land uses and would result in minimal adverse impacts to land uses.

AGRICULTURE

With the implementation of Alternative A, land currently being used for agricultural production will continue to operate and will not experience a change in land use. Parcel 1 and a portion of Parcel 2 would continue to be used as an operating vineyard under Alternative A, which would be consistent with the agricultural zoning and land use designations. An additional 60 acres would be designated for agricultural uses on Parcel 2 to allow for expansion of the existing vineyard operation. Parcel 5 and a portion of Parcel 3 would remain open space and would not be developed, which would be consistent with zoning and land use designations.

The project area encompasses land designated as prime farmland, unique farmland, farmland of local importance, and grazing land. Areas designated as prime farmland, unique farmland, and farmland of local importance are all located within Parcels 1 and 2. As shown in **Figure 4-1**, the majority of development under Alternative A would be located within grazing land. Alternative A would impact approximately 704 acres of the total 1,041.1 acres of grazing land and 0.8 of the total 84.4 acres of farmland of local importance; however, project design would minimize impacts to areas designated as prime farmland and unique farmland. The corridor of prime farmland would not be developed and would



SOURCE: Summit Project Management, 2011; California Dept. of Conservation Farmland Mapping & Monitoring Program, 2010; AES, 2012

Figure 4-1
FMMP Designations for Alternative A Site Plan

continue to operate as a vineyard. Development of the WWTP and supporting infrastructure, as described in **Section 2.0**, would be located in Parcel 1 and would impact 3 acres of the total 230.0 acres of unique farmland. The WWTP and recycled water reservoir would be located near the center of Parcel 1 and would not adversely impact the surrounding agricultural uses on the parcel. The existing water reservoir, used to store water for the vineyard, would be repurposed to store recycled water. Therefore, Alternative A would not have an overall adverse impact on local land use planning and zoning designations.

The Agricultural Element of the County's Comprehensive Plan indicates that there are approximately 105,060 acres of irrigated farmland within the County; including prime farmland, farmland of statewide importance, and unique farmland. Implementation of Alternative A would result in the conversion of a statistically insignificant percentage of harvested agricultural land for the proposed WWTP and supporting pipeline infrastructure on Parcel 1. Approximately 3 acres of the total 300 acres comprising Parcel 1 would be converted for Alternative A; thus, impacts to prime farmland under Alternative A would be minimal.

There are roughly 1,330,280 acres of grazing land in the County (Santa Barbara County, 2011a). Development of tribal residences on Parcels 2, 3, and 4 would remove approximately 0.05 percent (± 704 acres) of this grazing land from the jurisdiction of the County. The conversion of grazing lands into residential lots as proposed by Alternative A would result in an alteration of the current landscape found on Parcels 2, 3 and 4. This land is non-prime farmland and is not currently being used for agricultural purposes; therefore, impact to agriculture on these parcels would minimal.

The total Farmland Conversation Impact Rating (FCIR) score is used as an indicator for the project sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the allowable level. Sites receiving a combined score of less than 160 (out of 260 possible points) do not require further evaluation; alternative project locations should be considered for sites with a combined score greater than 160 points. A FCIR form was completed for the project site (**Appendix G**). Alternative A received a total rating of 141, scoring less than 160 points; therefore, no further evaluation is needed.

Williamson Act

All of the parcels within the project site are under Williamson Act Contracts (Santa Barbara County, 2011a). The parcels within the project site constitute approximately 1,433 acres (0.003 percent) of the 550,000± acres under County Williamson Act Contracts (Santa Barbara County, 2011). The Tribe has submitted a notice of non-renewal for the Williamson Act Contracts (**Appendix L**). In addition, the Tribe passed Resolution 931 dated July 1, 2013 which requires compliance with the provisions of the existing Williamson Act Contracts and associate non-renewal process until the contracts expire. Alternative A contains elements that would be consistent with the intent of the Williamson Act to preserve agriculture resources. As discussed above, implementation of Alternative A would result in the conversion of 3 acres of prime farmland as a result of the construction of the WWTP; however, the remaining prime farmland and a majority of the farmland of local importance (0.8 acres would be impacted) would remain in agricultural production. Accordingly, by following the non-renewal process and due to the limited acreage of farmland of local importance that would be impacted by Alternative A, a less-than-significant impact would occur and no mitigation is required.

4.1.9 PUBLIC SERVICES

METHODOLOGY

To determine the impact on public services the water supply; wastewater; solid waste; electricity, natural gas, and telecommunications; law enforcement; fire protection and emergency medical services; public schools, and parks and recreation demands for Alternative A are considered. An adverse impact would occur if project-related demands on public services would cause an exceedance of system capacities that result in a need for additional facilities, the construction and operation of which would result in adverse effects to the physical environment.

WATER SUPPLY

The project site is outside of the nearest municipal district service area. Hence no public water supply system connections are on the project site. Individual groundwater wells or water service contracts for surface water are the sources of potable and irrigation water for the region. Adverse impacts to surface water and groundwater resources from the development of Alternative A are addressed under **Section 4.1.2**. Water demand for Alternative A would be provided by the Tribe and supplied by groundwater via on-site wells. As discussed in **Section 4.1.2**, mitigation would require the Tribal groundwater wells to be developed outside zones of potential influence of off-site groundwater supply wells; therefore, the implementation of Alternative A would result in minimal impacts to water supply facilities.

WASTEWATER SERVICE

As discussed above, the project site is outside of the nearest municipal district service area. Hence no public municipal wastewater treatment facilities are on the project site. The existing wastewater needs on the project site and in the immediate vicinity are satisfied by septic systems. Alternative A includes construction of an on-site WWTP, recycled water storage reservoir on Parcel 1, and supporting pipeline infrastructure connecting internal development to the WWTP. All development components of Alternative A would be tied into the new WWTP as part of Alternative A. Overall, eliminating the need for septic systems would be environmentally beneficial and the new WWTP would provide for the use of recycled water to reduce irrigation water demands; therefore, with the lack of connections to municipal wastewater facilities, no impacts to wastewater services would occur.

SOLID WASTE

Potential solid waste from construction of Alternative A would include: paper, wood, glass, aluminum and plastics from packing materials; waste lumber; insulation; empty non-hazardous chemical containers; concrete; metal, including steel from welding/cutting operations; and electrical wiring. These materials would be collected by private waste haulers and, after shipment to the local recycling center, would be transported to the Santa Ynez Valley Recycling and Transfer Station and the Tajiguas Sanitary Landfill. The Tribe would recycle as much of the construction waste as possible; therefore, the non-recyclable construction waste would be minimal and would not cause adverse impacts to trash collection or disposal facilities.

Assuming a disposal rate of 2.3 pounds/person/day (Calrecycle, 2011) and 143 residences with an average household size of 2.61 persons (U.S. Census, 2010), approximately 860 pounds of solid waste per day (or 157 tons per year) would be disposed of by the residential component of Alternative A.

The Santa Ynez Valley Recycling and Transfer Station can process approximately 220 tons of material per day and has an average daily intake of 50 tons per day. The Tajiguas Sanitary Landfill is permitted to receive approximately 1,500 tons per day (or 547,500 tons per year) of solid waste. Currently, the landfill receives a maximum of 650 tons per day, providing a minimum remaining daily capacity of 850 tons per day (RRWMD, 2012). Alternative A would generate approximately 0.5 tons per day, which represents less than 0.3 and 0.05 percent of the transfer station's and landfill's minimum remaining permitted daily capacity, respectively. No adverse impacts would occur to municipal solid waste facilities.

ELECTRICITY, NATURAL GAS, AND TELECOMMUNICATIONS

Electrical and telephone infrastructure facilities are currently located on and near the project site. The Tribe would coordinate with service providers regarding the extension of services to the project site. No utility service impacts would occur that would result in physical adverse impacts to the environment.

LAW ENFORCEMENT

Under Public Law 280, 18 United States Code [U.S.C.] 1162, the State of California and other local law enforcement agencies have criminal enforcement authority on Tribal lands. The Santa Barbara County Sheriff's Department (SBCSD) would provide law enforcement services to the project site. The SBCSD's station closest to the project site is located in the City of Solvang, approximately 4.8 miles west of the project site.

The proposed Tribal residences would result in a negligible increase in demands on the SBCSD. Calls for service would not be disproportionate to other residential development in the County. In addition, the proposed Tribal residents are expected to relocate from existing housing units in the Santa Ynez Valley and all current land assignments on the existing Reservation shall continue to be maintained unchanged; therefore, no significant adverse impacts to law enforcement would occur that would result in physically adverse impacts to the environment. Under Alternative A, the Tribe will continue to fund the SBCSD; therefore, there will be no change in, or impacts to, these services.

FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES

Construction-related impacts include the potential for fire threat associated with equipment and vehicles coming into contact with wildland areas. Construction vehicles and equipment such as welders, torches, and grinders may accidentally spark and ignite vegetation or building materials. The increased risk of fire during the construction of the proposed facilities would be similar to that found at other construction sites. Since the project site is in an area classified as a High Fire Hazard Zone (CAL FIRE, 2012), construction activities may result in adverse impacts related to fire and medical responses services. With the implementation of the BMPS described in **Section 2.2.10** and the mitigation measures described in **Section 5.9** construction-related adverse impacts would be minimal.

The construction of Alternative A would be designed to meet existing building codes, established under a Tribal ordinance similar to IBC standards, including adherence to fire safety requirements. Use of the site for residential purposes could create additional demand for fire protection, and could require more frequent responses from local fire-fighting agencies. Alternative A would be primarily served by the Santa Barbara County Fire Department (SBCFD), through an existing service agreement with California Department of Forestry and Fire Protection (CAL FIRE). SBCFD provides service to the project area from Station 32, located approximately 0.7 mile southwest of the project site. Station 32 is fully equipped with at least four on-duty firefighter/paramedics at any given time.

Additionally, the project site is located in a State Responsibility Area, and CAL FIRE is compensated for wildland protection services as specified in the Statewide Annual Operating Plan between the BIA and CAL FIRE, as provided for in the Cooperative Wildland Fire Management and Stafford Act Response Agreement (Cooperative Agreement). The current Cooperative Agreement commenced in December 2007. Under an aid agreement, the SBCFD provides service to CAL FIRE service areas within the County. These service agreements will continue once the subject parcels are taken into trust under Alternative A; therefore, there will be no significant impact to the SBCFD or CAL FIRE pertaining to fire protection services.

Emergency calls to 911 are not anticipated to increase as a result of Alternative A as a majority of proposed residents of the housing development currently live in the Santa Ynez Valley; therefore, any new demands would be minimal. The potential increase in demand for emergency medical services would result in minimal impacts to emergency response dispatch services.

Overall, in terms of law enforcement and fire/emergency services, the Santa Ynez Valley is a net beneficiary from the ongoing fiscal support provided by the Tribe.

PUBLIC SCHOOLS

Impacts to College School District, Los Olivos School District, or Santa Ynez High School District as a result of Alternative A would be negligible because a majority of potential residents of the project site already reside in the Santa Ynez Valley or in nearby areas. Any potential increase in enrollment in local schools would be minimal. The impact of families relocating to the Tribal community after the development is completed would be negligible; therefore, no adverse impacts to local school districts would occur.

PARKS AND RECREATION

Residents of the new housing units would be Tribal members who move from existing residential units within the County, and employees would generally be current County residents. Development of the project would not increase the number of park users enough to impact local parks and recreation; therefore, a minimal impact to local parks or recreational facilities would occur.

4.1.10 NOISE

METHODOLOGY

Alternative A would have an adverse impact to the community noise level if construction noise exceeded 78 dBA, Leq between the hours of 7 am to 6 pm or if construction occurred between 6 pm to 7 am and if vibration from construction activities exceeded 0.5 Peak Particle Velocity (PPV) at structures or 0.1 PPV at sensitive noise receptor locations. Operation of Alternative A would have a significant adverse effect if an increase in traffic caused a 5 dBA, Leq increase in the ambient noise level or stationary noise sources cause the ambient noise level to exceed the Federal Highway Administrations (FHWA) Noise Abatement Criteria of 67 dBA, Leq.

Construction

Construction and operation noise effects were estimated using Caltrans methodology provided in its 2009 Technical Noise Supplement. Construction vibration effects were analyzed using Caltrans methodology provided in its 2004 Transportation and Construction-Induced Vibration Noise. Caltrans provides methods its noise publication to calculate construction and operation stationary source and transportation noise from increases in traffic, distances to receptors, and existing noise levels.

CONSTRUCTION NOISE EFFECTS

Grading and construction associated with the Alternative A would be intermittent over a four year period and temporary in nature. The closest receptors that would be exposed to noise during project construction are residence located approximately 200 feet east of the project site.

Construction noise levels at and near the project site would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips have the potential to raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. Haul trips for import of fill would be the main source of haul truck trips. During construction worker trips, one one-way fill, and four one-way material hauling trips would occur during the grading phase of construction. Because trucks are louder than passenger cars, passenger car equivalence (PCE) multiplier of 8 cars per truck was used. Therefore, the total passenger one-way car trip equivalence per day would be 90. The existing traffic volume on Armour Ranch Road is 71 trips per day; therefore, construction trip equivalence would more than double the existing traffic volume on Armour Ranch Road, which would result in a 3.6 dBA, Leq increase in the existing ambient noise level. As shown in **Table 3.10-5** average ambient noise level at the property site is 48.9 dBA, Leq. With construction traffic the ambient noise level would increase to 52.5 dBA, Leq, which is less than the federal construction noise threshold of 78 dBA (**Table 3.10-3**). Also, there is sensitive noise receptors located approximately 100 feet of potential fill, material, and equipment haul routes along SR-246, SR-156, and Baseline Road. The greatest ambient noise level along these roadways is 59.8 dBA, Leq **(Table 3.10-5)**. With project-related construction traffic the greatest ambient noise level would be 63.4 dBA, Leq, which is less than the federal construction noise threshold of 78 dBA (**Table 3.10-3**). Therefore, impacts to the ambient noise environment due to construction traffic would be minimal.

Table 4-8 presents typical stationary point source noise levels at 50 feet during different construction stages.

TABLE 4-8
TYPICAL CONSTRUCTION NOISE LEVELS

Construction Phase	Noise Level at 50 feet (dBA)
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

Source: Federal Highway Administration, 2006

Stationary point sources of noise attenuate (lessen) at a rate of 0 to 10 dBA per doubling of distance from the source, depending on the environmental characteristics of the site (i.e., topography, type of ground surfaces, noise barriers, etc.) (Caltrans, 2009a). An attenuation factor of 6.0 dBA per doubling of distance is appropriate given the topography and ground cover on and in the vicinity of the Project Site (i.e. trees and grass). The maximum construction noise at the Project Site would be 89 dBA at 50 feet. Using an attenuation factor of 6.0 dBA the noise level at the nearest sensitive noise receptor, a private residence, would be 77.0 dBA. The maximum noise level at the nearest sensitive noise receptor (a residence located 200 feet from Alternative A's eastern property boundary) would be less than the daytime (7 am to 6 pm) federal construction noise threshold of 78 dBA (**Table 3.10-3**). Therefore, with the impacts to the ambient noise environment due to on-site construction noise would be minimal.

Vibration

Construction activities would consist of using earthmoving equipment shown in **Table 4-9**, which can produce detectable or damaging levels of vibration at nearby sensitive land uses, primarily depending on the distance between the source and the nearby sensitive land use. Generally, physical damage is only possible when construction requires the use of equipment with high vibration levels (i.e., compactors, large dozers, pile drivers, etc) and occurs within 25 to 100 feet of an existing structure. **Table 4-9** provides estimated construction vibration levels at this distance. The predicted Peak Particle Velocity (PPV) levels are below the significance threshold of 0.5 PPV for structures and 0.1 PPV for annoyance of people (Caltrans, 2004). This would not be an adverse effect.

TABLE 4-9
REFERENCE AND PREDICTED PPV FROM CONSTRUCTION

Equipment	Reference PPV at 25 feet	PPV at 200 feet
	Inches per Second	
Large bulldozer	0.089	0.005
Excavator	0.089	0.005
Compactor	0.170	0.009
Scaper	0.089	0.005
Loaded trucks	0.076	0.004
Small bulldozer	0.003	0.0002

Note: PPV was predicted using the equation PPVpredicted = PPVref *(Dref/Dsource)^1.4.
Source: Caltrans, 2004.

OPERATION NOISE EFFECTS

The following identifies potential impacts from project-related noise sources, such as traffic, heating ventilation and air conditioning (HVAC) systems, and the wastewater treatment plant (WWTP).

Traffic

It is not anticipated that speed in the vicinity of the Project Site or the mix of trucks in the traffic would change during the project's operational phase; however, with the implementation of the project the traffic volumes would increase. A discussion of the potential increases in traffic noise levels along affected roadways is provided below:

SR- 154

Sensitive receptors are located on average approximately 50 feet from SR-154. As discussed in the Traffic Impact Study (TIS) included as **Appendix I**, there are approximately 532 vehicles per day on SR-154 adjacent to the southwestern portion of the project site. Alternative A would add an estimated 19 vehicles per peak day to SR-154. The existing ambient noise level 50 feet from the center line of SR-154 was measured to be 55.4 dBA, Leq, resulting in an increase of the ambient noise level of approximately 0.2 dBA Leq. As stated in the existing setting, an increase of less than 1 dBA would not be audible to sensitive receptors.

SR-246

SR-246 is located southwest of the project site and provides regional access to the project site from Solvang, Buellton, and Lompoc. Sensitive noise receptors are located approximately 50 feet from the centerline of SR-246. The existing ambient noise level 50 feet from the center line of SR-246 is approximately 56.0 dBA, Leq. The existing traffic volume on this roadway is approximately 1,155 vehicles per day (Traffic Impact Study, **Appendix I**). Alternative A would add approximately 42 vehicle trips per day to SR-246, resulting in an increase of the ambient noise level of approximately 0.2 dBA, Leq. The anticipated increase in traffic noise levels along SR-246 would not be audible to sensitive receptors.

Baseline Road

Baseline Road is located north of the project site and provides local access to Edison Road and SR-154. Residences are located approximately 50 feet from the centerline of Baseline Road. The existing ambient noise level at 50 feet from the centerline of Baseline Road was measured at 56.8 dBA, Leq. The existing traffic volume on this roadway is approximately 160 vehicles per day (TIA, **Appendix I**). Alternative A would add approximately 9 vehicle trips per day to Baseline Road, resulting in an increase of the ambient noise level of approximately 0.3 dBA, Leq. The anticipated increase in traffic noise levels along Baseline Road would not be audible to sensitive receptors.

Armour Ranch Road

Armour Ranch Road is located south of the project site and provides local access to SR-246 and SR-154. Residences are located approximately 50 feet from the centerline of Armour Ranch Road. The existing ambient noise level at 50 feet from the centerline of Armour Ranch Road was measured at 48.9 dBA, Leq. The existing traffic volume on this roadway is approximately 71 vehicles per day (TIA, **Appendix I**). Alternative A would add approximately 140 vehicle trips per day to Armour Ranch Road. Alternative A traffic would more than double the existing volume of traffic resulting in an increase of the ambient noise level of approximately 4.4 dBA, Leq. The anticipated increase in traffic noise levels along Armour Ranch Road would be less than the federal significant change in transportation noise of five dBA, Leq (refer to **Table 3.10-4**) and the federal noise abatement standard for residential receptors of 67 dBA, Leq.

The addition of traffic attributable to Alternative A would not audibly increase the ambient noise level along potentially affected roadways, including SR-246, SR-154, Baseline, and Armour Ranch Roads. Therefore, effects to sensitive noise receptors form the increase in traffic noise levels resulting from Alternative A would be minimal and no mitigation is required.

Vibration and Other Noise Source

Residential uses would bring the possibility of noise due to operations of roof-mounted air handling units associated with building HVAC equipment, WWTP, and land maintenance equipment.

The noise levels produced by HVAC systems vary with the capacities of the units, as well as with individual unit design. In this case, residential units would be located near the building, which generally produces a noise reduction barrier. Residential units are anticipated to be constructed at a distance of at least 300 feet from the nearest sensitive noise receptor, given this distance noise from residential HVAC equipment would not be audible. Therefore, there would be a less-than-significant effect due to HVAC noise.

WWTPs generate noise from pumps, processes, and on-site vehicles. Noise from pumps and processes are generally shielded within buildings and therefore, have little effect on sensitive noise receptors beyond the WWTP's boundaries. On-site vehicles generally travel at reduced speeds (less than 15 miles per hour), which reduces vehicle noise. Given the above factors and the distance to the nearest sensitive noise receptor (approximately 1,500 feet), noise from the WWTP would be minimal.

Noise from land maintenance equipment would be intermittent and temporary in nature and would be consistent with noise from established land uses. Worst case land maintenance equipment noise would be approximately 76 dBA, Leq at 50 feet. The resulting noise level at the nearest sensitive noise receptor would be 64 dBA, which is less than the Federal Noise Abatement Criteria of 67 dBA (**Table 3.10-5**). Therefore, there would be a minimal impact due land maintenance equipment noise.

Residential uses do not include sources of perceptible vibration. Therefore, impacts of vibration from Alternative A would be less-than-significant.

4.1.11 HAZARDOUS MATERIALS

METHODOLOGY

Impacts associated with hazardous materials include impacts resulting from a release of hazardous materials and impacts from improper hazardous materials management. A project would be considered to have significant hazardous materials impacts if the project site has existing hazardous materials on-site that would require remediation prior to development of a project alternative. Additionally, if a project would result in the use, handling, or generation of a regulated hazardous material, of which the regulated amounts would increase the potential risk of exposure resulting in reduction of quality of life or loss of life, then the project would have a significant adverse impact.

EXISTING SOURCES

No hazardous materials have been identified on the project site or within a distance that would expose people or the environment to hazardous materials at adverse levels.

C*ONSTRUCTION*

During the construction period, it is possible that hazardous materials, such as solvents, paint, and adhesives would be introduced, stored, and used on site. As with any liquid and solid, during handling and transfer from one container to another, the potential for an accidental release exists. Depending on the relative hazard of the material, if a spill were to occur of significant quantity, the accidental release could pose both a hazard to construction employees as well as to the environment. During grading and construction it is possible that hazardous substances such as gasoline, diesel fuel, and hydraulic fluid would be transported to the site. Temporary bulk aboveground storage tanks as well as storage sheds/trailers would likely be used by various contractors for fueling and maintenance purposes. Construction BMPs reduce and often eliminate the impact of such accidental releases. Since contact with stormwater during construction is the primary means of transporting these contaminants offsite, appropriate BMPs for this impact are included in the construction stormwater BMPs in **Section 5.11**. With the implementation of these BMPs and compliance with federal laws relating to the handling of hazardous materials, no adverse effects associated with the accidental release would occur during construction.

OPERATION

The majority of waste produced by the development of residential units on the project site would be non-hazardous. The small quantities of hazardous materials that would be generated or used would include pesticides, fertilizers, motor oil, hydraulic fluid, solvents, disinfectants, cleaners, lubricants, paint, and paint thinner. These materials would be anticipated to be generated from the homeowner maintenance. The amount and type of hazardous materials that would be generated are common to residential developments and do not pose unusual storage, handling or disposal issues. Based upon the amount and type of hazardous materials that will be stored, used, maintained and generated during operation of Alternative A, effects to the environment or public are considered to be minimal.

Additionally, the proposed WWTP may use hazardous materials such as sodium hypochlorite and citric acid. Although typical management practices reduce and often eliminate the impact accidental releases, the temporary onsite storage of hazardous materials could result in a release. The BMPS presented in **Section 2.2.10** would reduce impacts to minimal levels.

4.1.12 VISUAL RESOURCES

Impacts related to visual resources would be considered significant if Alternative A were to substantially alter or interrupt locally important scenic vistas, introduce visual elements that would conflict with the Santa Ynez Valley's rural atmosphere, or create sources of inappropriate or excessive glare or nighttime illumination.

The proposed Tribal housing development on Parcels 2, 3, and 4 would be similar in nature to existing low density, rural residential development scattered across the landscape of the Santa Ynez Valley. Project design would incorporate understated signage and safety lighting within public areas. Signage for all roads and facilities would be subtly incorporated into the landscape. All lighting at roadway intersections and parking areas for the proposed Tribal residences and WWTP would be downcast and shielded, in accordance with "dark sky" principles. As stated in **Section 2.2.10**, light poles would be no more than 18 feet high and would be required to have cut-off lenses.

The portion of the project site along scenic SR-154 that is located within the SYVCP Design Control Overlay would be preserved as an open space area. The proposed Tribal housing community and passive/equestrian trails would be separated from SR-154 by a 985-ft wide open space zone that would not be developed; therefore, only low-lying areas of the project site would be positioned within the viewshed of SR-154. The proposed WWTP and recycled water reservoir would also be buffered on all sides by the existing vineyard and would be comparable in architectural design to similar agricultural structures in the area.

Alternative A would be visible from the East Baseline/Rancho Estates subdivision located to the north and east of the project site; however, given the low density of the proposed residential lots, local views would be similar to those already found within the subdivision. As stated above, project design would prevent or minimize any sources of glare or excessive nighttime illumination. Development would be compatible with existing local conditions and visual impacts would be minimal.

4.2 ALTERNATIVE B – REDUCED DEVELOPMENT INTENSITY

4.2.1 LAND RESOURCES

The methodology used to determine project-related adverse impacts to land resources for Alternative B is the same as Alternative A. Impacts related to topography, seismicity, soils, and mineral resources under Alternative B would be similar as those described for Alternative A. For the development of Alternative B, residential lot sizes would be reduced from five acres to one acre and 30 acres would be devoted to the construction of a tribal government zone. Alternative B would increase open space and recreation land uses from 206 acres under Alternative A to 775 acres. The total amount of cut under Alternative B is 75,000 cubic yards and the total amount of fill is 160,000 cubic yards. This results in the need for approximately 75,000 cubic yards of fill material for Alternative B, which would be sourced from the proposed on-site drainage basins. Some structural grade fill may be imported to meet engineering requirements. With the implementation of the protective measures listed in **Section 2.2** and the mitigation measures listed in **Section 5.1**, development of Alternative B would result in minimal impacts to land resources.

4.2.2 WATER RESOURCES

METHODOLOGY

The methodology used to determine project-related adverse impacts to water resources for Alternative B is the same as Alternative A.

SURFACE WATER, DRAINAGE, AND FLOODING

As with Alternative A, Alternative B (**Figure 2-2**) has been designed to avoid the construction of Tribal residences, roads, WWTP, and utilities within riparian corridors and oak woodlands located on project parcels. As discussed in **Section 2.2.7**, road crossings would occur over potential Waters of the U.S. These crossings would be limited to the extent feasible; and, span bridges would be utilized where necessary to allow drainage to flow from the site. Discussion of impacts to surface water features on the project site is included in **Section 4.2.4**.

As with Alternative A, increased impervious surfaces would result in increased peak flows and increased total discharge from the project site during wet weather events, which if not properly conveyed and detained, has the potential to increase stormwater flow to off-site drainage systems. Alternative B would minimally increase impervious surfaces by approximately 4 percent on Parcels 2 and 4. The increase in peak flows would be up to 14 cfs compared to existing conditions for the 100-year, 24 hour peak storm events (**Appendix D**). Stormwater runoff generated on the project site would flow through a total of 13 road crossing, surface swales, and permeable surfaces to one of seven detention basins within Parcel 2 to ensure off-site stormwater peak discharge rates are the same rate as those under existing conditions for the 2- to 100-year storm events. Basins would be shaped and designed to match the project site's terrain. Other drainage recommendations would be the same as for Alternative A. With the implementation of stormwater drainage improvements recommended in **Appendix D** and the BMPs and mitigation measures discussed in **Sections 2.2.10**, stormwater flows on the project site post-development would not exceed existing peak runoff rates. Thus, Alternative B would result in no significant adverse impacts to drainage.

As noted in **Section 4.2.1**, a WWTP would be constructed on Parcel 1. Impacts to water resources under Alternative B with regards to the WWTP would be identical to those under Alternative A. The same mitigation for Alternative A would be required to reduce the impacts associated with Alternative B. Treated effluent would be recycled and applied to land on the parcels to be taken into trust and so impacts to water quality would less than significant.

Alternative B includes the construction of tribal community facilities and associated parking spaces. This center would have open space incorporated in and around it to accommodate low impact development (LID) stormwater features including biofiltration swales and detention basins. Areas outside this building would be kept as permeable surfaces to the maximum extent practicable, either as vegetation or high infiltration cover. With the implementation of stormwater drainage improvements recommended in **Appendix D** and the protective measures and BMPs discussed in **Section 2.2.10**, impacts due to the tribal community facilities would be minimal.

Implementation of Alternative B would result in no impact to existing stormwater drainage conditions on the project parcels that would remain under agricultural operation (the majority of Parcel 1 and the north western portion of Parcel 2) and those not developed under Alternative B, specifically Parcels 3 and 5.

As noted in **Sections 3.2.1** and **4.1.2**, portions of Parcels 1 and 2 of the project site are mapped as FEMA-designated 100-year Zone A flood area (refer to **Figure 3-2**). All Tribal residences, amenities, and the majority of the roads and utilities would be constructed outside the FEMA designated 100-year, 24-hour flood zone. As noted in **Section 4.1.2**, the vineyard area is located within the Zone A flood hazard area. However, this land is used for agricultural purposes. The natural permeability of the soil will ensure flooding impacts would be minimal. The proposed WWTP is planned for an area between two forks of the Zone A flood hazard area within Parcel 1. With the implementation of the recommendations identified in **Appendix D**, adverse impacts to floodplain management due to construction and operation of the WWTP would be reduced through project design and construction timing to a minimal level (refer to **Section 5.2**).

As with Alternative A, one planned road in the northwestern portion of Parcel 2 is adjacent to the flood area. However, the modifications and mitigations described in **Section 4.1.2** and **Section 5.2** would allow floodwater to drain through the project site without generating significant backflow and ensure there would be no significant adverse impacts to the floodplain from tribal roadway improvements (**Appendix D**).

WATER SUPPLY AND GROUNDWATER

Similar to Alternative A, under Alternative B the Tribe would develop an on-site water supply system to meet potable water demands. Groundwater wells would be located near the areas designated for Tribal housing and Tribal Government Center (Parcels 2, 3, and 4). The net water demand for potable water for Alternative B is 106 afy (refer to Table 2-5 of **Appendix C**). The tribal community facilities would require an additional 4.3 afy of water within the community center and administrative offices (refer to Table 2-5 of **Appendix C**). The existing vineyard on Parcels 1 and 2 and the open space and recreation area demands would be served by blending groundwater with tertiary treated recycled water from the WWTP located on Parcel 1. Two new wells would be adequate to supply potable water for Alternative B. Although the tribal community facilities increase water demands compared to Alternative A, Alternative B also reduces residential irrigation demand considerably with the smaller lot sizes and an increase in open space and recreation areas. Peak hour demand for the potable water system for Alternative B is calculated as 230 gpm; therefore two new wells, rated at 500 gpm, would be adequate to supply water for Alternative B. With the implementation of the mitigation measure outlined in **Section 5.2**, the new wells would be developed below the Baseline Fault at a distance that would prevent adverse impacts to neighboring wells.

As with Alternative A, water storage for fire, emergencies, and general operations would be required for Alternative B. The location of these storage tanks would be dependent on site topography and the final location the Tribal residences. These water storage reservoirs would meet current standards for tank design and seismic requirements. The tanks would be sited at locations to allow advantageous gravity flow while ensuring accessibility for maintenance and protection of the viewsheds.

The property's current water system, in conjunction with the proposed domestic wells, water from the WWTP, and the fire, emergency, and operational water storage tanks described above would provide adequate water supplies to meet the Alternative B's water demands while not significantly impacting the groundwater aquifer in the region.

WATER QUALITY

Impacts to water quality under Alternative B would be identical to those under Alternative A. The BMPs and mitigation measures listed in **Sections 2.2.10, 5.1** and **5.2** would ensure any impacts to water quality due to Alternative B would be less than significant.

Wastewater Treatment and Disposal

The WWTP for Alternative B would be designed similarly to what is proposed under Alternative A. However, Alternative B would typically produce approximately 44,000 gpd. This number is higher than Alternative A due to the addition of the tribal community facilities which would include food preparation facilities. Similar to Alternative A, treated effluent would be used to offset irrigation demands on the proposed trust parcels during the irrigation season. Well water would be mixed with the recycled water to ensure minimal impacts to water quality. Irrigation with recycled water would be limited to the irrigation seasons for crops or landscaping and would be applied at rates to prevent runoff. Mitigation has been incorporated into **Section 5.2** to ensure irrigation rates are monitored and are appropriate for the time of year to minimize incidental runoff. Similar to Alternative A, recycled effluent would be stored in the existing water reservoir that is located on Parcel 1. Any adverse impacts to surface water and groundwater quality associated with wastewater treatment and disposal would be minimal.

4.2.3 AIR QUALITY

METHODOLOGY

The methodology used to determine project-related pollutant emissions and impacts for Alternative B is the same as Alternative A; except that operation of Alternative B includes the development of the tribal community facilities. The trip generation rates for the tribal community facilities are provided in **Appendix I**. Trip generation rates for the tribal community facilities were derived from the Institute of Transportation Engineers, Trip Generation, 8th Edition.

AIR QUALITY IMPACTS

Construction Impacts

Construction of Alternative B would also emit criteria air pollutants (CAPs), as defined in **Section 3.4**, primarily from the use of construction equipment and grading activities. Although construction would be intermittent over a four year period, it is conservatively assumed, for this analysis, to occur 8-hours a day, 5 days a week over the four year period. Construction is assumed for this analysis to occur 8-hours a day, 5 days a week. Alternative B annual construction emission for each CAP is shown in **Table 4-10**.

Construction would occur on the project site, which is in a region of attainment for all criteria pollutants; therefore, in accordance with 40 CFR 93, construction of Alternative B would not cause an exceedance of NAAQS. Therefore, construction of Alternative B would not result in an adverse effect associated with the local or regional air quality environment.

TABLE 4-10
MITIGATED (UNMITIGATED) CONSTRUCTION EMISSIONS

Construction Year	ROG	NO_2	CO	SO_2	PM_{10}	$PM_{2.5}$
	tons per year					
2013	1.68 (2.18)	11.66 (11.66)	8.66 (8.66)	0.00 (0.00)	26.81 (65.46)	5.83 (14.12)
2014	3.01 (3.90)	19.49 (19.49)	15.12 (15.12)	0.00 (0.00)	49.06 (119.82)	10.63 (25.76)
2015	2.83 (3.72)	17.91 (17.91)	14.46 (14.46)	0.00 (0.00)	49.02 (119.73)	10.59 (25.69)
2016	2.05 (2.93)	12.57 (12.57)	10.99 (10.99)	0.00 (0.00)	48.74 (119.15)	10.40 (25.30)
2017	0.34 (0.85)	1.64 (1.64)	2.46 (2.46)	0.00 (0.00)	4.14 (10.10)	0.90 (2.17)
Maximum Annual Emissions	3.01 (3.90)	19.49 (19.49)	15.12 (15.12)	0.00 (0.00)	49.06 (119.82)	10.63 (25.76)
***De Minimis* Level**	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***
Adverse Effect?	***No***	***No***	***No***	***No***	***No***	***No***

Source: **Appendix B**

Hazardous air pollutant (HAPs) emissions in the form of diesel particulate matter (DPM) emitted from construction equipment has the potential to increase DPM concentration in the immediate vicinity of the construction site, resulting in an adverse impact if best management practices (BMPs) control measures are not implemented. BMPs provided in **Section 5.3** would also reduce DPM emissions from construction equipment by approximately 50 percent, reducing adverse effects to nearby sensitive receptors to minimal levels.

Operational Emissions

Alternative B would result in the generation of CAPs primarily from mobile sources, as well as from stationary sources due to the combustion of natural gas in boilers, stoves, heating units, and other equipment on the project site during operation. Estimated mobile and stationary emissions from operation of Alternative B are provided in **Table 4-11**. URBEMIS output files are provided in **Appendix B**.

TABLE 4-11
UNMITIGATED OPERATIONAL EMISSIONS

Sources	ROG	NO_2	CO	SO_2	PM_{10}	$PM_{2.5}$
	tons per year					
Area	2.78	0.50	4.56	0.01	0.55	0.53
Mobile	2.69	3.52	29.37	0.04	6.39	1.23
Total Emissions	5.47	4.02	33.93	0.05	6.94	1.76
De Minimis Levels	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Adverse Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: **Appendix B**

The project site is in a region of attainment for all CAPs. Under the federal Clean Air Act 40 CFR Part 93, if a region is in attainment for all CAPs, then the region meets the NAAQS and there are no *de minimis levels* or "thresholds" for a project's emissions. Operation of Alternative B would result in minimal HAP emissions (DPM) from delivery vehicles and other limited heavy equipment use. These emissions would not result in adverse impacts to sensitive receptors. Alternative B would not result in significant adverse effects associated with the regional air quality environment.

CLIMATE CHANGE

Refer to **Section 4.4.3** for a discussion and analysis of cumulative impacts related to climate change.

4.2.4 BIOLOGICAL RESOURCES

As with Alternative A, significant impacts to biological resources would occur if implementation of Alternative B would result in direct or indirect take of any federally listed species, including the destruction or degradation of any identified critical habitat. Biological resources were evaluated based on a comprehensive examination of the existing project site and the anticipated extent of habitats, wetland features, and potential occurrences of federal listed wildlife that would be affected by Alternative B.

ESTABLISHED NATIVE RESIDENT OR MIGRATORY CORRIDORS

Alternative B was designed to avoid the ephemeral drainage that provides a migratory corridor between the northern and western portion of the project site. In addition, the open space associated with Alternative B would allow for overland migration through the project site to the agricultural and annual grassland areas to the southwest, south, and west of the project site. Alternative B would have no effect on native resident or migratory fish or impede the use of native wildlife nursery sites because no habitat associated with these species occurs within the project site. No mitigation is required.

The proposed action area does not contain any native resident or migratory fish or wildlife species. Alternative B would have no impact on native resident or migratory fish or wildlife species because none exist within the proposed action area. No mitigation is required.

OAK TREES

Alternative B would adversely affect oak trees protected under the Tribal Ordinance Regarding Oak Tree Preservation for the Santa Ynez Band of Chumash Indians (Oak Tree Ordinance) (Santa Ynez Band of Chumash Indians, 2000) through removal of approximately 50 oak trees within the project site. The measures listed under **Section 5.4** would mitigate for adverse affects to protected oak trees.

HABITAT TYPES

Table 4-12 summarizes the estimated impacts to habitat types by acreages associated with Alternative B. Impacts to habitat types are discussed in further detain under the *Potential Waters of the U.S.* and *Federally Listed Species* headings below.

TABLE 4-12
TERRESTRIAL AND AQUATIC IMPACTS ASSOCIATED WITH ALTERNATIVE B

Habitat	Impact (Acreage)
Nonnative Grassland	170.56
Oak Savanna	8.71
Vineyard	5.28
Ruderal/Developed	4.93
Ephemeral Drainage	2.51
Seasonal Wetland	0.01
Total	**192.00**

Source: AES, 2012

POTENTIAL WATERS OF THE U.S.

Alternative B could adversely affect potential jurisdictional waters of the U.S., as defined by Section 404 of the Clean Water Act, through the discharge or fill of approximately 2.52 acres of ephemeral drainages and seasonal wetlands located within the project site, and impacts associated with development of the detention basins. Implementation of Alternative B may require obtaining a Section 404 permit from the USACE and a Section 401 Water Quality Certification from the USEPA. Adherence to the conditions of these permits would be required. At minimum, the measures listed under **Section 5.4** would mitigation and compensate for adverse affects to potential jurisdictional waters of the U.S.

FEDERALLY LISTED SPECIES

Federally Listed Plants

No potentially occurring federally listed plants occur within the proposed action area. Implementation of Alternative B would have no impact on these species because they do not occur within the proposed action area. No mitigation is required.

Federally Listed Wildlife

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*; VPFS)

VPFS have the potential to occur and are assumed to be present within the seasonal wetlands. Alternative B would remove approximately 0.01 acres of seasonal wetlands within the project site, unless the site plan is slightly modified. No indirect effects would occur to seasonal wetlands since no other seasonal wetlands with hydrological connectivity occur within 250 feet of the seasonal wetlands proposed to be impacted.

A Biological Assessment will be prepared and will be submitted to the USFWS pursuant to Section 7 of the FESA. A Biological Opinion shall be obtained from the USFWS prior to impacting seasonal wetlands containing VPFS. Implementation of Alternative B would adversely impact VPFS habitat and mitigation is warranted. With the implementation of the mitigation listed in **Section 5.4, t**he potential adverse affects on potential habitat for VPFS would not result in jeopardy and would facilitate their recovery.

California Red-Legged Frog (*Rana aurora draytonii*; CRLF)

The project site does not provide breeding habitat for CRLF. Alternative B would have no effect on CRLF breeding habitat because none exists within the proposed action area. The project site provides upland habitat within all land located within 5,249 feet of wetland features occurring outside of the eastern and western boundaries of the proposed action area. Alternative B may affect CRLF should it be determined that CRLF occupy the wetland features occurring outside of the project site. The avoidance and minimization measures identified in **Section 5.4**, including preconstruction surveys, biological monitors, and environmental awareness training would ensure that Alternative B would not adversely affect CRLF.

CRITICAL HABITAT

Alternative B would impact 65.28 acres of critical habitat for VPFS. This would adversely affect VPFS and therefore mitigation is specified in **Section 5.4**.

MIGRATORY BIRDS

Construction activities associated with Alternative B could result in disturbance of nest sites for migratory birds and other birds of prey within the blue oak woodland through temporary increases in ambient noise levels and increased human activity within the proposed action area. Potential disruption of nesting migratory birds and other birds of prey during construction within the proposed action area could result in the abandonment of active nests. Implementation of Alternative B could result in take of migratory birds and other birds of prey if nests are determined to be active within trees anticipated for removal. With the incorporation of the mitigation measures identified under **Section 5.4** for nesting birds, including preconstruction surveys and removal of trees outside of the nesting season, impacts to nesting birds would be reduced to less than significant.

4.2.5 CULTURAL RESOURCES

The implementation of Alternative B would result in similar impacts as those identified under Alternative A. As with Alternative A, during the final planning phase of the project, the residential units, associated facilities, and internal roadways would be designed to completely avoid adverse impacts to the cultural resources. In addition, with the minimal amount of ground disturbance associated with development of each residence (0.25 acres) and the associated driveways and utilities, implementation of Alternative B would not alter the character of each resource’s use or physical features that contribute to the resource’s historical significance. With the implementation of the mitigation listed in **Section 5.4,** adverse affects to cultural resources would be less than significant.

There is a possibility that significant subsurface cultural resources exist within the project site, as archaeological sites may be buried with no surface manifestation. There is also a possibility that an unanticipated discovery of human remains could occur. Development of Alternative B may adversely affect previously unknown subsurface prehistoric or historic archaeological resources, including human remains. This would be a potentially significant impact.

Mitigation measures are presented in **Section 5.5** for the protection and treatment of unanticipated discoveries of archaeological resources and/or human remains. Implementation of these mitigation measures would reduce adverse impacts to cultural resources to minimal levels.

Paleontological Resources

As discussed under Alternative A, the geology of the project site is consistent with those areas of known resources. Therefore, mitigation measures are presented in **Section 5.5** for the protection and preservation of unanticipated discoveries of paleontological resources. Implementation of these mitigation measures would reduce adverse impacts to unknown paleontological resources to less-than-significant levels.

4.2.6 Socioeconomic Conditions / Environmental Justice

Methodology

The methodology used to determine project-related adverse impacts to socioeconomic conditions/ environmental justice for Alternative B is the same as Alternative A.

Socioeconomic Conditions

Alternative B would remove the 1,433-acre project site from the County's property tax rolls, which would result in a loss of tax revenue. As with Alternative A, this loss of revenue would be a small fraction of total County tax revenue (0.01 percent) and would not lead to any significant adverse effects.

Direct impacts to demographics and population, employment and income, and housing from construction of Alternative B would be similar to those described above for Alternative A. Alternative B would result in additional jobs related to the proposed tribal facilities described in **Section 2.3**. Operation of the Tribal facilities would generate up to 75 full-time equivalent positions. Much of the office space would be used for existing Tribal employees and would have little effect on direct employment. This would be a minor, long-term beneficial impact to the economy.

Environmental Justice

The impacts to low-income and minority populations for Alternative B are the same as for Alternative A. The Tribe is the only identified minority population in the vicinity of the project site. No other low-income or minority populations are present. Tribal members would not be subjected to disproportionately high or adverse human health or environmental impacts because the project is for their benefit.

Alternative B would not result in adverse impacts with regard to environmental justice; therefore, no mitigation measures are warranted.

4.2.7 TRANSPORTATION AND CIRCULATION

METHODOLOGY

The methodology used to determine project-related adverse impacts to transportation and circulation for Alternative B is the same as Alternative A.

CONSTRUCTION

Alternative B would have similar construction impacts as Alternative A, with a minor increase in the number of delivery trips associated with the development of the banquet/exhibition hall, tribal office complex, and tribal community space. Based on the anticipated LOS conditions during operation of Alternative B, the minor increase in trips related to construction would not result in adverse impacts to roadway operations.

OPERATION

Methodology

Near-Term Conditions at the time of operation of Alternative B are the same as those determined under Alternative A in **Section 4.1.7**.

Trip Generation Rate

The trip generation rate for the single family residential units under Alternative B is the same as under Alternative A. For the Tribal development proposed on the 30-acre portion of Parcel 3, the Traffic Impact Study conservatively estimated that all 80,000 square feet of development would add new trips to the study roadway network simultaneously during peak hours. This assessment provides a worst-case impact assessment scenario. The Tribal development trips were estimated using the trip generation rate for land use category 495 Recreational Community Center published in the ITE *Trip Generation* Manual for all 80,000 square feet of development. Utilization of ITE and use category 495 provides a conservative assessment of the entire development (use of office ITE rates for some of the spaces would result in a lower overall trip generation rate). **Table 4-13** presents the estimated average daily trips, AM peak hour, and PM peak hour trip generation rates and associated number of trips that would be generated under Alternative B.

Trip Distribution

The distribution of project-related traffic for Alternative B would be similar to that of Alternative A (**Appendix I**).

TABLE 4-13
ALTERNATIVE B TRIP GENERATION RATES AND ESTIMATED TRIPS

Land Uses	Size	ADT		A.M. Peak Hour		P.M. Peak Hour	
		Rate	Trips	Rate	Trips	Rate	Trips
Single Family Residential	143 units	9.57	1,369	0.75	107	1.01	144
Community Center	80 ksf	22.88	1,830	1.62	130	1.45	116
Total Trips			**3,199**		**237**		**260**

Source: **Appendix I**

Impacts to Study Roadway Intersections

Table 4-14 summarizes the near-term AM and PM peak-hour LOS at each study intersection after introduction of project-generated traffic. All of the study intersections operate at LOS C or better with project-related traffic during both the AM and PM peak hours with the exception of SR-264 at SR-154. Mitigation measures provided in **Section 5.7** would reduce the intersection at SR-264 at SR-154 to LOS B in the AM and LOS C in the PM. With mitigation, the implementation of Alternative B would result in minimal adverse impacts to the study roadway intersections.

TABLE 4-14
ALTERNATIVE B INTERSECTIONS LEVEL OF SERVICE AND AVERAGE DELAY

Intersection	Traffic Control	AM Peak		PM Peak	
		LOS	Average Delay (sec)	LOS	Average Delay (sec)
SR-154/US-101 SB	Stop Sign	B	11.7	B	10.5
SR-154/US-101 NB	Stop Sign	B	12.0	B	10.7
SR-154/Grand Avenue	Stop Sign	C	15.5	C	18.5
SR-154/Roblar Avenue	Stop Sign	C	16.3	C	20.4
SR-154/Edison Street	Stop Sign	B	11.8	C	15.3
SR-154/Alisal Road	Signal	C	20.8	C	23.3
SR-246/Alamo Pintado Road	Signal	C	20.2	C	27.0
SR-246/Refugio Road	Signal	C	17.7	C	27.3
SR-246/Edison Street	Signal	C	19.0	C	22.2
SR-246/SR-154	Stop Sign	C	14.3	**F**	**>50.0**

Bold indicates unacceptable LOS.
Source: **Appendix I**

Impacts to Study State Highway Roadway Segments

Table 4-15 summarizes the near-term AM and PM peak-hour LOS at each state highway segment after introduction of project-generated traffic. All of the study area highway segments currently operate at LOS D or better during both the AM and PM peak hours. The implementation of Alternative B would result in minimal adverse impacts to the study state highway roadway segments.

TABLE 4-15
ALTERNATIVE B STATE HIGHWAY SEGMENT LEVEL OF SERVICE

Highway Segment	Peak Hour LOS
SR 154 North of Edison Street[1]	LOS D/LOS C
SR 154 South of SR 246-Armour Ranch Road[1]	LOS D/LOS D
SR 246 from SR 154 to Solvang[2]	LOS B-C

[1] North and southbound LOS based on travel speeds and ability to pass using P.M. peak hour flows.
[2] Signalized segments - LOS based on delays at intersections.
Source: **Appendix I**

Impacts to Study County Roadway Segments

Table 4-16 summarizes the near-term AM and PM peak-hour LOS at each County roadway segment after introduction of project-generated traffic. The implementation of Alternative B would result in minimal adverse impacts to the study County roadway segments.

TABLE 4-16
ALTERNATIVE B COUNTY ROADWAYS OPERATIONS

Roadway	Geometry	ADT	Acceptable Capacity[1]
Baseline Avenue e/o Edison Street	2 Lanes	2,051	5,530
Armour Ranch Road e/o SR 154	2 Lanes	3,030	5,530

ADT = average daily trips.
[1] County of Santa Barbara determined that 70 percent of capacity equals LOS B.
Source: **Appendix I**

Bicycle, Pedestrian, and Transit Networks

Alternative B would have the same bicycle, pedestrian, and transit impacts as Alternative A.

4.2.8 LAND USE

METHODOLOGY

The methodology used to determine project-related adverse impacts to land use for Alternative B is the same as Alternative A.

LOCAL PLANNING AND LAND USE COMPATIBILITY

Alternative B would result in the removal of 1,433± acres from County jurisdiction, placing the land into federal trust for the benefit of the Tribe. Alternative B would remove the same amount of acreage from the County's jurisdiction as Alternative A and, therefore, would result in similar impacts to local land use planning and zoning designations. As with Alternative A, Santa Barbara County would no longer retain land use jurisdiction over the project site after it is taken into trust, and the current zoning and land use designations assigned to the project site would no longer apply.

Development proposed under Alternative B is of reduced intensity compared to Alternative A. Rather than developing 143 five-acre lots, Alternative B would involve developing 143 one-acre lots. Total residential land use and utilities would cover approximately 197 acres compared to the approximately 796 acres proposed under Alternative A. Land preserved for agricultural uses under Alternative B would be the same as Alternative A (300 acres). Because less acreage would be designated for residential purposes under this alternative, even when including the proposed 30 acres of Tribal development, more acreage would be preserved for open space and recreational uses than Alternative A; approximately 775 acres would remain undeveloped and used as open space/recreation areas compared to approximately 206 acres proposed under Alternative A. Implementation of Alternative B would result in minimal impacts to land use.

AGRICULTURE

Similar to Alternative A, all onsite agricultural activities would continue to operate. The WWTP and associated facilities proposed for development under Alternative B are identical to that which is proposed for Alternative A; therefore, the same impacts to prime farmland and unique farmland would occur. As seen in **Figure 4-2,** the reduced intensity residential development under Alternative B would have less of an impact on farmland of local importance than Alternative A. When compared to Alternative A, approximately 569 additional acres of grazing land would remain undeveloped under this reduced intensity alternative. Alternative B received a total FCIR rating of 137, scoring less than 160 points; therefore, no further evaluation is needed. Implementation of Alternative B would result in minimal impacts to agriculture.

Williamson Act

The project site under Alternative B would include the same parcels currently under Williamson Act Contracts as Alternative A and impacts would be similar. By following the non-renewal process as required through Tribal Resolution 913 and due to the limited acreage of farmland of local importance that would be impacted by Alternative B, a less-than-significant impact would occur and no mitigation is required.

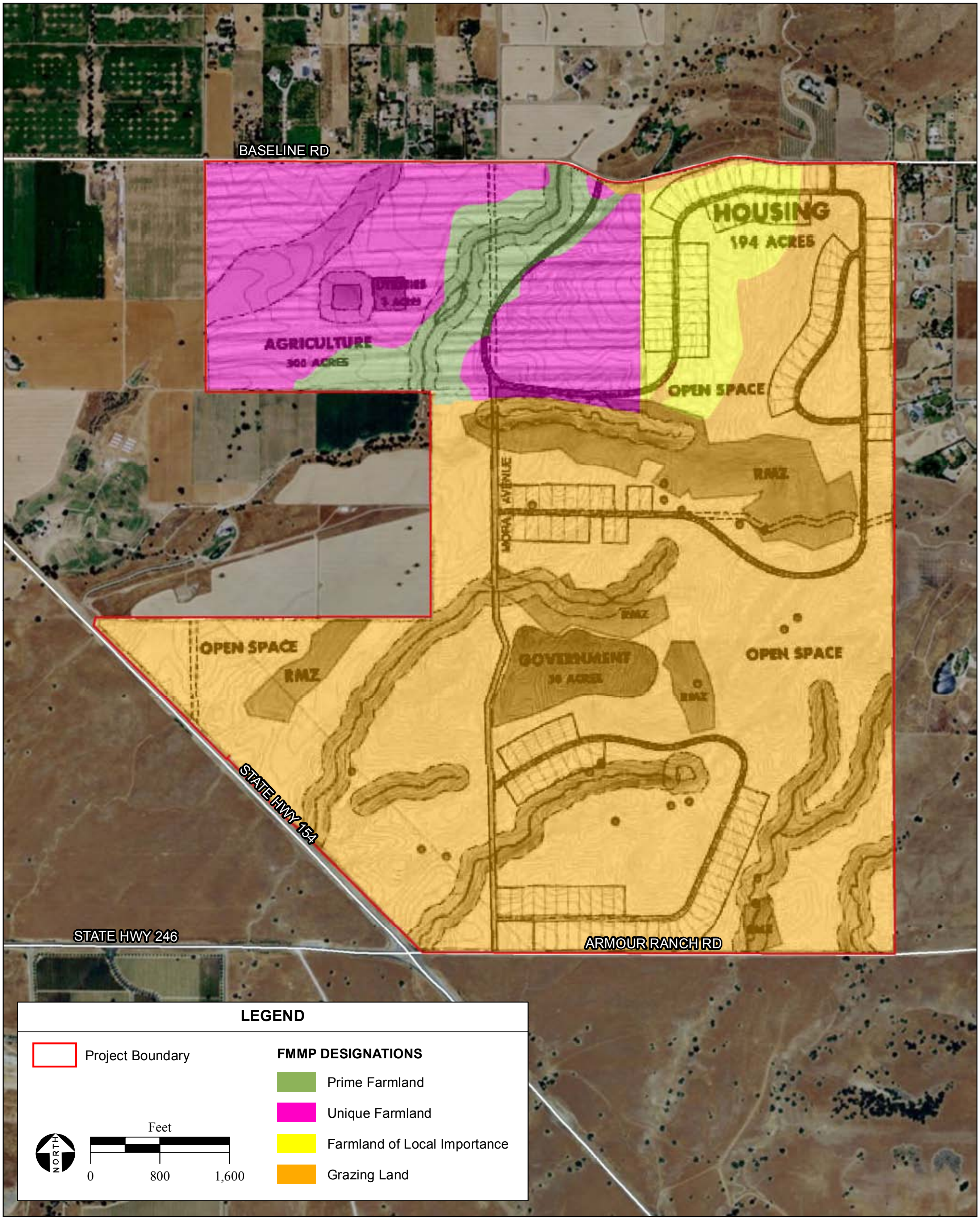
4.2.9 PUBLIC SERVICES

METHODOLOGY

The methodology used to determine project-related adverse impacts to public services for Alternative B is the same as Alternative A.

WATER SUPPLY

Although potable water demand would increase under Alternative B compared to Alternative A, the project site would still obtain water through the development of onsite groundwater sources. Alternative B would have no adverse effects on existing municipal water supplies after mitigation is implemented.



SOURCE: California Dept. of Conservation Farmland Mapping & Monitoring Program, 2010; USDA NAIP Aerial Photograph, 2010; AES, 2012

Figure 4-2
FMMP Designations for Alternative B Site Plan

WASTEWATER SERVICE

Under Alternative B, wastewater would be treated onsite at the proposed WWTP. The construction and operation of the onsite WWTP would not adversely impact existing municipal treatment facilities.

SOLID WASTE

Construction waste would be generated temporarily and would consist of the same materials described previously under Alternative A. Generation rates would be similar to Alternative A. Because most Tribal members that would be residents and employees already live within the County, the net impact to the existing landfills would not change and no adverse effects would occur. It is estimated that up to 75 full-time equivalent employees could be hired as a result of Alternative B. Public administration facilities typically dispose of 0.4 tons of solid waste per employee per year (CIWMB, 2007). Therefore, the community facilities, housing, and related support facilities under Alternative B are estimated to dispose of no greater than approximately 30 tons of solid waste per year. An additional 30 tons per year would not impact the Santa Ynez Valley Recycling and Transfer Station (which currently has 170 tons per day of unused permitted capacity) or the Tajiguas Sanitary Landfill (which currently has 850 tons per day of unused permitted capacity). Solid waste accumulated during special events at the exhibition hall would be collected at the time of the event through contractors hired by the Tribe and disposed of accordingly. With 170 tons per day and 850 tons per day of remaining capacity at the local transfer station and landfill, these intermittent events would not adversely impact solid waste facilities. Implementation of the BMPs presented in **Sections 2.2.10** and **2.3.1** would further reduce impacts to solid waste facilities.

ELECTRICITY, NATURAL GAS, AND TELECOMMUNICATIONS

Electrical, natural gas, and telephone services are the same as those described for Alternative A. The Tribe will coordinate with local service providers regarding the extension of services to the project site. The increase compared to Alternative A for the Tribal development proposed as part of Alternative B would not adversely impact utility services.

LAW ENFORCEMENT

Under Public Law 280, the State of California and other local law enforcement agencies have criminal enforcement authority on Tribal lands. The SBCSD would provide law enforcement services to the project site. Calls for service would not be disproportionate to other residential or commercial development in the County. During planned special events at the Tribal development, the main access driveways would be utilized. To ensure visitor access to the site does not interfere with roadway operations, mitigation has been included in **Section 5.9**. With mitigation, implementation of Alternative B would result in minimal impacts to law enforcement.

FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES

The increased risk of fire during the construction of Alternative B would be similar to that found at other construction sites. Because the project site is in an area classified as a High Wildland Fire Zone, construction-related impacts would be potentially significant. With the implementation of the BMP presented in **Section 2.3.1** (installation of an early detection system) and mitigation measures listed in **Section 5.9**, adverse impacts to fire protection and emergency medical services would be reduced to less-than-significant levels. Design standards equivalent to current building and fire codes will be adhered to in relation to fire safety. The additional demand for fire protection and emergency medical services under Alternative B would be similar to that of Alternative A. Due to the existing agreements and availability of emergency medical services, the adverse impact to emergency services would be minimal.

PUBLIC SCHOOLS

The development of Alternative B would result in a negligible net increase in enrollment for local schools because a majority of residents of the project site already live in the Santa Ynez Valley or in nearby areas of County. The impact of families relocating to the Tribal community after the development is completed would be negligible. Therefore, no significant adverse impact to local school districts would occur under Alternative B.

PARKS AND RECREATION

The development of Alternative B would include recreation areas, parks and multi-use trails for use by Tribal members; therefore, no adverse impacts would occur to local parks or recreational facilities.

4.2.10 NOISE

METHODOLOGY

The methodology for Alternative B is the same as the methodology used to determine impacts under Alternative A.

CONSTRUCTION NOISE EFFECTS

Construction noise sources under Alternative B would be similar to though discussed under Alternative A. During construction worker trips, seven one-way fill, and four one-way material hauling trips would occur during the grading and building phases of construction. Because trucks are louder than passenger cars, a passenger car equivalence (PCE) multiplier of 8 cars per truck was used. Therefore, the total passenger one-way car trips per day would be 148. The existing traffic volume on Armour Ranch Road is 71 trips per day; therefore, construction trip equivalence would more than double the existing traffic volume on Armour Ranch Road, which would result in a 4.9 dBA, Leq increase in the existing ambient noise level. As shown in **Table 3.10-5**, the average ambient noise level at the property site is 48.9 dBA, Leq. With construction traffic, the ambient noise level would increase to 53.8 dBA, Leq, which is less than the federal construction noise threshold of 78 dBA (**Table 3.10-3**). In addition, sensitive noise receptors are located approximately 50 feet of potential fill, material, and equipment haul routes along SR-246, SR-156, and Baseline Road. The highest ambient noise level along the haul/delivery route is 59.8 dBA, Leq **(Table 3.10-5)**. With project-related construction traffic the greatest ambient noise level would be 64.7 dBA, Leq, which is less than the federal construction noise threshold of 78 dBA (**Table**

3.10-3). Therefore, impacts to the ambient noise environment due to construction traffic would be minimal.

Table 4.10-1 presents typical stationary point source noise levels at 50 feet during various construction stages. Using an attenuation factor of 6.0 dBA, the noise level at the nearest sensitive noise receptor, a private residence, would be 77.0 dBA, which is less than the daytime (7 am to 6 pm) federal construction noise threshold of 78 dBA (**Table 3.10-3**). Therefore, impacts to the ambient noise environment due to on-site construction noise would be minimal.

Vibration

Vibration impact under Alternative B would be the same as under Alternative A.

OPERATION NOISE EFFECTS

The following identifies potential impacts from project-related noise sources, such as traffic, heating ventilation and air conditioning systems, and the wastewater treatment plant (WWTP).

Traffic

A discussion of the potential increases in traffic noise levels along affected roadways is provided below:

SR- 154

As discussed in **Appendix I**, there are approximately 532 vehicles per day on SR-154 adjacent to the southwestern portion of the project site. Alternative B would add an estimated 20 vehicles per peak day to SR-154. The existing ambient noise level 50 feet from the center line of SR-154 was measured to be 55.4 dBA, Leq, resulting in an increase of the ambient noise level of approximately 0.2 dBA Leq. As stated in the existing setting, an increase of less than 1 dBA would not be audible to sensitive receptors.

SR-246

The existing ambient noise level 50 feet from the center line of SR-246 is approximately 56.0 dBA, Leq. The existing traffic volume on this roadway is approximately 1,155 vehicles per day (**Appendix I**) under Alternative B. Alternative B would add approximately 69 vehicle trips per day to SR-246, resulting in an increase of the ambient noise level of approximately 0.3 dBA, Leq. The anticipated increase in traffic noise levels along Lake SR-246 would not be audible to sensitive receptors.

Baseline Road

The existing ambient noise level at 50 feet from the centerline of Baseline Road was measured at 56.8 dBA, Leq under Alternative B. The existing traffic volume on this roadway is approximately 160 vehicles per day (**Appendix I**). Alternative B would add approximately 9 vehicle trips per day to Baseline Road, resulting in an increase of the ambient noise level of approximately 0.3 dBA, Leq.

The anticipated increase in traffic noise levels along Baseline Road would not be audible to sensitive receptors.

Armour Ranch Road

The existing ambient noise level at 50 feet from the centerline of Armour Ranch Road was measured at 48.9 dBA, Leq. The existing traffic volume on this roadway is approximately 71 vehicles per day (**Appendix I**). Alternative B would add approximately 229 vehicle trips per day to Armour Ranch Road. Alternative B traffic would more than double the existing traffic volume resulting in an increase in the ambient noise level of approximately 4.6 dBA, Leq. The anticipated increase in traffic noise levels along Armour Ranch Road would be less than the federal criteria for significant increases in ambient noise from transportation sources of five dBA, Leq (refer to **Table 3.10-4**) and the federal noise abatement standard for residential receptors of 67 dBA, Leq.

The addition of traffic attributable to Alternative B would not audibly increase the ambient noise level along potentially affected roadways, including SR-246, SR-154, and Baseline and Armour Ranch Roads. Therefore, effects to sensitive noise receptors form the increase in traffic noise levels resulting from Alternative B are considered minimal and no mitigation is required.

Vibration and Other Noise Source

Operational vibration and other noise under Alternative B would be the similar to those under Alternative A.

4.2.11 HAZARDOUS MATERIALS

The methodology used to determine project-related adverse impacts relating to hazardous materials for Alternative B is the same as Alternative A.

As discussed in **Section 4.1.11**, no hazardous materials have been identified on site or within a distance that would affect the environment or public health from the implementation of Alternative B. The mitigation measures for hazardous materials during the construction phases of Alternative B are the same as those for Alternative A, listed in **Section 5.11**, and would reduce adverse impacts from the implementation of Alternatives B to a minimal level.

4.2.12 VISUAL RESOURCES

The methodology used to determine project-related adverse impacts to visual resources for Alternative B is the same as Alternative A.

Alternative B would involve the construction of a similar residential development of reduced intensity compared to Alternative A. The visual character of the development would be compatible with the neighboring East Baseline/Rancho Estates. Increased visual buffers of open space would be positioned between neighboring properties and roadways under this reduced intensity alternative. Alternative B would not result in significant adverse impacts to visual resources.

4.3 ALTERNATIVE C – NO ACTION

4.3.1 LAND RESOURCES

The methodology used to determine project-related adverse impacts to land resources for Alternative C is the same as Alternative A.

Under the No-Action Alternative, the land would not be taken into trust and the proposed development would not occur. The site would remain as agriculture and grazing lands. Land resources would not be adversely impacted.

4.3.2 WATER RESOURCES

The methodology used to determine project-related adverse impacts to water resources for Alternative C is the same as Alternative A.

Under the No-Action Alternative, the proposed residential uses would not be developed. No additional impervious surfaces would be created on the project site. No adverse impacts to water resources would occur under the No-Action Alternative.

4.3.3 AIR QUALITY

The methodology used to determine project-related adverse impacts to air quality for Alternative C is the same as Alternative A.

Under the No-Action Alternative the site would continue to be undeveloped land and none of the construction or operational air quality impacts identified for Alternatives A or B would occur. Based on the land use restrictions, the property would not be developed in the near future and no adverse impacts to air quality would result from Alternative C.

4.3.4 BIOLOGICAL RESOURCES

The methodology used to determine project-related adverse impacts to biological resources for Alternative C is the same as Alternative A.

Under the No-Action Alternative C, no development would occur within the project site. As such, there would be no adverse direct or indirect impacts to the biological resources within or in the vicinity of the project site.

4.3.5 CULTURAL RESOURCES

The methodology used to determine project-related adverse impacts to cultural resources for Alternative C is the same as Alternative C.

Under the No-Action Alternative, the project site would continue to remain in agricultural production and used as grazing land. Because the parcels would remain consistent with existing conditions, there would likely be no adverse impacts to any unknown archaeological or paleontological resources.

4.3.6 SOCIOECONOMIC CONDITIONS/ ENVIRONMENTAL JUSTICE

The methodology used to determine project-related adverse impacts to socioeconomic conditions/ environmental justice for Alternative C is the same as Alternative A.

Under the No-Action Alternative, the project site would not be placed in trust for the benefit of the Tribe and the associated tribal residences and supporting water and wastewater infrastructure would not be constructed. The Tribe would not receive any of the socioeconomic and environmental justice benefits associated with Alternative A. The project site would remain on the County's property tax rolls.

There would be no impacts to population and demographics, employment and income, or housing associated with Alternative C. The property would remain in its current use and would not be developed in the near future due to land use restrictions.

4.3.7 TRANSPORTATION AND CIRCULATION

The methodology used to determine project-related adverse impacts to transportation and circulation for Alternative C is the same as Alternative A.

Under the No-Action Alternative, there would be no increase in vehicular traffic on project area roadways. None of the traffic impacts identified for Alternative A would occur under No-Action Alternative.

4.3.8 LAND USE

METHODOLOGY

The methodology used to determine project-related adverse impacts to land use for Alternative C is the same as Alternative A.

LOCAL PLANNING AND LAND USE COMPATIBILITY

Under Alternative C, the 1,433± acre site would not be placed into trust for the benefit of the Tribe and the property would not be developed. The Tribe would retain ownership of the properties in fee title, and jurisdiction would remain with Santa Barbara County; therefore, no change in land use would occur.

AGRICULTURE

Under Alternative C, the existing vineyard would continue to operate on the project site and no development would occur; therefore, no impacts to agriculture would result under this alternative. Alternative C received a total FCIR rating of 83, scoring less than 160 points; therefore, no further evaluation is needed.

Williamson Act

Under Alternative C, the contracts would expire as the Tribe has already submitted a notice of non-renewal. With land use and zoning restrictions, agriculture lands would remain protected until the County lifts such restrictions through the planning process.

4.3.9 PUBLIC SERVICES

The methodology used to determine project-related adverse impacts to public services for Alternative C is the same as Alternative A.

Under the No-Action Alternative, the project site would not be developed. Therefore, the existing land uses on the project site would remain and demands for public services would not be increased. No new utility extensions would be required.

4.3.10 NOISE

The methodology used to determine project-related adverse impacts relating to noise for Alternative C is the same as Alternative A.

Under the No-Action Alternative, the project site would remain undeveloped and largely open space. Based on land use restrictions, no future development is anticipated in the near future. With regard to noise, the project site would not be a source of transportation and/or non-transportation noise. No noise impacts would occur under the No-Action Alternative.

4.3.11 HAZARDOUS MATERIALS

The methodology used to determine project-related adverse impacts relating to hazardous materials for Alternative C is the same as Alternative A.

No development would occur under this alternative, and the project site would remain in its current state. No hazardous material impacts would occur under the No-Action Alternative.

4.3.12 VISUAL RESOURCES

The methodology used to determine project-related adverse impacts to visual resources for Alternative C is the same as Alternative A.

Under the No-Action Alternative, the 1,433± acre project site would not be placed into trust for the benefit of the Tribe and the property would not be developed as identified under Alternatives A and B. The Tribe would retain ownership of the properties in fee title, and jurisdiction would remain with Santa Barbara County. The existing vineyard would continue to operate on the project site. Therefore, no impacts to visual resources would occur under this alternative.

4.4 CUMULATIVE EFFECTS

Potential cumulative impacts for each environmental issue area under Alternatives A and B are discussed below. Implementation of Alternative C, the No-Action Alternative, would not result in cumulative effects and therefore is not discussed further in this section. Cumulative impacts are defined in 40 Code of Federal Regulations (C.F.R.) 1508.7 as the impacts:

> *… on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

Near-Term cumulative conditions were established by reviewing the cumulative project database maintained by the County for projects within the Santa Ynez Valley. **Table 4-17** presents a summary of the approved and pending near-term cumulative development within he Santa Ynez Valley.

Long-term (2030) Cumulative conditions were established using the 20-year build out forecasts contained in the Santa Ynez Valley Community Plan. The 20-Year forecasts are based on 20-year build out land uses provided by the County for the Santa Ynez Valley area, growth within the adjacent cities of Buellton and Solvang, plus cumulative growth from outside of the Santa Ynez Valley.

TABLE 4-17
NEAR-TERM APPROVED/PENDING
SANTA YNEZ VALLEY PROJECTS

Use Type	Total Development
Residential	55 Units
Agricultural Development (excluding wineries)	1.14 acres
Wineries-Vineyard	0.54 acres
Wineries-Commercial Facilities	35,493 square feet

Source: Santa Barbara, 2012e

4.4.1 Land Resources

Minimal changes in topography would occur as a result of the implementation of Alternatives A or B, as cut and fill volumes would largely be related to roadway development and cut from the development of the detention basins would be used to balance fill requirements to the extent feasible. Reasonably foreseeable development projects could result in alterations to land resources to accommodate development in urban areas or areas designated under the Santa Ynez Valley Community Plan and Santa Barbara General Plan. Future developments would be required to be in compliance with local and state building codes and ordinances to ensure buildings are constructed to appropriate seismic standards and with local, state, and federal requirements to prevent water quality degradation from soil erosion. Accordingly, potential cumulative impacts to land and mineral resources would be minimal.

4.4.2 Water Resources

Construction and operation of either Alternatives A or B would create new potential for off-site erosion and/or siltation. It would also create new impervious surfaces, potentially resulting in additional off-site flows. With incorporation of the grading and drainage plan (**Appendix D**) and the BMPs and mitigation measures in **Sections 2.2.10, 2.3.1,** and **5.2**, the adverse impacts of either development alternative would be reduced to less than significant. Other projects located offsite could cause drainage, flooding, or water quality impacts that may adversely interact cumulatively with those of the development alternatives. However, these projects would be required by the CWA to file for coverage under an NPDES Construction General Permit. Additionally, these projects would have to meet Santa Barbara County's drainage and flood prevention standards preventing impacts to floodplain management. Therefore, implementation of Alternatives A or B would not lead to cumulatively considerable impacts to regional drainage, flooding, or surface water quality.

Implementation of Alternative A or B would result in increased potable water demand. This increase in potable water demand will not result in potable water impacts on or from any of the other proposed projects (Wallace 2012). Potential off-site projects would be required to comply with County provisions concerning potable water supplies and water conservation. Therefore, with the siting of the new water wells for Alternatives A and B outside of influence zones of off-site wells, impacts to water supplies would not be cumulatively considerable.

4.4.3 AIR QUALITY

ALTERNATIVE A

Past, present and future development projects contribute to a regions air quality conditions on a cumulative basis; therefore by its very nature, air pollution is largely a cumulative impact. If a project's individual emissions contribute toward exceedance of the NAAQS, then the project's impact on air quality would be cumulatively considerable. In developing attainment designations for CAPs, the EPA considers the regions past, present and future emission levels.

Operational Emissions

Alternative A in the cumulative year 2030, would result in the generation of CAPs from mobile sources, as well as from stationary sources due to the combustion of natural gas in boilers, stoves, heating units, and other equipment on the project site during operation. Estimated mobile and stationary emissions from operation of Alternative A are provided in **Table 4-18**. URBEMIS output files are provided in **Appendix B**.

TABLE 4-18
UNMITIGATED OPERATIONAL EMISSIONS

Sources	ROG	NO_2	CO	SO_2	PM_{10}	$PM_{2.5}$
	tons per year					
Area	2.67	0.40	4.34	0.01	0.55	0.53
Mobile	0.76	0.75	7.41	0.02	3.12	0.60
Total Emissions	3.43	1.15	11.75	0.03	3.67	1.13
De Minimis Levels	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***
Adverse Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source **Appendix B**

The project site is in a region of attainment for all CAPs. Under the federal Clean Air Act 40 CFR Part 93, if a region is in attainment for all criteria pollutants, then the region meets the NAAQS and there are no *de minimis levels* or "thresholds" for a project's emissions. Mitigation provided in **Section 5.3** would minimize CAP emissions under the cumulative year 2030 from operation of Alternative A. With mitigation measures to minimize emissions of CAPs, Alternative A would not result in adverse cumulative affects to the regional air quality environment.

CLIMATE CHANGE

Strategies and Emission Estimates

URBEMIS, which is approved by both EPA and CARB, was used to estimate construction and operational GHG emissions, which are provided in **Table 4-19**. Construction emissions were estimated to be 8,264 MT of CO_2e per year (MT/yr). Once construction is completed, Alternative A would emit approximately 3,760MT/yr of CO_2e from mobile, area sources, water and wastewater transport and treatment, electricity use, and solid waste disposal. Total project related GHG emissions during construction and operation (annually) of the project are estimated at 12,024 MT/yr of CO_2e.

TABLE 4-19
ESTIMATED PROJECT-RELATED GHG EMISSIONS

Alternative A	GHGs	CO_2e Emissions (ST)	Conversion Factor (ST/MT)	GHG Emissions in CO_2e (MT)
Direct				
Construction	CO_2	9,081	0.91	8,264
Mobile	CO_2	2,139	0.91	1,946
Area	CO_2	510	0.91	464
Indirect[2]				
Electricity Usage[1]	CO_2e			1,144
Water and Wastewater[2]	CO_2e			55
Solid Waste[3]	CO_2e			151
Project-related GHG Emissions				**12,024**

ST = short tons; MT = metric tons; CO2e = carbon dioxide equivalent
[1]Based on federal emissions factors and 18 MWh of electricity and gas equivalent per residence.
[2]Based on 132 million gallons of water and wastewater transport and treatment per year.
[3]Based on 358 metric tons of solid was and federal emissions factors.
Source: **Appendix B**; federal GHG reporting regulations, 40 CFR Part 98.

Implementation of Santa Barbara's applicable CAS strategies would result in a reduction of project-related GHG emissions to levels below current background levels. The CAS strategies applicable to Alternative A are shown in **Table 4-20**, mitigation measures which show compliance with the CAS strategies, are provided in **Section 5.3**. Other strategies or mitigation measures do not apply because they either apply to state entities, such as CARB; are planning-level measures; apply to particular industries such as the auto repair industry; or are not applicable to the project. With the incorporation of the applicable strategies outlined in the Santa Barbara County CAS as mitigation measures, implementation of Alternative A would not adversely impact California GHG reduction goals**.**

TABLE 4-20
APPLICABLE CAS REDUCTION STRATEGIES AND PROJECT CONSISTENCY

Strategies	Actions	Consistency
Energy Efficiency	Reduce/promote reduction of energy consumption	Mitigation measure 5.3.1 requires that the Tribe install energy star appliances whenever feasible.
Green Buildings	Adopted Green Building Code and exceed Title 24 standards	Mitigation measure 5.3.1 requires the Tribe to comply with the Green Building Code and exceed Title 24 standards by 25 percent.
Recycling and Waste	Increase diversion from landfills	Mitigation measure 5.3.1
Sustainable Forests	Promote urban forests and make land use decisions that conserve forest lands	Through the design of the project design would 131 acres of oak woodlands would be conserved.
Water	Increase water recycling and reuse runoff	Through the design of the project recycled water from the WWTP would be used for agricultural uses.
Transportation	Transit oriented planning	Mitigation measure 5.3.1 would assist the City of Solvang in expanding the current public transportation system.
Source: County of Santa Barbara, 2011; AES, 2012.		

ALTERNATIVE B

Alternative B would also result in the generation of CAPs primarily from mobile sources and stationary sources. Estimated mobile and stationary emissions from operation of Alternative B are provided in **Table 4-21**. URBEMIS output files are provided in **Appendix B**.

TABLE 4-21
UNMITIGATED OPERATIONAL EMISSIONS

Sources	ROG	NO_2	CO	SO_2	PM_{10}	$PM_{2.5}$
	tons per year					
Area	2.78	0.50	4.56	0.01	0.55	0.53
Mobile	1.54	1.56	14.93	0.04	6.36	1.23
Total Emissions	4.32	2.06	19.49	0.05	6.94	1.76
De Minimis Levels	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***	***N/A***
Adverse Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: **Appendix B**

Mitigation provided in **Section 5.3** would minimize CAP emissions under the cumulative year 2030 from operation of Alternative B. With mitigation measures to minimize emissions of criteria pollutants, Alternative B would not result in an adverse cumulative effect to the regional air quality environment.

CLIMATE CHANGE

Strategies and Emission Estimates

Table 4-22 presents the estimated construction and operational GHG emissions. Construction emissions were estimated to be 8,264 MT CO_2e per year (MT/yr). Once construction is completed, Alternative A would emit approximately 4,937MT/yr of CO_2e from mobile, area sources, water and wastewater transport and treatment, electricity use, and solid waste disposal. Total project related GHG emissions during construction and operation (annually) of the project are estimated at 13,616 MT/yr of CO_2e.

TABLE 4-22
ESTIMATED PROJECT-RELATED GHG EMISSIONS

Alternative A	GHGs	CO_2e Emissions (ST)	Conversion Factor (ST/MT)	GHG Emissions in CO_2e (MT)
Direct				
Construction	CO_2	9,537	0.91	8,679
Mobile	CO_2	3,314	0.91	3,016
Area	CO_2	627	0.91	571
Indirect[2]				
Electricity Usage[1]	CO_2e			1,144
Water and Wastewater[2]	CO_2e			55
Solid Waste[3]	CO_2e			151
Project-related GHG Emissions				**13,616**

ST = short tons; MT = metric tons; CO2e = carbon dioxide equivalent
[1]Based on federal emissions factors and 18 MWh of electricity and gas equivalent per residence.
[2]Based on 132 million gallons of water and wastewater transport and treatment per year.
[3]Based on 358 metric tons of solid was and federal emissions factors.
Source: **Appendix B**; federal GHG reporting regulations, 40 CFR Part 98.

The CAS strategies applicable to Alternative B are provided in **Table 4-20**, mitigation measures which show compliance with the applicable CAS strategies are provided in **Section 5.3**. With the incorporation of applicable strategies outlined in the Santa Barbara County CAS as mitigation measures, implementation of Alternative A would not adversely impact California GHG reduction goals.

4.4.4 BIOLOGICAL RESOURCES

Potential adverse impacts to biological resources on the project site, including sensitive habitats, potentially jurisdictional waters of the U.S., native trees, riparian habitat, special-status species, and migratory birds will be reduced to minimal levels through measures incorporated into project construction and design (**Section 2.2.10**) and mitigation (**Section 5.4**). Other developments in the vicinity would have the potential to impact similar habitats. Any sensitive habitats with the potential to support populations of local endangered species would be protected through Santa Barbara mitigation requirements. Cumulative impacts to native trees would be mitigated by compliance with the County of Santa Barbara (2003)

Deciduous Oak Tree Protection and Regeneration. Any cumulative developments affecting jurisdictional waters of the U.S. or special-status species would be required to mitigate according to the applicable provisions of the CWA and the FESA, and migratory birds would be protected from take subject to the MBTA. Owing to the requirement to comply with pertinent local, state and federal regulations, cumulative impacts to biological resources would be less than significant.

4.4.5 CULTURAL RESOURCES

With the incorporation of the mitigation in **Section 5.5**, and requirements for surrounding projects to follow state cultural resource protection policies, the implementation of Alternatives A and B would result in a minimal adverse impact to cultural resources. With mitigation incorporated for paleontological resources and requirements for surrounding projects to protect such resources, cumulative impacts to paleontological resources would be minimal.

4.4.6 SOCIOECONOMIC CONDITIONS / ENVIRONMENTAL JUSTICE

Implementation of Alternatives A or B would improve the socioeconomic conditions of the Tribe and would generate significant, short-term (two years) employment benefits to a local construction sector that has been hard hit over the past four years. Since the approved and pending projects that would occur in the immediate area are relatively minor in their extent and potential impact to the Santa Ynez Valley, implementation of Alternatives A or B would not lead to cumulatively considerable impacts to socioeconomic conditions. Other than the Tribe, there are no minority populations in the project area and therefore implementation of Alternatives A or B would not result in cumulatively considerable impacts to environmental justice considerations.

4.4.7 TRANSPORTATION AND CIRCULATION

NEAR-TERM CUMULATIVE IMPACTS

The trip generation rates, trip distribution, operational standards, and project-related impacts in the near-term cumulative condition are the same as those determined for the near-term traffic analyses for Alternatives A and B.

LONG-TERM CUMULATIVE SETTING WITHOUT PROJECT TRAFFIC

Tables 4-23, **4-24**, and **4-25** present the AM and PM peak-hour LOS at each study intersection, state highway segment, and County roadway for the long-term cumulative setting using 20-year projections for the Santa Ynez Valley provided by the County.

LONG-TERM CUMULATIVE TRAFFIC IMPACTS

To assess long-term cumulative impacts to the roadway network, the trips generated by the alternatives presented in **Section 4.1.7** for Alternative A and **Section 4.2.7** for Alternative B were added to the traffic volumes of the long-term cumulative setting calculated above.

Alternative A

Impacts to Study Roadway Intersections

Table 4-26 summarizes the cumulative impacts from the implementation of Alternative A to the AM and PM peak hour LOS at each study intersection.

TABLE 4-23
CUMULATIVE WITHOUT PROJECT TRAFFIC INTERSECTIONS LOS AND AVERAGE DELAY

Intersection	Traffic Control	AM Peak		PM Peak	
		LOS	Average Delay (sec)	LOS	Average Delay (sec)
SR-154/US-101 SB	Stop Sign	B	13.7	B	11.3
SR-154/US-101 NB	Stop Sign	B	13.4	B	11.5
SR-154/Grand Avenue	Stop Sign	C	23.0	**F**	**>50.0**
SR-154/Roblar Avenue	Stop Sign	**F**	**>50.0**	**F**	**>50.0**
SR-154/Edison Street	Stop Sign	**E**	**39.0**	**F**	**>50.0**
SR-154/Alisal Road	Signal	C	29.7	D	46.6
SR-246/Alamo Pintado Road	Signal	D	46.7	**E**	**74.6**
SR-246/Refugio Road	Signal	C	34.2	**E**	**68.4**
SR-246/Edison Street	Signal	B	16.6	C	22.1
SR-246/SR-154	Stop Sign	D	28.7	**F**	**>50.0**

Bold indicates unacceptable LOS.
Source: **Appendix I**

TABLE 4-24
CUMULATIVE WITHOUT PROJECT STATE HIGHWAY SEGMENT LOS

Highway Segment	Peak Hour LOS
SR 154 North of Edison Street[1]	**LOS E**/LOS D
SR 154 South of SR 246-Armour Ranch Road[1]	LOS E/LOS C
SR 246 from SR 154 to Solvang[2]	LOS B – **LOS F**

[1] North and southbound LOS based on travel speeds and ability to pass using P.M. peak hour flows.
[2] Signalized segments - LOS based on delays at intersections.
Source: **Appendix I**

TABLE 4-25
CUMULATIVE WITHOUT PROJECT COUNTY ROADWAYS OPERATIONS

Roadway	Geometry	ADT	Acceptable Capacity[1]
Baseline Avenue e/o Edison Street	2 Lanes	1,800	5,530
Armour Ranch Road e/o SR 154	2 Lanes	900	5,530

ADT = average daily trips.
[1] County of Santa Barbara determined that 70 percent of capacity equals LOS B.
Source: Associated Traffic Engineers, 2012 (**Appendix I**).

TABLE 4-26
CUMULATIVE ALTERNATIVE A INTERSECTIONS LOS AND AVERAGE DELAY

Intersection	Traffic Control	AM Peak		PM Peak	
		LOS	Average Delay (sec)	LOS	Average Delay (sec)
SR-154/US-101 SB	Stop Sign	B	13.8	B	11.5
SR-154/US-101 NB	Stop Sign	B	13.4	B	11.5
SR-154/Grand Avenue	Stop Sign	C	23.7	**F**	**>50.0**
SR-154/Roblar Avenue	Stop Sign	**F**	**>50.0**	**F**	**>50.0**
SR-154/Edison Street	Stop Sign	**E**	**40.8**	**F**	**>50.0**
SR-154/Alisal Road	Signal	C	30.9	D	49.4
SR-246/Alamo Pintado Road	Signal	D	48.9	**E**	**77.7**
SR-246/Refugio Road	Signal	C	33.7	**E**	**66.9**
SR-246/Edison Street	Signal	B	16.6	C	22.1
SR-246/SR-154	Stop Sign	**F**	**>50.0**	**F**	**>50.0**

Bold indicates unacceptable LOS.
Source: **Appendix I**

All of the study intersections operate at LOS C or better with the addition of project traffic during both the AM and PM peak hours with the exception of the following six intersections:

- SR-154/Grand Avenue (pm peak hour)
- SR-154/Roblar Avenue (am and pm peak hour)
- SR-154/Edison Street (am and pm peak hour)
- SR-246/Alamo Pintado Road (pm peak hour)
- SR-246/Refugio Road (pm peak hour)
- SR-246/SR-154 (am and pm peak hour)

Mitigation measures provided in **Section 5.7** would improve operations at the six intersections to acceptable LOSs. With the incorporation of mitigation, implementation of Alternative A, combined with regional growth, would result in minor cumulatively considerable impacts to the study roadway intersections.

Impacts to Study State Highway Roadway Segments

Table 4-27 summarizes the cumulative impacts from the implementation of Alternative A to the AM and PM peak hour LOS along each study state highway roadway segment. All of the study area highway segments would operate at an unacceptable LOS either during the AM or PM peak hour. Mitigation measures provided in **Section 5.7** would improve operations at the six intersections to acceptable LOSs. With the incorporation of mitigation, implementation of Alternative A, combined with regional growth, would result in minor cumulatively considerable impacts to the study state highway roadway segments.

TABLE 4-27
CUMULATIVE ALTERNATIVE A STATE HIGHWAY SEGMENT LOS

Highway Segment	Peak Hour LOS
SR 154 North of Edison Street[1]	**LOS E**/LOS D
SR 154 South of SR 246-Armour Ranch Road[1]	**LOS E**/LOS C
SR 246 from SR 154 to Solvang[2]	LOS B – **LOS F**

[1] North and southbound LOS based on travel speeds and ability to pass using P.M. peak hour flows.
[2] Signalized segments - LOS based on delays at intersections.
Source: **Appendix I**

Impacts to Study County Roadway Segments

Table 4-28 summarizes the cumulative impacts from the implementation of Alternative A to the AM and PM peak hour LOS along each study state highway roadway segment. As shown, the County roadway segments carry volumes within their acceptable capacity ratings. Implementation of Alternative A, combined with regional growth, would result in minor cumulatively considerable impacts to the study County roadway segments.

TABLE 4-28
CUMULATIVE ALTERNATIVE A COUNTY ROADWAYS OPERATIONS

Roadway	Geometry	Cumulative ADT	Acceptable Capacity[1]
Baseline Avenue e/o Edison Street	2 Lanes	2,005	5,530
Armour Ranch Road e/o SR 154	2 Lanes	2,064	5,530

ADT = average daily trips.
[1] County of Santa Barbara determined that 70 percent of capacity equals LOS B.
Source: **Appendix I**

Cumulative Bicycle, Pedestrian, and Transit Networks

A Class 2 bike path is proposed for SR-246 west of SR-154 and a Class 1 bike path is proposed for SR-154 north of SR-246 (Santa Barbara County, 2009). The project would not generate pedestrian trips, bicycling activity, or transit riders along Baseline Road, Armour Road, SR-154, SR-246, or the other public roads in the area. The cumulative non-vehicular networks would not be affected by the predicted LOS. Thus, no adverse impacts are projected to these networks as a result of the implementation of Alternative A.

Alternative B

Impacts to Study Roadway Intersections

Table 4-29 summarizes the cumulative impacts from the implementation of Alternative B to the AM and PM peak hour LOS at each study intersection. All of the study intersections operate at LOS C or better with the addition of project traffic during both the AM and PM peak hours with the exception of the same six intersections as those identified under the Alternative A long-term cumulative analysis. Mitigation measures provided in **Section 5.7** would improve operations at the six intersections to acceptable LOSs.

With the incorporation of mitigation, implementation of Alternative B, combined with regional growth, would result in minor cumulatively considerable impacts to the study roadway intersections.

TABLE 4-29
CUMULATIVE ALTERNATIVE B INTERSECTIONS LOS AND AVERAGE DELAY

Intersection	Traffic Control	AM Peak		PM Peak	
		LOS	Average Delay (sec)	LOS	Average Delay (sec)
SR-154/US-101 SB	Stop Sign	B	13.9	B	11.5
SR-154/US-101 NB	Stop Sign	B	13.5	B	11.6
SR-154/Grand Avenue	Stop Sign	C	24.0	**F**	**>50**
SR-154/Roblar Avenue	Stop Sign	**F**	**>50**	**F**	**>50**
SR-154/Edison Street	Stop Sign	**E**	**43.2**	**F**	**>50**
SR-154/Alisal Road	Signal	C	32.3	D	51.5
SR-246/Alamo Pintado Road	Signal	D	51.2	**E**	**79.9**
SR-246/Refugio Road	Signal	D	35.1	**E**	**72.0**
SR-246/Edison Street	Signal	B	18.7	C	23.7
SR-246/SR-154	Stop Sign	**F**	**>50**	**F**	**>50**

Source: Appendix I
Bold indicates unacceptable LOS.

Impacts to Study State Highway Roadway Segments

Table 4-30 summarizes the cumulative impacts from the implementation of Alternative B to the AM and PM peak hour LOS along each study state highway roadway segment. As identified under Alternative A, all of the study area highway segments would operate at an unacceptable either in the am or pm peak hour. Mitigation measures provided in **Section 5.7** would improve operations at the six intersections to acceptable LOSs. With the incorporation of mitigation, implementation of Alternative B, combined with regional growth, would result in minor cumulatively considerable impacts to the study state highway roadway segments.

TABLE 4-30
CUMULATIVE ALTERNATIVE B STATE HIGHWAY SEGMENT LOS

Highway Segment	Peak Hour LOS
SR 154 North of Edison Street[1]	**LOS E**/LOS D
SR 154 South of SR 246-Armour Ranch Road[1]	**LOS E**/LOS C
SR 246 from SR 154 to Solvang[2]	LOS B – **LOS F**

[1] North and southbound LOS based on travel speeds and ability to pass using P.M. peak hour flows.
[2] Signalized segments - LOS based on delays at intersections.
Source: **Appendix I**

Impacts to Study County Roadway Segments

Table 4-31 summarizes the cumulative impacts from the implementation of Alternative B to the AM and PM peak hour LOS along each study state highway roadway segment. As shown, the County roadway segments carry volumes within their acceptable capacity ratings. Implementation of Alternative B, combined with regional growth, would result in minor cumulatively considerable impacts to the study County roadway segments.

TABLE 4-31
CUMULATIVE ALTERNATIVE B COUNTY ROADWAYS OPERATIONS

Roadway	Geometry	Existing ADT	Acceptable Capacity[1]
Baseline Avenue e/o Edison Street	2 Lanes	2,211	5,530
Armour Ranch Road e/o SR 154	2 Lanes	3,230	5,530

ADT = average daily trips.
[1] County of Santa Barbara determined that 70 percent of capacity equals LOS B.
Source: **Appendix I**

Bicycle, Pedestrian, and Transit Networks

Alternative B would have the same cumulative impacts on bicycle, pedestrian, and transit networks as Alternative A.

4.4.8 LAND USE

If taken into federal trust, the project site would not be subject to County jurisdiction regarding land use. Any surrounding cumulative projects off Tribal trust lands; however, would be subject to existing local land use regulations. Alternatives A and B would not result in changes to surrounding land use patterns; therefore, any changes would be attributable to County policies only. The approved and pending projects that would occur in the Santa Ynez Valley include residential, commercial, and agriculture/agriculture-related land uses (vineyards/wineries); therefore, implementation of Alternative A or Alternative B would not lead to cumulatively considerable impacts to land use management in the region.

AGRICULTURE

The proposed development of residential and governmental uses on land that is currently zoned for agriculture would not contribute to the conversion of surrounding agricultural land. Existing agricultural operations in the area would not be converted; therefore, implementation of Alternative A or Alternative B would not contribute to cumulatively considerable impacts to agriculture in the region.

4.4.9 NOISE

This section identifies the noise impacts that would result from the development of Alternative B under the cumulative year 2030. Impacts are measured against the environmental baseline presented in **Section 3.4**.

METHODOLOGY

The methodology for analyzing noise impacts in the cumulative year 2030 is the same as the methodology used to determine impacts in the near-term.

Alternative A Cumulative Operation Noise Effects

The following identifies potential cumulative impacts from project-related noise sources, such as traffic, heating ventilation and air conditioning systems, and the wastewater treatment plant (WWTP).

Alternative A Traffic Noise

A discussion of the potential increases in traffic noise levels along affected roadways is provided below:

SR- 154

As discussed in **Appendix I**, there would be approximately 1,355 vehicles per day on SR-154 adjacent to the southwestern portion of the project site in the cumulative year 2030. Alternative A would add an estimated 19 vehicles per peak day to SR-154 under Alternative A. The existing ambient noise level 50 feet from the center line of SR-154 was calculated to be 60.9 dBA, Leq, resulting in an increase of the ambient noise level of approximately 0.0 dBA Leq. As stated in the existing setting, an increase of less than 1 dBA would not be audible to sensitive receptors.

SR-246

The existing ambient noise level 50 feet from the center line of SR-246 is approximately 60.7 dBA, Leq. The existing traffic volume on this roadway is approximately 3,385 vehicles per day (**Appendix I**) under Alternative A in the cumulative year 2030. Alternative A would add approximately 42 vehicle trips per day to SR-246, resulting in an increase of the ambient noise level of approximately 0.1 dBA, Leq. The anticipated increase in traffic noise levels along SR-246 would not be audible to sensitive receptors.

Baseline Road

The existing ambient noise level at 50 feet from the centerline of Baseline Road was calculated to be 62.9 dBA, Leq under Alternative A in the cumulative year 2030. The traffic volume on this roadway in the cumulative year 2030 is approximately 489 vehicles per day (**Appendix I**). Alternative A would add approximately 9 vehicle trips per day to Baseline Road, resulting in an increase of the ambient noise level of approximately 0.0 dBA, Leq.

Armour Ranch Road

The existing ambient noise level at 50 feet from the centerline of Armour Ranch Road was calculated to be 52.2 dBA, Leq. The existing traffic volume on this roadway is approximately 80 vehicles per day (**Appendix I**) in the cumulative year 2030. Alternative A would add approximately 140 vehicle trips per day to Armour Ranch Road. Alternative A traffic would more than double the existing traffic volume resulting in an increase of the ambient noise level of approximately 4.5 dBA, Leq. The anticipated increase in traffic noise levels along Armour Ranch Road would be less than the federal significance level for increases in the ambient noise environment from transportation sources of five dBA, Leq (refer to **Table 3.10-4**) and the federal noise abatement standard for residential receptors of 67 dBA, Leq.

The addition of traffic attributable to the Alternative A in the cumulative year 2030 would not audibly increase the ambient noise level along potentially affected roadways, including SR-246, SR-154, and Baseline and Armour Ranch Roads. Therefore, effects to sensitive noise receptors from the increase in traffic noise levels resulting from Alternative A combined with regional growth in the cumulative year 2030 are considered less than significant and no mitigation is required.

Vibration and Other Noise Source

Operational vibration and other noise impacts under Alternative A in the cumulative year 2030 would be the same as those under near-term Alternative A; therefore, a less than significant effect would occur to the noise environment.

Alternative B Cumulative Operation Noise Effects

The following identifies potential cumulative impacts from project-related noise sources, such as traffic, heating ventilation and air conditioning systems, and the wastewater treatment plant (WWTP).

Traffic

A discussion of the potential increases in traffic noise levels along affected roadways is provided below:

SR- 154

As discussed in **Appendix I**, there would be approximately 1,355 vehicles per day on SR-154 adjacent to the southwestern portion of the project site in the cumulative year 2030. Alternative B would add an estimated 20 vehicles per peak day to SR-154. The existing ambient noise level 50 feet from the center line of SR-154 was calculated to be 60.9 dBA, Leq, resulting in an increase of the ambient noise level of approximately 0.0 dBA Leq. As stated in the existing setting, an increase of less than 1 dBA is not audible to sensitive receptors.

SR-246

The existing ambient noise level 50 feet from the center line of SR-246 is approximately 60.7 dBA, Leq. The existing traffic volume on this roadway is approximately 3,385 vehicles per day (**Appendix I**) under Alternative B in the cumulative year 2030. Alternative B would add approximately 69 vehicle trips per day to SR-246, resulting in an increase of the ambient noise level of approximately 0.1 dBA, Leq. The anticipated increase in traffic noise levels along SR-246 would not be audible to noise sensitive receptors.

Baseline Road

The existing ambient noise level at 50 feet from the centerline of Baseline Road was calculated to be 62.9 dBA, Leq under Alternative B in the cumulative year 2030. The traffic volume on this roadway in the cumulative year 2030 is approximately 489 vehicles per day (**Appendix I**). Alternative B would add approximately 9 vehicle trips per day to Baseline Road, resulting in an increase of the ambient noise level of approximately 0.0 dBA, Leq.

Armour Ranch Road

The existing ambient noise level at 50 feet from the centerline of Armour Ranch Road was calculated to be 52.2 dBA, Leq. The existing traffic volume on this roadway is approximately 80 vehicles per day (**Appendix I**) in the cumulative year 2030. Alternative B would add approximately 229 vehicle trips per day to Armour Ranch Road. Alternative B traffic would more than double the existing volume of traffic resulting in an increase of the ambient noise level of approximately 4.3 dBA, Leq. The anticipated increase in traffic noise levels along Armour Ranch Road would be less than the federal significance level for increases in the ambient noise environment from transportation sources of five dBA, Leq (refer to **Table 3.10-4**) and the federal noise abatement standard for residential receptors of 67 dBA, Leq.

The addition of traffic attributable to the Alternative B in the cumulative year 2030 would not audibly increase the ambient noise level along potentially affected roadways, including SR-246, SR-154, and Baseline and Armour Ranch Roads. Therefore, effects to sensitive noise receptors from the increase in traffic noise levels resulting from Alternative B combined with regional growth in the cumulative year 2030 are considered less than significant and no mitigation is required.

Vibration and Other Noise Source

Operational vibration and other noise impacts under Alternative B in the cumulative year 2030 would be the same as those under near-term Alternative B; therefore, a less than significant effect would occur to the noise environment.

4.4.10 PUBLIC SERVICES AND UTILITIES

Public services and utilities for Alternatives A or B would be accommodated by existing and planned municipal public services (fire protection, law enforcement, solid waste, electrical utilities), or would be provided by the Tribe's own facilities (water and wastewater service). As development of the Santa Ynez Valley continues, the combined need for public services may create a cumulative impact. However, all approved and pending projects on fee land in the Santa Ynez Valley would be subject to review by local governments and would include provisions for public services. As a result, Alternatives A or B would not result in significant cumulative impacts to public services.

4.4.11 HAZARDOUS MATERIALS

The potential for impacts related to hazardous materials to occur during construction of Alternative A or B would be similar to those of other cumulative projects in the Santa Ynez Valley. Other development projects would require the implementation of mitigation measures similar to those listed in **Section 5.11** pertaining to construction activities and the storage and use of hazardous materials during operation. The approved and pending developments would be required to adhere to State and municipal regulations regarding the delivery, handling, and storage of hazardous materials, thereby reducing the risk of accidental exposure to the public. Therefore, with the implementation of mitigation measures included in

Section 5.11, there would be no significant cumulative impacts associated with hazardous materials under Alternatives A or B.

4.4.12 VISUAL RESOURCES

Surrounding lands are subject to local land use regulations and ordinances regulating lighting and signage. Alternatives A and B would result in minimal impacts to visual resources. The approved and pending projects that would occur in the immediate area would not result in substantial impacts to visual resources or result in significant new sources of light or glare; therefore, implementation of Alternatives A or B would not lead to cumulatively considerable impacts to visual resources.

4.5 INDIRECT AND GROWTH-INDUCING EFFECTS

Under NEPA, indirect and growth-inducing effects of a proposed project must be analyzed [40 Code of Federal Regulations (CFR) 1508.8(b)]. The CEQ Regulations define indirect effects as effects that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable. Growth-inducing effects are defined as effects that foster economic or population growth, either directly or indirectly. Direct growth inducement could result, for example, if a project includes the construction of a new residential development. Indirect growth inducement could result if a project establishes substantial new permanent employment opportunities (e.g., new commercial, industrial, or governmental enterprises) or if it removes obstacles to population growth (e.g., expansion of a wastewater treatment plant to increase the service availability). This section focuses on the indirect and growth-inducing effects of Alternatives A and B. Alternative C, the No-Action Alternative, would not result in indirect or growth-inducing effects and is therefore not discussed further.

4.5.1 INDIRECT EFFECTS

Analyses of the adequacy of local infrastructure and services are included in the discussion of environmental consequences for each proposed Alternative. No significant, unmitigatible impacts have been identified that would result from Alternatives A or B. Utility infrastructure would not be significantly improved or expanded to increase service availability to any areas surrounding the project site. Domestic water supply and wastewater service would developed on-site and therefore, no indirect off-site expansion of utilities is required to implement Alternatives A and B. Other indirect effects are analyzed in previous sections by issue area.

4.5.2 GROWTH-INDUCING EFFECTS

Growth inducement may constitute an adverse impact if the increased growth is not consistent with or accommodated by the land use and growth management plans and policies for the area affected. Local land use plans provide for development patterns and growth policies that allow for orderly development supported by adequate public services and utilities such as water supply, roadway infrastructure, sewer services, and solid waste disposal services. A project that would induce "disorderly" growth (i.e., would conflict with local land use plans) could indirectly cause adverse environmental or public service impacts.

Alternatives A and B would involve the construction of new housing development for Tribal members. Tribal members generally have homes either on the Tribe's existing trust property or within the local community, and the new housing development proposed under Alternatives A and B would be capable of relieving current overcrowding on the Tribe's Reservation and accommodating future growth of the Tribe. Construction-related employment would generate approximately 55 new homes sales over the nine-year period of analysis (California Economic Forecast, 2012). Also, a limited number of long-term, permanent employment opportunities (approximately 75) would be created by the development of the Tribal community and government facilities. Therefore, it is anticipated that the net local population growth directly resulting from Alternatives A and B would be minimal.

Analyses of the adequacy of local infrastructure and services are included in the discussion of environmental consequences for each proposed alternative. No significant, unmitigated impacts have been identified that would result from the implementation of Alternative A or Alternative B. Additionally, the proposed infrastructure improvements would be sized to meet the needs of the proposed development. The WWTP would not provide excess capacity that could lead to growth within the region. No indirect growth impacts are anticipated to occur from the expansion of the Tribal facilities, as few long-term or permanent employment opportunities would be created. Utility infrastructure would not be significantly expanded to increase service availability to surrounding areas. Growth-inducing impacts would be less than significant for all of the proposed alternatives.

SECTION 5.0

MITIGATION MEASURES

The following mitigation measures shall be incorporated into the project design, construction, and operation as applicable to reduce potentially adverse impacts of the Project Alternatives. All mitigation that is necessary to reduce adverse impacts to a minimal level will be binding on the Tribe because it is intrinsic to the project, required by federal law, required by agreements between the Tribe and local agencies, and/or subject to a Tribal resolution.

5.1 LAND RESOURCES

Implementation of the protective measures and Best Management Practices (BMPs) described in **Section 2.0**, along with the mitigation measures below, shall minimize potential impacts related to soils. These measures are recommended for Alternatives A and B.

- The Tribe shall comply with the National Pollutant Discharge Elimination System Permit (NPDES Construction General Permit) from the United States Environmental Protection Agency (EPA) for construction site runoff during the construction phase in compliance with the Clean Water Act (CWA). A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared, implemented, and maintained throughout the construction phase of the development, consistent with Construction General Permit requirements. The SWPPP shall detail the BMPs to be implemented during construction and post-construction operation of the selected project alternative to reduce impacts related to soil erosion and water quality. The BMPs shall include, but are not limited to, the following:
    - Existing vegetation shall be retained where possible. To the extent feasible, grading activities shall be limited to the immediate area required for construction and remediation.
    - Temporary erosion control measures (such as silt fences, fiber rolls, vegetated swales, a velocity dissipation structure, staked straw bales, temporary re-vegetation, rock bag dams, erosion control blankets, and sediment traps) shall be employed for disturbed areas during the wet season.
    - No disturbed surfaces shall be left without erosion control measures in place during the winter and spring months.
    - Construction activities shall be scheduled to minimize land disturbance during peak runoff periods. Soil conservation practices shall be completed during the fall or late winter to reduce erosion during spring runoff.

- o Creating construction zones and grading only one area or part of a construction zone at a time shall minimize exposed areas. If possible during the wet season, grading on a particular zone shall be delayed until protective cover is restored on the previously graded zone.
- o Disturbed areas shall be re-vegetated following construction activities.
- o Construction area entrances and exits shall be stabilized with crushed aggregate.
- o Sediment shall be retained on-site by a system of sediment basins, traps, or other appropriate measures.
- o A spill prevention and countermeasure plan shall be developed which identifies proper storage, collection, and disposal measures for potential pollutants (such as fuel, fertilizers, pesticides, etc.) used on-site.
- o Petroleum products shall be stored, handled, used, and disposed of properly in accordance with provisions of the Clean Water Act [33 United States Code (U.S.C.) 1251 to 1387].
- o During the wet season, construction materials, including topsoil and chemicals, shall be stored, covered, and isolated to prevent runoff losses and contamination of surface and groundwater.
- o Fuel and vehicle maintenance areas shall be established away from all drainage courses and designed to control runoff.
- o Sanitary facilities shall be provided for construction workers.
- o Disposal facilities shall be provided for soil wastes, including excess asphalt during construction and demolition.

- All workers shall be trained in the proper handling, use, cleanup, and disposal of all chemical materials used during construction activities and shall provide appropriate facilities to store and isolate contaminants.
- All contractors involved in the project shall be trained on the potential environmental damages resulting from soil erosion prior to development by conducting a pre-construction conference. Copies of the project's erosion control plan shall be distributed at that time. All construction bid packages, contracts, plans, and specifications shall contain language that requires adherence to the plan.

5.2 WATER RESOURCES

Implementation of the protective measures and BMPs described in **Section 2.0**, along with the recommended mitigation measures below will minimize potential impacts related to Alternatives A or B.

- Development and implementation of a SWPPP under **Section 5.1** will reduce impacts to stormwater quality.
- Through contractual obligations, the Tribe shall ensure that construction of the wastewater

treatment plant and roadways located adjacent to flood areas occur in the dry season.

- Recycled water application areas shall be monitored to ensure off-site runoff does not occur. Provisions included within monitoring requirements to reduce the potential for off-site flow shall include:
  - Recycled water shall be applied to confined areas (such as landscaped areas) only during periods of dry weather. In accordance with the water balance and seasonal storage requirements presented in the Water and Wastewater Feasibility Analysis (**Appendix C**), a minimum of five acre-feet of storage shall be provided to account for storage during wet weather and winter months when irrigation rates are lowest. The Tribe shall not apply recycled water 24 hours prior to a forecasted rain event and shall wait 24 hours after the rain event to apply recycled water.
  - Recycled water shall not be applied during periods of winds exceeding 30 miles per hour (mph).
  - Recycled water shall not be applied within 100 feet of a water of the U.S.
- New groundwater wells shall be located within the central portion of the project site, south of the Baseline fault within the permeable sands of the water-bearing Careaga Formation.

5.3 AIR QUALITY

Implementation of the protective measures and BMPs described in **Section 2.0** would reduce potential adverse impacts to air quality. Implementation of the mitigation measures below will minimize potential air quality impacts related to hazardous air pollutant emissions during the construction of Alternative A or B.

- Through contractual obligations, the Tribe shall ensure construction vehicles, delivery, and commercial vehicles do not idle for more than five minutes.
- Through contractual obligations, the Tribe shall ensure heavy duty construction equipment is equipped with diesel particulate matter filters.
- Through contractual obligations, the Tribe shall, to the extent possible and feasible, require the use of heavy duty construction equipment that meets CARB’s most recent certification standards.

5.3.1 CLIMATE CHANGE

Implementation of the protective measures and BMPs described in **Section 2.0**, along with the mitigation measures described below would minimize potential impacts related to climate change:

- The Tribe shall adopt and comply with the California Green Building Code and exceed Title 24 standards by 25 percent.
- The Tribe shall recycle 50 percent of the solid waste generated on-site.

- The Tribe shall work with the Santa Ynez Valley Transit to extend public transportation to the project site and construct public transportation stops on Baseline Road east of SR-154.

5.4 BIOLOGICAL RESOURCES

Implementation of the protective measures and BMPs described in **Section 2.0**, along with the mitigation measures below, will minimize potential impacts to biological resources. These measures are recommended for Alternatives A and B.

5.4.1 OAK TREES

The following mitigation measures are required for Alternatives A and B to identify and avoid and/or reduce impacts to oak trees within the project site:

- Once the construction footprint is finalized, the contractor shall flag any oak trees slated for removal prior to groundbreaking. A qualified arborist shall survey trees anticipated for removal, identify any oak trees within the selected footprint, and prepare an Arborist Report. The Arborist Report shall identify all oak trees anticipated for removal and require a no net loss of oak trees. The Arborist Report shall provide a revegation plan that includes proposed planting locations within the project site and a five-year monitoring plan to ensure that the revegetation effort is successful.

5.4.2 WATERS OF THE U.S.

The following mitigation measures are required for Alternatives A and B to identify and avoid and/or reduce impacts to waters of the U.S. (including wetlands) within the project site:

- Any proposed construction activities that would occur within the vicinity of potentially jurisdictional waters of the U.S. shall be conducted during the dry season (i.e., April 15 through October 15) to further reduce the quantity of potential sedimentation within the watershed.
- A Section 404 Clean Water Act permit shall be obtained from the U.S. Army Corps of Engineers (USACE) prior to any discharge of dredged or fill material into waters of the U.S. An Individual Permit may be required if the development of the selected alternative exceeds 0.5 acres of impacts to waters of the U.S. The Tribe shall comply with all the terms and conditions of the permit and compensatory mitigation shall be in place prior to any direct effects to waters of the U.S. At minimum, mitigation measures require the creation of waters of the U.S. at a 1:1 ratio for any affected waters of the U.S. The U.S. Environmental Protection Agency (USEPA) shall require a 401 Water Quality Certification permit prior to the USACE issuance of a 404 permit. Mitigation shall be implemented in compliance with any permits.

5.4.3 FEDERALLY LISTED WILDLIFE

The following mitigation measures are required for Alternatives A and B to compensate for adverse affects to vernal pool fairy shrimp (*Branchinecta lynchi*; VPFS). Upon implementation of the mitigation measures identified below, potential impacts to VPFS would be reduced to a less-than-significant level.

- A Biological Opinion shall be obtained from the USFWS prior to construction within designated critical habitat. All mitigation measures in the Biological Assessment (AES, 2012b) and the Biological Opinion issued by USFWS shall be adhered to. These measures may include:
  - Before discharge of fill material, the Tribe shall purchase preservation and creation credits from a USFWS-approved conservation bank. The expansion of permanent habitat at a two-to-one ratio for VPFS via the purchase of preservation credits and the creation of habitat at a one-to-one ratio or alternative option approved by the USFWS through the Section 7 consultation would off-set the temporary loss of micro-habitat within the proposed action area.
  - Temporary high-visibility construction fencing shall be installed along the edge of work areas within 50 feet of mapped seasonal wetlands and channels. Temporary high-visibility construction fencing shall be installed around the channels occurring within 50 feet of construction activities. Fencing shall be installed prior to any construction and remain in place until all construction activities within the action area have been completed.
  - Staging areas shall be located away from the fenced seasonal wetlands. Temporary stockpiling of excavated or imported material shall occur only in approved construction staging areas.
  - A USFWS-approved biologist shall conduct a habitat sensitivity training related to VPFS for project contractors and personnel. Supporting materials containing training information shall be prepared and distributed. Upon completion of training, all construction personnel shall sign a form stating that they have attended the training and understand all the conservation measures. Training shall be conducted in languages other than English, as appropriate. Proof of this instruction will be kept on file with the Tribe. The Tribe will provide the USFWS with a copy of the training materials and copies of the signed forms by project staff indicating that training has been completed within 30 days of the completion of the first training session. Copies of signed forms will be submitted monthly as additional training occurs for new employees. The crew foreman will be responsible for ensuring that construction personnel adhere to the guidelines and restrictions. If new construction personnel are hired following the habitat sensitivity training, the crew foreman will ensure that the personnel receive the mandatory training before starting work.

The following mitigation measures are required for Alternatives A and B to compensate for adverse affects to California red-legged frog (*Rana aurora draytonii*; CRLF). Upon implementation of the mitigation measures identified below, potential impacts to CRLF would be reduced to a less-than-significant level.

- A qualified biologist shall conduct a habitat sensitivity training related to CRLF for project contractors and personnel, as identified under the mitigation measures for VPFS.
- A qualified biologist shall conduct a preconstruction survey within 14 days prior to the onset of construction activities occurring within 1.6 kilometers of potential breeding habitat.
- A qualified biologist shall monitor construction activities during initial grading activities within the project site. Should a CRLF be detected within the construction footprint, grading activities shall halt and the USFWS shall be consulted. No grading activities shall commence until the biologist determines that the CRLF has vacated the construction footprint on its own accord and the USFWS authorizes the re-initiation of grading activities.

5.4.4 NESTING MIGRATORY BIRDS AND OTHER BIRDS OF PREY

The following mitigation measures are required for Alternatives A and B to avoid and/or reduce impacts to migratory birds and other birds of prey nesting within the project site:

- If any construction activities (e.g., building, grading, ground disturbance, removal of vegetation) are scheduled to occur during the nesting season, pre-construction bird surveys shall be conducted. The nesting season generally extends from March 1 to September 15. Preconstruction surveys for any nesting bird species shall be conducted by a qualified wildlife biologist throughout all areas of suitable habitat that are within 500 feet of any proposed construction activity. The surveys shall occur no more than 14 days prior to the scheduled onset of construction activities. If construction is delayed or halted for more than 14 days, another preconstruction survey for nesting bird species shall be conducted. If no nesting birds are detected during the preconstruction surveys, no additional surveys or mitigation measures are required.
- Any trees proposed for removal shall be removed outside of the nesting season. The nesting season generally extends from March 1 to September 15.
- If nesting bird species are observed within 500 feet of construction areas during the surveys, appropriate avoidance setbacks shall be established. The size and scale of nesting bird avoidance setbacks shall be determined by a qualified wildlife biologist and shall be dependent upon the species observed and the location of the nest. Avoidance setbacks shall be established around all active nest locations via stakes and high visibility fencing. The nesting bird setbacks shall be completely avoided during construction activities and the fencing must remain intact. The qualified wildlife biologist shall also determine an appropriate monitoring plan and decide if construction monitoring is necessary during construction activities. The setback fencing may

be removed when the qualified wildlife biologist confirms that the nest is no longer occupied and all birds have fledged.

- If impacts (i.e., take) to migratory nesting bird species are unavoidable, consultation with the USFWS shall be initiated. Through consultation, an appropriate and acceptable course of action shall be established.

5.5 CULTURAL RESOURCES

The following mitigation measure is required for Alternatives A and B to avoid adverse effects to cultural resources and/or historical properties:

- Prior to the final siting of the residential units, utility corridors, roadways, and any other project component that would result in ground disturbance, a qualified archaeologist shall identify appropriate buffer zones around each cultural resource to assure avoidance during construction.
- Prior to construction within 500 feet of a cultural resource buffer zone, a qualified Tribal Cultural Resource Monitor shall demarcate each buffer zone using appropriate materials such as high visibility construction fencing, which will not be removed until the completion of construction activities within 500 feet of the cultural resource buffer zone.
- A qualified Tribal Cultural Resource Monitor shall monitor construction activities occurring within 500 feet of the buffer zone.

The following mitigation measures are recommended for Alternatives A and B to reduce the potential for significant construction-related impacts to cultural resources, including archaeological sites, human remains, and/or paleontological resources:

- In the event that any prehistoric or historic cultural resources, or paleontological resources, are discovered during ground-disturbing activities, all work within 50 feet of the resources shall be halted and the Tribe and the Bureau of Indian Affairs (BIA) archaeologist shall be consulted to assess the significance of the find. If any find is determined to be significant by the qualified professionals, then appropriate agency and Tribal representatives shall meet to determine the appropriate course of action.
- If human remains are encountered, work shall halt in the vicinity of the find and the Santa Barbara County Coroner shall be notified immediately. Pursuant to 36 Code of Federal Regulations (C.F.R.) Part 800.13 of the National Historic Preservation Act (NHPA): *Post-Review Discoveries*, and 43 C.F.R. § 10.4 (2006) of the Native American Graves Protection and Repatriation Act (NAGPRA): *Inadvertent Discoveries*, the State Historic Preservation Office (SHPO) and the BIA archaeologist will also be contacted immediately. No further ground disturbance shall occur in the vicinity of the find until the County Coroner, SHPO, and BIA archaeologist have examined the find and agreed on an appropriate course of action. If the remains are determined to be of Native American origin, the BIA representative shall notify a

Most Likely Descendant (MLD). The MLD is responsible for recommending the appropriate disposition of the remains and any grave goods.

- Should paleontological resources be unearthed, a paleontological resource impact mitigation plan (PRIMP) shall be prepared prior to further earthmoving in the vicinity of the find. The PRIMP shall detail the procedures for collecting and preserving the discovered fossils. Any fossils discovered during construction shall be accessioned in an accredited scientific institution for future study.

5.6 SOCIOECONOMIC CONDITIONS/ ENVIRONMENTAL JUSTICE

Impacts to socioeconomic conditions and regional environmental justice would be less-than-significant for Alternative A or B, and no mitigation is necessary.

5.7 TRANSPORTATION AND CIRCULATION

The Tribe shall contribute its fair share of the funding for the traffic improvements recommended below proportionate to the level of impact associated with the trips added by Alternatives A and B. Mitigation measures for Alternatives A and B are summarized below.

Alternatives A and B – Near-term

- **SR-246 at SR-154** – The Tribe shall pay a fair share contribution of 23.0 percent for Alternative A or 32.7 percent for Alternative B for the development of one of the two following intersection improvement options provided by Caltrans:
  - A roundabout shall be installed at SR-246 at AR-154; or
  - The intersection of SR-246 at SR-154 shall be signalized.

Alternatives A and B – Cumulative

- **SR-154 Corridor** – The Tribe shall pay a fair share contribution, as indicated below, for the development of either roundabouts or signalization of the following intersections as determined by Caltrans:

TABLE 5.7-1
SR-154 CORRIDOR FAIR SHARE CONTRIBUTIONS

Intersection	Fair Share Contribution (%)	
	Alt A	Alt B
SR-154 at Grand Avenue	3.1	4.9
SR-154 at Roblar Avenue	2.5	3.5
SR-154 at Edison Street	3.1	4.4
SR-154 at SR-246 and Armour Ranch Road	23.0	32.7
Source: ATE, 2012 (**Appendix I**).		

Completion of roundabouts at these intersections would result in a LOS A. Signalization of these intersections would result in a LOS B. Completion of roundabouts or signalization of the above intersections would result in an acceptable level of service on the highway segments SR-154 North of Edison Street and SR-154 South of SR-246-Armour Ranch Road.

- **SR-246 Corridor** – The Tribe shall pay a fair share contribution, as indicated below, for the development of either roundabouts or signalization of the following intersections as determined by Caltrans:

TABLE 5.7-2
SR-246 CORRIDOR FAIR SHARE CONTRIBUTION

Intersection	Fair Share Contribution (%)	
	Alt A	Alt B
SR-246 at Alamo Pintado Road	5.6	8.9
SR-246 at Edison Street	33.0	44.1
SR-246 at Refugio Road	7.1	11.1
SR-246 at Armour Ranch Road and SR-154	23.0	32.7
Source: ATE, 2012 (**Appendix I**).		

Completion of roundabouts at these intersections would result in a LOS A. Signalization of these intersections would result in a LOS B. Completion of roundabouts or signalization of the above intersections would result in an acceptable level of service on the highway segment SR-246 from SR-154 to Solvang.

5.8 LAND USE

Impacts to land use would be less-than-significant for Alternative A or B, and no mitigation is necessary.

5.9 PUBLIC SERVICES

Implementation of the protective measures and BMPs described in **Section 2.0** along with the mitigation measures below would ensure that the construction and operation of Alternatives A or B would not have significant adverse impacts on fire and emergency services.

- To minimize the risk of fire and the need for fire protection services during construction, any construction equipment that normally includes a spark arrester shall be equipped with a spark arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.
- During construction, staging areas, welding areas, and areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. To the extent feasible, the contractor shall keep these areas clear of

combustible materials in order to maintain a firebreak.

- Fire extinguishers shall be maintained onsite and inspected on a regular basis.
- An evacuation plan shall be developed for the project alternatives in the event of a fire emergency.

Implementation of the following mitigation measure under Alternative B would reduce adverse impacts with respect to law enforcement services.

- The Tribe shall contract with CHP for speed enforcement, lane closures, traffic breaks, and queuing control during special events at the tribal community facilities.

5.10 NOISE

Impacts relating to noise generation during construction and operation would be less-than-significant for Alternative A or B, and no mitigation is necessary.

5.11 HAZARDOUS MATERIALS

Implementation of the protective measures and BMPs described in **Section 2.0**, along with the mitigation measures listed below are recommended to reduce potential impacts associated with construction and operation of Alternatives A and B.

- Potentially hazardous materials, including fuels, shall be stored away from drainages and secondary containment shall be provided for all hazardous materials during construction.
- A spill prevention and countermeasure plan shall be developed which identifies proper storage, collection, and disposal measures for potential pollutants (such as fuel storage tanks) used onsite, as well as the proper procedures for cleaning up and reporting spills.
- Vehicles and equipment used during construction shall be provided proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill. Maintenance and fueling shall be conducted in an area that meets the criteria set forth in the spill prevention plan.
- A hazardous materials storage and disposal plan shall be prepared. The plan shall provide a detailed inventory of hazardous materials to be stored and used onsite, provide appropriate procedures for disposal of unused hazardous materials, and detail training requirements for employees that handle hazardous materials as a normal part of their employment. The plan shall also include emergency response procedures in the event of an accidental release of hazardous materials.

5.12 VISUAL RESOURCES

With implementation of the protective measures and BMPs outlined in **Section 2.0**, no further mitigation is necessary for Alternative A or B.

SECTION 6.0

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SECTION 7.0

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APPENDIX A

SOIL RESOURCES REPORTS

United States Department of Agriculture

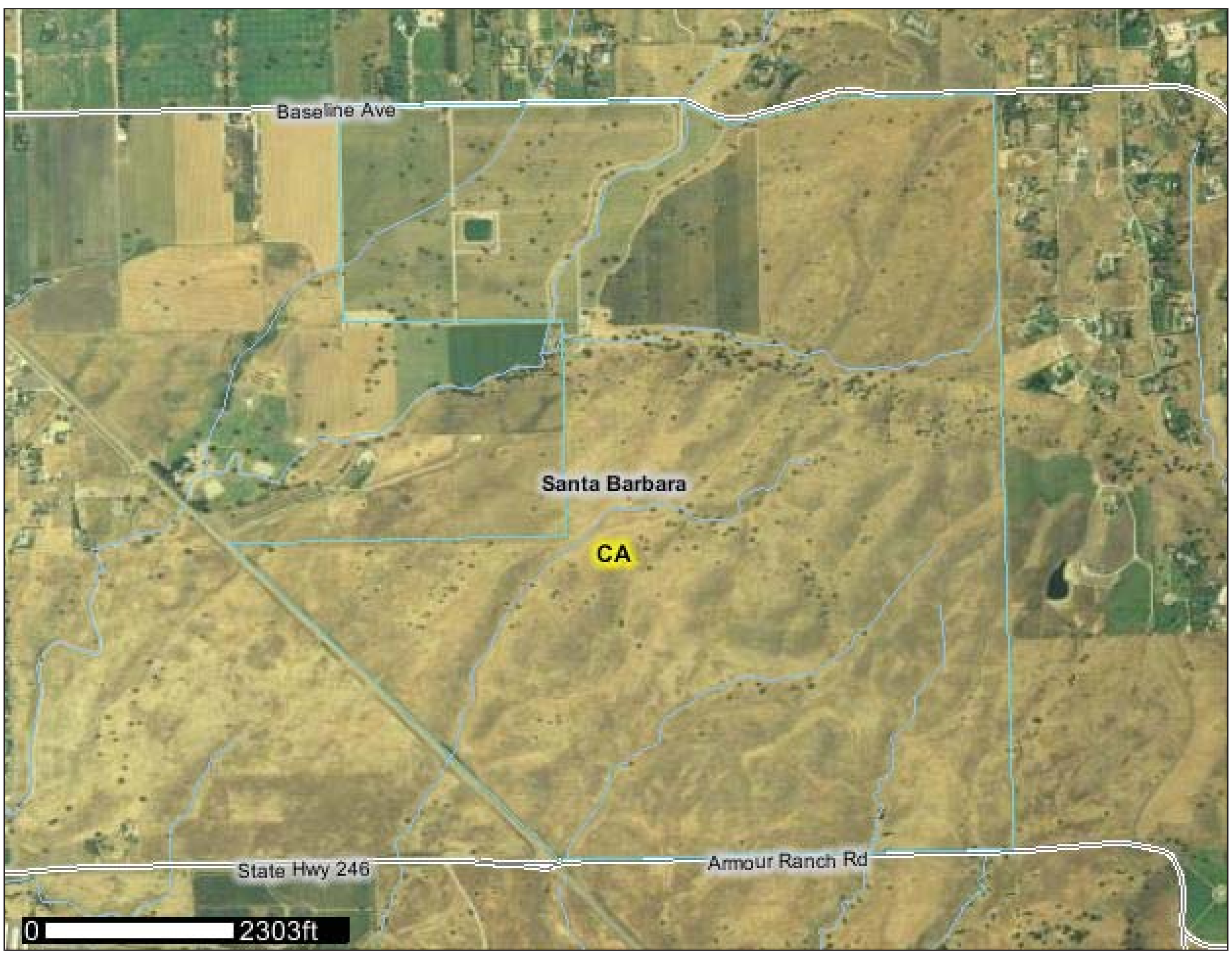
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Northern Santa Barbara Area, California

Santa Ynez Camp 4 Site



December 28, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

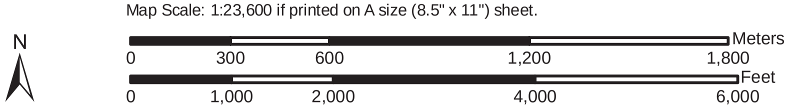
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:23,600 if printed on A size (8.5" x 11") sheet.



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
Survey Area Data: Version 7, Aug 31, 2009

Date(s) aerial images were photographed: 6/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Northern Santa Barbara Area, California (CA672)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BoA	Botella loam, 0 to 2 percent slopes	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	81.1	5.7%
TdF	Terrace escarpments, loamy	0.0	0.0%
Totals for Area of Interest		**1,429.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Northern Santa Barbara Area, California

BoA—Botella loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 50 to 800 feet
Mean annual precipitation: 12 to 22 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 250 to 320 days

Map Unit Composition

Botella and similar soils: 85 percent
Minor components: 15 percent

Description of Botella

Setting

Landform: Flood plains, valleys
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from acid sandstone and shale

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability (nonirrigated): 3c

Typical profile

0 to 9 inches: Loam
9 to 65 inches: Clay loam
65 to 76 inches: Sandy clay loam

Minor Components

Unnamed

Percent of map unit: 10 percent

Botella clay loam

Percent of map unit: 5 percent

CeC—Chamise sandy loam, 5 to 9 percent slopes

Map Unit Setting

Elevation: 200 to 1,500 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 300 days

Map Unit Composition

Chamise and similar soils: 85 percent
Minor components: 15 percent

Description of Chamise

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: 34 to 46 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 3e
Other vegetative classification: LOAMY (015XD047CA_1)

Typical profile

0 to 28 inches: Sandy loam
28 to 34 inches: Shaly clay
34 to 47 inches: Very shaly clay
47 to 60 inches: Very shaly clay loam

Minor Components

Unnamed

Percent of map unit: 10 percent

Chamise sh-l

Percent of map unit: 5 percent

ChF—Chamise shaly loam, 15 to 45 percent slopes

Map Unit Setting

Elevation: 200 to 1,500 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 300 days

Map Unit Composition

Chamise and similar soils: 85 percent
Minor components: 15 percent

Description of Chamise

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: 22 to 40 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability (nonirrigated): 6e
Other vegetative classification: LOAMY (015XD047CA_1)

Typical profile

0 to 18 inches: Shaly loam
18 to 24 inches: Shaly clay
24 to 37 inches: Very shaly clay
37 to 60 inches: Very shaly clay loam

Minor Components

Tierra

Percent of map unit: 5 percent

Chamise sandy loam

Percent of map unit: 5 percent

Unnamed

Percent of map unit: 5 percent

ChG2—Chamise shaly loam, 30 to 75 percent slopes, eroded

Map Unit Setting

Elevation: 200 to 1,500 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 300 days

Map Unit Composition

Chamise and similar soils: 85 percent
Minor components: 15 percent

Description of Chamise

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 10 to 20 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability (nonirrigated): 7e
Ecological site: SHALLOW LOAMY (R015XD093CA)

Typical profile

0 to 10 inches: Shaly loam
10 to 16 inches: Shaly clay
16 to 29 inches: Very shaly clay
29 to 60 inches: Very shaly clay loam

Minor Components

Unnamed

Percent of map unit: 15 percent

PtC—Positas fine sandy loam, 2 to 9 percent slopes

Map Unit Setting

Elevation: 400 to 900 feet
Mean annual precipitation: 15 to 20 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 300 to 320 days

Map Unit Composition

Positas and similar soils: 85 percent
Minor components: 15 percent

Description of Positas

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: 20 to 26 inches to abrupt textural change
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 3e
Ecological site: CLAYPAN (R015XD115CA)

Typical profile

0 to 21 inches: Fine sandy loam

21 to 48 inches: Clay
48 to 60 inches: Very gravelly clay

Minor Components

Unnamed
Percent of map unit: 15 percent

PtD—Positas fine sandy loam, 9 to 15 percent slopes

Map Unit Setting
Elevation: 400 to 900 feet
Mean annual precipitation: 15 to 20 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 300 to 320 days

Map Unit Composition
Positas and similar soils: 85 percent
Minor components: 15 percent

Description of Positas

Setting
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities
Slope: 9 to 15 percent
Depth to restrictive feature: 12 to 20 inches to abrupt textural change
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.3 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 3e
Ecological site: CLAYPAN (R015XD115CA)

Typical profile
0 to 21 inches: Fine sandy loam
21 to 48 inches: Clay
48 to 60 inches: Very gravelly clay

Minor Components

Unnamed

Percent of map unit: 15 percent

PtE—Positas fine sandy loam, 15 to 30 percent slopes

Map Unit Setting

Elevation: 400 to 900 feet
Mean annual precipitation: 15 to 20 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 300 to 320 days

Map Unit Composition

Positas and similar soils: 85 percent
Minor components: 15 percent

Description of Positas

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 6 to 26 inches to abrupt textural change
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Ecological site: CLAYPAN (R015XD115CA)

Typical profile

0 to 21 inches: Fine sandy loam
21 to 48 inches: Clay
48 to 60 inches: Very gravelly clay

Minor Components

Unnamed

Percent of map unit: 10 percent

Positas cb-fsl

Percent of map unit: 5 percent

SnC—Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes

Map Unit Setting

Elevation: 600 to 800 feet
Mean annual precipitation: 15 to 20 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 260 to 300 days

Map Unit Composition

Santa ynez and similar soils: 85 percent
Minor components: 15 percent

Description of Santa Ynez

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: 20 to 30 inches to abrupt textural change
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 3e
Ecological site: CLAYPAN (R015XD115CA)

Typical profile

0 to 25 inches: Gravelly fine sandy loam
25 to 32 inches: Gravelly clay
32 to 60 inches: Very gravelly clay

Minor Components

Unnamed

Percent of map unit: 15 percent

SnD—Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes

Map Unit Setting

Elevation: 600 to 800 feet
Mean annual precipitation: 15 to 20 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 260 to 300 days

Map Unit Composition

Santa ynez and similar soils: 85 percent
Minor components: 15 percent

Description of Santa Ynez

Setting

Landform: Scarp slopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: 20 to 29 inches to abrupt textural change
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 4e
Ecological site: CLAYPAN (R015XD115CA)

Typical profile

0 to 25 inches: Gravelly fine sandy loam
25 to 32 inches: Gravelly clay
32 to 60 inches: Very gravelly clay

Minor Components

Unnamed

Percent of map unit: 10 percent

Positas

Percent of map unit: 5 percent

TdF—Terrace escarpments, loamy

Map Unit Setting

Mean annual precipitation: 14 inches
Mean annual air temperature: 61 degrees F

Map Unit Composition

Terrace escarpments: 85 percent
Minor components: 15 percent

Description of Terrace Escarpments

Setting

Landform: Escarpments
Parent material: Loamy alluvium

Interpretive groups

Land capability classification (irrigated): 6e
Land capability (nonirrigated): 6e
Ecological site: SHALLOW LOAMY (R015XD093CA)

Typical profile

0 to 60 inches: Variable

Minor Components

Unnamed

Percent of map unit: 15 percent

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

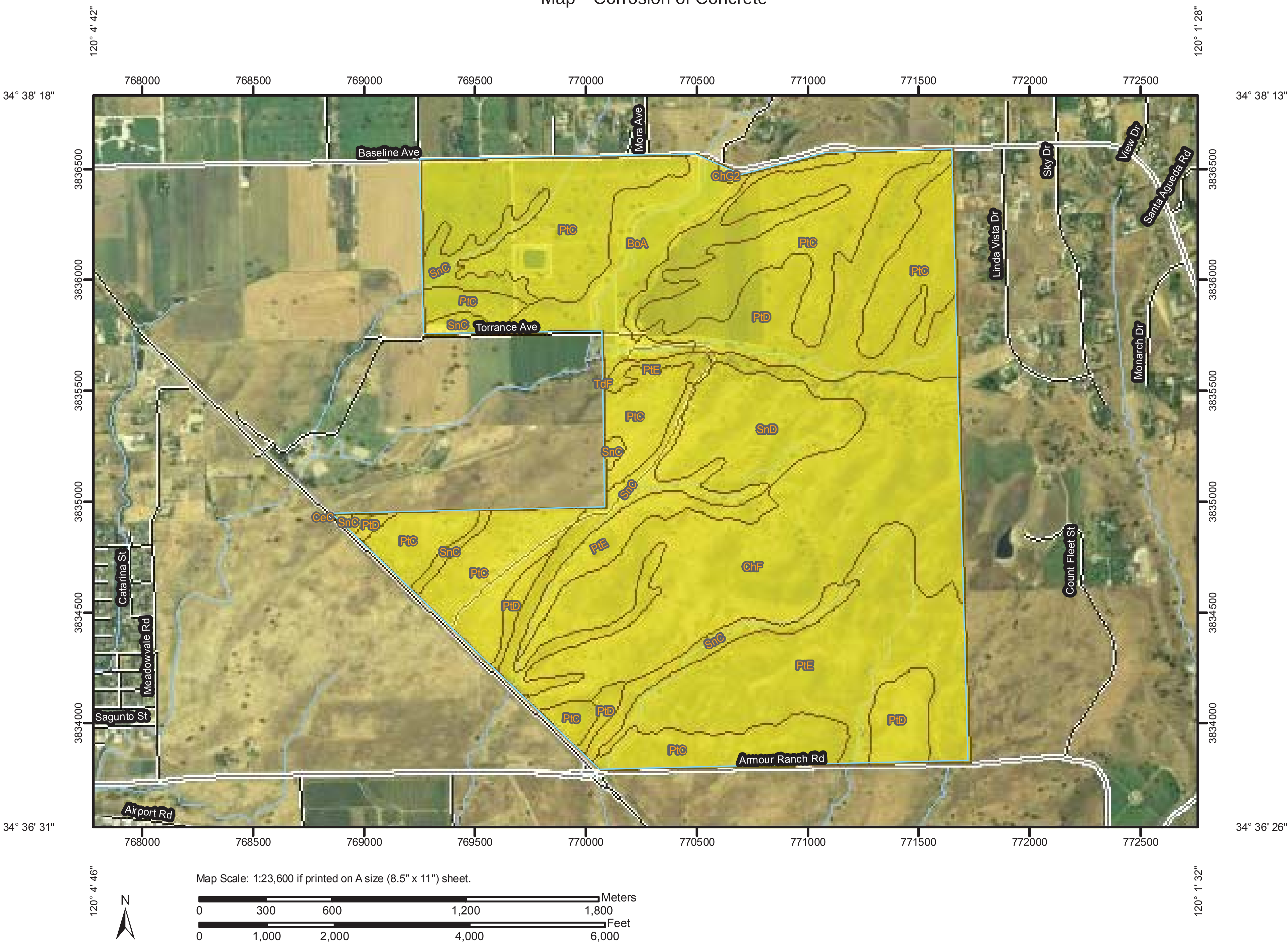
Building Site Development

Building site development interpretations are designed to be used as tools for evaluating soil suitability and identifying soil limitations for various construction purposes. As part of the interpretation process, the rating applies to each soil in its described condition and does not consider present land use. Example interpretations can include corrosion of concrete and steel, shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

Corrosion of Concrete

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."


120° 4' 42"
120° 1' 28"
34° 38' 18"
34° 38' 13"
34° 36' 31"
34° 36' 26"
120° 4' 46"
120° 1' 32"
768000
768500
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3836500
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3834000
Baseline Ave
Mora Ave
Sky Dr
View Dr
Santa Agueda Rd
Linda Vista Dr
Monarch Dr
Torrance Ave
Count Fleet St
Catarina St
Meadowvale Rd
Sagunto St
Armour Ranch Rd
Airport Rd
ChG2
PtC
BoA
PtD
SnC
TdF
PtE
SnD
CeC
ChF
Map Scale: 1:23,600 if printed on A size (8.5" x 11") sheet.
Meters
0
300
600
1,200
1,800
Feet
0
1,000
2,000
4,000
6,000
N

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- High
- Moderate
- Low
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
Survey Area Data: Version 7, Aug 31, 2009

Date(s) aerial images were photographed: 6/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Corrosion of Concrete

Corrosion of Concrete— Summary by Map Unit — Northern Santa Barbara Area, California (CA672)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BoA	Botella loam, 0 to 2 percent slopes	Moderate	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	Moderate	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	Moderate	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	Moderate	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	Moderate	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	Moderate	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	Moderate	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	Moderate	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	Moderate	81.1	5.7%
TdF	Terrace escarpments, loamy		0.0	0.0%
Totals for Area of Interest			**1,429.3**	**100.0%**

Rating Options—Corrosion of Concrete

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

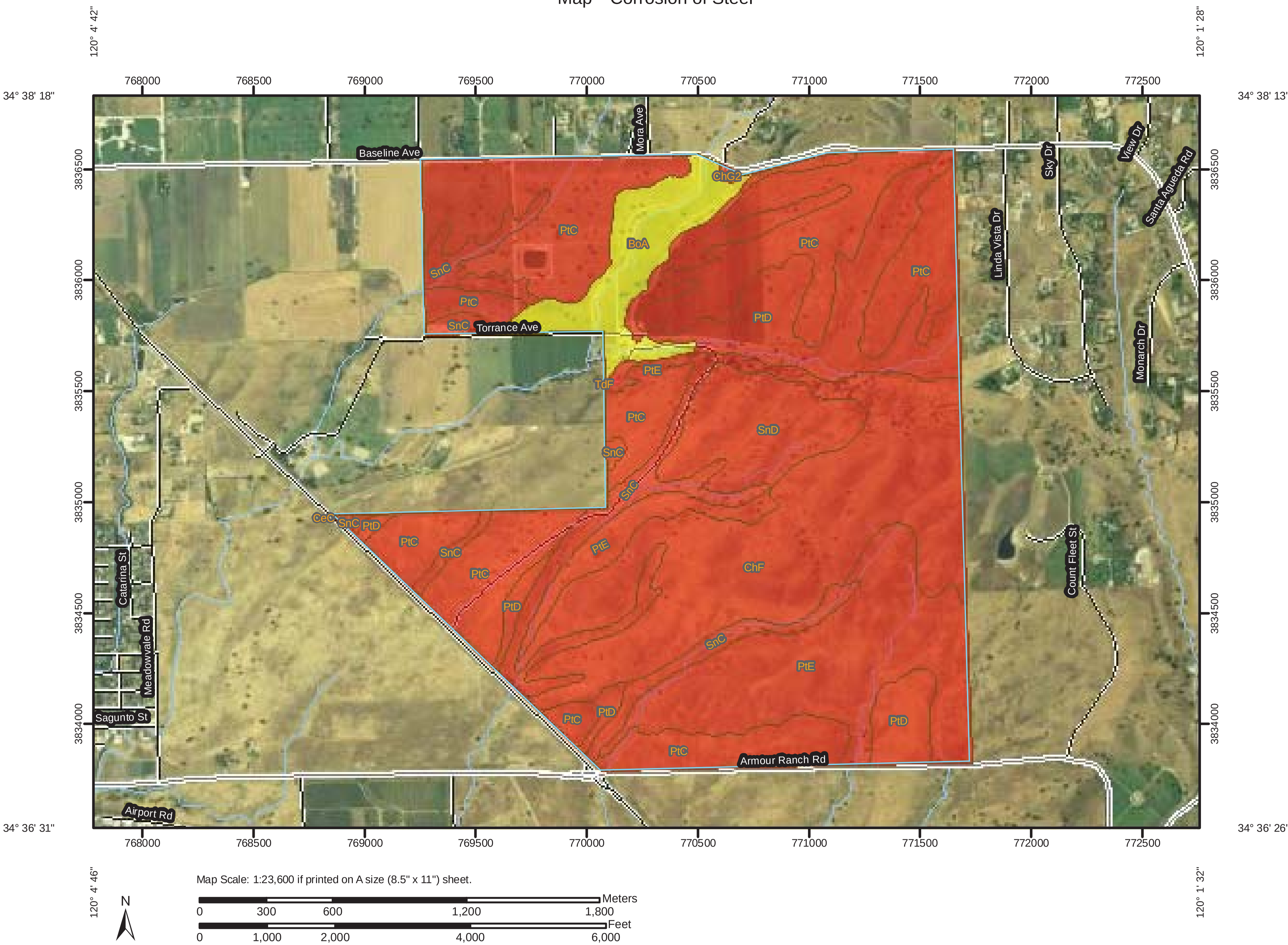
Tie-break Rule: Higher

Corrosion of Steel

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Custom Soil Resource Report
Map—Corrosion of Steel



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- High
- Moderate
- Low
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

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Soil Survey Area: Northern Santa Barbara Area, California
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Table—Corrosion of Steel

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BoA	Botella loam, 0 to 2 percent slopes	Moderate	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	High	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	High	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	High	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	High	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	High	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	High	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	High	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	High	81.1	5.7%
TdF	Terrace escarpments, loamy		0.0	0.0%
Totals for Area of Interest			**1,429.3**	**100.0%**

Rating Options—Corrosion of Steel

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

California Revised Storie Index (CA)

The Storie Index is a soil rating based on soil properties that govern a soil's potential for cultivated agriculture in California.

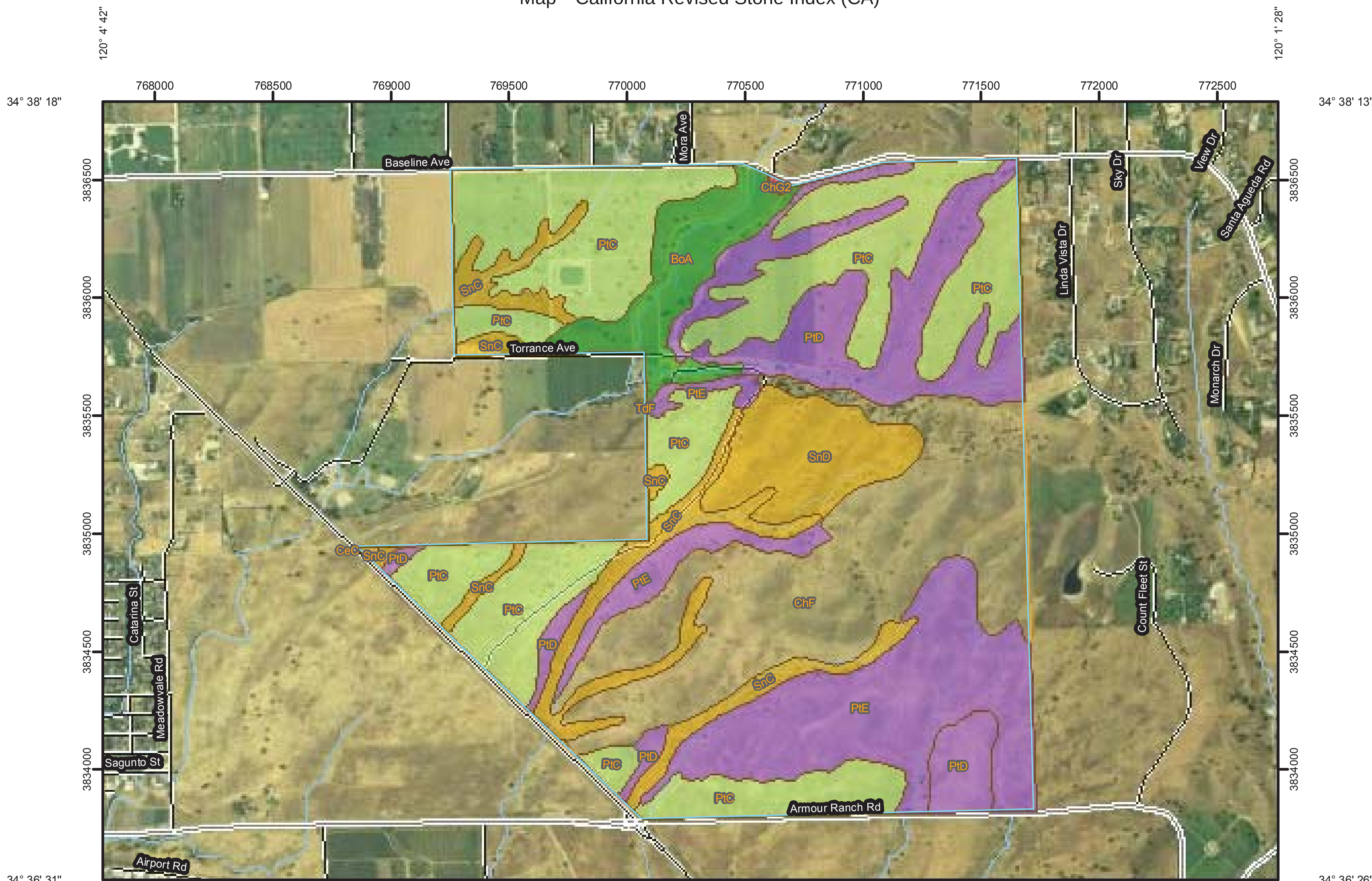
The Storie Index assesses the productivity of a soil from the following four characteristics: Factor A, degree of soil profile development; factor B, texture of the surface layer; factor C, slope; and factor X, manageable features, including drainage, microrelief, fertility, acidity, erosion, and salt content. A score ranging from 0 to 100 percent is determined for each factor, and the scores are then multiplied together to derive an index rating.

For simplification, Storie Index ratings have been combined into six grade classes as follows: Grade 1 (excellent), 100 to 80; grade 2 (good), 79 to 60; grade 3 (fair), 59 to 40; grade 4 (poor), 39 to 20; grade 5 (very poor), 19 to 10; and grade 6 (nonagricultural), less than 10.

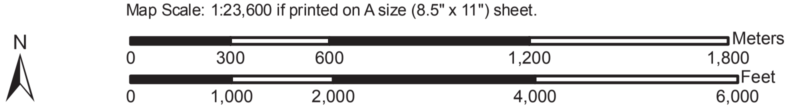
The components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as the one shown for the map unit. The percent composition of each component in a particular map unit is given to help the user better understand the extent to which the rating applies to the map unit.

Other components with different ratings may occur in each map unit. The ratings for all components, regardless the aggregated rating of the map unit, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Map—California Revised Storie Index (CA)



Map Scale: 1:23,600 if printed on A size (8.5" x 11") sheet.



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Grade One - Excellent
- Grade Two - Good
- Grade Three - Fair
- Grade Four - Poor
- Grade Five - Very Poor
- Grade Six - Nonagricultural
- Not rated
- not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
Survey Area Data: Version 7, Aug 31, 2009

Date(s) aerial images were photographed: 6/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—California Revised Storie Index (CA)

California Revised Storie Index (CA)— Summary by Map Unit — Northern Santa Barbara Area, California (CA672)					
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Acres in AOI**	**Percent of AOI**
BoA	Botella loam, 0 to 2 percent slopes	Grade One - Excellent	Botella (85%)	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	Grade Four - Poor	Chamise (85%)	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	Grade Five - Very Poor	Chamise (85%)	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	Grade Six - Nonagricultural	Chamise (85%)	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	Grade Two - Good	Positas (85%)	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	Grade Three - Fair	Positas (85%)	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	Grade Three - Fair	Positas (85%)	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	Grade Four - Poor	Santa Ynez (85%)	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	Grade Four - Poor	Santa Ynez (85%)	81.1	5.7%
TdF	Terrace escarpments, loamy	Not Rated	Terrace escarpments (85%)	0.0	0.0%
			Unnamed (15%)		
Totals for Area of Interest				**1,429.3**	**100.0%**

Rating Options—California Revised Storie Index (CA)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Hydric Rating by Map Unit

This rating indicates the proportion of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is designated as "all hydric," "partially hydric," "not hydric," or "unknown hydric," depending on the rating of its respective components.

"All hydric" means that all components listed for a given map unit are rated as being hydric, while "not hydric" means that all components are rated as not hydric. "Partially hydric" means that at least one component of the map unit is rated as hydric, and at least one component is rated as not hydric. "Unknown hydric" indicates that at least one component is not rated so a definitive rating for the map unit cannot be made.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

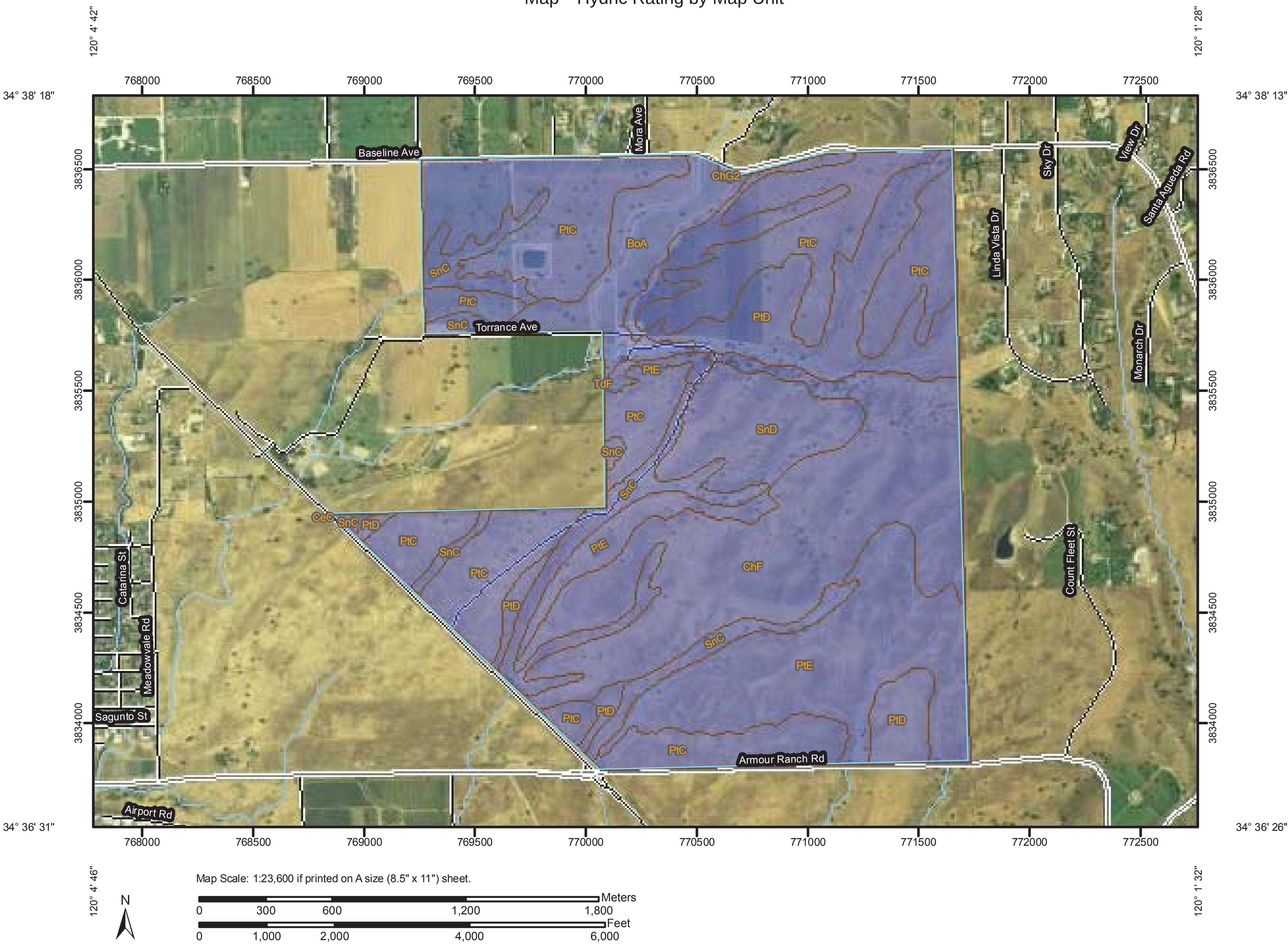
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Map—Hydric Rating by Map Unit



Map Scale: 1:23,600 if printed on A size (8.5" x 11") sheet.

Meters: 0, 300, 600, 1,200, 1,800

Feet: 0, 1,000, 2,000, 4,000, 6,000

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- All Hydric
- Partially Hydric
- Not Hydric
- Unknown Hydric
- Not rated or not available

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
Survey Area Data: Version 7, Aug 31, 2009

Date(s) aerial images were photographed: 6/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydric Rating by Map Unit

Hydric Rating by Map Unit— Summary by Map Unit — Northern Santa Barbara Area, California (CA672)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BoA	Botella loam, 0 to 2 percent slopes	Not Hydric	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	Not Hydric	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	Not Hydric	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	Not Hydric	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	Not Hydric	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	Not Hydric	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	Not Hydric	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	Not Hydric	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	Not Hydric	81.1	5.7%
TdF	Terrace escarpments, loamy	Not Hydric	0.0	0.0%
Totals for Area of Interest			**1,429.3**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Absence/Presence

Tie-break Rule: Lower

Irrigated Capability Class

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

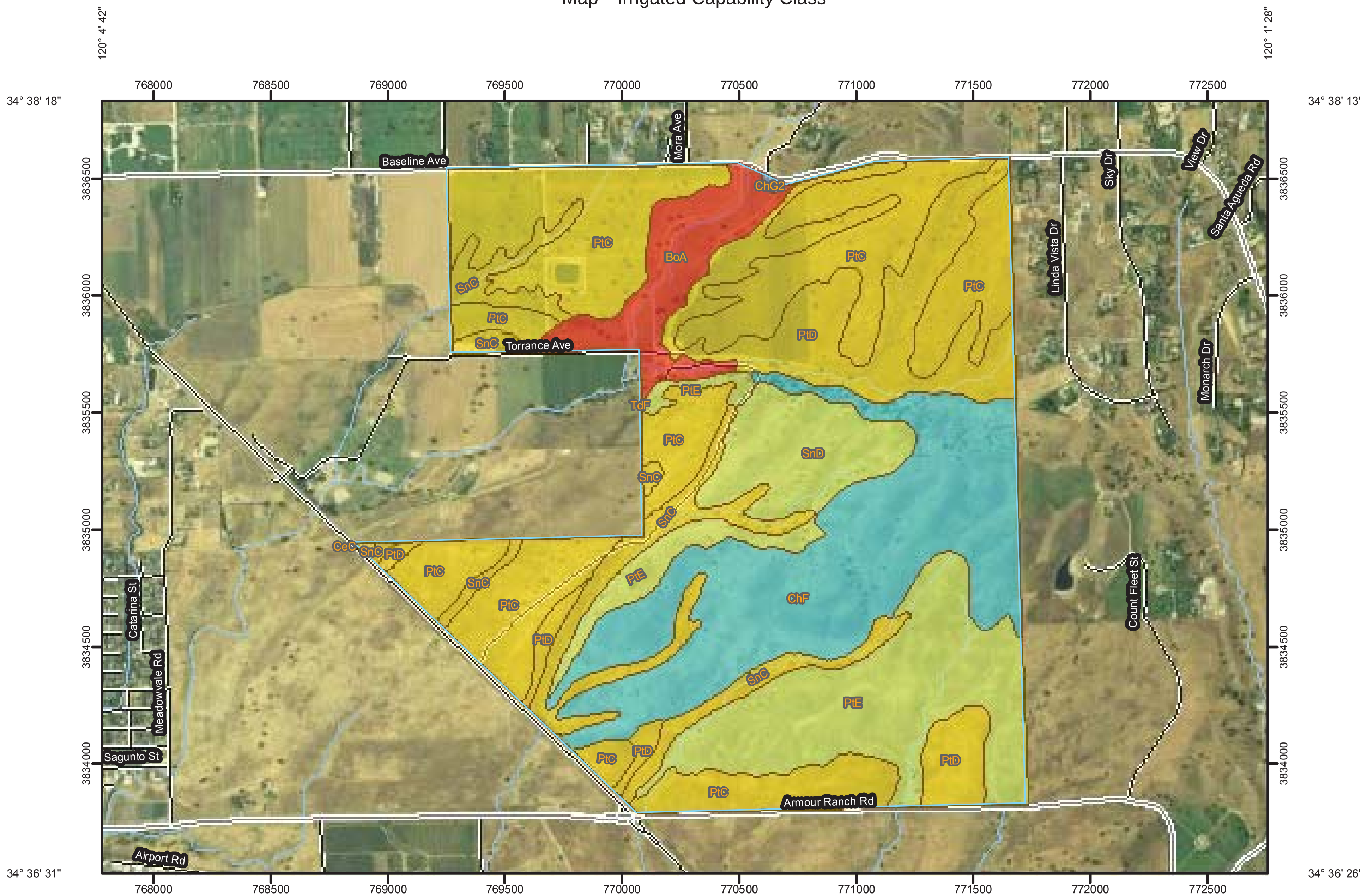
Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Custom Soil Resource Report
Map—Irrigated Capability Class



Map Scale: 1:23,600 if printed on A size (8.5" x 11") sheet.

N

0 300 600 1,200 1,800 Meters

0 1,000 2,000 4,000 6,000 Feet

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
Survey Area Data: Version 7, Aug 31, 2009

Date(s) aerial images were photographed: 6/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Irrigated Capability Class

Irrigated Capability Class— Summary by Map Unit — Northern Santa Barbara Area, California (CA672)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BoA	Botella loam, 0 to 2 percent slopes	1	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	3	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	6	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	7	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	3	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	3	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	4	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	3	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	4	81.1	5.7%
TdF	Terrace escarpments, loamy	6	0.0	0.0%
Totals for Area of Interest			**1,429.3**	**100.0%**

Rating Options—Irrigated Capability Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Irrigated Capability Subclass

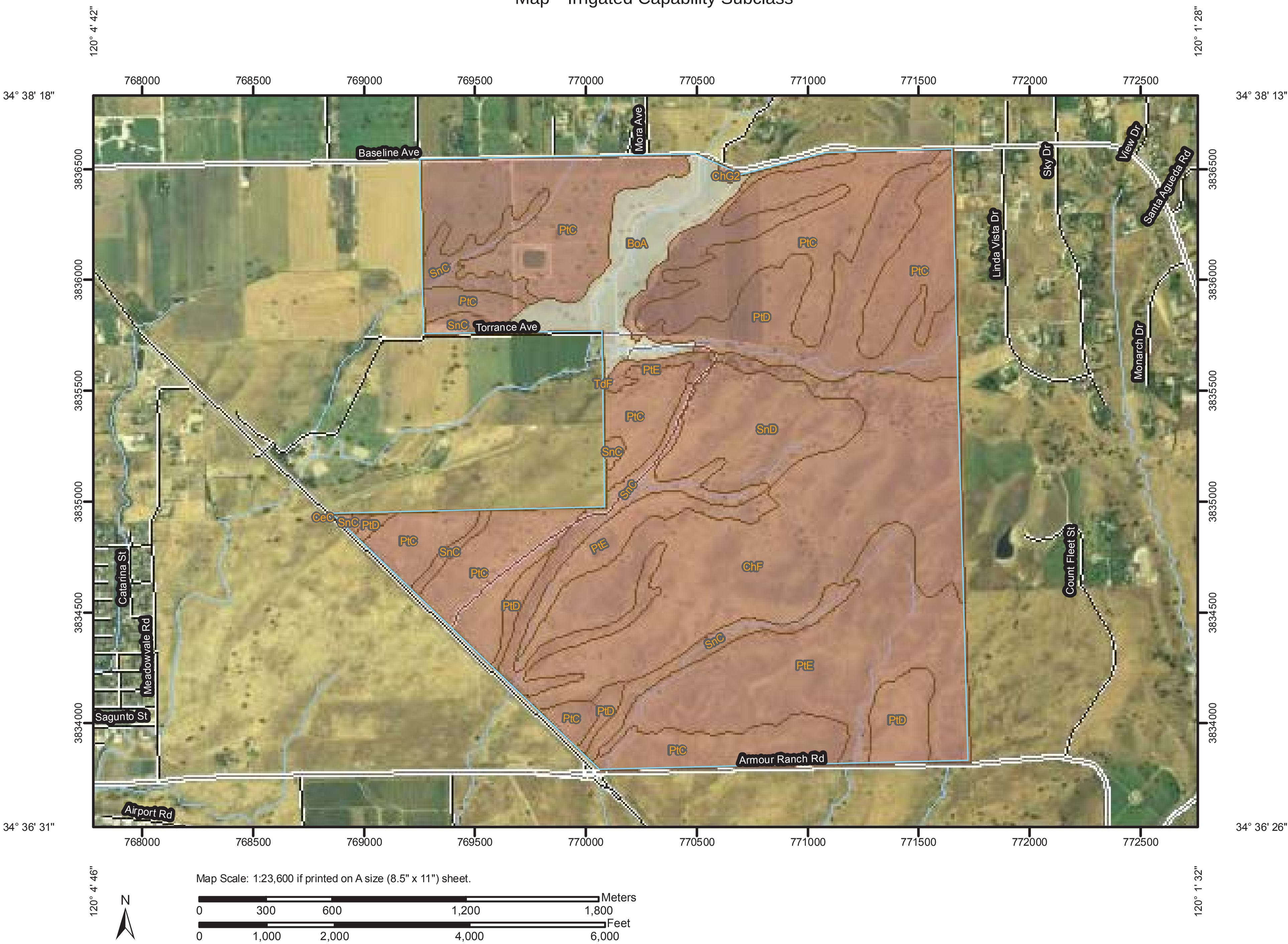
Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability subclasses are soil groups within one capability class. They are designated by adding a small letter, "e," "w," "s," or "c," to the class numeral, for example, 2e. The letter "e" shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; "w" shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); "s" shows that the soil is limited mainly because it is shallow, droughty, or stony; and "c," used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by "w," "s," or "c" because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, or wildlife habitat.

Custom Soil Resource Report
Map—Irrigated Capability Subclass



Map Scale: 1:23,600 if printed on A size (8.5" x 11") sheet.

Meters: 0, 300, 600, 1,200, 1,800

Feet: 0, 1,000, 2,000, 4,000, 6,000

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Erosion
- Soil limitation within the rooting zone
- Excess water
- Climate condition
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
Survey Area Data: Version 7, Aug 31, 2009

Date(s) aerial images were photographed: 6/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Irrigated Capability Subclass

Irrigated Capability Subclass— Summary by Map Unit — Northern Santa Barbara Area, California (CA672)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BoA	Botella loam, 0 to 2 percent slopes		77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	e	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	e	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	e	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	e	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	e	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	e	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	e	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	e	81.1	5.7%
TdF	Terrace escarpments, loamy	e	0.0	0.0%
Totals for Area of Interest			**1,429.3**	**100.0%**

Rating Options—Irrigated Capability Subclass

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Erosion Factors

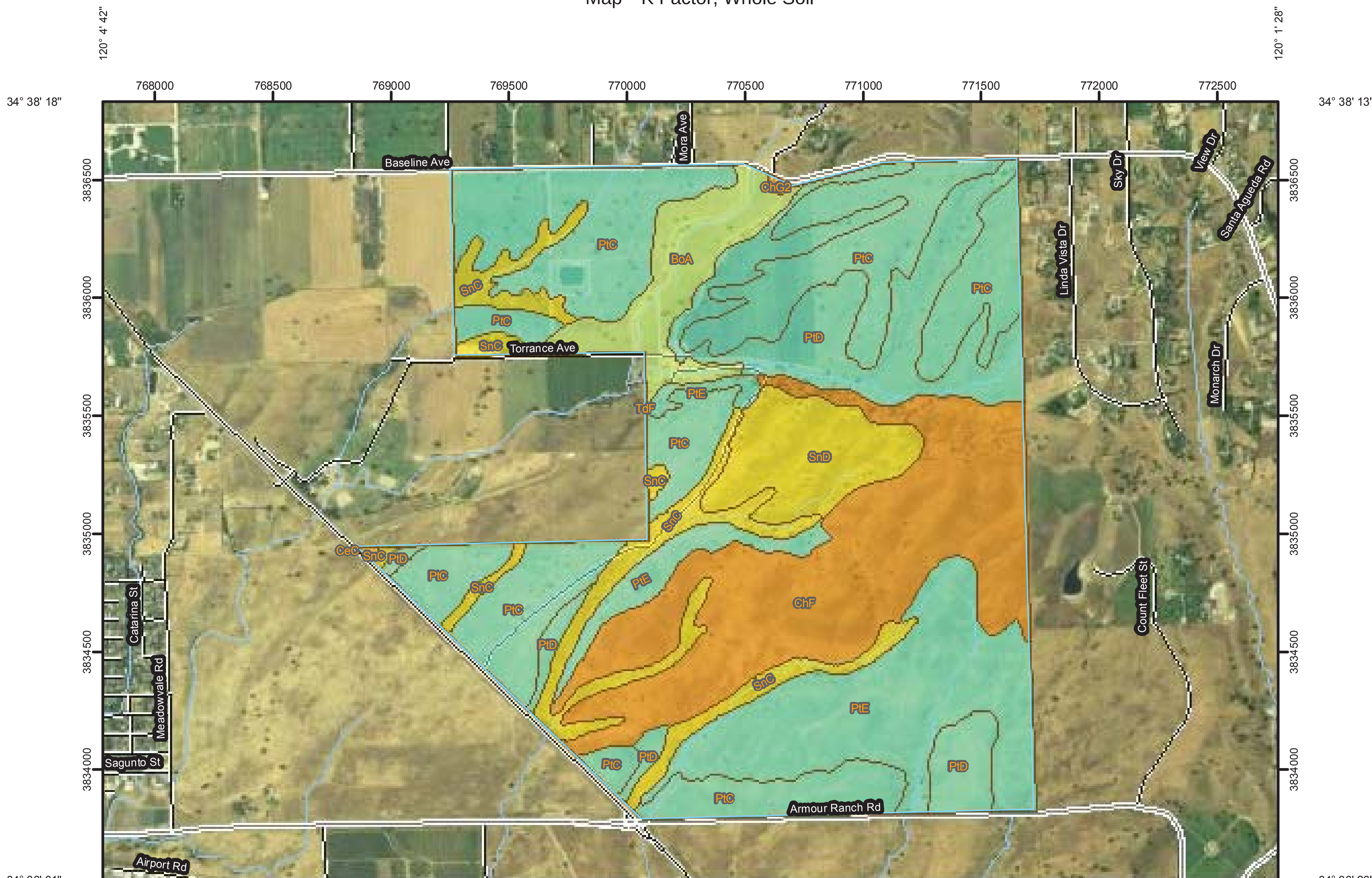
Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil

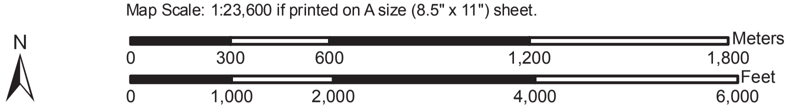
Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Map—K Factor, Whole Soil



Map Scale: 1:23,600 if printed on A size (8.5" x 11") sheet.



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

.02

.05

.10

.15

.17

.20

.24

.28

.32

.37

.43

.49

.55

.64

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
Survey Area Data: Version 7, Aug 31, 2009

Date(s) aerial images were photographed: 6/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—K Factor, Whole Soil

K Factor, Whole Soil— Summary by Map Unit — Northern Santa Barbara Area, California (CA672)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BoA	Botella loam, 0 to 2 percent slopes	.24	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	.15	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	.10	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	.10	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	.32	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	.32	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	.32	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	.17	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	.17	81.1	5.7%
TdF	Terrace escarpments, loamy		0.0	0.0%
Totals for Area of Interest			**1,429.3**	**100.0%**

Rating Options—K Factor, Whole Soil

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options: Surface Layer

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Linear Extensibility

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Low (0 - 3)
- Moderate (3 - 6)
- High (6 - 9)
- Very High (9 - 30)
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
Survey Area Data: Version 7, Aug 31, 2009

Date(s) aerial images were photographed: 6/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Linear Extensibility

Linear Extensibility— Summary by Map Unit — Northern Santa Barbara Area, California (CA672)				
Map unit symbol	**Map unit name**	**Rating (percent)**	**Acres in AOI**	**Percent of AOI**
BoA	Botella loam, 0 to 2 percent slopes	4.1	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	3.1	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	3.6	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	4.0	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	4.2	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	4.2	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	4.2	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	3.6	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	3.6	81.1	5.7%
TdF	Terrace escarpments, loamy		0.0	0.0%
Totals for Area of Interest			**1,429.3**	**100.0%**

Rating Options—Linear Extensibility

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options: All Layers

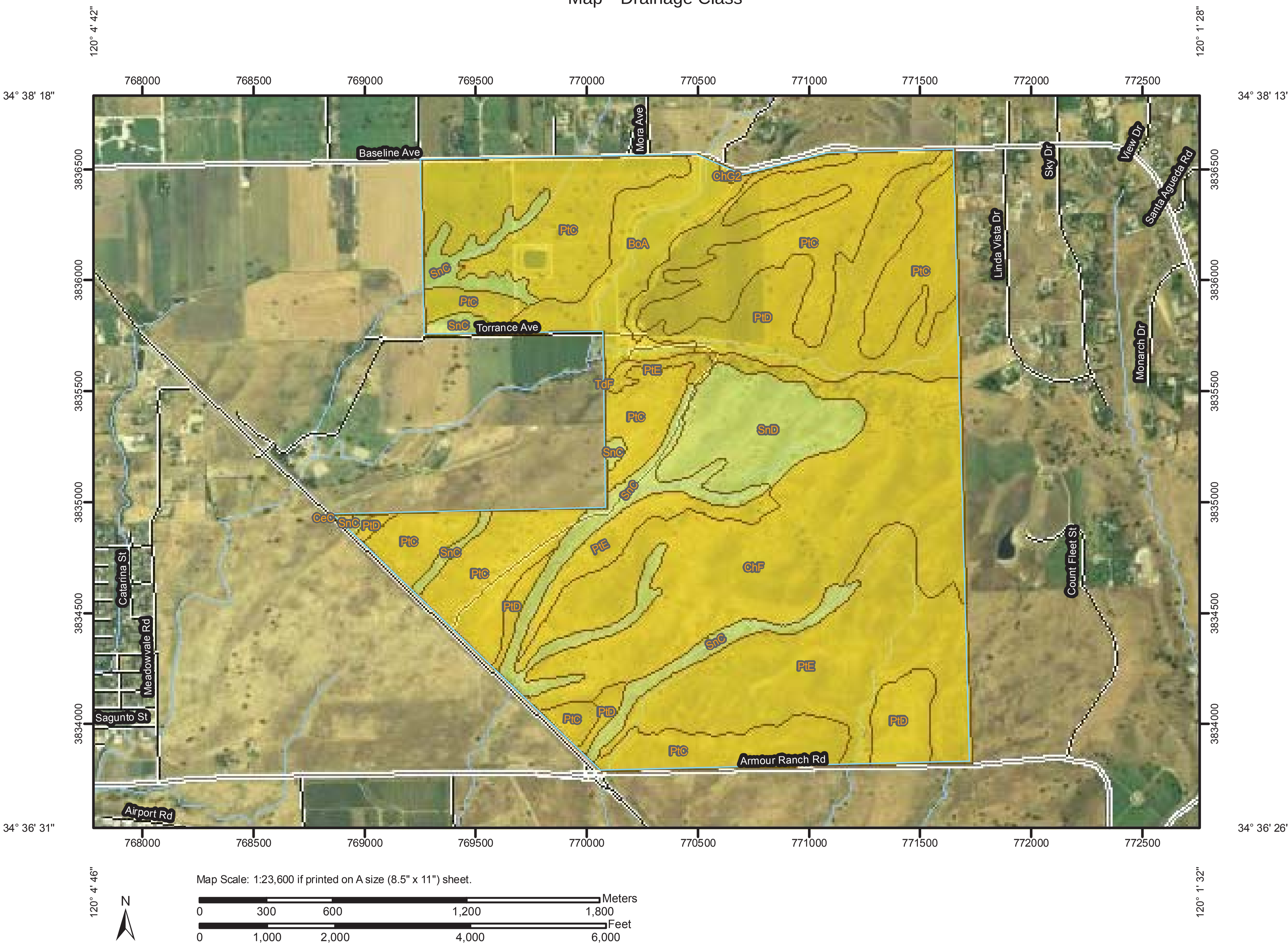
Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Map—Drainage Class



Map Scale: 1:23,600 if printed on A size (8.5" x 11") sheet.

Meters: 0, 300, 600, 1,200, 1,800

Feet: 0, 1,000, 2,000, 4,000, 6,000

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
Survey Area Data: Version 7, Aug 31, 2009

Date(s) aerial images were photographed: 6/6/2005

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Table—Drainage Class

Drainage Class— Summary by Map Unit — Northern Santa Barbara Area, California (CA672)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BoA	Botella loam, 0 to 2 percent slopes	Well drained	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	Well drained	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	Well drained	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	Well drained	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	Well drained	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	Well drained	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	Well drained	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	Moderately well drained	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	Moderately well drained	81.1	5.7%
TdF	Terrace escarpments, loamy		0.0	0.0%
Totals for Area of Interest			**1,429.3**	**100.0%**

Rating Options—Drainage Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

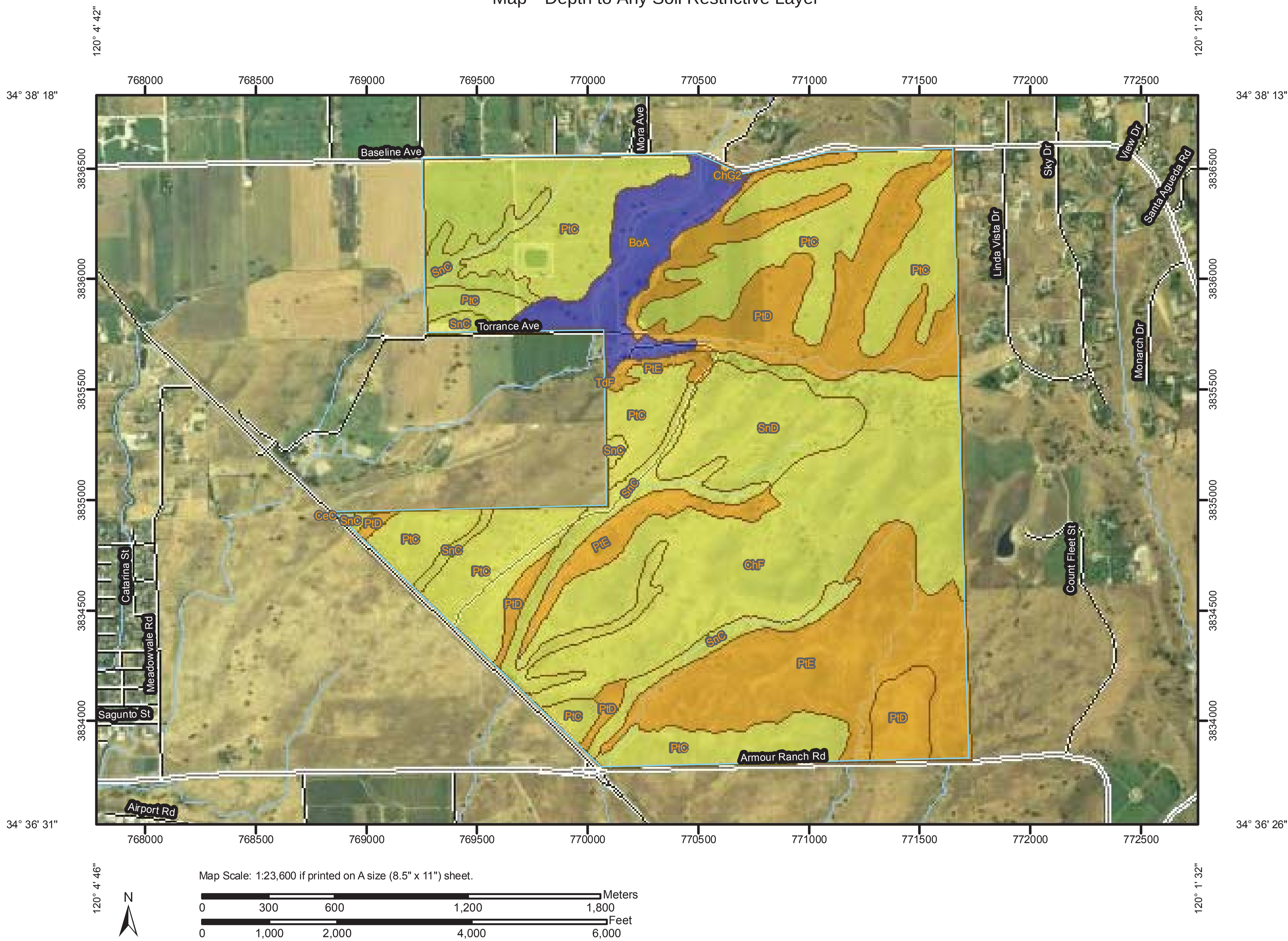
Depth to Any Soil Restrictive Layer

A "restrictive layer" is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers.

This theme presents the depth to any type of restrictive layer that is described for each map unit. If more than one type of restrictive layer is described for an individual soil type, the depth to the shallowest one is presented. If no restrictive layer is described in a map unit, it is represented by the "> 200" depth class.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Any Soil Restrictive Layer



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200

Political Features

Cities

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
Survey Area Data: Version 7, Aug 31, 2009

Date(s) aerial images were photographed: 6/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Any Soil Restrictive Layer

Depth to Any Soil Restrictive Layer— Summary by Map Unit — Northern Santa Barbara Area, California (CA672)				
Map unit symbol	**Map unit name**	**Rating (centimeters)**	**Acres in AOI**	**Percent of AOI**
BoA	Botella loam, 0 to 2 percent slopes	>200	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	102	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	79	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	38	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	58	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	41	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	41	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	64	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	62	81.1	5.7%
TdF	Terrace escarpments, loamy	>200	0.0	0.0%
Totals for Area of Interest			**1,429.3**	**100.0%**

Rating Options—Depth to Any Soil Restrictive Layer

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Water Features

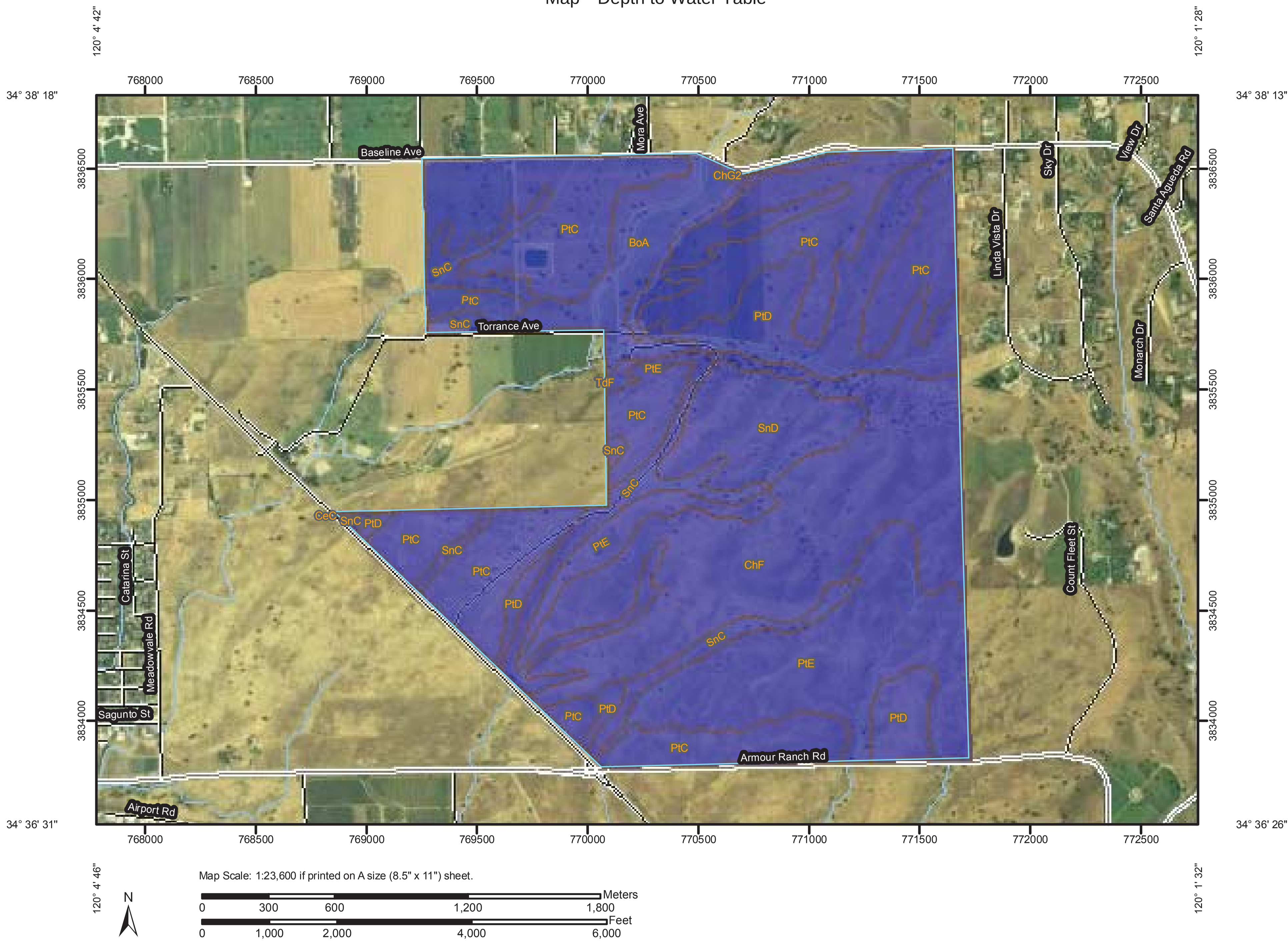
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Water Table



Map Scale: 1:23,600 if printed on A size (8.5" x 11") sheet.

Meters: 0, 300, 600, 1,200, 1,800

Feet: 0, 1,000, 2,000, 4,000, 6,000

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:23,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Northern Santa Barbara Area, California
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Date(s) aerial images were photographed: 6/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Water Table

Depth to Water Table— Summary by Map Unit — Northern Santa Barbara Area, California (CA672)				
Map unit symbol	**Map unit name**	**Rating (centimeters)**	**Acres in AOI**	**Percent of AOI**
BoA	Botella loam, 0 to 2 percent slopes	>200	77.6	5.4%
CeC	Chamise sandy loam, 5 to 9 percent slopes	>200	0.5	0.0%
ChF	Chamise shaly loam, 15 to 45 percent slopes	>200	302.9	21.2%
ChG2	Chamise shaly loam, 30 to 75 percent slopes, eroded	>200	1.2	0.1%
PtC	Positas fine sandy loam, 2 to 9 percent slopes	>200	438.9	30.7%
PtD	Positas fine sandy loam, 9 to 15 percent slopes	>200	189.6	13.3%
PtE	Positas fine sandy loam, 15 to 30 percent slopes	>200	224.2	15.7%
SnC	Santa Ynez gravelly fine sandy loam, 2 to 9 percent slopes	>200	113.2	7.9%
SnD	Santa Ynez gravelly fine sandy loam, 9 to 15 percent slopes	>200	81.1	5.7%
TdF	Terrace escarpments, loamy	>200	0.0	0.0%
Totals for Area of Interest			**1,429.3**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

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APPENDIX B

AIR EMISSIONS MODEL OUTPUT

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\equinn\Application Data\Urbemis\Version9a\Projects\Chumash\Chumash - Alternative A.urb924

Project Name: Chumash - Alternative A

Project Location: Santa Barbara County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013 TOTALS (tons/year unmitigated)	2.05	11.46	8.21	0.00	54.17	0.63	54.80	11.31	0.58	11.89	1,436.58
2013 TOTALS (tons/year mitigated)	1.64	11.46	8.21	0.00	22.13	0.32	22.45	4.62	0.29	4.92	1,436.58
Percent Reduction	19.88	0.00	0.00	0.00	59.15	49.17	59.03	59.14	49.23	58.66	0.00
2014 TOTALS (tons/year unmitigated)	3.64	19.17	14.34	0.00	99.20	1.03	100.23	20.72	0.95	21.66	2,605.49
2014 TOTALS (tons/year mitigated)	2.91	19.17	14.34	0.00	40.53	0.52	41.05	8.47	0.48	8.95	2,605.49
Percent Reduction	20.00	0.00	0.00	0.00	59.15	49.10	59.04	59.14	49.17	58.70	0.00
2015 TOTALS (tons/year unmitigated)	3.46	17.62	13.74	0.00	99.20	0.95	100.14	20.72	0.87	21.59	2,605.47
2015 TOTALS (tons/year mitigated)	2.73	17.62	13.74	0.00	40.53	0.48	41.01	8.47	0.44	8.91	2,605.47
Percent Reduction	21.02	0.00	0.00	0.00	59.15	49.07	59.05	59.14	49.14	58.74	0.00
2016 TOTALS (tons/year unmitigated)	2.68	12.33	10.34	0.00	98.98	0.58	99.56	20.67	0.53	21.21	2,058.58

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2016 TOTALS (tons/year mitigated)	1.96	12.33	10.34	0.00	40.43	0.30	40.73	8.45	0.27	8.72	2,058.58
Percent Reduction	27.11	0.00	0.00	0.00	59.15	48.76	59.09	59.14	48.85	58.88	0.00
2017 TOTALS (tons/year unmitigated)	0.73	1.61	2.20	0.00	8.29	0.08	8.37	1.73	0.07	1.81	374.77
2017 TOTALS (tons/year mitigated)	0.32	1.61	2.20	0.00	3.39	0.04	3.43	0.71	0.04	0.75	374.77
Percent Reduction	56.50	0.00	0.00	0.00	59.11	46.51	58.99	59.07	46.77	58.57	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	2.67	0.40	4.34	0.01	0.55	0.53	509.81

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.33	1.70	14.57	0.02	3.12	0.60	1,629.07

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	4.00	2.10	18.91	0.03	3.67	1.13	2,138.88

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013	2.05	11.46	8.21	0.00	54.17	0.63	54.80	11.31	0.58	11.89	1,436.58

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Asphalt 06/01/2013-12/31/2015	0.42	2.76	1.74	0.00	0.00	0.20	0.20	0.00	0.19	0.19	310.86
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.40	2.72	1.49	0.00	0.00	0.20	0.20	0.00	0.18	0.18	287.66
Paving On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.75
Paving Worker Trips	0.01	0.02	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.45
Mass Grading 06/01/2013-12/15/2016	0.20	1.59	0.93	0.00	3.04	0.08	3.12	0.64	0.07	0.70	181.10
Mass Grading Dust	0.00	0.00	0.00	0.00	3.04	0.00	3.04	0.63	0.00	0.63	0.00
Mass Grading Off Road Diesel	0.19	1.56	0.84	0.00	0.00	0.07	0.07	0.00	0.07	0.07	170.80
Mass Grading On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.82
Mass Grading Worker Trips	0.00	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.48
Fine Grading 06/15/2013-02/01/2017	0.68	5.60	3.03	0.00	51.12	0.26	51.38	10.68	0.24	10.91	642.99
Fine Grading Dust	0.00	0.00	0.00	0.00	51.12	0.00	51.12	10.68	0.00	10.68	0.00
Fine Grading Off Road Diesel	0.68	5.58	2.85	0.00	0.00	0.26	0.26	0.00	0.24	0.24	627.84
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.14
Building 06/25/2013-06/20/2017	0.29	1.52	2.50	0.00	0.01	0.09	0.10	0.00	0.09	0.09	301.18
Building Off Road Diesel	0.22	1.29	0.91	0.00	0.00	0.09	0.09	0.00	0.08	0.08	153.63
Building Vendor Trips	0.01	0.11	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.34
Building Worker Trips	0.06	0.11	1.49	0.00	0.01	0.00	0.01	0.00	0.00	0.01	120.21
Coating 07/08/2013-06/30/2017	0.46	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
Architectural Coating	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46

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2014	3.64	19.17	14.34	0.00	99.20	1.03	100.23	20.72	0.95	21.66	2,605.49
Asphalt 06/01/2013-12/31/2015	0.68	4.42	2.92	0.00	0.00	0.32	0.32	0.00	0.30	0.30	533.78
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.65	4.36	2.53	0.00	0.00	0.32	0.32	0.00	0.30	0.30	493.94
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.44
Paving Worker Trips	0.02	0.03	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.40
Building 06/25/2013-06/20/2017	0.50	2.69	4.53	0.00	0.01	0.16	0.17	0.01	0.14	0.15	577.99
Building Off Road Diesel	0.38	2.30	1.70	0.00	0.00	0.14	0.14	0.00	0.13	0.13	294.84
Building Vendor Trips	0.02	0.19	0.18	0.00	0.00	0.01	0.01	0.00	0.01	0.01	52.47
Building Worker Trips	0.10	0.19	2.64	0.00	0.01	0.01	0.02	0.00	0.01	0.01	230.68
Coating 07/08/2013-06/30/2017	0.94	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Architectural Coating	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Fine Grading 06/15/2013-02/01/2017	1.19	9.54	5.34	0.00	93.96	0.43	94.39	19.62	0.40	20.02	1,181.83
Fine Grading Dust	0.00	0.00	0.00	0.00	93.96	0.00	93.96	19.62	0.00	19.62	0.00
Fine Grading Off Road Diesel	1.18	9.51	5.02	0.00	0.00	0.43	0.43	0.00	0.40	0.40	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.32	2.53	1.54	0.00	5.22	0.12	5.34	1.09	0.11	1.20	310.96
Mass Grading Dust	0.00	0.00	0.00	0.00	5.22	0.00	5.22	1.09	0.00	1.09	0.00
Mass Grading Off Road Diesel	0.31	2.49	1.40	0.00	0.00	0.12	0.12	0.00	0.11	0.11	293.27
Mass Grading On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.55
Mass Grading Worker Trips	0.01	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.13

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2015	3.46	17.62	13.74	0.00	99.20	0.95	100.14	20.72	0.87	21.59	2,605.47
Asphalt 06/01/2013-12/31/2015	0.64	4.09	2.87	0.00	0.00	0.30	0.30	0.00	0.27	0.27	533.77
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.61	4.03	2.51	0.00	0.00	0.29	0.29	0.00	0.27	0.27	493.94
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.44
Paving Worker Trips	0.01	0.03	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.40
Building 06/25/2013-06/20/2017	0.46	2.46	4.27	0.00	0.01	0.15	0.16	0.01	0.13	0.14	577.97
Building Off Road Diesel	0.35	2.11	1.67	0.00	0.00	0.13	0.13	0.00	0.12	0.12	294.84
Building Vendor Trips	0.02	0.17	0.17	0.00	0.00	0.01	0.01	0.00	0.01	0.01	52.48
Building Worker Trips	0.09	0.18	2.43	0.00	0.01	0.01	0.02	0.00	0.01	0.01	230.66
Coating 07/08/2013-06/30/2017	0.94	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Architectural Coating	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Fine Grading 06/15/2013-02/01/2017	1.12	8.76	5.11	0.00	93.96	0.40	94.36	19.62	0.36	19.99	1,181.82
Fine Grading Dust	0.00	0.00	0.00	0.00	93.96	0.00	93.96	19.62	0.00	19.62	0.00
Fine Grading Off Road Diesel	1.10	8.74	4.82	0.00	0.00	0.39	0.39	0.00	0.36	0.36	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.30	2.32	1.48	0.00	5.22	0.11	5.33	1.09	0.10	1.19	310.96
Mass Grading Dust	0.00	0.00	0.00	0.00	5.22	0.00	5.22	1.09	0.00	1.09	0.00
Mass Grading Off Road Diesel	0.29	2.28	1.36	0.00	0.00	0.11	0.11	0.00	0.10	0.10	293.27
Mass Grading On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.55
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.13

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2016	2.68	12.33	10.34	0.00	98.98	0.58	99.56	20.67	0.53	21.21	2,058.58
Building 06/25/2013-06/20/2017	0.42	2.25	4.03	0.00	0.01	0.13	0.14	0.01	0.12	0.12	577.97
Building Off Road Diesel	0.32	1.94	1.65	0.00	0.00	0.11	0.11	0.00	0.11	0.11	294.84
Building Vendor Trips	0.01	0.15	0.15	0.00	0.00	0.01	0.01	0.00	0.00	0.01	52.48
Building Worker Trips	0.09	0.16	2.23	0.00	0.01	0.01	0.02	0.00	0.01	0.01	230.66
Coating 07/08/2013-06/30/2017	0.94	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Architectural Coating	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Fine Grading 06/15/2013-02/01/2017	1.05	8.04	4.93	0.00	93.96	0.36	94.32	19.62	0.33	19.95	1,181.82
Fine Grading Dust	0.00	0.00	0.00	0.00	93.96	0.00	93.96	19.62	0.00	19.62	0.00
Fine Grading Off Road Diesel	1.04	8.02	4.66	0.00	0.00	0.36	0.36	0.00	0.33	0.33	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.27	2.04	1.37	0.00	5.00	0.10	5.10	1.04	0.09	1.13	297.86
Mass Grading Dust	0.00	0.00	0.00	0.00	5.00	0.00	5.00	1.04	0.00	1.04	0.00
Mass Grading Off Road Diesel	0.27	2.01	1.26	0.00	0.00	0.09	0.09	0.00	0.09	0.09	280.91
Mass Grading On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.28
Mass Grading Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.66

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2017	0.73	1.61	2.20	0.00	8.29	0.08	8.37	1.73	0.07	1.81	374.77
Building 06/25/2013-06/20/2017	0.18	0.96	1.78	0.00	0.01	0.05	0.06	0.00	0.05	0.05	270.16
Building Off Road Diesel	0.14	0.83	0.76	0.00	0.00	0.05	0.05	0.00	0.04	0.04	137.82
Building Vendor Trips	0.01	0.06	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.53
Building Worker Trips	0.04	0.07	0.95	0.00	0.01	0.00	0.01	0.00	0.00	0.00	107.81
Coating 07/08/2013-06/30/2017	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
Architectural Coating	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
Fine Grading 06/15/2013-02/01/2017	0.09	0.65	0.42	0.00	8.28	0.03	8.31	1.73	0.03	1.76	104.15
Fine Grading Dust	0.00	0.00	0.00	0.00	8.28	0.00	8.28	1.73	0.00	1.73	0.00
Fine Grading Off Road Diesel	0.09	0.65	0.40	0.00	0.00	0.03	0.03	0.00	0.03	0.03	101.69
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45

Phase Assumptions

Phase: Fine Grading 6/15/2013 - 2/1/2017 - Type Your Description Here

Total Acres Disturbed: 144

Maximum Daily Acreage Disturbed: 36

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

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3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2013 - 12/15/2016 - Default Fine Site Grading Description

Total Acres Disturbed: 143.09

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 12.47

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 6/1/2013 - 12/31/2015 - Default Paving Description

Acres to be Paved: 36

Off-Road Equipment:

2 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 0 hours per day

2 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

2 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

3 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

3 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 6/25/2013 - 6/20/2017 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/8/2013 - 6/30/2017 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013	1.64	11.46	8.21	0.00	22.13	0.32	22.45	4.62	0.29	4.92	1,436.58
Asphalt 06/01/2013-12/31/2015	0.42	2.76	1.74	0.00	0.00	0.10	0.10	0.00	0.09	0.09	310.86
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.40	2.72	1.49	0.00	0.00	0.10	0.10	0.00	0.09	0.09	287.66
Paving On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.75
Paving Worker Trips	0.01	0.02	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.45
Mass Grading 06/01/2013-12/15/2016	0.20	1.59	0.93	0.00	1.24	0.04	1.28	0.26	0.04	0.29	181.10
Mass Grading Dust	0.00	0.00	0.00	0.00	1.24	0.00	1.24	0.26	0.00	0.26	0.00
Mass Grading Off Road Diesel	0.19	1.56	0.84	0.00	0.00	0.04	0.04	0.00	0.03	0.03	170.80
Mass Grading On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.82
Mass Grading Worker Trips	0.00	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.48

Fine Grading 06/15/2013-02/01/2017	0.68	5.60	3.03	0.00	20.88	0.13	21.01	4.36	0.12	4.48	642.99
Fine Grading Dust	0.00	0.00	0.00	0.00	20.88	0.00	20.88	4.36	0.00	4.36	0.00
Fine Grading Off Road Diesel	0.68	5.58	2.85	0.00	0.00	0.13	0.13	0.00	0.12	0.12	627.84
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.14
Building 06/25/2013-06/20/2017	0.29	1.52	2.50	0.00	0.01	0.05	0.06	0.00	0.05	0.05	301.18
Building Off Road Diesel	0.22	1.29	0.91	0.00	0.00	0.04	0.04	0.00	0.04	0.04	153.63
Building Vendor Trips	0.01	0.11	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.34
Building Worker Trips	0.06	0.11	1.49	0.00	0.01	0.00	0.01	0.00	0.00	0.01	120.21
Coating 07/08/2013-06/30/2017	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
Architectural Coating	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
2014	2.91	19.17	14.34	0.00	40.53	0.52	41.05	8.47	0.48	8.95	2,605.49
Asphalt 06/01/2013-12/31/2015	0.68	4.42	2.92	0.00	0.00	0.16	0.16	0.00	0.15	0.15	533.78
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.65	4.36	2.53	0.00	0.00	0.16	0.16	0.00	0.15	0.15	493.94
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.44
Paving Worker Trips	0.02	0.03	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.40
Building 06/25/2013-06/20/2017	0.50	2.69	4.53	0.00	0.01	0.09	0.10	0.01	0.08	0.08	577.99
Building Off Road Diesel	0.38	2.30	1.70	0.00	0.00	0.07	0.07	0.00	0.07	0.07	294.84
Building Vendor Trips	0.02	0.19	0.18	0.00	0.00	0.01	0.01	0.00	0.01	0.01	52.47
Building Worker Trips	0.10	0.19	2.64	0.00	0.01	0.01	0.02	0.00	0.01	0.01	230.68

Coating 07/08/2013-06/30/2017	0.21	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Architectural Coating	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Fine Grading 06/15/2013-02/01/2017	1.19	9.54	5.34	0.00	38.38	0.22	38.59	8.01	0.20	8.21	1,181.83
Fine Grading Dust	0.00	0.00	0.00	0.00	38.38	0.00	38.38	8.01	0.00	8.01	0.00
Fine Grading Off Road Diesel	1.18	9.51	5.02	0.00	0.00	0.21	0.21	0.00	0.20	0.20	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.32	2.53	1.54	0.00	2.13	0.06	2.19	0.45	0.05	0.50	310.96
Mass Grading Dust	0.00	0.00	0.00	0.00	2.13	0.00	2.13	0.45	0.00	0.45	0.00
Mass Grading Off Road Diesel	0.31	2.49	1.40	0.00	0.00	0.06	0.06	0.00	0.05	0.05	293.27
Mass Grading On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.55
Mass Grading Worker Trips	0.01	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.13

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2015	2.73	17.62	13.74	0.00	40.53	0.48	41.01	8.47	0.44	8.91	2,605.47
Asphalt 06/01/2013-12/31/2015	0.64	4.09	2.87	0.00	0.00	0.15	0.15	0.00	0.14	0.14	533.77
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.61	4.03	2.51	0.00	0.00	0.15	0.15	0.00	0.14	0.14	493.94
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.44
Paving Worker Trips	0.01	0.03	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.40
Building 06/25/2013-06/20/2017	0.46	2.46	4.27	0.00	0.01	0.08	0.09	0.01	0.07	0.08	577.97
Building Off Road Diesel	0.35	2.11	1.67	0.00	0.00	0.07	0.07	0.00	0.06	0.06	294.84
Building Vendor Trips	0.02	0.17	0.17	0.00	0.00	0.01	0.01	0.00	0.01	0.01	52.48
Building Worker Trips	0.09	0.18	2.43	0.00	0.01	0.01	0.02	0.00	0.01	0.01	230.66
Coating 07/08/2013-06/30/2017	0.21	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Architectural Coating	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Fine Grading 06/15/2013-02/01/2017	1.12	8.76	5.11	0.00	38.38	0.20	38.57	8.01	0.18	8.20	1,181.82
Fine Grading Dust	0.00	0.00	0.00	0.00	38.38	0.00	38.38	8.01	0.00	8.01	0.00
Fine Grading Off Road Diesel	1.10	8.74	4.82	0.00	0.00	0.20	0.20	0.00	0.18	0.18	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.30	2.32	1.48	0.00	2.13	0.05	2.19	0.45	0.05	0.50	310.96
Mass Grading Dust	0.00	0.00	0.00	0.00	2.13	0.00	2.13	0.45	0.00	0.45	0.00
Mass Grading Off Road Diesel	0.29	2.28	1.36	0.00	0.00	0.05	0.05	0.00	0.05	0.05	293.27
Mass Grading On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.55
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.13

2016	1.96	12.33	10.34	0.00	40.43	0.30	40.73	8.45	0.27	8.72	2,058.58
Building 06/25/2013-06/20/2017	0.42	2.25	4.03	0.00	0.01	0.07	0.08	0.01	0.06	0.07	577.97
Building Off Road Diesel	0.32	1.94	1.65	0.00	0.00	0.06	0.06	0.00	0.05	0.05	294.84
Building Vendor Trips	0.01	0.15	0.15	0.00	0.00	0.01	0.01	0.00	0.00	0.01	52.48
Building Worker Trips	0.09	0.16	2.23	0.00	0.01	0.01	0.02	0.00	0.01	0.01	230.66
Coating 07/08/2013-06/30/2017	0.21	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Architectural Coating	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94
Fine Grading 06/15/2013-02/01/2017	1.05	8.04	4.93	0.00	38.38	0.18	38.56	8.01	0.17	8.18	1,181.82
Fine Grading Dust	0.00	0.00	0.00	0.00	38.38	0.00	38.38	8.01	0.00	8.01	0.00
Fine Grading Off Road Diesel	1.04	8.02	4.66	0.00	0.00	0.18	0.18	0.00	0.16	0.16	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.27	2.04	1.37	0.00	2.04	0.05	2.09	0.43	0.04	0.47	297.86
Mass Grading Dust	0.00	0.00	0.00	0.00	2.04	0.00	2.04	0.43	0.00	0.43	0.00
Mass Grading Off Road Diesel	0.27	2.01	1.26	0.00	0.00	0.05	0.05	0.00	0.04	0.04	280.91
Mass Grading On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.28
Mass Grading Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.66

2017	0.32	1.61	2.20	0.00	3.39	0.04	3.43	0.71	0.04	0.75	374.77
Building 06/25/2013-06/20/2017	0.18	0.96	1.78	0.00	0.01	0.03	0.04	0.00	0.03	0.03	270.16
Building Off Road Diesel	0.14	0.83	0.76	0.00	0.00	0.02	0.02	0.00	0.02	0.02	137.82
Building Vendor Trips	0.01	0.06	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.53
Building Worker Trips	0.04	0.07	0.95	0.00	0.01	0.00	0.01	0.00	0.00	0.00	107.81
Coating 07/08/2013-06/30/2017	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
Architectural Coating	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
Fine Grading 06/15/2013-02/01/2017	0.09	0.65	0.42	0.00	3.38	0.01	3.40	0.71	0.01	0.72	104.15
Fine Grading Dust	0.00	0.00	0.00	0.00	3.38	0.00	3.38	0.71	0.00	0.71	0.00
Fine Grading Off Road Diesel	0.09	0.65	0.40	0.00	0.00	0.01	0.01	0.00	0.01	0.01	101.69
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 6/15/2013 - 2/1/2017 - Type Your Description Here

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Scrapers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Mass Grading 6/1/2013 - 12/15/2016 - Default Fine Site Grading Description

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Paving 6/1/2013 - 12/31/2015 - Default Paving Description

For Pavers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Paving Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

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For Cement and Mortar Mixers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Other Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 6/25/2013 - 6/20/2017 - Default Building Construction Description

For Cranes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Generator Sets, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Welders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Architectural Coating 7/8/2013 - 6/30/2017 - Default Architectural Coating Description

For Residential Architectural Coating Measures, the Residential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Residential Architectural Coating Measures, the Residential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.03	0.33	0.14	0.00	0.00	0.00	420.38
Hearth	0.88	0.06	3.49	0.01	0.55	0.53	88.25
Landscape	0.11	0.01	0.71	0.00	0.00	0.00	1.18
Consumer Products	1.28						
Architectural Coatings	0.37						
TOTALS (tons/year, unmitigated)	2.67	0.40	4.34	0.01	0.55	0.53	509.81

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	1.33	1.70	14.55	0.02	3.12	0.60	1,627.17
Wastewater Treatment Plant	0.00	0.00	0.02	0.00	0.00	0.00	1.90
TOTALS (tons/year, unmitigated)	1.33	1.70	14.57	0.02	3.12	0.60	1,629.07

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2017 Season: Annual

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Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	143.00	9.57	dwelling units	143.00	1,368.51	9,935.66
Wastewater Treatment Plant		1.00	1000 sq ft	2.00	2.00	11.40
					1,370.51	9,947.06

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	46.2	0.2	99.6	0.2
Light Truck < 3750 lbs	16.4	0.6	97.6	1.8
Light Truck 3751-5750 lbs	20.5	0.0	100.0	0.0
Med Truck 5751-8500 lbs	7.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	73.3	26.7
Lite-Heavy Truck 10,001-14,000 lbs	1.0	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.1	0.0	18.2	81.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.8	44.7	55.3	0.0
School Bus	0.2	0.0	0.0	100.0
Motor Home	1.2	0.0	91.7	8.3

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.9	5.6	6.1	5.7	4.1	5.7
Rural Trip Length (miles)	15.0	15.0	15.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Wastewater Treatment Plant				100.0	0.0	0.0

Operational Changes to Defaults

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\equinn\Application Data\Urbemis\Version9a\Projects\Chumash\Chumash - Alternative B.urb924

Project Name: Chumash - Alternative B

Project Location: Santa Barbara County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013 TOTALS (tons/year unmitigated)	2.18	11.66	8.66	0.00	64.82	0.64	65.46	13.54	0.59	14.12	1,502.41
2013 TOTALS (tons/year mitigated)	1.68	11.66	8.66	0.00	26.48	0.33	26.81	5.53	0.30	5.83	1,502.41
Percent Reduction	22.87	0.00	0.00	0.00	59.15	48.63	59.04	59.14	48.69	58.70	0.00
2014 TOTALS (tons/year unmitigated)	3.90	19.49	15.12	0.00	118.78	1.04	119.82	24.81	0.96	25.76	2,725.89
2014 TOTALS (tons/year mitigated)	3.01	19.49	15.12	0.00	48.53	0.53	49.06	10.14	0.49	10.63	2,725.89
Percent Reduction	22.77	0.00	0.00	0.00	59.15	48.58	59.05	59.14	48.65	58.75	0.00
2015 TOTALS (tons/year unmitigated)	3.72	17.91	14.46	0.00	118.78	0.96	119.73	24.81	0.88	25.69	2,725.87
2015 TOTALS (tons/year mitigated)	2.83	17.91	14.46	0.00	48.53	0.49	49.02	10.14	0.45	10.59	2,725.87
Percent Reduction	23.88	0.00	0.00	0.00	59.15	48.56	59.06	59.14	48.64	58.78	0.00
2016 TOTALS (tons/year unmitigated)	2.93	12.57	10.99	0.00	118.56	0.59	119.15	24.76	0.54	25.30	2,175.57

2016 TOTALS (tons/year mitigated)	2.05	12.57	10.99	0.00	48.43	0.31	48.74	10.12	0.28	10.40	2,175.57
Percent Reduction	30.27	0.00	0.00	0.00	59.15	48.04	59.09	59.14	48.16	58.90	0.00
2017 TOTALS (tons/year unmitigated)	0.85	1.64	2.46	0.00	10.01	0.08	10.10	2.09	0.08	2.17	407.45
2017 TOTALS (tons/year mitigated)	0.34	1.64	2.46	0.00	4.09	0.04	4.14	0.86	0.04	0.90	407.45
Percent Reduction	59.70	0.00	0.00	0.00	59.11	45.74	59.00	59.07	46.06	58.62	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	2.78	0.50	4.56	0.01	0.55	0.53	626.86

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	2.69	3.52	29.37	0.04	6.39	1.23	3,314.31

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	5.47	4.02	33.93	0.05	6.94	1.76	3,941.17

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013	2.18	11.66	8.66	0.00	64.82	0.64	65.46	13.54	0.59	14.12	1,502.41

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Asphalt 06/01/2013-12/31/2015	0.42	2.76	1.74	0.00	0.00	0.20	0.20	0.00	0.19	0.19	311.64
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.40	2.72	1.49	0.00	0.00	0.20	0.20	0.00	0.18	0.18	287.66
Paving On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.53
Paving Worker Trips	0.01	0.02	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.45
Mass Grading 06/01/2013-12/15/2016	0.21	1.74	0.98	0.00	3.04	0.08	3.12	0.64	0.07	0.71	209.72
Mass Grading Dust	0.00	0.00	0.00	0.00	3.04	0.00	3.04	0.63	0.00	0.63	0.00
Mass Grading Off Road Diesel	0.19	1.56	0.84	0.00	0.00	0.07	0.07	0.00	0.07	0.07	170.80
Mass Grading On Road Diesel	0.01	0.17	0.05	0.00	0.00	0.01	0.01	0.00	0.01	0.01	32.44
Mass Grading Worker Trips	0.00	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.48
Fine Grading 06/15/2013-02/01/2017	0.68	5.60	3.03	0.00	61.77	0.26	62.03	12.90	0.24	13.14	642.99
Fine Grading Dust	0.00	0.00	0.00	0.00	61.77	0.00	61.77	12.90	0.00	12.90	0.00
Fine Grading Off Road Diesel	0.68	5.58	2.85	0.00	0.00	0.26	0.26	0.00	0.24	0.24	627.84
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.14
Building 06/25/2013-06/20/2017	0.30	1.57	2.90	0.00	0.01	0.10	0.10	0.00	0.09	0.09	337.50
Building Off Road Diesel	0.22	1.29	0.91	0.00	0.00	0.09	0.09	0.00	0.08	0.08	153.63
Building Vendor Trips	0.01	0.14	0.13	0.00	0.00	0.00	0.01	0.00	0.00	0.00	33.95
Building Worker Trips	0.07	0.14	1.86	0.00	0.01	0.00	0.01	0.00	0.00	0.01	149.91
Coating 07/08/2013-06/30/2017	0.56	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56
Architectural Coating	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56

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2014	3.90	19.49	15.12	0.00	118.78	1.04	119.82	24.81	0.96	25.76	2,725.89
Asphalt 06/01/2013-12/31/2015	0.69	4.42	2.93	0.00	0.00	0.32	0.33	0.00	0.30	0.30	535.12
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.65	4.36	2.53	0.00	0.00	0.32	0.32	0.00	0.30	0.30	493.94
Paving On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.78
Paving Worker Trips	0.02	0.03	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.40
Building 06/25/2013-06/20/2017	0.53	2.78	5.23	0.00	0.02	0.16	0.18	0.01	0.15	0.15	647.68
Building Off Road Diesel	0.38	2.30	1.70	0.00	0.00	0.14	0.14	0.00	0.13	0.13	294.84
Building Vendor Trips	0.02	0.23	0.23	0.00	0.00	0.01	0.01	0.00	0.01	0.01	65.16
Building Worker Trips	0.13	0.24	3.30	0.00	0.02	0.01	0.02	0.01	0.01	0.01	287.68
Coating 07/08/2013-06/30/2017	1.15	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Architectural Coating	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Fine Grading 06/15/2013-02/01/2017	1.19	9.54	5.34	0.00	113.54	0.43	113.97	23.71	0.40	24.11	1,181.83
Fine Grading Dust	0.00	0.00	0.00	0.00	113.54	0.00	113.54	23.71	0.00	23.71	0.00
Fine Grading Off Road Diesel	1.18	9.51	5.02	0.00	0.00	0.43	0.43	0.00	0.40	0.40	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.34	2.75	1.61	0.00	5.22	0.12	5.35	1.09	0.11	1.21	360.12
Mass Grading Dust	0.00	0.00	0.00	0.00	5.22	0.00	5.22	1.09	0.00	1.09	0.00
Mass Grading Off Road Diesel	0.31	2.49	1.40	0.00	0.00	0.12	0.12	0.00	0.11	0.11	293.27
Mass Grading On Road Diesel	0.02	0.25	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	55.71
Mass Grading Worker Trips	0.01	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.13

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2015	3.72	17.91	14.46	0.00	118.78	0.96	119.73	24.81	0.88	25.69	2,725.87
Asphalt 06/01/2013-12/31/2015	0.65	4.09	2.87	0.00	0.00	0.30	0.30	0.00	0.27	0.27	535.12
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.61	4.03	2.51	0.00	0.00	0.29	0.29	0.00	0.27	0.27	493.94
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.78
Paving Worker Trips	0.01	0.03	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.40
Building 06/25/2013-06/20/2017	0.49	2.54	4.91	0.00	0.02	0.15	0.17	0.01	0.14	0.14	647.66
Building Off Road Diesel	0.35	2.11	1.67	0.00	0.00	0.13	0.13	0.00	0.12	0.12	294.84
Building Vendor Trips	0.02	0.21	0.21	0.00	0.00	0.01	0.01	0.00	0.01	0.01	65.17
Building Worker Trips	0.12	0.22	3.03	0.00	0.02	0.01	0.02	0.01	0.01	0.01	287.66
Coating 07/08/2013-06/30/2017	1.15	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Architectural Coating	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Fine Grading 06/15/2013-02/01/2017	1.12	8.76	5.11	0.00	113.54	0.40	113.93	23.71	0.36	24.07	1,181.82
Fine Grading Dust	0.00	0.00	0.00	0.00	113.54	0.00	113.54	23.71	0.00	23.71	0.00
Fine Grading Off Road Diesel	1.10	8.74	4.82	0.00	0.00	0.39	0.39	0.00	0.36	0.36	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.31	2.52	1.55	0.00	5.22	0.11	5.34	1.09	0.10	1.20	360.11
Mass Grading Dust	0.00	0.00	0.00	0.00	5.22	0.00	5.22	1.09	0.00	1.09	0.00
Mass Grading Off Road Diesel	0.29	2.28	1.36	0.00	0.00	0.11	0.11	0.00	0.10	0.10	293.27
Mass Grading On Road Diesel	0.02	0.22	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	55.71
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.13

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2016	2.93	12.57	10.99	0.00	118.56	0.59	119.15	24.76	0.54	25.30	2,175.57
Building 06/25/2013-06/20/2017	0.45	2.32	4.62	0.00	0.02	0.13	0.15	0.01	0.12	0.12	647.66
Building Off Road Diesel	0.32	1.94	1.65	0.00	0.00	0.11	0.11	0.00	0.11	0.11	294.84
Building Vendor Trips	0.02	0.18	0.19	0.00	0.00	0.01	0.01	0.00	0.01	0.01	65.17
Building Worker Trips	0.11	0.20	2.78	0.00	0.02	0.01	0.02	0.01	0.01	0.01	287.65
Coating 07/08/2013-06/30/2017	1.15	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Architectural Coating	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Fine Grading 06/15/2013-02/01/2017	1.05	8.04	4.93	0.00	113.54	0.36	113.89	23.71	0.33	24.04	1,181.82
Fine Grading Dust	0.00	0.00	0.00	0.00	113.54	0.00	113.54	23.71	0.00	23.71	0.00
Fine Grading Off Road Diesel	1.04	8.02	4.66	0.00	0.00	0.36	0.36	0.00	0.33	0.33	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.28	2.21	1.43	0.00	5.00	0.10	5.10	1.05	0.09	1.14	344.94
Mass Grading Dust	0.00	0.00	0.00	0.00	5.00	0.00	5.00	1.04	0.00	1.04	0.00
Mass Grading Off Road Diesel	0.27	2.01	1.26	0.00	0.00	0.09	0.09	0.00	0.09	0.09	280.91
Mass Grading On Road Diesel	0.01	0.19	0.07	0.00	0.00	0.01	0.01	0.00	0.01	0.01	53.36
Mass Grading Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.66

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2017	0.85	1.64	2.46	0.00	10.01	0.08	10.10	2.09	0.08	2.17	407.45
Building 06/25/2013-06/20/2017	0.19	0.99	2.03	0.00	0.01	0.05	0.06	0.00	0.05	0.05	302.73
Building Off Road Diesel	0.14	0.83	0.76	0.00	0.00	0.05	0.05	0.00	0.04	0.04	137.82
Building Vendor Trips	0.01	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.46
Building Worker Trips	0.04	0.09	1.19	0.00	0.01	0.00	0.01	0.00	0.00	0.01	134.46
Coating 07/08/2013-06/30/2017	0.58	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57
Architectural Coating	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57
Fine Grading 06/15/2013-02/01/2017	0.09	0.65	0.42	0.00	10.01	0.03	10.03	2.09	0.03	2.12	104.15
Fine Grading Dust	0.00	0.00	0.00	0.00	10.01	0.00	10.01	2.09	0.00	2.09	0.00
Fine Grading Off Road Diesel	0.09	0.65	0.40	0.00	0.00	0.03	0.03	0.00	0.03	0.03	101.69
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45

Phase Assumptions

Phase: Fine Grading 6/15/2013 - 2/1/2017 - Type Your Description Here

Total Acres Disturbed: 174

Maximum Daily Acreage Disturbed: 43.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2013 - 12/15/2016 - Default Fine Site Grading Description

Total Acres Disturbed: 143.09

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 106.03

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 6/1/2013 - 12/31/2015 - Default Paving Description

Acres to be Paved: 43.5

Off-Road Equipment:

2 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 0 hours per day

2 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day

2 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

3 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

3 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 6/25/2013 - 6/20/2017 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 7/8/2013 - 6/30/2017 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2013	1.68	11.66	8.66	0.00	26.48	0.33	26.81	5.53	0.30	5.83	1,502.41
Asphalt 06/01/2013-12/31/2015	0.42	2.76	1.74	0.00	0.00	0.10	0.10	0.00	0.09	0.09	311.64
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.40	2.72	1.49	0.00	0.00	0.10	0.10	0.00	0.09	0.09	287.66
Paving On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.53
Paving Worker Trips	0.01	0.02	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.45
Mass Grading 06/01/2013-12/15/2016	0.21	1.74	0.98	0.00	1.24	0.04	1.29	0.26	0.04	0.30	209.72
Mass Grading Dust	0.00	0.00	0.00	0.00	1.24	0.00	1.24	0.26	0.00	0.26	0.00
Mass Grading Off Road Diesel	0.19	1.56	0.84	0.00	0.00	0.04	0.04	0.00	0.03	0.03	170.80
Mass Grading On Road Diesel	0.01	0.17	0.05	0.00	0.00	0.01	0.01	0.00	0.01	0.01	32.44
Mass Grading Worker Trips	0.00	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.48

Fine Grading 06/15/2013-02/01/2017	0.68	5.60	3.03	0.00	25.23	0.13	25.36	5.27	0.12	5.39	642.99
Fine Grading Dust	0.00	0.00	0.00	0.00	25.23	0.00	25.23	5.27	0.00	5.27	0.00
Fine Grading Off Road Diesel	0.68	5.58	2.85	0.00	0.00	0.13	0.13	0.00	0.12	0.12	627.84
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.01	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.14
Building 06/25/2013-06/20/2017	0.30	1.57	2.90	0.00	0.01	0.05	0.06	0.00	0.05	0.05	337.50
Building Off Road Diesel	0.22	1.29	0.91	0.00	0.00	0.04	0.04	0.00	0.04	0.04	153.63
Building Vendor Trips	0.01	0.14	0.13	0.00	0.00	0.00	0.01	0.00	0.00	0.00	33.95
Building Worker Trips	0.07	0.14	1.86	0.00	0.01	0.00	0.01	0.00	0.00	0.01	149.91
Coating 07/08/2013-06/30/2017	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56
Architectural Coating	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56
2014	3.01	19.49	15.12	0.00	48.53	0.53	49.06	10.14	0.49	10.63	2,725.89
Asphalt 06/01/2013-12/31/2015	0.69	4.42	2.93	0.00	0.00	0.16	0.16	0.00	0.15	0.15	535.12
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.65	4.36	2.53	0.00	0.00	0.16	0.16	0.00	0.15	0.15	493.94
Paving On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.78
Paving Worker Trips	0.02	0.03	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.40
Building 06/25/2013-06/20/2017	0.53	2.78	5.23	0.00	0.02	0.09	0.11	0.01	0.08	0.09	647.68
Building Off Road Diesel	0.38	2.30	1.70	0.00	0.00	0.07	0.07	0.00	0.07	0.07	294.84
Building Vendor Trips	0.02	0.23	0.23	0.00	0.00	0.01	0.01	0.00	0.01	0.01	65.16
Building Worker Trips	0.13	0.24	3.30	0.00	0.02	0.01	0.02	0.01	0.01	0.01	287.68

Coating 07/08/2013-06/30/2017	0.27	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Architectural Coating	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Fine Grading 06/15/2013-02/01/2017	1.19	9.54	5.34	0.00	46.37	0.22	46.59	9.68	0.20	9.88	1,181.83
Fine Grading Dust	0.00	0.00	0.00	0.00	46.37	0.00	46.37	9.68	0.00	9.68	0.00
Fine Grading Off Road Diesel	1.18	9.51	5.02	0.00	0.00	0.21	0.21	0.00	0.20	0.20	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.34	2.75	1.61	0.00	2.13	0.07	2.20	0.45	0.06	0.51	360.12
Mass Grading Dust	0.00	0.00	0.00	0.00	2.13	0.00	2.13	0.45	0.00	0.45	0.00
Mass Grading Off Road Diesel	0.31	2.49	1.40	0.00	0.00	0.06	0.06	0.00	0.05	0.05	293.27
Mass Grading On Road Diesel	0.02	0.25	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	55.71
Mass Grading Worker Trips	0.01	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.13

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2015	2.83	17.91	14.46	0.00	48.53	0.49	49.02	10.14	0.45	10.59	2,725.87
Asphalt 06/01/2013-12/31/2015	0.65	4.09	2.87	0.00	0.00	0.15	0.15	0.00	0.14	0.14	535.12
Paving Off-Gas	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.61	4.03	2.51	0.00	0.00	0.15	0.15	0.00	0.14	0.14	493.94
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.78
Paving Worker Trips	0.01	0.03	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.40
Building 06/25/2013-06/20/2017	0.49	2.54	4.91	0.00	0.02	0.08	0.10	0.01	0.08	0.08	647.66
Building Off Road Diesel	0.35	2.11	1.67	0.00	0.00	0.07	0.07	0.00	0.06	0.06	294.84
Building Vendor Trips	0.02	0.21	0.21	0.00	0.00	0.01	0.01	0.00	0.01	0.01	65.17
Building Worker Trips	0.12	0.22	3.03	0.00	0.02	0.01	0.02	0.01	0.01	0.01	287.66
Coating 07/08/2013-06/30/2017	0.27	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Architectural Coating	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Fine Grading 06/15/2013-02/01/2017	1.12	8.76	5.11	0.00	46.37	0.20	46.57	9.68	0.18	9.87	1,181.82
Fine Grading Dust	0.00	0.00	0.00	0.00	46.37	0.00	46.37	9.68	0.00	9.68	0.00
Fine Grading Off Road Diesel	1.10	8.74	4.82	0.00	0.00	0.20	0.20	0.00	0.18	0.18	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.31	2.52	1.55	0.00	2.13	0.06	2.20	0.45	0.06	0.50	360.11
Mass Grading Dust	0.00	0.00	0.00	0.00	2.13	0.00	2.13	0.45	0.00	0.45	0.00
Mass Grading Off Road Diesel	0.29	2.28	1.36	0.00	0.00	0.05	0.05	0.00	0.05	0.05	293.27
Mass Grading On Road Diesel	0.02	0.22	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	55.71
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.13

2016	2.05	12.57	10.99	0.00	48.43	0.31	48.74	10.12	0.28	10.40	2,175.57
Building 06/25/2013-06/20/2017	0.45	2.32	4.62	0.00	0.02	0.07	0.09	0.01	0.07	0.07	647.66
Building Off Road Diesel	0.32	1.94	1.65	0.00	0.00	0.06	0.06	0.00	0.05	0.05	294.84
Building Vendor Trips	0.02	0.18	0.19	0.00	0.00	0.01	0.01	0.00	0.01	0.01	65.17
Building Worker Trips	0.11	0.20	2.78	0.00	0.02	0.01	0.02	0.01	0.01	0.01	287.65
Coating 07/08/2013-06/30/2017	0.27	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Architectural Coating	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Fine Grading 06/15/2013-02/01/2017	1.05	8.04	4.93	0.00	46.37	0.18	46.55	9.68	0.17	9.85	1,181.82
Fine Grading Dust	0.00	0.00	0.00	0.00	46.37	0.00	46.37	9.68	0.00	9.68	0.00
Fine Grading Off Road Diesel	1.04	8.02	4.66	0.00	0.00	0.18	0.18	0.00	0.16	0.16	1,153.99
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.02	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.83
Mass Grading 06/01/2013-12/15/2016	0.28	2.21	1.43	0.00	2.04	0.05	2.10	0.43	0.05	0.48	344.94
Mass Grading Dust	0.00	0.00	0.00	0.00	2.04	0.00	2.04	0.43	0.00	0.43	0.00
Mass Grading Off Road Diesel	0.27	2.01	1.26	0.00	0.00	0.05	0.05	0.00	0.04	0.04	280.91
Mass Grading On Road Diesel	0.01	0.19	0.07	0.00	0.00	0.01	0.01	0.00	0.01	0.01	53.36
Mass Grading Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.66

2017	0.34	1.64	2.46	0.00	4.09	0.04	4.14	0.86	0.04	0.90	407.45
Building 06/25/2013-06/20/2017	0.19	0.99	2.03	0.00	0.01	0.03	0.04	0.00	0.03	0.03	302.73
Building Off Road Diesel	0.14	0.83	0.76	0.00	0.00	0.02	0.02	0.00	0.02	0.02	137.82
Building Vendor Trips	0.01	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.46
Building Worker Trips	0.04	0.09	1.19	0.00	0.01	0.00	0.01	0.00	0.00	0.01	134.46
Coating 07/08/2013-06/30/2017	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57
Architectural Coating	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57
Fine Grading 06/15/2013-02/01/2017	0.09	0.65	0.42	0.00	4.09	0.01	4.10	0.85	0.01	0.87	104.15
Fine Grading Dust	0.00	0.00	0.00	0.00	4.09	0.00	4.09	0.85	0.00	0.85	0.00
Fine Grading Off Road Diesel	0.09	0.65	0.40	0.00	0.00	0.01	0.01	0.00	0.01	0.01	101.69
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 6/15/2013 - 2/1/2017 - Type Your Description Here

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

5/1/2012 3:21:32 PM

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Scrapers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Mass Grading 6/1/2013 - 12/15/2016 - Default Fine Site Grading Description

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Paving 6/1/2013 - 12/31/2015 - Default Paving Description

For Pavers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Paving Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

5/1/2012 3:21:32 PM

For Cement and Mortar Mixers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Other Equipment, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 6/25/2013 - 6/20/2017 - Default Building Construction Description

For Cranes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Generator Sets, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Welders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Architectural Coating 7/8/2013 - 6/30/2017 - Default Architectural Coating Description

For Residential Architectural Coating Measures, the Residential Exterior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

For Residential Architectural Coating Measures, the Residential Interior: Use Low VOC Coatings mitigation reduces emissions by:

ROG: 10%

5/1/2012 3:21:32 PM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.03	0.43	0.22	0.00	0.00	0.00	537.18
Hearth	0.88	0.06	3.49	0.01	0.55	0.53	88.25
Landscape	0.13	0.01	0.85	0.00	0.00	0.00	1.43
Consumer Products	1.28						
Architectural Coatings	0.46						
TOTALS (tons/year, unmitigated)	2.78	0.50	4.56	0.01	0.55	0.53	626.86

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	1.33	1.70	14.55	0.02	3.12	0.60	1,627.17
Wastewater Treatment Plant	0.00	0.00	0.02	0.00	0.00	0.00	1.90
Tribal Community Development	1.36	1.82	14.80	0.02	3.27	0.63	1,685.24
TOTALS (tons/year, unmitigated)	2.69	3.52	29.37	0.04	6.39	1.23	3,314.31

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

5/1/2012 3:21:32 PM

Analysis Year: 2017 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	143.00	9.57	dwelling units	143.00	1,368.51	9,935.66
Wastewater Treatment Plant		1.00	1000 sq ft	2.00	2.00	11.40
Tribal Community Development		22.88	1000 sq ft	80.00	1,830.40	10,403.99
					3,200.91	20,351.05

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	46.2	0.2	99.6	0.2
Light Truck < 3750 lbs	16.4	0.6	97.6	1.8
Light Truck 3751-5750 lbs	20.5	0.0	100.0	0.0
Med Truck 5751-8500 lbs	7.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	73.3	26.7
Lite-Heavy Truck 10,001-14,000 lbs	1.0	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.1	0.0	18.2	81.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.8	44.7	55.3	0.0
School Bus	0.2	0.0	0.0	100.0
Motor Home	1.2	0.0	91.7	8.3

5/1/2012 3:21:32 PM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.9	5.6	6.1	5.7	4.1	5.7
Rural Trip Length (miles)	15.0	15.0	15.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Wastewater Treatment Plant				100.0	0.0	0.0
Tribal Community Development				2.0	1.0	97.0

Operational Changes to Defaults

5/4/2012 10:31:43 AM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\equinn\Application Data\Urbemis\Version9a\Projects\Chumash\Chumash - Cumulative Alternative A.urb924

Project Name: Chumash - Cumulative Alternative A

Project Location: Santa Barbara County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	2.67	0.40	4.34	0.01	0.55	0.53	509.81

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.76	0.75	7.41	0.02	3.12	0.60	1,618.65

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	3.43	1.15	11.75	0.03	3.67	1.13	2,128.46

5/4/2012 10:31:43 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.03	0.33	0.14	0.00	0.00	0.00	420.38
Hearth	0.88	0.06	3.49	0.01	0.55	0.53	88.25
Landscape	0.11	0.01	0.71	0.00	0.00	0.00	1.18
Consumer Products	1.28						
Architectural Coatings	0.37						
TOTALS (tons/year, unmitigated)	2.67	0.40	4.34	0.01	0.55	0.53	509.81

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	0.76	0.75	7.40	0.02	3.12	0.60	1,616.76
Wastewater Treatment Plant	0.00	0.00	0.01	0.00	0.00	0.00	1.89
TOTALS (tons/year, unmitigated)	0.76	0.75	7.41	0.02	3.12	0.60	1,618.65

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Season: Annual

5/4/2012 10:31:43 AM

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	143.00	9.57	dwelling units	143.00	1,368.51	9,935.66
Wastewater Treatment Plant		1.00	1000 sq ft	2.00	2.00	11.40
					1,370.51	9,947.06

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	46.9	0.0	100.0	0.0
Light Truck < 3750 lbs	16.1	0.0	99.4	0.6
Light Truck 3751-5750 lbs	20.3	0.0	100.0	0.0
Med Truck 5751-8500 lbs	7.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	80.0	20.0
Lite-Heavy Truck 10,001-14,000 lbs	1.0	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.1	0.0	18.2	81.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.2	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.8	34.2	65.8	0.0
School Bus	0.2	0.0	0.0	100.0
Motor Home	1.1	0.0	90.9	9.1

5/4/2012 10:31:43 AM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.9	5.6	6.1	5.7	4.1	5.7
Rural Trip Length (miles)	15.0	15.0	15.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Wastewater Treatment Plant				100.0	0.0	0.0

5/4/2012 10:33:44 AM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\equinn\Application Data\Urbemis\Version9a\Projects\Chumash\Chumash - Cumulative Alternative B.urb924

Project Name: Chumash - Cumulative Alternative B

Project Location: Santa Barbara County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	2.78	0.50	4.56	0.01	0.55	0.53	626.86

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.54	1.56	14.93	0.04	6.39	1.23	3,293.01

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	4.32	2.06	19.49	0.05	6.94	1.76	3,919.87

5/4/2012 10:33:44 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.03	0.43	0.22	0.00	0.00	0.00	537.18
Hearth	0.88	0.06	3.49	0.01	0.55	0.53	88.25
Landscape	0.13	0.01	0.85	0.00	0.00	0.00	1.43
Consumer Products	1.28						
Architectural Coatings	0.46						
TOTALS (tons/year, unmitigated)	2.78	0.50	4.56	0.01	0.55	0.53	626.86

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	0.76	0.75	7.40	0.02	3.12	0.60	1,616.76
Wastewater Treatment Plant	0.00	0.00	0.01	0.00	0.00	0.00	1.89
Tribal Community Development	0.78	0.81	7.52	0.02	3.27	0.63	1,674.36
TOTALS (tons/year, unmitigated)	1.54	1.56	14.93	0.04	6.39	1.23	3,293.01

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

5/4/2012 10:33:44 AM

Analysis Year: 2030 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	143.00	9.57	dwelling units	143.00	1,368.51	9,935.66
Wastewater Treatment Plant		1.00	1000 sq ft	2.00	2.00	11.40
Tribal Community Development		22.88	1000 sq ft	80.00	1,830.40	10,403.99
					3,200.91	20,351.05

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	46.9	0.0	100.0	0.0
Light Truck < 3750 lbs	16.1	0.0	99.4	0.6
Light Truck 3751-5750 lbs	20.3	0.0	100.0	0.0
Med Truck 5751-8500 lbs	7.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	80.0	20.0
Lite-Heavy Truck 10,001-14,000 lbs	1.0	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	1.1	0.0	18.2	81.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.2	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.8	34.2	65.8	0.0
School Bus	0.2	0.0	0.0	100.0
Motor Home	1.1	0.0	90.9	9.1

5/4/2012 10:33:44 AM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.9	5.6	6.1	5.7	4.1	5.7
Rural Trip Length (miles)	15.0	15.0	15.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Wastewater Treatment Plant				100.0	0.0	0.0
Tribal Community Development				2.0	1.0	97.0

APPENDIX C

WATER AND WASTEWATER FEASIBILITY ANALYSIS

WATER AND WASTEWATER FEASIBILITY ANALYSIS

FOR CHUMASH CAMP 4 PROPERTY FEE-TO-TRUST APPLICATION ENVIRONMENTAL ASSESSMENT

Prepared for:

Analytical Environmental Services, Inc,
Sacramento, California

Prepared by:

WALLACE GROUP

612 Clarion Court
SAN LUIS OBISPO, CA 93401
T 805 544-4011   F 805 544-4294

Job Number: 1113-0001
April 27, 2012

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CHAPTER 1

INTRODUCTION

The Santa Ynez Band of Chumash Indians (Tribe) proposes a project to develop approximately 1,433 acres of land as part of a trust land acquisition. This water and wastewater technical feasibility study is in support of the Environmental Assessment (EA) prepared in support of the Tribe's application for the Bureau of Indian Affairs (BIA) to take the 1,433-acre Project into Trust. by the Tribe to reduce potential adverse impacts to environmental resources. The EA is being prepared by Analytical Environmental Services (AES), Sacramento, California. The project alternatives evaluated in this EA consist of:

> **Alternative A** (Proposed Project) – 1,433± acre trust land acquisition and development of 143 five-acre residential lots for Tribal members. The remaining land uses would entail 300 acres of vineyards (256 acres existing), 206 acres of open space/recreational, 131 acres of riparian corridor and oak woodland conservation, and 3 acres of Special Purpose Zone- Utilities;

> **Alternative B** (Reduced Development Intensity Alternative) – Identical trust land acquisition and development of 143 one-acre residential lots for Tribal members. The remaining land uses would entail 775 acres of open space/recreational, 30 acres of Tribal Government/Development(including 80,000 square feet of Tribal facilities), and the same acreages of vineyard, riparian corridor and oak woodland conservation, and utilities land uses as proposed under Alternative A; and

> **Alternative C** (No Action Alternative) – No federal action or proposed development. The "No Action" alternative is not discussed further in this report, as no technical evaluation is warranted for this alternative.

A summary of project components under the two development alternatives (A and B) is provided in Table 1-1. Full details of the Project Descriptions and alternatives can be found in the EA prepared by AES for this Project.

ALTERNATIVE A – PROPOSED PROJECT

Alternative A consists of two main components: (1) the placement of 5 parcels totaling approximately 1,433± acres into Federal trust status for the Tribe; and (2) the development of 143 five-acre residential plots with the remaining acreage dedicated to agriculture, open space/recreational, conservation of riparian corridors and oak woodland, and development of utilities. Development of the site would include domestic water connections, a wastewater treatment plant (WWTP), and supporting roads and infrastructure. Alternative A is described in more detail in the following sections.

TABLE 1-1

SUMMARY OF PROJECT DEVELOPMENT ALTERNATIVES[a]

Project Components	Alternative	
	A	B
Land Taken into Trust	1,433± acres	1,433± acres
Residential Development	143 five-acre lots	143 one-acre lots
Designated Tribal Land Uses	300 acres of Agriculture (existing), 206 acres of Open Space/Recreational – General/Trails, 98 acres of Resource Management Zone – Riparian Corridors, 33 acres of Resource Management Zone – Oak Woodland, and 3 acres of Special Purpose Zone- Utilities	300 acres of Agriculture (existing), 755 acres of Open Space/Recreational – General/Trails, and 30 acres of Special Purpose Zone -Tribal Government/Development 98 acres of Resource Management Zone – Riparian Corridors, 33 acres of Resource Management Zone – Oak Woodland, and 3 acres of Special Purpose Zone- Utilities
Water Source	Groundwater	Groundwater
Wastewater Treatment	Onsite WWTP	Onsite WWTP

[a]*Source: AES, 2012*

Proposed Residential Development.

Under Alternative A, the Tribe would develop residential plots on Parcels 2, 3 and 4 of the project site. The proposed housing would consist of up to 143 five-acre residential plots with construction of single-family detached houses of varying sizes ranging from 3,000 to 5,000 square feet. Development on each five-acre plot would include approximately 0.35 acres of disturbance for building pad development, driveway construction, utility installations, and landscaping. Additionally, new domestic water connections, improved access roads, driveways, a new wastewater treatment plant, and utilities would also be constructed to support the residences. A site plan identifying the proposed residential plots is shown in Figure 1-1.

Designated Tribal Land Uses

In addition to the proposed residential development, the Tribe would designate the following land uses on the subject property:

Agricultural

The Tribe would continue operating an existing 256-acre vineyard located on Parcel 1 and a portion of Parcel 2 (refer to Figure 1-1). An additional 44 acres would be designated for agricultural use on Parcel 2 to allow for expansion of the existing vineyard operation. The vineyard is currently in operation and includes a storage reservoir, existing access roadways, and a processing/shipping area. No winemaking facilities are currently located on the project site, and there are no plans to develop a winery on the project site. Various structures are located within the agricultural lands including an old abandoned house and operational horse stables.

Open Space/Recreational – General/Trails

Approximately 206 acres of the project site would be designated as open space and recreation. Passive trails would be designated for pedestrian use and equestrian trails would be developed to provide recreation for residents and guests in coordination with the horse stables located on the existing agricultural lands. The open space/recreational area adjacent to State Route (SR) 154 would be utilized as a viewshed protection zone. No residential development is planned within the zone adjacent to SR-154 to protect the viewshed of the scenic highway.

Special Purpose Zone- Utilities (WWTP)

To support the development of residential plots, a central tertiary WWTP would be developed on three acres of the agricultural lands. The tertiary WWTP is described in more detail below.

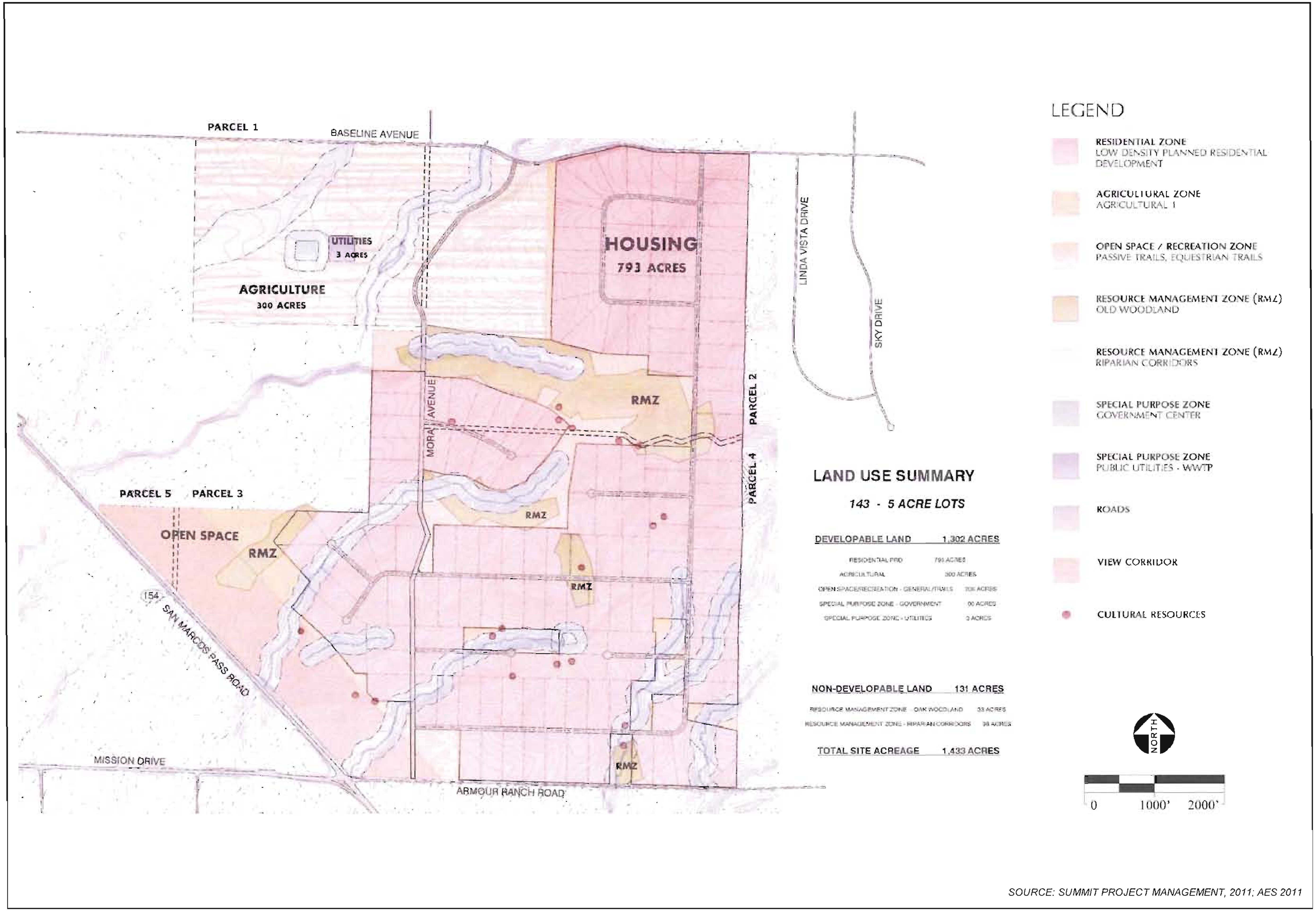
Water Supply

The Tribe would develop an on-site water supply system using groundwater to meet potable water demands. Groundwater wells would be located in reasonable proximity to the proposed residential developments. The Tribe would install an onsite domestic water storage tank as well as the appropriate water distribution pipelines to the proposed Tribal residences. Water quality would be no less stringent than Federal water quality and Federal Safe Drinking Water Act standards. Inspections of the water supply system and water quality by the U.S. Environmental Protection Agency (USEPA) would ensure compliance with applicable safe drinking water standards. Tertiary treated wastewater would be utilized to meet the irrigation water demands of the vineyard operation, common area landscaping, and other irrigated uses as feasible. The existing agriculture storage reservoir would be used to meet the recycled water storage requirements. Proposed water facilities are discussed in more detail in Chapter 2 of this Report.

Wastewater Treatment and Disposal

A new tertiary WWTP would be constructed on Parcel 1 (Figure 1-1) adjacent to the existing reservoir within the vineyards. The WWTP would be sized to accommodate the proposed wastewater generation rates of the Proposed Project. The tertiary treated wastewater would be recycled for use as agricultural irrigation for the existing agricultural operations, common area landscaping, and other irrigated uses as feasible on the project site. Drainage control would be installed along the perimeter of recycled water irrigation areas to prevent comingling with stormwater runoff. Recycled water runoff would be collected and disposed of via discharge to the WWTP.

The proposed WWTP and related facilities are discussed in more detail in Chapter 3 of this Report. In general terms, wastewater facilities would include a tertiary WWTP, sewer lift stations, conveyance systems, emergency storage, runoff/spill control, and a recycled water reservoir. The sewer lift stations would be developed within the residential areas as needed. The existing water reservoir located on Parcel 1 would be re-purposed to store recycled water from the WWTP, and enlarged if necessary. The reservoir would be equipped with provisions for potable water “make-up” water (with air-gap separation to protect the potable water supply) to supplement recycled water during high demand times. The existing water reservoir is currently lined and prior to use as a recycled water reservoir, the lining would be inspected for tears or other imperfections that may result in leakage. The proposed wastewater treatment system would be operated pursuant to U.S. Environmental Protection Agency (EPA) regulations.



CHUMASH CAMP 4 FEE-TO-TRUST

Figure 1-1
Fee-To-Trust Land Use Summary - Alternative A

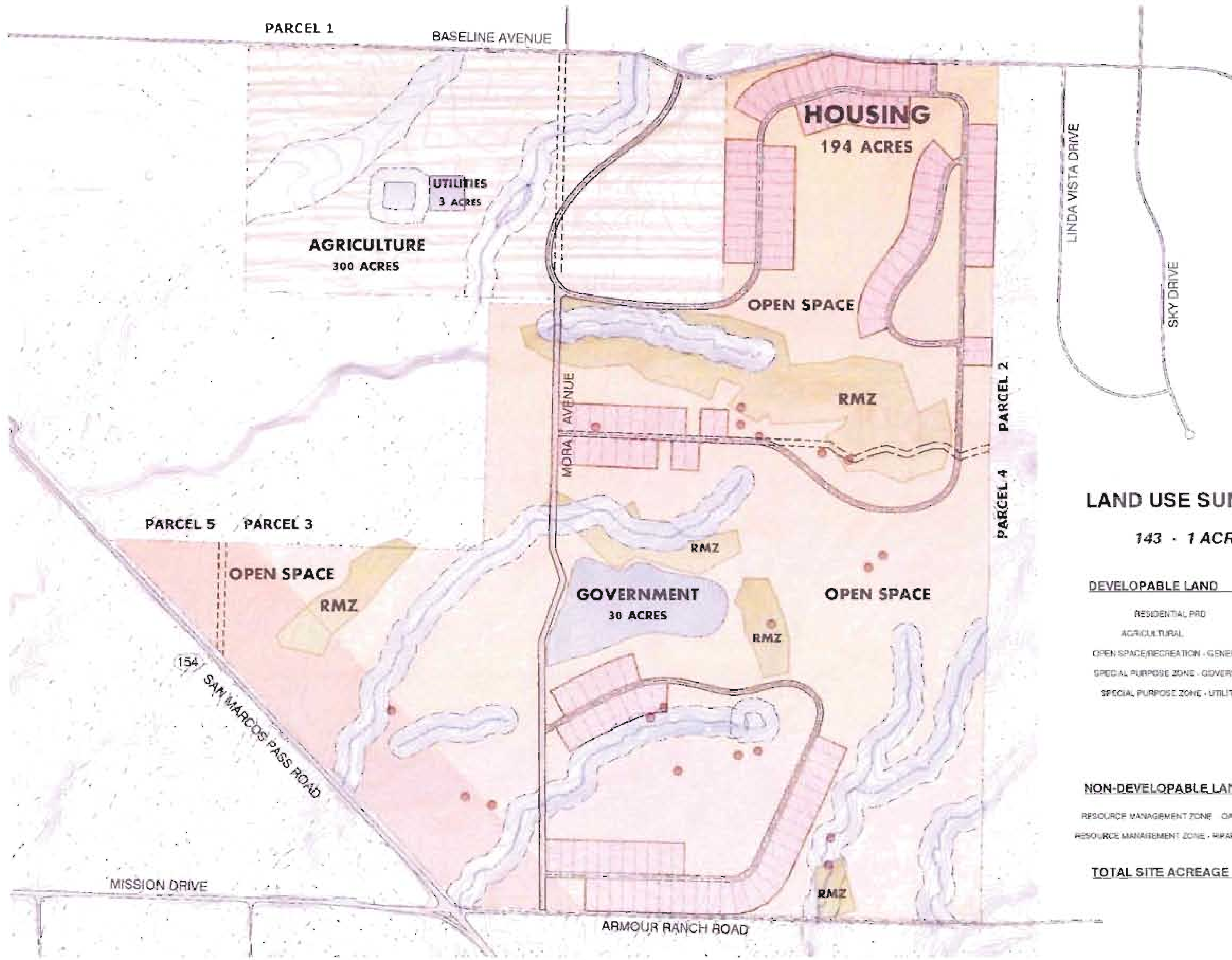
ALTERNATIVE B – REDUCED DEVELOPMENT INTENSITY

Alternative B would involve placing the 1,433-acre Camp 4 site into federal trust status for the benefit of the Tribe; however, under Alternative B, the residential parcel lot sizes would be reduced from 5 acres to 1 acre, decreasing the residential acreage from approximately 793± acres to approximately 194± acres. Development on each one-acre plot would include approximately 0.25 acres of disturbance for building pad development, driveway construction, utility installations, and landscaping. Additionally, new domestic water connections, improved access roads, driveways, a new WWTP, and utilities would also be constructed to support the residences. A site plan identifying the proposed residential plots is shown in Figure 1-2. In addition, approximately 30 acres of the project site would be reserved for approximately 80,000 square feet of Tribal government/ development space. The Tribal facilities would include development of a banquet/exhibition hall designed with an agriculture/equestrian theme, associated administrative spaces, a tribal office complex, and a tribal retreat including ceremony room and gymnasium. A breakdown of the components of the proposed Tribal facilities is displayed in Table 1-2. It is anticipated that the Tribal development would include office space for up to 75 Tribal employees and result in up to 100 events per year being held at the facilities. Approximately 400 parking spaces would be provided for the facilities.

Table 1-2. Tribal Community Development – Onsite Facilities

Usage	Square Footage (sf)
Community Center	34,280
Community Center Administrative Support	3,110
Tribal Office Complex	12,025
Tribal Retreat	11,480
Circulation (Misc. at 30%)	18,269
Total Development	**79,164**

The remaining land uses and project components under Alternative B are identical to that proposed under Alternative A including: the construction of 143 residences ranging from 3,000 to 5,000 square feet, domestic water connections, and a WWTP. Public services, water supply, wastewater treatment and disposal, and roadway improvements would all be provided for Alternative B as described for Alternative A.



LEGEND

- RESIDENTIAL ZONE — LOW DENSITY PLANNED RESIDENTIAL DEVELOPMENT
- AGRICULTURAL ZONE — AGRICULTURAL 1
- OPEN SPACE / RECREATION ZONE — PASSIVE TRAILS, EQUESTRIAN TRAILS
- RESOURCE MANAGEMENT ZONE (RMZ) — OLD WOODLAND
- RESOURCE MANAGEMENT ZONE (RMZ) — RIPARIAN CORRIDORS
- SPECIAL PURPOSE ZONE — GOVERNMENT CENTER
- SPECIAL PURPOSE ZONE — PUBLIC UTILITIES - WWTP
- ROADS
- VIEW CORRIDOR
- CULTURAL RESOURCES

LAND USE SUMMARY

143 - 1 ACRE LOTS

DEVELOPABLE LAND	**1,302 ACRES**
RESIDENTIAL PRD	194 ACRES
AGRICULTURAL	300 ACRES
OPEN SPACE/RECREATION - GENERAL/TRAILS	775 ACRES
SPECIAL PURPOSE ZONE - GOVERNMENT	30 ACRES
SPECIAL PURPOSE ZONE - UTILITIES	3 ACRES
NON-DEVELOPABLE LAND	**131 ACRES**
RESOURCE MANAGEMENT ZONE - OAK WOODLAND	33 ACRES
RESOURCE MANAGEMENT ZONE - RIPARIAN CORRIDORS	98 ACRES
TOTAL SITE ACREAGE	**1,433 ACRES**

NORTH

0 1000' 2000'

SOURCE: SUMMIT PROJECT MANAGEMENT, 2011; AES 2011

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CHUMASH CAMP 4 FEE-TO-TRUST

Figure 1-2
Fee-To-Trust Land Use Summary - Alternative B

Protective Measures and Best Management Practices

Protective measures and best management practices (BMPs) pertinent to this water and wastewater feasibility study have been incorporated into the project design to eliminate or substantially reduce environmental impacts from the Proposed Project.

These measures and BMPs are discussed below.

Land Resources

All structures would meet the Tribe's building ordinance, which meets or exceeds Uniform Building Code (UBC) requirements.

Water Resources

- High water-demand plants would be minimized in landscaping plans. Native and drought-tolerant plant species (trees, shrubs, and ground cover) would be emphasized.
- Water-efficient fixtures and appliances would be installed in residences.

Public Services

- Structural fire protection would be provided through compliance with Tribal ordinances no less stringent than applicable Uniform Fire Code requirements. The Tribe would ensure that appropriate water supply and pressure is available for emergency fire flows.

CHAPTER 2

WATER SYSTEM

This chapter describes the projected water demands, water supply and distribution system requirements for the Chumash Camp 4 Project (Project) for Alternatives A and B. The water demand forecasts form the basis for assessing water supply requirements and identifying distribution system requirements. Recycled water demands are discussed in detail in Chapter 3.

PROJECTED POTABLE WATER DEMAND

Potable water demands projected for the Project will form the basis for recommendations for needed water supply, and for laying out conceptual water system components including potable water distribution and fire suppression system, water storage and pumping requirements. Detailed hydraulic analyses of the conceptual water system are beyond the scope of this study; however, general water system infrastructure is described in this Chapter. Water demands for Alternatives A and B are based on the program descriptions presented in Chapter 1 of this Report.

Key factors, assumptions and details used to formulate water demands for both Alternatives A and B include the following:

- Residential Units, 3.5 persons per dwelling unit, or ~500 permanent population
- Domestic water demand, 90 gallons per capita per day (gpcd)
- All homes furnished with low-flow fixtures

Hydraulic Demand Parameters

Water system demands are important characteristics of water systems, as these parameters are used to size pumping, storage, and distribution system facilities. Demands calculated for this Project will be used to evaluate water distribution system requirements. Since this is a planned future Project, existing operations data is not available to be used as part of the water demand analysis. Therefore, trends from other communities will be used to estimate demand factors herein.

Hydraulic demand parameters are defined as follows:

- Average Day Demand (ADD). The ADD is the average water demand calculated over the year. This demand is generally determined by production records, however, since the Project is a new development, the ADD must be estimated based on industry standards.
- Night Time Demand (NTD). The NTD is the production of water during low flow periods, typically seen in the middle of the night. These flows are critical for properly sizing pumps to meet these low demands. The NTD peaking factor for communities can vary considerably.
- Maximum Day Demand (MDD). The MDD is the maximum daily production of water needed to meet the peak day demand of the year. This is generally during the

summer as a result of increased residential irrigation demand. The MDD peaking factor for communities of similar size can range from 1.6 to 2.0. To be conservative, for this analysis, a peaking factor of 2.0 (2.0 times the ADD) will be used.

- Peak Hour Demand (PHD). The PHD of the system is critical in sizing water mains and pumping facilities. During peak hour demand, customers will generally experience low service pressures in areas with undersized mains and/or lack of looped distribution pipelines. The PHD is generally determined by calculating the specific demand within the day, by monitoring tank levels and pumping records. A PHD factor of 3.5 (3.5 times the ADD) was assigned to the entire system, based on engineering judgment and data from other similar municipalities. It is also noted, however, that the fire flow will be the highest water demand in the system.

It is noted that irrigation of the existing vineyards, open space/recreational land use designations, and Tribal Government Center irrigation demands (Alternative B), will be met using recycled water from the wastewater treatment plant, and make-up groundwater from on-site irrigation wells. Refer to Chapter 3 for more information on recycled water uses and demands.

Landscape irrigation demands were developed in part, by referring to local weather data available on the California Irrigation Management Information System (CIMIS) web site for local Santa Ynez weather stations, and consideration of the type of landscaping to be irrigated. For all residential lots, turf area was estimated, in part by comparing sample properties surrounding the Project area to determine landscaped areas, turf/lawn areas, and buffer areas with no landscaping.

Potable Water Demand – Alternative A

Potable water demands for Alternative A are summarized in Table 2-1. Key factors, assumptions and details used to formulate water demands for Alternative A include the following:

- 5-acre Lot size, 1.85 acres of low water demand landscaping per lot, water demand 1.0 acre feet per year (AFY)/acre
- Pad disturbance area, 0.35 acres
- Assumes 0.15 acres of irrigated turf/lawn area per lot
- Lawn/Turf irrigation demand, 3.0 AFY/acre

Potable Water Demand – Alternative B

Potable water demands for Alternative A are summarized in Table 2-2. Specific water demands for the Tribal Government Center are summarized in Table 2-3. Key factors, assumptions and details used to formulate water demands for Alternative A include the following:

- 1-acre Lot size, 0.40 acres of low water demand landscaping per lot, 1.0 AFY/acre
- Pad disturbance, 0.25 acres
- Assumes 0.10 acres of irrigated turf/lawn area per lot, 3 AFY/acre irrigation demand

Table 2-1. Summary of Potable Water Demands – Alternative A

User	Unit	Type of Unit	Peak Hour Demand per Unit, gpm[b]	Annual Demand, AFY
Residential - indoor	143	SFR[a]	0.30	50.5
Residential - landscape drought tolerant LS	1.85	acres	3.44	264.6
Residential - Lawn	0.15	acres	0.84	64.4
TOTAL	**---**	**---**	**655**	**379.4**

[a] *Single-family residence*

[b] *Gallons per minute*

Table 2-2. Summary of Potable Water Demands – Alternative B

User	Unit	Type of Unit	Peak Hour Demand per Unit, gpm	Annual Demand, AFY
Residential - indoor	143	SFR	0.30	50.5
Residential - landscape drought tolerant LS	0.4	acres	0.74	57.2
Residential - Lawn	0.1	acres	0.56	42.9
TOTAL	**---**	**---**	**229**	**150.6**

Table 2-3. Summary of Potable Water Demands – Tribal Government Center

Building Use	Unit	Quantity	Demand	Unit	Demand, gpm	Demand, AFY
Community Center	Event	100/yr	10	gpd/person@1,000 persons/event	69.4	3.1
Admin	Employee	75 ea	20	gpd/employee	9.4	1.2
Tribal Office			Included in employees above			
Tribal Retreat			Included in events above			
TOTAL					**78.8**	**4.3**

Note: Tribal Government Center irrigation demands met using recycled water and non-potable irrigation water.

WATER SUPPLY

This section discusses the existing site hydrogeology, existing water wells and expected water quality, the existing storage reservoir, and water supply needs.

Net Potable Water Demand – Alternative A

Net potable water demands for Alternative A are summarized in Table 2-4. The net project demand considers new potable water demands only, therefore does not include the existing water demand for the vineyard (which will be irrigated with recycled water and irrigation water from on-site irrigation wells). Key factors, assumptions and details used to formulate potable water demands for Alternative A were discussed earlier in this Chapter 2.

Table 2-4. Net Potable Water Demand for Alternative A (5-Acre Parcels)

User	Unit	Type of Unit	Annual Demand (AFY)
Residential - indoor use	143	SFR	51
Residential - landscape irrigation (drought tolerant)	1.85	acres	265
Residential – lawn irrigation	0.15	acres	64
Treated wastewater for irrigation (90% of indoor use)	--	--	<45>
NET PROJECT POTABLE WATER DEMAND	--	--	335

SFR – single family residence

Net Potable Water Demand – Alternative B

Net potable water demands for Alternative B are summarized in Table 2-5. As in Alternative A, the net potable water project demand considers new water demands only, therefore does not include the existing water demand for the vineyard (to be irrigated with recycled water and irrigation water from on-site irrigation wells). Specific potable water demands for the Tribal Government Center are summarized in Table 2-3. Key factors, assumptions and details used to formulate water demands for Alternative B were presented earlier in Chapter 2.

Table 2-5. Net Potable Water Demand for Alternative B (1-Acre Parcels)

User	Unit	Type of Unit	Annual Demand (AFY)
Residential – indoor use	143	SFR	51
Residential – landscape irrigation (drought tolerant)	0.4	acres	57
Residential – lawn irrigation	0.1	acres	43
Tribal Government Center (indoor)	--	--	4
Treated wastewater for irrigation (90% of indoor use)	--	--	<49>
NET PROJECT DEMAND	--	--	106

SFR – single family residence

Site Hydrogeology

Existing water supply at the site is entirely from groundwater resources within the Santa Ynez Uplands Groundwater Basin. The basin comprises the eastern portion of the groundwater basins of the Santa Ynez River watershed. These basins lie between the San Rafael Mountains to the north and east, the Purisima Hills to the northwest and the Santa Ynez Mountains to the south. The Santa Ynez Upland Groundwater Basin is located north of the Santa Ynez River between Buellton and the east end of Lake Cachuma. It underlies 130 square miles and is widest in the west and narrows to the east.

The shape of the basin is controlled by east-west trending folding and faulting of sedimentary beds and has also been influenced by historical stages and flow of the Santa Ynez River. It is bounded by a topographical groundwater divide from the San Antonio Basin to the northwest, faults and impermeable rocks of the San Rafael Mountains to the north and east, and by nonwater-bearing Tertiary age formations to the south that separate it from the Santa Ynez River alluvial basin. Average rainfall within the basin varies from a maximum of about 24 inches per year in the higher elevations to a minimum of about 15 inches per year in the southern and central areas. Rainfall and stream seepage are the primary sources of recharge to the basin.

(DWR, 1980, SB County Groundwater Report, 2008).

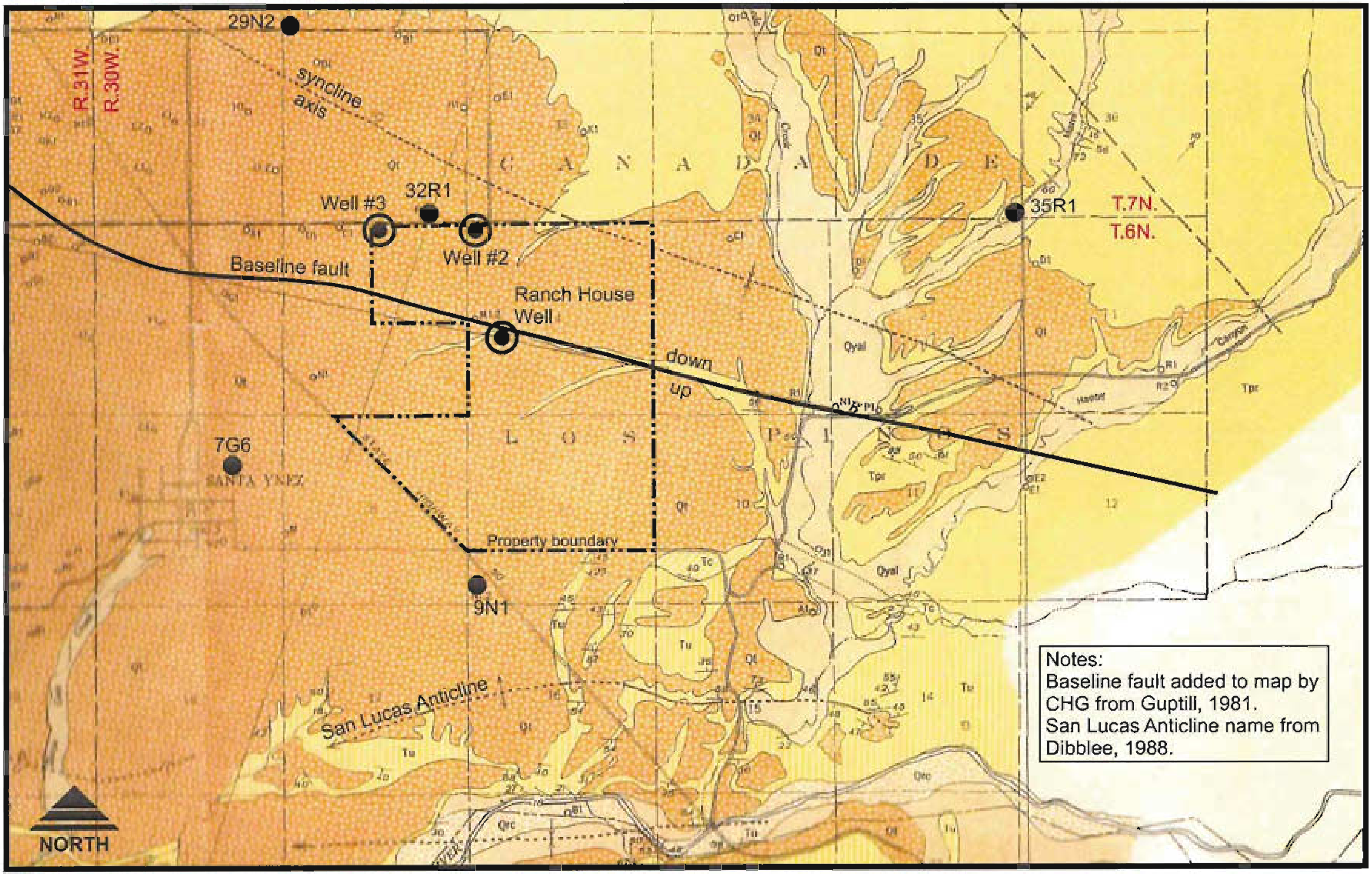
Loosely consolidated sand and gravel aquifers of the Plio-Pleistocene age Paso Robles Formation are the major source of groundwater in the basin. The formation consists of deposits of sand and gravel interbedded with clay and silt in discontinuous, lenticular beds. The Pliocene-age Careaga Formation lies underneath the Paso Robles Formation as unconsolidated fine to medium grained marine sand and lesser silt. Although it is water bearing within the basin, it is generally tapped by wells only in the southern margins of the basin where it has been uplifted to relatively shallow depths.

The Paso Robles and Careaga Formations have been folded into a north-dipping monocline north of the axis of the San Lucas Anticline which brings consolidated nonwater-bearing rocks of the Sisquoc and Monterey Formations to or near the ground surface south of the Chumash Camp 4 Project southern boundary. The water bearing zones of the Paso Robles Formation become increasingly thick and both the Paso Robles and the Careaga Formations become increasingly deep from south to north across the project area to the roughly east-west trending Baseline fault that crosses the northern half of the project property. The Baseline fault is a reverse fault, vertically offsetting fluvial terraces in the project area (Guptill, 1981), and effectively lowering the underlying Paso Robles and Careaga Formations north of the fault. The beds continue to dip to the north to the axis of a syncline crossing the northeast corner of the project area. North of the syncline, the beds become shallower.

Supply wells drilled between the Baseline fault and the syncline axis would encounter the greatest thickness of the Paso Robles Formation within and in the vicinity of the project boundaries. The fault may restrict groundwater flow across the fault plane, resulting in non-correlative groundwater levels in wells on opposite sides of the fault. A regional geologic map from the U.S. Geological Survey (1951) is included as Figure 2-1, showing the two fold axes with the Baseline fault added by CHG. The geologic maps by Dibblee (1988, 1993) were not used because of conflicting information on the two adjacent quadrangles.

Existing Water Well Production

Current water supply at the site is provided by two irrigation wells, serving irrigation requirements for the 256 acre vineyard, and by one ranch/domestic well that provides water for the ranch house and for stock watering. Well locations are shown on Figure 2-1. The two irrigation wells are located along Baseline Avenue situated within the down-dropped geologic structure between the Baseline fault and the synclinal axis north of the property, and the ranch/ domestic well is located near the trace of the fault.



Base map: Geologic Map & Sections of the Central Part of the Santa Ynez River Basin U.S.G.S. Water-Supply Paper 1107 Plate 2, Upson & Thomasson, 1951

0 4,000 8,000

Scale: 1 inch = 4,000 feet

Explanation

Qt	Terrace deposits
Tpr	Paso Robles Formation
Tc	Careaga Formation
Tu	Consolidated Tertiary rocks
⊙	Existing onsite project well
●	Existing offsite well with water level data

Figure 2-1
Regional Geology Map
Chumash Camp 4
Cleath-Harris Geologists

The irrigation well #3 in the northwest corner of the property, was completed in 1984 to a total depth of 795 feet with perforations from 248 to 785 feet depth. The well was completed with 16-inch steel casing. According to the ranch manager, the well produces between 900 and 1,200 gallons per minute (gpm). During a four-hour pump test in November 1984, the static water level was 137 feet depth. Four pumping steps were performed beginning at 1,200 gpm and ending at 2,700 gpm with a final pumping level of 230 feet depth. A 60-minute pumping test was performed in August 1999 at rates of 1,960, 1,830 and 1,680 gpm with a maximum pumping level of 185 feet depth. The testing contractor recommended operational flow rates between 1,100 and 1,400 gpm for best operating efficiencies.

The irrigation well #2 is approximately one half mile east of well #3, and was completed in 1999 to a total depth of 740 feet. Perforation depth intervals are from 290 to 520 feet, 550 to 620 feet, and 660 to 730 feet. Casing is 16-inch diameter steel. According to the ranch manager, the well produces 1,700 gpm. During an eight-hour pumping test in December 1999, the static water level was measured at 178 feet depth. Pumping was performed in three steps at 1,500, 2,000 and 2,500 gpm with a maximum pumping level of 233 feet depth. The well is equipped with a 250 horse-power pump motor.

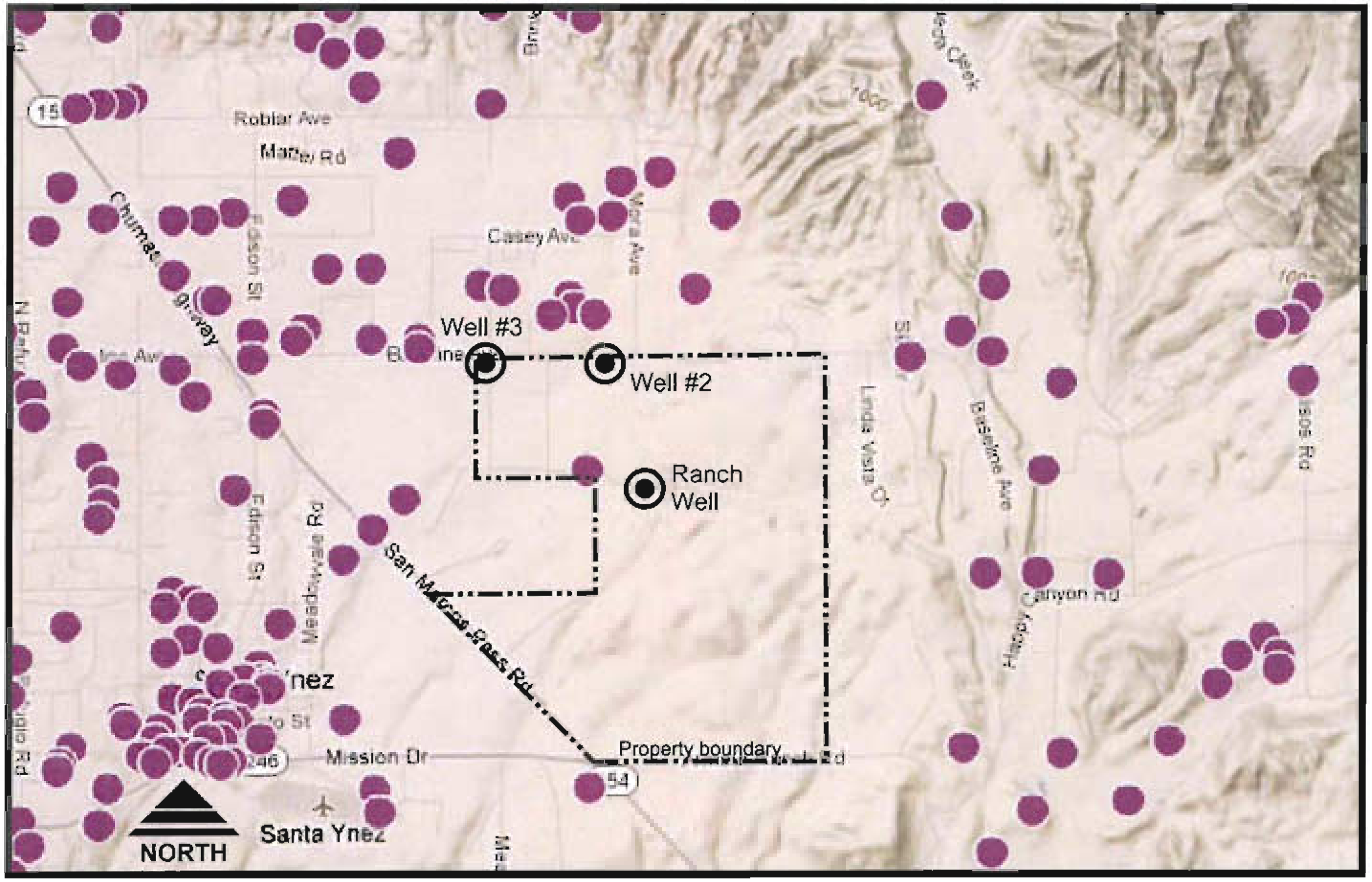
Both irrigation wells are equipped with an air line for measuring water levels and a flow meter. Water is pumped from the wells to a ½-acre lined reservoir for vineyard irrigation, that holds approximately 2-1/2 acre-feet.

The Ranch House Well was completed with eight-inch diameter steel casing and serves the cattle ranching area and the ranch house. The total depth of the well is 505 feet. A new, three horse-power pump was installed in 2005, and is capable of pumping 25 gpm. Static water level in July 2005 was 105 feet depth.

There is an eight-inch diameter steel-cased well with a windmill rod and column in the north-central portion of parcel 4. The well was dry to a total depth of 74 feet during a site visit by CHG in March 2012.

During the March 2012 CHG site visit, an active irrigation well was observed off the property on the adjacent parcel approximately three tenths of a mile west of the ranch house. The well is equipped with a submersible pump.

Several wells are present along the north side of Baseline Avenue that serve domestic supply and small irrigation demands including stock watering. Two wells serve the Santa Ynez Rancho Estates Mutual Water Company east of the project site. According to the ranch manager, an irrigation well also to the east of the project property serves a 50-acre vineyard. There are presumed to be several domestic wells serving the tract northeast of the project property. No wells were observed south of Armour Ranch Road during the March 2012 site visit by CHG. Offsite wells for which water level data are available through the California Department of Water Resources (DWR) internet site are shown in Figure 2-2.



Base map: California DWR Water data library online map.

0 4,000 8,000
Scale: 1 inch = 4,000 feet

Explanation

● Well locations with water level data available through California Dept. of Water Resources

Figure 2-2
Water-Level Location Map
Chumash Camp 4
Cleath-Harris Geologists

The irrigation demand for the existing vineyard located in the northern portion of the site is met by groundwater supply from the two Baseline Avenue wells by way of the ½-acre reservoir. Based on typical water use in Santa Ynez Valley vineyards, duty factors vary from 0.8 to 1.2 acre-feet per acre per year. For this assessment, one acre-foot per acre per year is estimated for the onsite vineyard water demand. Under the existing conditions at the site, the annual water demand for the 256 acre vineyard is estimated at 256 acre-feet per year (AFY).

Existing Water Well Quality

Water quality samples were obtained at the Baseline Avenue Well #2 on December 22, 1999 following the well completion and pump testing. No other water quality results were available for the onsite supply wells. The samples from Well #2 were analyzed for general minerals, general physical, and inorganic chemicals. No analytes were present in concentrations above the State of California maximum contaminant levels for drinking water. The total dissolved solids concentration was 480 milligrams per liter (mg/l) and total hardness concentration was 386 mg/l. Based on the laboratory results, water from Well #2 is suitable for irrigation water. Water quality testing to meet US EPA maximum contaminant levels established under the Safe Drinking Water Act is required from water supply wells prior to providing the domestic supply for the proposed project. Table 2-6 provides a summary of the analytical results.

Project Potable Water Supply Needs – Alternative A

Potable water demand calculations were prepared for this Alternative, and include residential demands for 143 five-acre lots including residential landscaping. It is estimated that 335 AFY of water demand is needed to serve the new project under Alternative A. The existing vineyard and open space/recreation demands will be served by blending groundwater from existing on-site irrigation wells and tertiary treated recycled water from the wastewater treatment facility. Peak hour demand for the potable water system is calculated as 655 gpm. Two new wells, rated at 750 gpm each, should be provided to supply the Project potable water, and for potable water supply redundancy.

Project Potable Water Supply Needs – Alternative B

Potable water demand calculations were prepared for this Alternative, and include residential demands for 143 one-acre lots including residential landscaping, and the Tribal Government Center. It is estimated that 106 AFY of water demand is needed to serve the new project under Alternative B. Although the Tribal Government Center increases water demand compared to Alternative A, this Alternative B also reduces residential irrigation demand considerably with the smaller lot size. As with Alternative A, the vineyard and open space/recreation demands, and Tribal Government Center landscape irrigation, will be served by groundwater supply wells and by tertiary treated recycled water from the wastewater treatment facility. Peak hour demand for the potable water system is calculated as 230 gpm. The estimated peak hour demand is considerably lower than Alternative A, due to significant reduction in residential irrigation demand. Two new wells, rated at 500 gpm each, should be provided to supply the Project potable water, and for potable water supply redundancy.

Table 2-6. Water Quality Results – Baseline Well #2

Analyte	Units	Results	MCL
Total Hardness (as $CaCO_3$)	mg/L	386	--
Calcium	mg/L	31	--
Magnesium	mg/L	75	--
Potassium	mg/L	2	--
Sodium	mg/L	26	--
Bicarbonate	mg/L	440	--
Sulfate	mg/L	22	250
Chloride	mg/L	35	250
Nitrate (NO_3)	mg/L	5.8	45
Fluoride	mg/L	0.2	2
pH	pH units	7.8	--
Electrical Conductivity	umhos/cm	827	1600
Total Dissolved Solids	mg/L	480	1000
Color	units	ND	15
Odor	TON	ND	3
Turbidity	NTU	ND	5
MBAS	mg/L	ND	0.5
Aluminum	ug/L	ND	1000
Antimony	ug/L	ND	6
Arsenic	ug/L	2	10
Barium	ug/L	269	1000
Beryllium	ug/L	ND	4
Cadmium	ug/L	ND	5
Chromium	ug/L	27	50
Copper	ug/L	ND	1000
Iron	ug/L	ND	300
Lead	ug/L	ND	15
Manganese	ug/L	ND	50
Mercury	ug/L	ND	2
Nickel	ug/L	ND	100
Selenium	ug/L	ND	50
Silver	ug/L	ND	100
Thallium	ug/L	ND	2
Zinc	ug/L	ND	5000

mg/L = milligrams per liter
ug/L = micrograms per liter
umhos/cm = micromhos per centimeter
TON = Threshold Odor Number
NTU = Nephelometric Turbidity Units
MCL = Maximum Contaminant Level
ND = Not detected above laboratory detection limit
NOTE: Samples obtained December 22, 1999

PROPOSED POTABLE WATER SUPPLY SYSTEM

The two existing wells on site have provided irrigation water supply for the vineyard and are considered reliable for future irrigation use based on their well design, their location within the deepest part of the groundwater basin, and the observed trend in rising water levels in the area. Although the basin is in a state of overdraft, changing pumping patterns and the importation of State Water in the 1980s and 1990s altered the amount of water extracted from the basin, resulting in more balanced groundwater conditions (SB County Groundwater Report, 2008). These changes in water use and the rising water level trends in the project area suggest that existing production rates of the two project irrigation wells can be relied upon to meet future irrigation demands.

To meet the proposed project potable water demands, however, two new potable water supply wells would be required to provide a groundwater supply redundancy, and also provide for flexibility in pumping schedules. While new wells located in the northeastern portion of the project area would likely provide the best onsite production, the nearby offsite wells northeast of the project area could experience significant water-level impacts from new project wells in that location (Figures 2-1 and 2-2). A new well located north of the Baseline fault but away from the northeast corner of the property could be expected to provide a reliable and adequate water supply and be less likely to cause significant offsite impacts than new wells located near the northeasterly project boundary. A new well placed south of, but near the Baseline fault would likely produce a reliable and adequate water supply for the project, and could be expected to cause minimal or no offsite water-level impacts. There are fewer offsite wells east of the southern project area than northeast of the site, and a well south of the fault could be located several thousand feet from the nearest offsite wells. Impacts across the fault from a new well would be minimized because of the expected restrictions to groundwater flow along the fault plane. Also, a well drilled south of the fault could tap permeable sands of the relatively unexploited Careaga Formation as it becomes shallower to the south away from the fault.

WASTEWATER

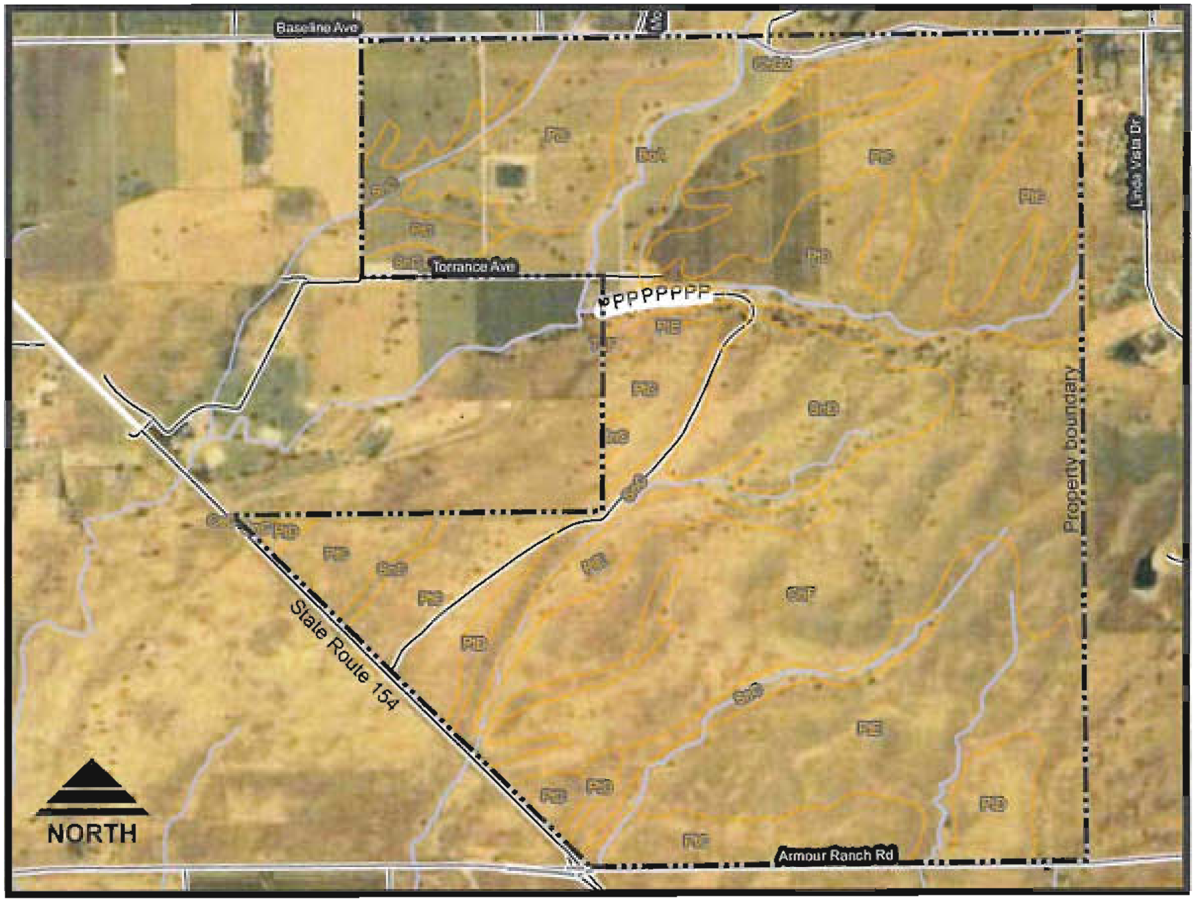
Wastewater treatment for both project Alternatives A and B is proposed to include onsite tertiary treatment for recycling and reuse in vineyard and landscape irrigation. The wastewater flow is assumed in this study to be equivalent to 90 percent of residential and Tribal Government Center indoor water use. The treated effluent will be pumped to the irrigation reservoir where it could be blended with groundwater produced from onsite wells and be available for vineyard and landscape irrigation. Because of probable increased storage requirements to accommodate effluent volumes, an additional treated effluent storage reservoir may be necessary (refer to Chapter 3 for further discussion).

The project may require up to two sites to be used for treated effluent storage ponds. The pond locations and design will be dependent on the treatment plant site selection and on site conditions. The options for percolation pond designs that could be used for wastewater disposal are very limited at the site because of the character of underlying soils. However, based on the water balance presented in Chapter 3, it is not anticipated that percolation disposal will be required. The Santa Ynez area has been identified as an area where existing septic system use is causing problems (Questa, 2003). According to the Septic System Sanitary Survey for Santa Barbara County report (Questa, 2003), one of the sources of the wastewater related problems was the “highly restrictive soil-site conditions for a large portion of the area…” Because of the soil conditions, many disposal systems in the vicinity of the project area are based on drywell designs (Santa Barbara County, Office of Long Range Planning, September 2009).

The soil types found at the site are shown on Figure 2-3 and are based on soil surveys by the Natural Resources Conservation Service. The capacity of the soils to transmit water is considered very low to moderately low in soils underlying 73 percent of the project site and moderately low to moderately high in soils underlying 21 percent of the site. The Botella loam (BoA) has the highest saturated hydraulic conductivity, but it is located within the vineyard in the northern portion of the site. The Chamise shaly loam (ChF) extends across a large area and may provide minimal percolation rates; however, it is a thin soil underlain by less permeable material and underlies moderately steep slopes. Based on the soil types and conductivities listed in the soil survey, percolation rates underlying the site are generally inferred to be very slow. Soil characteristics for each soil type are summarized in Table 2-7 below:

Table 2-7. Soil Properties on Project Site

Soil Type	Percent of Property	Percent Slopes	Depth to restrictive feature (inches)	Drainage Class	Capacity of the most limiting layer to transmit water
BoA	5.4	0-2	80	well drained	mod high (0.2 to 0.57 in/hr)
CeC	0	5-9	34-46	well drained	mod low to mod high (0.06 to 0.20 in/hr)
ChF	21.2	15-45	22-40	well drained	mod low to mod high (0.06 to 0.20 in/hr)
ChG2	0.1	30-75	10-20	well drained	mod low to mod high (0.06 to 0.20 in/hr)
PtC	30.7	2-9	20-26	well drained	very low to mod low (0.00 to 0.06 in/hr)
PtD	13.3	9-15	12-20	well drained	very low to mod low (0.00 to 0.06 in/hr)
PtE	15.7	15-30	6-26	well drained	very low to mod low (0.00 to 0.06 in/hr)
SnC	7.9	2-9	20-30	mod well drained	very low to mod low (0.00 to 0.06 in/hr)
SnD	5.7	9-15	20-29	mod well drained	very low to mod low (0.00 to 0.06 in/hr)



Base map: U.S. Department of Agriculture, NRCS, Custom Soil Resource Report for Northern Santa Barbara Area, California

0 2,000 4,000

Scale: 1 inch = 2,000 feet

Explanation

BoA	Botella loam, 0-2% slopes
CeC	Chamise sandy loam, 5-9% slopes
ChF	Chamise shaly loam, 15-45% slopes
ChG2	Chamise shaly loam, 30-75% slopes, eroded
PtC	Positas fine sandy loam, 2-9% slopes
PtD	Positas fine sandy loam, 9-15% slopes
PtE	Positas fine sandy loam, 15-30% slopes
SnC	Santa Ynez gravelly fine sandy loam, 2-9% slopes
SnD	Santa Ynez gravelly fine sandy loam, 9-15% slopes

Figure 2-3
Soil Survey Map
Chumash Camp 4
Cleath-Harris Geologists

IMPACTS

The Santa Barbara County Groundwater Report for 2008 states that the Santa Ynez Uplands Groundwater Basin is in overdraft by about 2,000 AFY based on 2001 estimates. Available storage within the basin is estimated to be about 900,000 AF (La Freniere and French, 1968). Safe yield of this basin is estimated to be 11,500 AFY (for gross pumpage) and estimated pumpage of the basin is 11,000 AFY (Ahlroth, 2001).

Implementation of the proposed project results in a net increase in water production of 335 AFY for Alternative A, and 106 AFY for Alternative B. Should the basin be in overdraft, any increase in groundwater production in the basin adds to that deficit; however, groundwater levels in U.S. Geological Survey monitored wells to the north, east and west of the site have risen since the mid 1990s. Because of the increased importation of water that offsets pumping in the basin, these stabilizing water levels indicate a lessened severity of overdraft conditions in the project area.

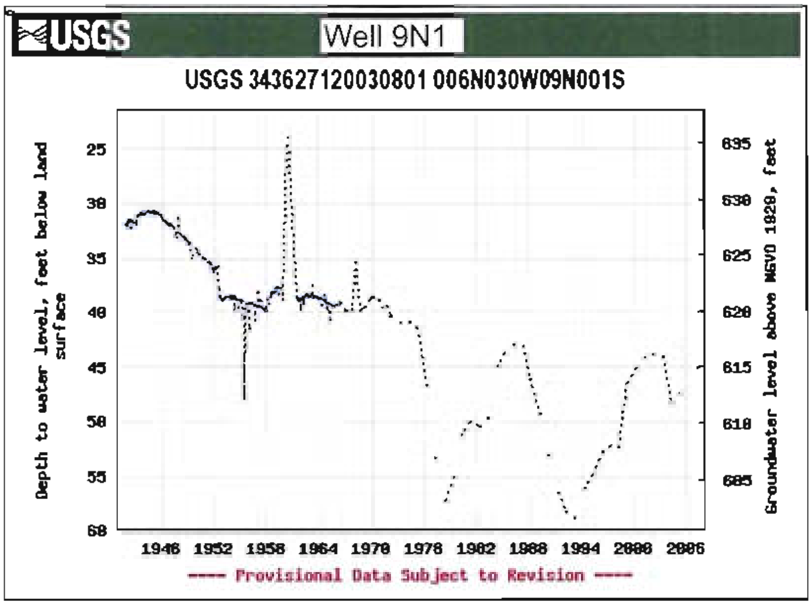
Hydrographs for the U.S. Geological Survey monitored wells are shown in Figures 2-4 and 2-5. A map showing locations for other offsite wells for which water level data are available with the DWR is shown on Figure 2-2. Increased well production above existing conditions at the site may adversely impact neighboring wells depending on where the onsite wells are located and the amount of pumping that occurs. The recommendations in the following paragraph are provided to reduce/prevent these potential impacts.

RECOMMENDATIONS TO REDUCE IMPACTS

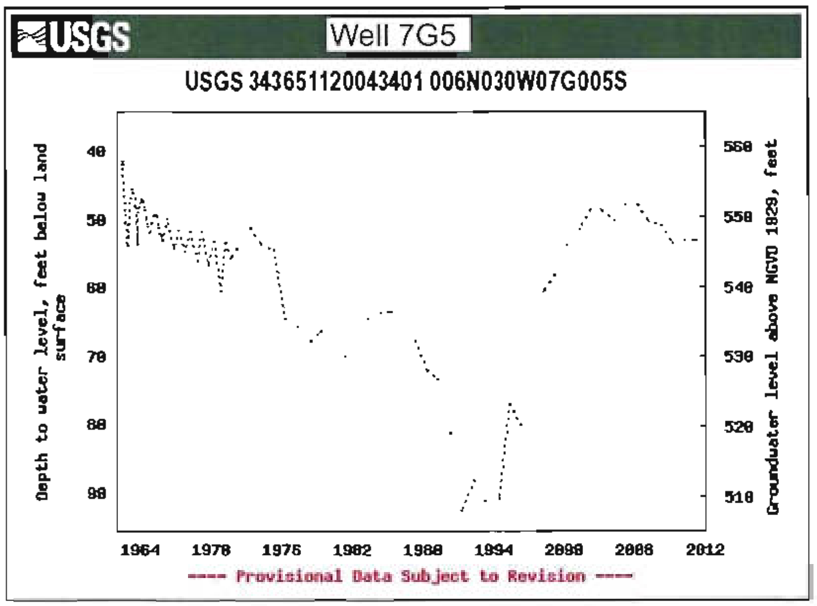
Potential impacts to offsite wells may be reduced through various options that would reduce groundwater production and/or use imported water to meet demand. Water conservation methods may be appropriate for residential indoor use, Tribal Government Center use, residential landscape use and in the existing vineyard irrigation. There are many resources and water conservation programs/techniques available. For example, the County of Santa Barbara Public Works Department has information on water conservation measures on their website (http://www.sbwater.org/), some of which have been incorporated into this report. These conservation measures are consistent with best management practices to reduce water demands. In addition to use of low flow fixtures and drought tolerant landscaping (see Chapter 1), the following recommendations can be considered:

- Drip irrigation, drought-tolerant planting, and dry-farming techniques are recommended where appropriate.
- A reduction in the amount of space set aside for residential landscape areas should be considered.
- Residential lawns have the highest water demand of the various land uses. Reduction of lawn size below the 0.15 acres per residence for Alternative A and the 0.1 acres for Alternative B would significantly reduce this demand.
- Irrigation controllers/timers should be used to control duration and timing of irrigation to minimize losses.
- Stormwater runoff capture for landscape irrigation, where possible.

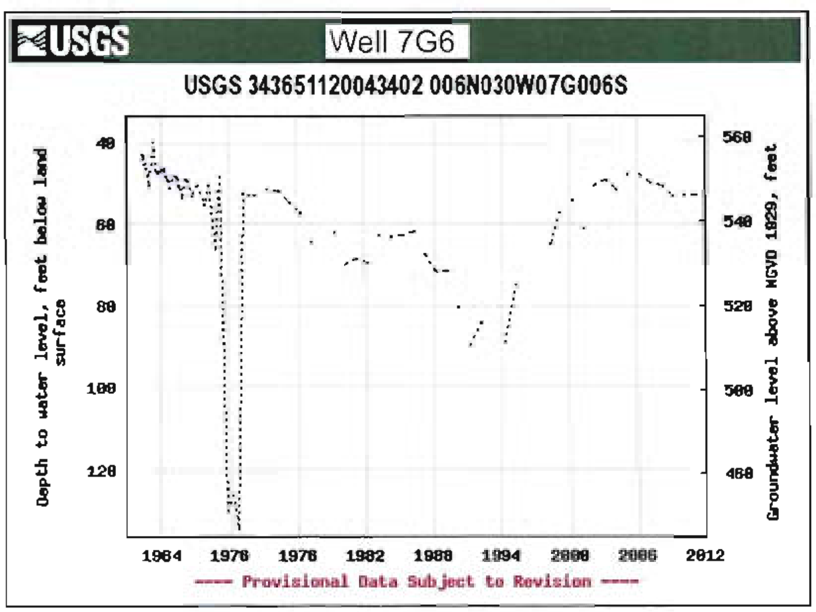
Siting proposed water wells as far as possible from existing offsite wells would result in lower water-level declines at neighboring wells. In addition, siting at least one of the new wells south of the Baseline fault (Figure 2-1) would reduce impacts to adjacent wells. The capacity of proposed wells to meet the project demand and water quality cannot be properly assessed without actually constructing and testing each well.



Latitude 34°36'27", Longitude 120°03'08" NAD27
Land-surface elevation 660.00 feet above NGVD29
The depth of the well is 160 feet below land surface.



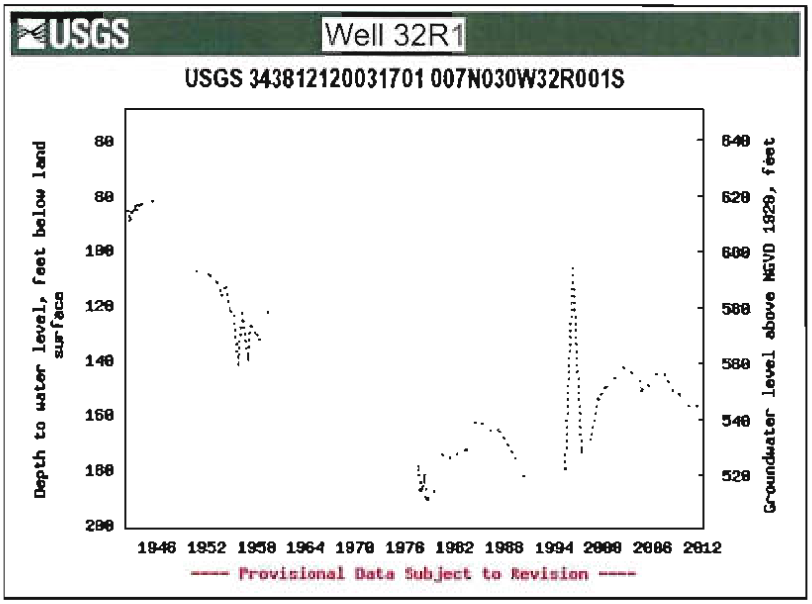
Latitude 34°36'51", Longitude 120°04'34" NAD27
Land-surface elevation 600.00 feet above NGVD29
The depth of the well is 158 feet below land surface.



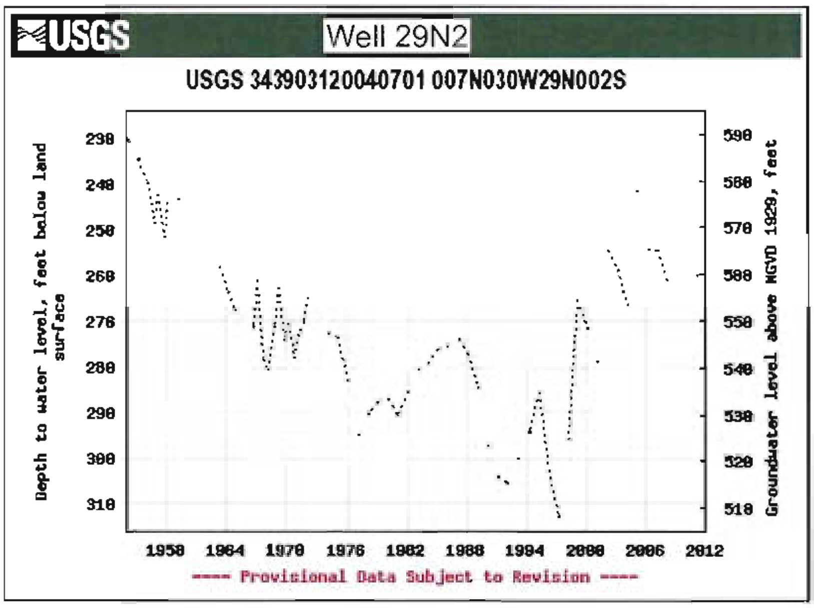
Latitude 34°36'51", Longitude 120°04'34" NAD27
Land-surface elevation 600.00 feet above NGVD29
The depth of the well is 410 feet below land surface.

Figure 2-4
Water Level Hydrographs
Wells 9N1, 7G5, 7G6
Chumash Camp 4

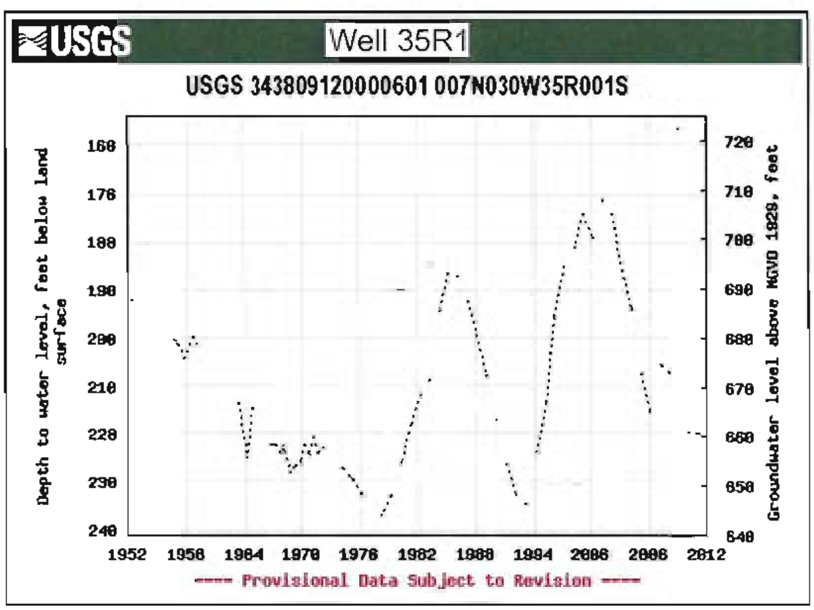
Cleath-Harris Geologists



Latitude 34°38'12", Longitude 120°03'17" NAD27
Land-surface elevation 701.00 feet above NGVD29
The depth of the well is 186 feet below land surface.



Latitude 34°39'03", Longitude 120°04'07" NAD27
Land-surface elevation 820.00 feet above NGVD29
The depth of the hole is 485 feet below land surface.



Latitude 34°38'09", Longitude 120°00'06" NAD27
Land-surface elevation 880.00 feet above NGVD29
The depth of the well is 288 feet below land surface.

Figure 2-5
Water Level Hydrographs
Wells 32R1, 29N2, 35R1
Chumash Camp 4
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PROPOSED WATER DISTRIBUTION SYSTEM

This section describes the proposed water distribution, storage and pumping system required to serve Project Alternatives A and B. The potable water and fire suppression demands are anticipated to be served by a single water distribution system. An overview of the water system, including storage reservoirs and pumping station, and water distribution system, are shown on Figures 2-6 and 2-7, respectively, for Alternatives A and B. It is noted that the locations of the two new domestic water supply wells are not shown on these figures, as the actual locations will need to be determined as part of detailed design.

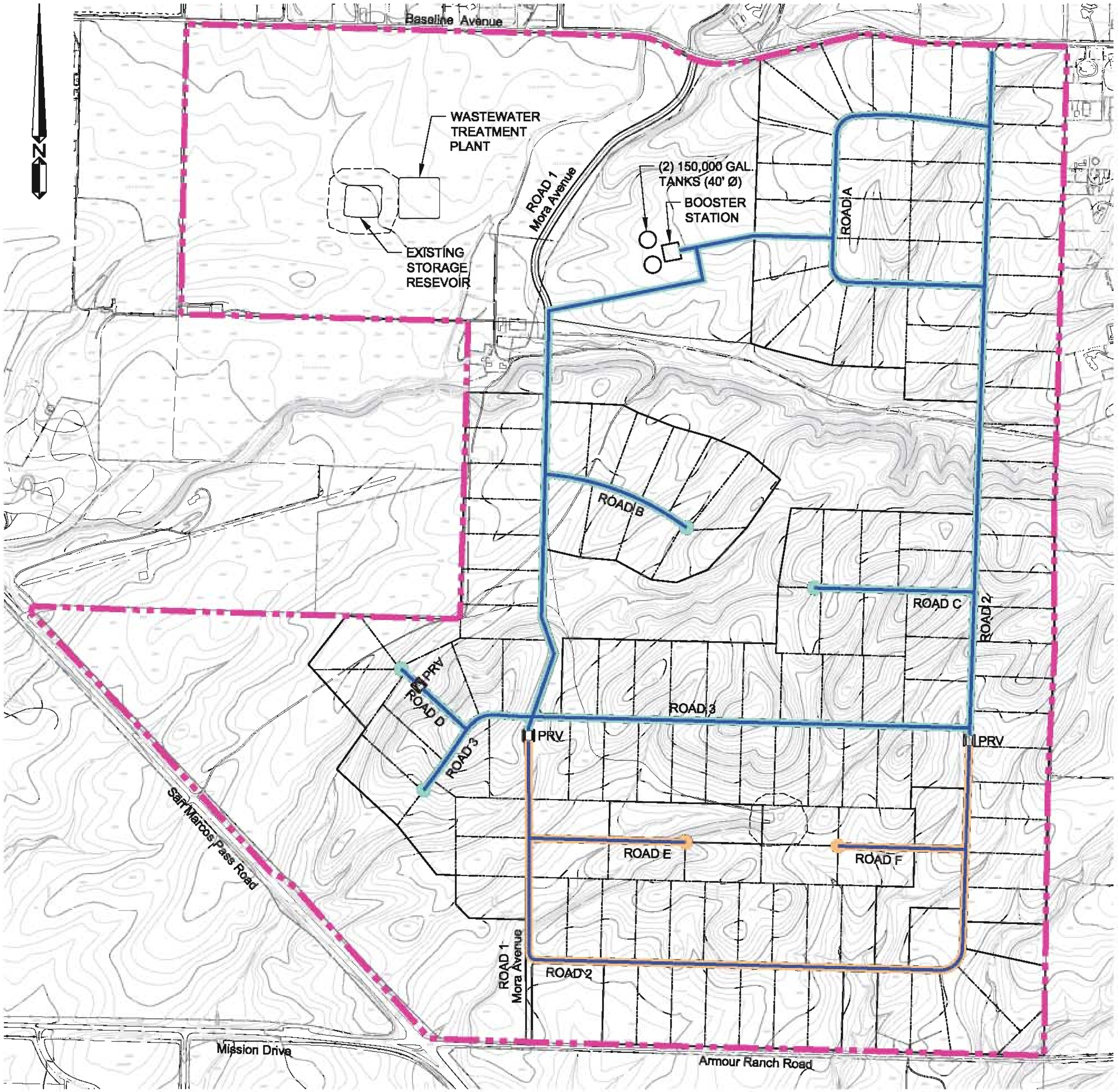
Distribution System

The following subsection describes water distribution system requirements for Alternatives A and B. The distribution system should be designed to ensure 40 psi pressure is delivered to each home during average demand conditions, and no less than 30 psi during peak hour flows. The distribution system should also be designed to ensure that during fire flows, a minimum residual pressure of 20 psi is achieved. If fire sprinklers are provided through the Project, higher residual pressures may be required. Again, this would be determined as part of detailed design.

Alternative A. Interior roads and residential lots will have an elevation ranging from 695 feet to 850 feet above mean sea level (MSL). With this range in elevations, the water distribution system should include at least two separate pressure zones, to avoid unusually high and low static pressures in the distribution system. Even with two pressure zones, it is likely that several of the residences may require individual pressure reducing valves at their residential water connection to the water main. A minimum pipe diameter of 8-inches is recommended throughout the water system. However, consideration to provide a 12-inch diameter main “loop” should be given, to reduce the potential for undesirable surge pressures (by reducing line velocities). A detailed hydraulic analysis of the water system is beyond the scope of this study; however, given the nature of the layout of the roads, high and low points, the need for several dead-end mains, and the required fire flows, hydraulic design considerations will be important in the overall design of the water system.

It is envisioned that there will be two pressure zones for this Alternative A, to best serve all of the residences, avoid excessive water line pressures, and to meet minimum service pressures. Refer to Figure 2-8 for a hydraulic profile graphically depicting the envisioned water pressure zones, in relationship to residences, water storage and pumping facilities, and water supply wells.

Alternative B. Similar to Alternative A, interior roads and residential lots will have an elevation ranging from 695 feet to 850 feet above mean sea level (MSL). Hydraulically, the water system will be very similar to Alternative A, with a reduced pressure zone for the southern “loop”. It is likely that the Government Center will be part of the main zone (higher pressure and hydraulic grade line). The pressure reducing station would be immediately downstream of the Government Center. The Government Center would have a water service lateral feeding off of the main line from the street, possibly with its own on-site water loop for water service and fire suppression, depending on layout of the Government Center facilities. This water system layout has no dead end mains like Alternative A; however, water main sizing should follow the same recommendations described for Alternative A. Details of the hydraulics would be determined during detailed design of the Project. The water system hydraulics are shown, similar to Alternative A, in Figure 2-8.



LEGEND:

	PROJECT BOUNDARY
	WATER STORAGE TANK
	BOOSTER STATION
	WATER DISTRIBUTION PIPELINE, MAIN PRESSURE ZONE
	WATER DISTRIBUTION PIPELINE, PRV ZONE 1
PRV	PRESSURE REDUCING STATION
PRV	INDIVIDUAL RESIDENTIAL PRESSURE REDUCING VALVE

NOTES:

1. REFER TO FIGURE 1-1 FOR LAND USE DESIGNATIONS.
2. DOMESTIC WATER WELLS ARE NOT SHOWN AS LOCATIONS WILL NEED TO BE DETERMINED AT A LATER TIME.

GRAPHIC SCALE

0 1000' 2000'

(IN FEET)
1 IN = 1000 FT

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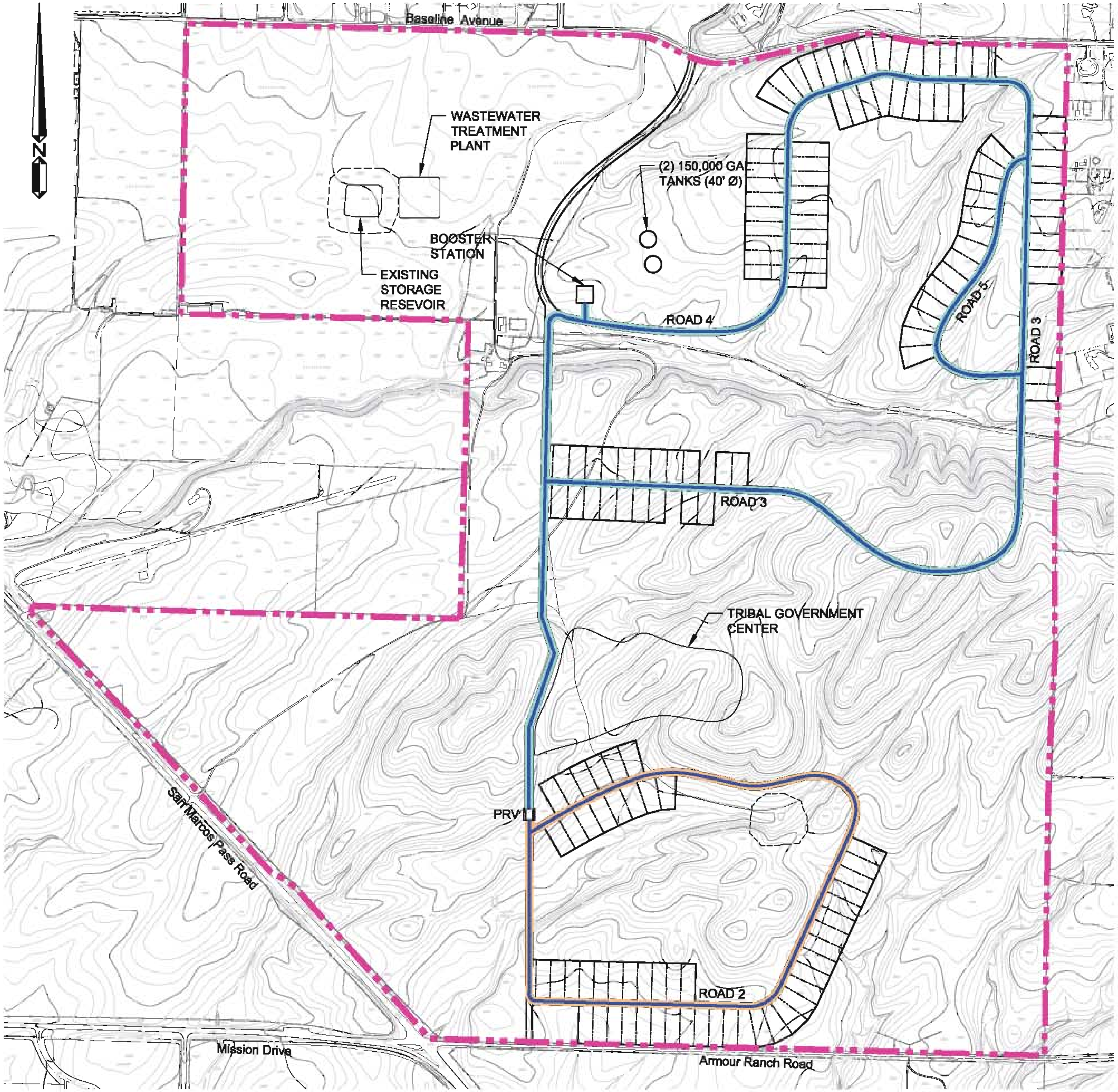
Figure 2-6
Waterline Layout - Alternative A



LEGEND:

PROJECT BOUNDARY

WATER STORAGE TANK

BOOSTER STATION

WATER DISTRIBUTION PIPELINE, MAIN PRESSURE ZONE

WATER DISTRIBUTION PIPELINE, PRV ZONE 1

PRV — PRESSURE REDUCING STATION

NOTES:

1. REFER TO FIGURE 1-2 FOR LAND USE DESIGNATIONS.
2. DOMESTIC WATER WELLS ARE NOT SHOWN AS LOCATIONS WILL NEED TO BE DETERMINED AT A LATER TIME.

GRAPHIC SCALE

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1 IN = 1000 FT

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Figure 2-7
Waterline Layout - Alternative B

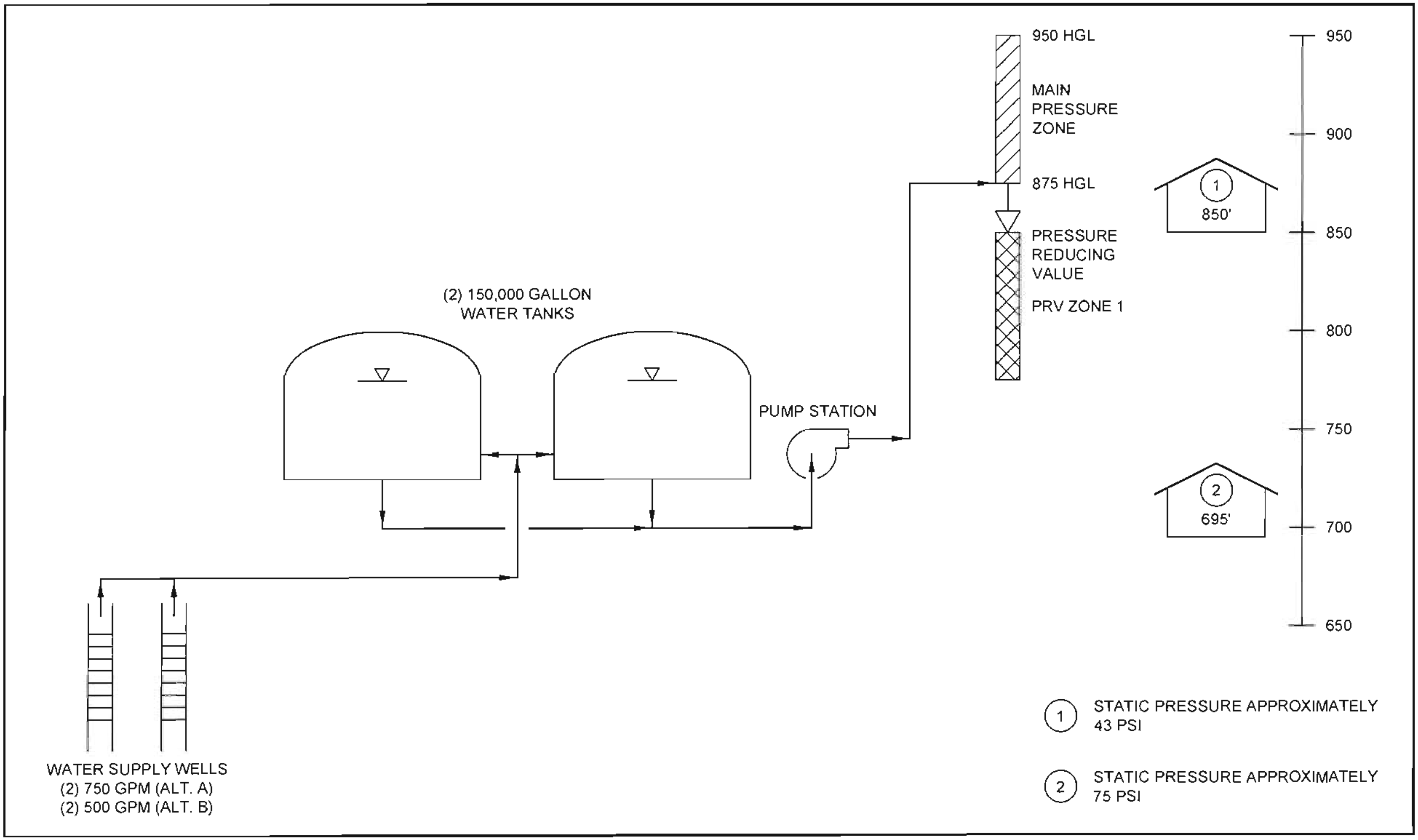

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Figure 2-8
Hydraulic Profile Of Water Distribution System

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Water Storage and Pumping

This section describes the proposed water storage and pumping facilities needed to serve the Project, Alternatives A and B. Storage requirements are summarized in Table 2-8.

Storage Requirements. Storage requirements for community systems are generally comprised of three components:

- Emergency Storage
- Fire Storage
- Operational Storage

Emergency Storage

Emergency storage is intended to provide for conditions such as extended power outages, pump failures, and similar problems. Most water planners accept that during emergencies, supply per capita may be reduced to minimum levels. Typically, on that basis, an emergency storage volume of 50 gpcd for three days is accepted as a reasonable value. Emergency storage for this Project is thus based on 500 permanent residents, for both Alternatives A and B.

Fire Storage

Fire storage is the volume of water needed to control an anticipated fire in a building or group of buildings. The determination of this storage is based upon a recommended flow rate, its duration, and a minimum residual pressure as established by the agency of interest. Based on experience in working with the County of Santa Barbara Fire Department, it is anticipated that with sprinklered buildings, the recommended fire flow will be 1,500 gpm for a duration of 2 hours.

Operational Storage

Operational storage is the amount of water needed to equalize the daily supply and demand. Without this storage, water production facilities large enough to meet the instantaneous peak demands of the system would be required. With adequate operational storage, well pumps can operate at the daily average rate, while storage facilities meet the hourly peaks. This operating method also prevents the unnecessary use of additional well pumps at times when electrical rates are the highest. Based on the typical daily water use patterns of most communities, it is recommended that the required operational storage be approximately 25 percent of the total water use for any given day. The American Waterworks Association (AWWA) Manual of Practice M-32 recommends operational storage of 20 to 25 percent of build-out average day demand for the given zone, or up to 15 percent of the ultimate maximum day demand. Storage recommendations for Alternatives A and B are based on storage for 25% of maximum day demand.

Table 2-8. Summary of Storage Requirements – Alternatives A and B

Alternative	Storage Component (rounded numbers)			
	Emergency	Fire	Operational	Total (rounded up)
A	75,000	180,000	23,000	300,000
B	75,000	180,000	25,000	300,000

It is noted that detailed siting of water storage tanks is beyond the scope of this study. However, based on site topography, and location of proposed residential lots, both Alternatives will require some degree of pumping from storage reservoirs. Full gravity flow and pressure from storage reservoirs cannot be accommodated due to the higher elevations of the lots. For both Alternatives, water storage was envisioned to be at approximately elevation 725. The tanks should be located where relatively accessible for maintenance, while protecting the existing view sheds.

The water storage reservoirs are envisioned to be welded steel tanks (at-grade), meeting current standards for tank design and seismic requirements. Alternatively, should it be desired to further screen or hide the tanks from view, the tanks could be pre-stressed concrete tanks that can be partially or fully buried.

Booster Station – Alternative A. The water system will require a booster station, rated at 2,250 to 2,500 gpm to achieve fire flow demand of 1,500 gpm plus domestic demands. Given site and storage reservoir elevations, the pumps will need to be rated for approximately 250 feet total dynamic head (TDH). Consideration could be given to locating the storage reservoirs at a higher elevation and thus reduce the pumping head requirements of the booster station. This would increase the head requirements for pumping from the wells to the storage reservoirs, however. The pump station should be designed to also operate efficiently at low flows, thus provision for a small "jockey" pump to handle night-time flows should be considered. The booster station should be equipped with emergency standby power provisions (generator) to ensure uninterrupted service in the event of power outages.

Booster Station – Alternative B. Booster Station recommendations for this Alternative would be very similar to that described for Alternative A, except that the total pumping capacity could be reduced slightly to 2,000 gpm.

CHAPTER 3

WASTEWATER SYSTEM

The wastewater system includes collection, treatment and reuse/disposal of all products of the treatment processes including:

- Effluent water
- Bio-solids
- Screenings

The intent is to provide a high quality system so that the treatment meets the water quality for unrestricted reuse on the property, that bio-solids can be disposed economically, and screenings can be disposed in a conventional (publicly-owned and operated) landfill.

WASTEWATER FLOWS

Based on Tables 2-1, 2-2 and 2-3 showing domestic water demands (and Tribal Government Center water demands for Alternative B), wastewater flows were calculated based on:

- 90% of domestic water demand generates wastewater flow
- Permanent population of 500 (3.5 persons per household)
- 75 employees at Tribal Government Center
- 100 Tribal Government Center events per year, drawing up to 1,000 people per event, including food preparation for these events

Based on the above assumptions and factors, wastewater flows to the wastewater treatment plant (WWTP) are summarized as follows:

- Alternative A – 41,000 gpd average dry weather flow (ADWF)
- Alternative B – 44,000 gpd ADWF

WASTEWATER COLLECTION SYSTEM

The collection system will provide capacity to convey the ultimate wastewater flow at peak hydraulic conditions. These conditions include the potential for a diurnal maximum flow when all development is complete and the flows may include an allowance for nominal pipeline infiltration as considered feasible according to maximum EPA limitation (200 gallons per inch diameter per mile per day).

The collection system will also include a number of gravity sewer manholes, 48” diameter, and spaced at intervals for ease of access for maintenance. Typically, manhole spacing for the size pipelines considered will be on the order of 300 feet, and also where significant grade breaks and bends occur in the gravity sewer system.

Gravity Sewer System

The gravity sewer system will be comprised of four-inch diameter laterals between buildings and street mains, eight-inch diameter street mains, and interceptor pipelines ranging in diameter from 8-inches to 15-inches.

The minimum diameter for street mains and interceptors is eight inches for ease of maintenance. The actual design will be based on two criteria:

- Capacity is required for peak hydraulic flow and this determines the combination of diameter and slope
- Because slope is also a result of the topography, the pipe diameter may be controlled as a function of slope and the ability to meet a minimum velocity which would be defined as meeting a velocity of 1.3 feet per second at a depth of flow ratio to pipe diameter of 0.2. (Steeply sloping topography makes this issue disappear. When the topography is relatively flat, to maintain an adequate slope may require inclining pipeline profiles deeply below grade in order to satisfy the minimum velocity requirement

Sewage Lift Stations

Sewage lift stations will be constructed as submersible pumping unit stations utilizing circular precast concrete vaults, lined for corrosion protection, equipped with duplex pumping units for redundancy and backup, and level controls for starting, stopping pumping units and signaling alarms for failure conditions.

If the depth of pipelines becomes excessive (more than 20 feet below grade), then consideration is given to the benefit of raising the pipeline profile to a shallower level by the installation, and use of a lift station. Where individual homes may require a solitary pumping unit to pump residential wastewater into the collection system, a sub-grade sump with an automatically- controlled grinder pump will be installed on the owner’s property where the home waste plumbing will directly discharge into the sump and the sump discharge will go into a street main.

The collection system is envisioned to be a combination of eight-inch diameter PVC gravity pipelines, four-inch diameter PVC force mains, and small pumping stations and individual home grinder pump sump installations. Details of pipeline diameter and material selection would be confirmed during detailed design.

Collection System – Alternative Layout A. The composition of this system is based on the Program definition described in Chapter 1 of this report, and Figure 1-1. The recommended sewer collection system layout for Alternative A is presented in Figure 3-1.

LEGEND:

PROJECT BOUNDARY

GRAVITY SEWER

X REFER TO TABLE 3-1 FOR CORRESPONDING SEWER PIPE DESCRIPTIONS

NOTE:

REFER TO FIGURE 1-1 FOR LAND USE DESIGNATIONS

GRAPHIC SCALE

0 1000' 2000'

(IN FEET)

1 IN = 1000 FT

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Figure 3-1
Sewer Collection System Layout - Alternative A

The pipelines are summarized in Table 3-1. For Alternative A, the topography, if not modified, would lead to the installation of as many as 10 pumping stations and short force mains or inverted siphons to cross beneath washes. However, for planning purposes, it will be assumed that these wash crossings will be graded for the dual objectives of providing a manageable roadway profile for ease of transportation and to allow a continuous profile of gravity sewer pipelines.

Table 3-1. Summary of Sewer Pipelines – Alternative A

Line Number	Description	Length, feet
1	8" gravity sewer, Road 2 connecting with Road A, south of Baseline Ave. to intersection with Sewer Pipeline 14	2,500
2	8" gravity sewer, Road A loop along a loop, connecting to Road 2	3,500
3	8" gravity sewer, Road 4 to Sewer Pipeline 14	1,900
4	8" gravity sewer, Road C connecting to Road 2	1,300
5	8" gravity sewer, Road 2 to Road 1 loop, extending from Road C to Road 1, to Sewer Pipeline 15	12,500
6	8" gravity sewer, eastern portion of Road 3	1,600
7	8" gravity sewer, Road F	1,000
8	8" gravity sewer, Road E	1,200
9	8" gravity sewer, western portion of Road 3 connecting through property to Road 1	1,200
10	8" gravity sewer, Road 3 west of Road 1	500
11	8" gravity sewer, western portion of Road 3	1,500
12	8" gravity sewer, aligned west and north of Road 3 properties, west of Road 1	1,300
13	8" gravity sewer, Road B	1,750
14	8" gravity sewer, connecting Road 2 to Road 1 paralleling large east-west drainage wash	3,600
15	12" to 15" gravity interceptor line to WWTP from Road 1	1,500
TOTAL		36,850

See Figure 3-2 for layout of sewer collection system.

Collection System – Alternative Layout B. The composition of this system is based on the Program definition described in Chapter 1 of this report, and Figure 1-2. The recommended sewer collection system layout for Alternative A is presented in Figure 3-2. The pipelines and a single pumping station are summarized in Table 3-2 for Alternative B. Just as in Alternative A, the assumption is made that numerous washes will be graded to facilitate both ease of roadway driving and to allow a continuous gravity sewer pipeline through the washes. There will be one unavoidable exception in Alternative B where a pumping station will be required.

WASTEWATER TREATMENT SYSTEM

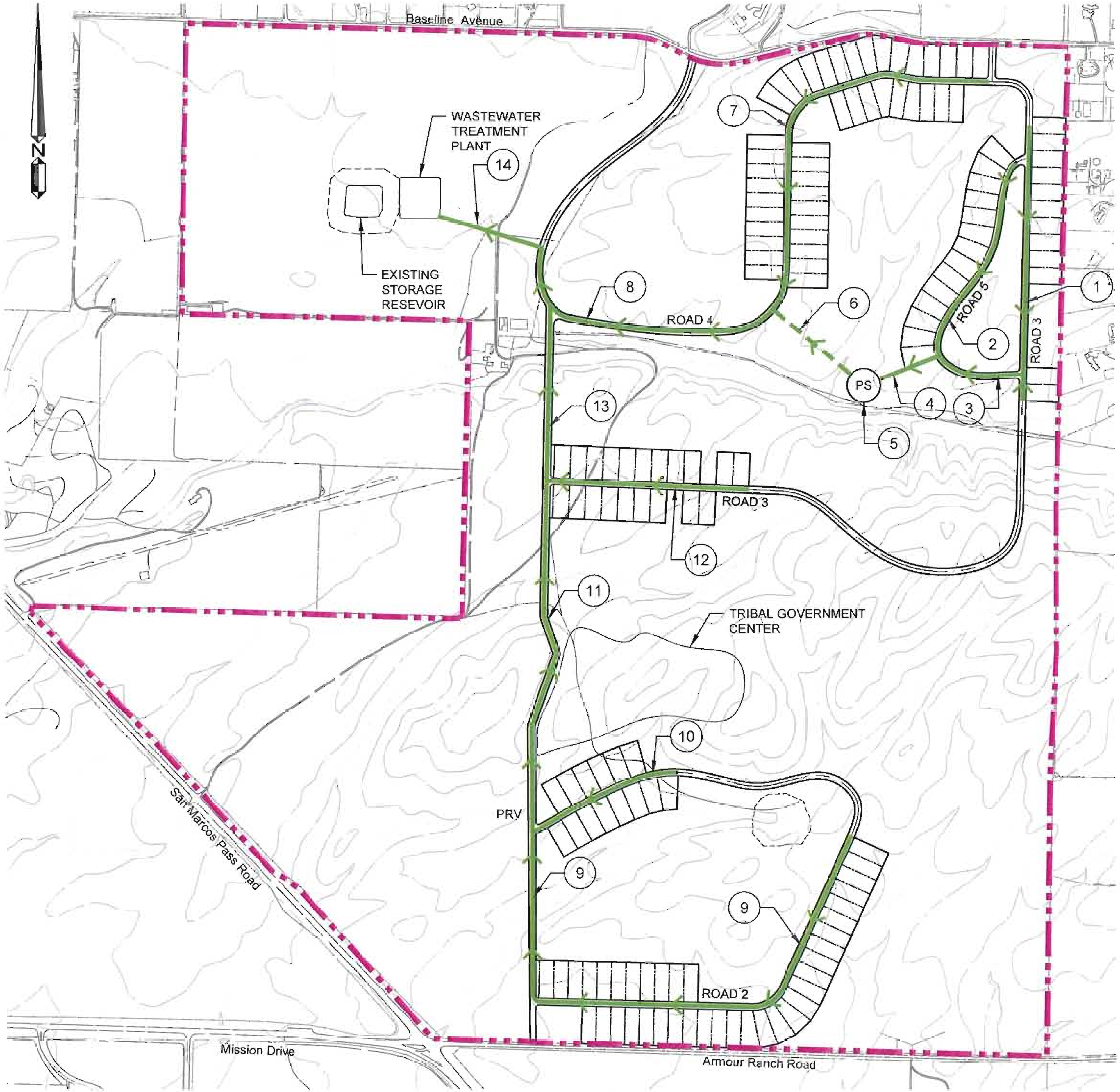
The wastewater treatment system will be designed to receive a high strength domestic waste based on experience of this type of customer base including residential, some office, and Tribal Government Center wastewater. It is envisioned that the Government Center will include food preparation facilities, and thus a higher strength wastewater is anticipated. For planning, the strength of wastewater will be assumed to be as presented in Table 3-3. The table also presents the required effluent quality for the purpose of recycling as an unrestricted (meeting same requirements as California Code, Title 22) reuse.

Wastewater Process Selection

The objective is to produce a reusable effluent that does not create a restrictive constraint on the area of beneficial use. This means that in the issue of health and safety, the industry defined quality is known as a "tertiary - 2.2 coliform" effluent. It means the effluent is the highest level of treatment currently practiced and offers the widest possible array of reuse options. From a practical standpoint, it means that the effluent can be spray irrigated in agricultural areas without restriction of humans and animals in the area of application.

In order to process the expected wastewater, based on volume, strength, and the variations of flow, the number of options for treatment has been narrowed to three that are deemed both feasible and cost-effective:

1. Sequencing batch reactor with tertiary filtration, ultraviolet (UV) disinfection, and sludge holding (and probably with dewatering)
2. Multiple Stage Activated Biological Process (MSABP), with tertiary filtration, and UV disinfection
3. Modified Ludzack-Ettinger (mLE) process reactor with tertiary filtration, UV disinfection, and sludge holding (and probably with dewatering)



LEGEND:

	PROJECT BOUNDARY
PS	SEWAGE PUMP STATION
	GRAVITY SEWER
	FORCE MAIN
X	REFER TO TABLE 3-2 FOR CORRESPONDING SEWER PIPE DESCRIPTIONS

NOTE:

REFER TO FIGURE 1-2 FOR LAND USE DESIGNATIONS

GRAPHIC SCALE

0 1000' 2000'

(IN FEET)

1 IN = 1000 FT

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Figure 3-2
Sewer Collection System Layout - Alternative B

Table 3-2. Summary of Sewer Pipelines – Alternative B

Line Number	Description	Length, feet
1	8" gravity sewer, Road 3 south of Baseline Avenue	1,800
2	8" gravity sewer, Road 5 (flowing southerly) to Sewer Pipeline 4	1,800
3	8" gravity sewer, Road 5 (flowing northerly) to Sewer Pipeline 4	600
4	8" gravity sewer from Road 5 to Pumping Station	500
5	Pumping Station	
6	4" force main from Pumping Station to Road 4	1,300
7	8" gravity sewer, Road 4 to tie-in with force main	4,000
8	8" gravity sewer, Road 4 from force main to Road 2	2,300
9	8" gravity sewer, eastern loop of Road 2 to Sewer Pipeline 10	5,200
10	8" gravity sewer, northwestern loop of Road to north/south leg of Road 2	1,300
11	8" gravity sewer, Road 2 between Sewer Pipeline 10 and Road 3	2,500
12	8" gravity sewer, western leg of Road 3	1,700
13	8" gravity sewer, Road 2 between Road 3 and Road 4	1,500
14	12" to 15" interceptor sewer, Road 4 to WWTP	1,500
TOTAL		26,000

See Figure 3-2 for layout of sewer collection system.

Table 3-3. Influent and Effluent Wastewater Characteristics

	Constituent	Units	Value
Influent:			
(BOD)	Biochemical Oxygen Demand	mg/l	600
(TSS)	Total Suspended Solids	mg/l	350
(TKN)	Total Kjeldahl Demand	mg/l	75
(TP)	Total Phosphorus	mg/l	20
Effluent:			
(BOD)	Biochemical Oxygen Demand	mg/l	10
(TSS)	Total Suspended Solids	mg/l	10
NH3	Ammonia	mg/l	1
T.I.N.	Total inorganic nitrogen	mg/l	8
T.N.	Total nitrogen	mg/l	8
T.P.	Total phosphorus	mg/l	3
Coliform	Total coliform	mpn/100 ml	2.2
	Turbidity	NTU	2

Each of these combinations is capable of meeting the project needs; each has some specific advantages which will be summarily presented in this chapter. For purposes of the recommendations in the wastewater system, only one of these three will be presented in detail.

Wastewater Treatment Plant Capacity – Alternative A. Based on the development plans proposed for Alternative A, as summarized in Table 1-1, the capacity required in the treatment plant at build out will be 41,000 gallons per day of average dry weather flow. The distinctions of Alternative A that separate it from Alternative B are:

- 143 Five acre lots
- 206 acres of open space/recreational use and trails

For the normal design practice, a peaking factor must be estimated to apply to the average dry weather flow. Small systems require high peaking factors. For this system, a peaking factor of 3.0 will be assumed.

Wastewater Treatment Plant Capacity – Alternative B. Based on the development plans proposed for Alternative B, as summarized in Table 1-1, the capacity required in the treatment plant at build out will be 45,000 gallons per day of average dry weather flow. The distinctions of Alternative B that separate it from Alternative A are:

- 143 One- acre lots
- 755 acres of open space/recreational use and trails
- Addition of Tribal Government Center

For the normal design practice, a peaking factor must be estimated to apply to the average dry weather flow. Small systems require high peaking factors. For this system, a peaking factor of 3.0 will be assumed.

Wastewater Treatment Plant Description

The wastewater treatment plant will be capable of processing the influent wastewater and producing the effluent by means of the plant process units outlined below in Table 3-4.

Table 3-4. Description of Wastewater Treatment Process Units

Item No.	Process Unit	Number of Units	Type	Criteria
	Headworks:			
1	Screens	2	Auto	1 mm
2	Grit cyclone *	2		PWWF
3	Grit classifier *	1		PWWF
	Biological Treatment:			
4	Treatment Basins	12	A	ADWF
5	Effluent Equalization Basin	1	A or B	PWWF
	Final Effluent:			
6	Filtration	2	Cloth	ADWF
7	Disinfection	2	UV	ADWF
	Equipment:			
8	Influent Pumping Units	3	Submersible	PWWF
9	Internal Recyle Pumping	4	Centr.	ADWF
10	Effluent Pumping	2	Centr.	ADWF
11	Aeration Blowers	3	Pos Displ.	Max Mo.

A=Concrete
B=Steel
** - Optional - assessment of grit potential during design*

Influent Pumping and Transfer Pumping. There will be two categories of pumping units; submersible type pumping units for influent pumping, and end suction dry pit units for transfer puming. The submersible units are installed with an easily removable connection with cable for ease of pulling pumps for maintenance.

Headworks (Screening and De-gritting). Screening is a highly variable choice of equipment. The size of treatment plant, the nature of waste material, and objective for removal of material are equally important factors in choosing the right screen. Maintenance requirements are dependent on the choice made. For the plant proposed, there are at least three possible choices that would be appropriate. The three most logical types for the proposed plant are:

- A cylindrical metal (stainless steel) screen with small (1 mm) opening size
- A continuous belt type unit with medium opening size range (6 to 8 mm)
- A step screen also with medium opening size range (6 to 8 mm)

Detailed selection of such equipment is beyond the scope of this study.

Biological Treatment**.** The three types of biological treatment processes described above (SBR, MSABP, and mLE) will be described in detail below: Each of these processes will produce a secondary effluent of a quality so that a conventional tertiary filtration process, followed by disinfection, will produce a final effluent meeting the requirements of effluent for unrestricted reuse.

1. Sequencing batch reactor – this process has certain unique characteristics as presented in the Table 3-5.

Table 3-5. Characteristics of Sequencing Batch Reactor

Factor	Unique Characteristics of the Overall Process Train
Tanks	Tanks are large - based on 24-hour detention time
Energy	Not energy efficient due to variable water level
Flexibility	Very flexible - capable of high turndown ratio
Operation	Simple operation - controlled by single PLC
Screenings	Normal amount based on 6-8 mm opening size
Effluent	Excellent quality
Bio-solids	Large quantity
Concept	Alternate tanks fill and process in batches based on 5 cycles per 24 hrs

2. Multi-stage activated biological reactor – this process' characteristics are presented in Table 3- 6.

Table 3-6. Characteristics of Multi-Stage Biological Reactor

Factor	Unique Characteristics of the Overall Process Train
Tanks	Tanks are large - based on 40-hour detention time
Energy	Energy efficient due to constant water surface
Flexibility	Moderately flexible
Operation	Simple operation - controlled by single pLC
Screening	Large amount based on 1 mm screen size
Effluent	Superior quality - clarifier is just a backup
Bio-solids	Minimal quantity - mostly reduced in secondary process
Concept	12 stages of bioreactor - multiple stages of oxic and anoxic biology

3. Modified Ludzack Ettinger - this process' characteristics are presented in Table 3-7.

Table 3-7. Characteristics of Modified Ludzack Reactor

Factor	Unique Characteristics of the Overall Process Train
Tanks	Tanks are small - based on 12 hour detention time
Energy	Energy efficient due to constant water surface
Flexibility	Moderately flexible
Operation	Requires daily interaction by operator
Screenings	Normal amount based on 6-8 mm opening size
Effluent	Excellent quality
Bio-solids	Large quantity
Concept	High rate with multiple recycle streams in 2-stage reactor

Flow Equalization. Effluent equalization is valuable ahead of the tertiary and disinfection processes because it eliminates the hydraulic flow variability, and thus minimizes size/capacity requirements of downstream process units. The design capacity then gets reduced to the maximum month flow at the build out stage of development, as opposed to peak hourly flow. The equalization basin is usually sized for a fraction (20 to 40 percent) of the daily flow at the rated average capacity of the plant. In this case, the volume would be between 10,000 and 20,000 gallons. Because the plant is small (only 50,000 gallons per day) the more conservative volume of 20,000 gallons is recommended.

The basin should be designed for the supply side to be provided by gravity and the discharge side by pumping if the site topography and geology restricts the ability to allow a continuous gravity system to the final effluent discharge point.

Tertiary Treatment. **T**he most cost effective type of system for this plant would be a cloth disk filter unit. The units are constructed to have a basin enclosure that contains the secondary effluent submerging a number of cloth covered disks that rotate and allow the water to penetrate the cloth, leaving behind the filter reject materials, primarily particulate material that represents suspended solids, and turbidity. The cloth disks are periodically sprayed with a clean water stream to remove accumulated particulates from the individual disks. Also, a periodic backwash cycle pumps water fro the basin as the cumulated reject material increases within the basin. However, a steady supply of secondary effluent enters the basin allowing the disk filters to continuously filter uninterrupted.

Disinfection. Two methods of disinfection are practical for the 50,000 gpd size plant. The easiest to operate is the ultraviolet (UV) type. For such a small size, the low pressure, low intensity type is the most cost-effective. Several manufacturers make this type of UV system. They are available in both open channel and closed conduit configuration. The advantage of open channel is ease of access and the advantage of closed conduit is compactness.

Generally speaking, a UV system is more expensive to operate than a sodium or calcium hypochlorite disinfection system because the cost of electrical power used is more expensive than the cost of chemicals. However, on a small system, the cost of maintenance becomes a more significant factor. Maintaining a chemical feed system such as hypochlorite requires more diligence and attention to equipment condition than does a UV system. Also, hypochlorite systems are intricate in the feed and control systems and generally require periodic surveillance to make sure all parts are functioning properly.

SUMMARY OF ALTERNATIVE PROCESS TRAINS

The complete process trains for three alternatives are compared in Table 3-8. A process schematic of the entire recommended process train is presented in Figure 3-3. This schematic illustrates the sequence of the primary liquid stream though each step of the treatment process. It illustrates the disposition of the end products of the treatment (effluent for reuse, bio-solids, and screenings). It does not illustrate the numerous internal process loops or the various additive process inputs such as the aeration or mixing air, the chemical feed systems, or instrumentation and controls. During design, individuals process and instrumentation drawings will present that level of detail.

Table 3-8. Comparison of Treatment Process Schemes

Factor	MSABP	SBR	MLE
Screenings Volume	Very high due to small screen opening size (1 mm)	Moderate due to size of screen opening (6-8 mm)	Moderate due to size of screen opening (6-8 mm)
Power Usage	Moderate usage overall; MSABP high; sludge zero	High due to varible depth and low transfer efficiency	Moderate; low on mLE but also needed for sludge
Tank Volume	High	Moderate	Low
Sludge Volume	Low	Moderate	Moderate
Effluent Quality	High	High	High
Ease of Operation	Dictated by tertiary and disinfection	Dictated by tertiary and disinfection	Dictated by tertiary and disinfection
Maintenance	Moderate	Moderate	Moderate
Process Flexibility	Highly flexible (turndown ratio is high)	Highly flexible (turndown ratio is high)	Moderately flexible (turndown ratio is moderate)

A layout for the process units and ancillary facilities is presented in Figure 3-4. In this figure, the approximate sizes and locations of the process units and the ancillary buildings are shown. The plant will have a fenced area of approximately one acre, allowing for a 50-foot buffer around all buildings, and providing access for all building and process areas that will require ingress for maintenance. This site would be secured by an 8-foot high fence and accessed through one of two 20-foot gated openings. The site would be partially asphalt paved and partially landscaped with low maintenance cover such as gravel and shrubbery.

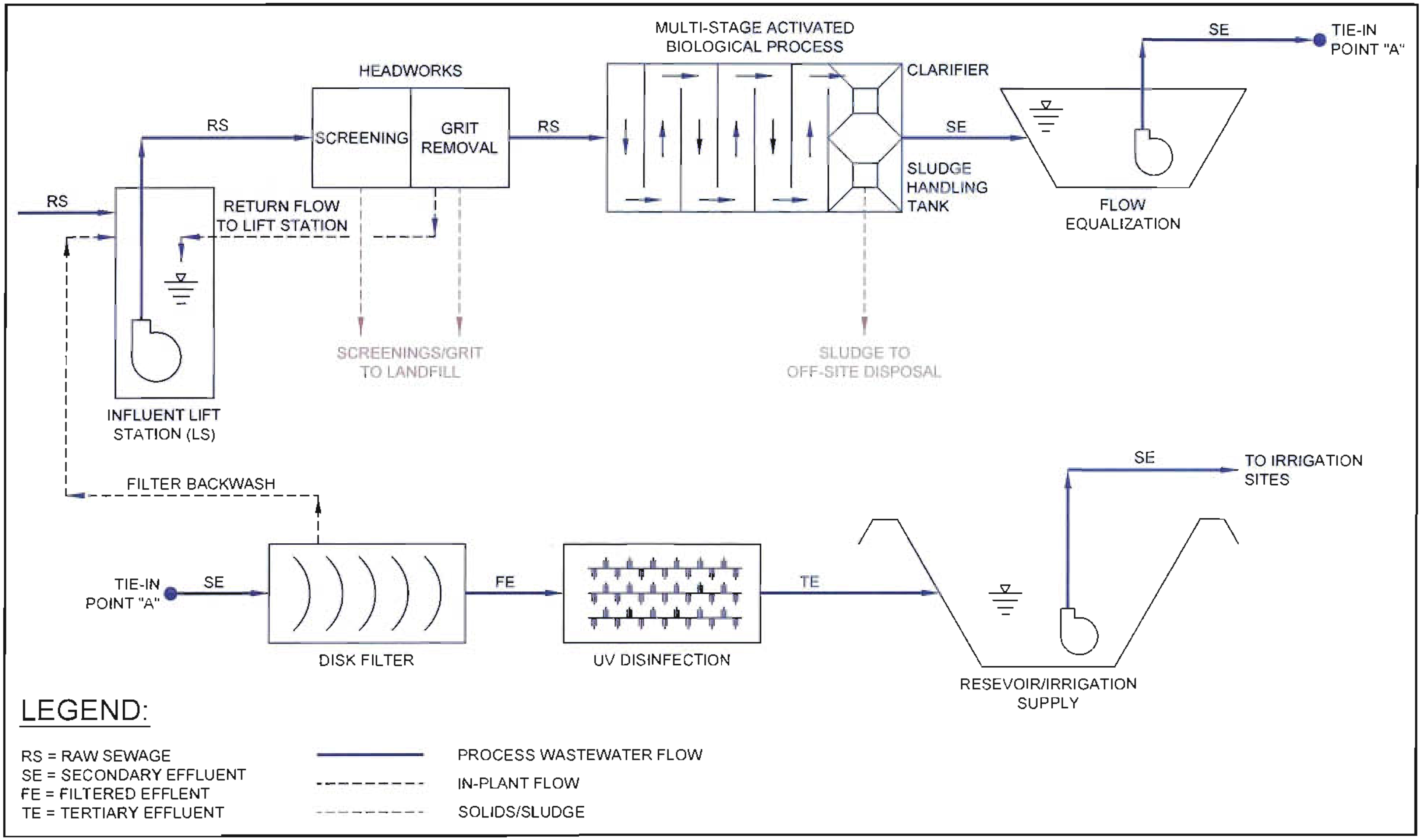

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Figure 3-3
Recommended Wastewater Process Flow Schematic

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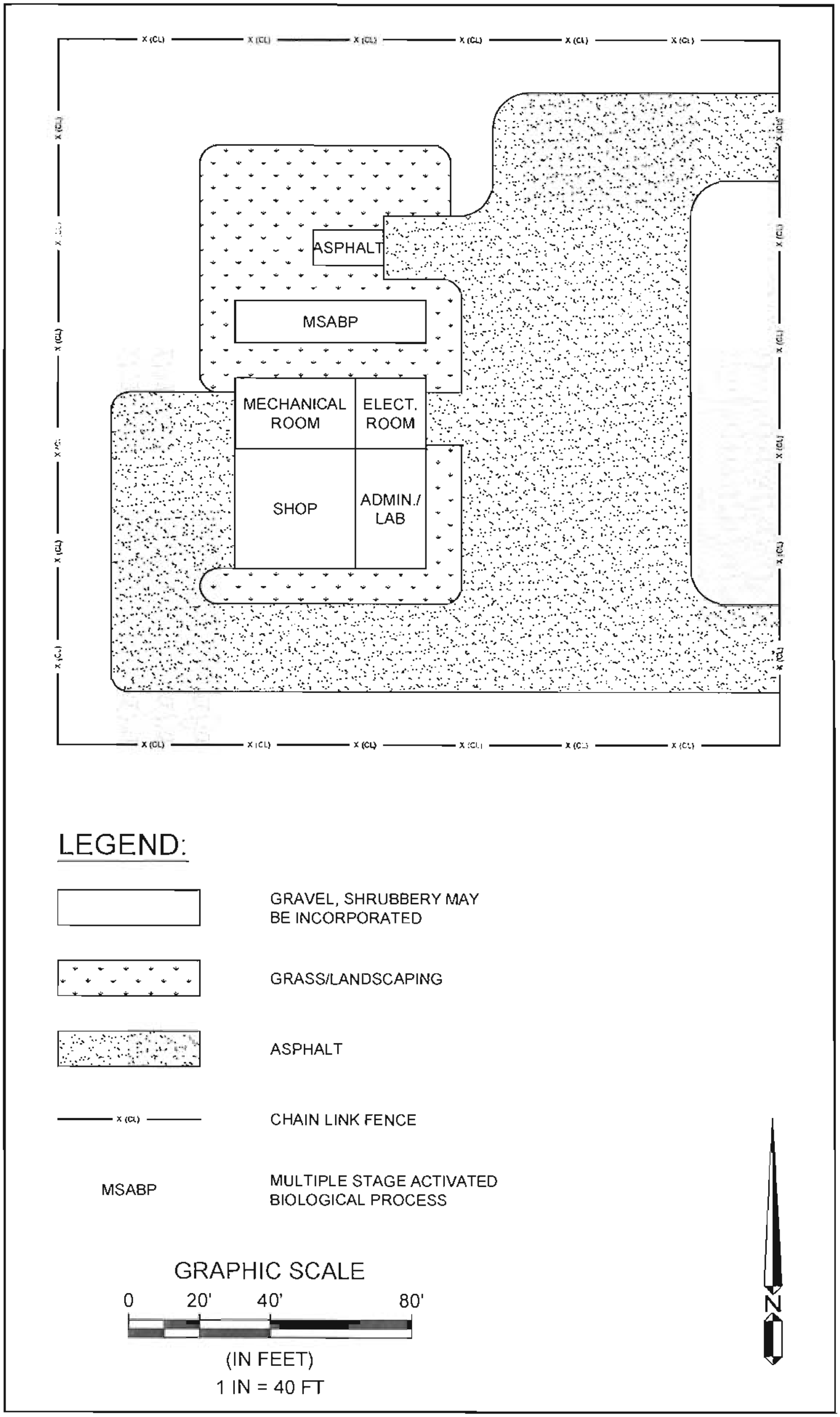

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Figure 3-4
Wastewater Treatment Plant Layout

RECYCLED WATER DISTRIBUTION AND STORAGE

The purpose of recycling is twofold; to supplement the use of groundwater in irrigation, thus conserving the potable water supply (and reduce groundwater pumping demand), and secondly to beneficially reuse the effluent in a manner that avoids creating a point discharge to a known waterway.

In order to manage the entire annual effluent, a comprehensive plan for reuse, storage, and distribution becomes necessary. In the southwestern United States, the most critical element of a comprehensive plan is formulating a sound storage system that addresses daily, monthly and seasonal storage requirements.

The first decision is to make the storage a joint use process; a storage facility that can allow water to be withdrawn without upsetting the biology and secondly a facility that can maintain a stable, balanced biological system of clean water, microorganisms for sustaining an aquatic food chain, and a water chemistry that does not accumulate inorganic salts.

From a practical perspective, this means the storage must be deep (more than 20 feet deep), cold (allow a high dissolved oxygen concentration), and conducive to plant growth (a soil-based bottom). Inevitably, some change will occur over time and this means that some maintenance will become necessary. However, that maintenance level of effort is minimized when the water is allowed to develop a balanced biological system of plants and aquatic animals.

Determining the size of the storage is based on two principals; a pre-determined depth for successful operation and a volume that allows the required seasonal storage in addition to a permanent volume for sustainability of the pond itself. The seasonal storage requirement is a mathematically-determined volume that represents the volume that would be accumulated during the colder months of the year when demand is diminished and the effluent continues to supply the pond on a regular basis.

Recycled Water Irrigation System

The design of a recycled water irrigation system shall provide adequate distribution to apply the water based on a combination of water duty factor (acre-feet per acre per year, or simply feet per year) and when using recycled water, an agronomic application must be considered based on specific vegetation assimilation rates. For example, duty factors can vary from less than one foot per year up to seven feet per year for certain tree grown nut crops (i.e. pecans). It is understood that the project site will use recycled water for both an existing vineyard and for more common grass and shrubbery type landscaping. These types of irrigation requirements can vary from less than one foot per year to approximately three feet per year, depending on the system efficiency. A summary of the expected irrigation supply of recycled water is presented in Table 3-9.

Table 3-9. Monthly Water Balance

Month	WWTP	Pond				Pond	Vineyard	NET				
	Effluent, Af-a	Rainfall, inches -b	Rainfall, AF	Supply, AF	Evap, Inches - c	Evap., AF	Irrigation, AF	Surplus, AF	Potable Supple-ment	Storage Volume	Vol. - Yr. N+1	Vol. - Yr. N+2
January	4.28	3.78	0.32	4.60	1.68	0.14	0	4.46	0.00	4.46	16.98	16.98
February	3.87	4.18	0.35	4.22	2.21	0.18	0	4.03	0.00	8.49	21.02	21.01
March	4.28	3.07	0.26	4.54	3.52	0.29	20	-15.75	7.26	0.00	5.26	5.26
April	4.14	1.28	0.11	4.25	5.01	0.42	30	-26.17	26.17	0.00	0.00	0.00
May	4.28	0.30	0.03	4.31	5.78	0.48	30	-26.17	26.18	0.00	0.00	0.00
June	4.14	0.09	0.01	4.15	6.18	0.52	40	-36.36	36.36	0.00	0.00	0.00
July	4.28	0.03	0.00	4.29	6.40	0.53	40	-36.25	36.25	0.00	0.00	0.00
August	4.28	0.06	0.01	4.29	6.01	0.50	40	-36.21	36.21	0.00	0.00	0.00
September	4.14	0.25	0.02	4.17	4.46	0.37	25	-21.21	21.21	0.00	0.00	0.00
October	4.28	0.50	0.04	4.32	3.57	0.30	0	4.03	0.00	4.03	4.03	4.03
November	4.14	1.76	0.15	4.29	2.19	0.18	0	4.11	0.00	8.14	8.14	8.14
December	4.28	2.91	0.24	4.53	1.67	0.14	0	4.39	0.00	12.53	12.52	12.52
Total	50.42	18.21	1.52	51.94	48.68	4.06	225.00	-177.11	189.64	---	---	---

A - Based on the plant capacity and 10 percent loss in process and in internal consumption
B - Monthly averages from 1931 through 2003
C - Data from C.I.M.I.S.; based on the evaporative losses from storage pond

Daily Storage Requirements. Daily storage is not a factor for the system. The seasonal storage volume will far exceed the need for daily volume. Daily/diurnal storage volume will be accounted for in the 20,000 gallon equalization storage tank within the plant process train.

Water Balance and Seasonal Storage Requirements. Seasonal storage is required to account for the annual variations between effluent supply, potable use for irrigation, irrigation demand, evaporation, and evapo-transpiration. The scenarios can be summarized as follows:

- In the summer, demand exceeds supply. The water from the plant will be supplied directly to a storage pond on-site where the water level will vary.
- In the winter, demand will infrequently exceed supply however, most of the time supply will exceed demand.
- Quantitatively, a month by month assessment of the supply and demand, accounting for vineyard crop irrigation, other landscape irrigation, and the effects of average rainfall and evaporation from the storage pond.
- For an analysis of storage requirements and to prepare a mass balance of treatment plant effluent, rainfall (on the vineyard area), evaporation from the storage pond surface, and irrigation for the vineyard, these assumptions were used:

➢ The required total duty factor for the vineyard, in addition to rainfall, is 0.75 feet per year which results in 225 AF/year on a 300-acre vineyard

➢ The monthly allocation of the presumed 225 AF/year will be distributed from March through September with the emphasis on the summer months

➢ The rainfall will be only accounted for in the mass balance in the amount of rainfall that contributes directly to the storage pond

➢ Evaporation from the storage pond will also be accounted for the in the mass balance

➢ The supply of available non-potable water will be the sum of effluent plus rainfall (pond only) minus evaporation (pond only)

The data presentation in Table 3-9 illustrates several key results of the analysis:

- The net annual balance is a deficit (the total irrigation for the vineyard, at 225 AF/year exceeds the production of effluent and the net loss of evaporation from rainfall incident to the storage pond)
- The precise net balance will vary slightly depending on how large the surface are for the pond is chosen to be
- The duty factor of 0.75 Feet per year for irrigation was chosen neglecting the rainfall that occurs during the winter months and is directly applicable to the vineyard; if this assumption is altered and the rainfall is accounted for, and then the effluent could be available for irrigation of other areas. For this to occur, rainfall harvesting and capture would be required
- Storage volume would merely be 5 AF

- Each month the vineyard requires irrigation, most of the water would come from sources other than effluent

RECYCLED WATER QUALITY

The chemical make-up of water used for irrigation purposes is very important in ensuring maintenance of the quality of the landscaping and crops being irrigated. Key water quality parameters from an agronomic aspect are described in this section.

Sodium, Sodium Adsorption Ratio (SAR), and Adjusted SAR (aSAR)

Sodium is not an essential plant nutrient, yet it is always present in the irrigation waters and it can become the most important single constituent in the water if it exceeds tolerable concentrations. Acceptable levels of sodium are judged in proportion to divalent cations, principally calcium and magnesium in the water. The criteria commonly used to determine the potential effect of this critical element are sodium adsorption ratio (SAR) and adjusted SAR. Adjusted SAR accounts for the presence of carbonates and bicarbonates in the irrigation water, because of their tendency to precipitate calcium from the solution, aggravating the effect of sodium. The most widely accepted method of adjusting the SAR is the so-called Cax method, wherein the ratio of bicarbonate to calcium is used to determine the adjustment factor. Long-term use of irrigation water with high SAR can result in gradual elevation of soil solution SAR and deleterious effects on soil structure, leading to progressively reduced soil permeability, water-logging, and anaerobic (oxygen deficient) conditions in the root zone.

Calcium

Calcium is essential for all plant life. It is almost always available in abundance in the soil, as far as plant nutrition requirements are concerned. However, calcium also plays another important role in the soil solution. It can balance the adverse impacts of sodium on soil physical structure and the soil's ability to transport water. Native soils in California are generally rich in calcium compounds.

Chloride

Chloride is also essential to plant life, but sufficient in extremely low concentrations. This element is almost never deficient in the environment. Excessive concentrations of chloride (beyond 140 mg/L) can be harmful due to toxicity to the plant tissues.

Dissolved Solids, Specific Conductance

Total dissolved solids (TDS) is a direct measure of salinity in the irrigation water. An indirect index of salinity is the electrical conductance (EC, inverse of electrical resistance) of the water sample. Elevated TDS concentrations of irrigation water can cause deleterious effects to plant growth and to soil conditions and characteristics.

Boron

Boron is an essential nutrient for plant germination and growth. However, beyond a narrow band of concentrations (0.1 to 5 mg/L), it becomes toxic to plant life. Boron is not highly mobile and cannot be easily flushed out of the root zone; however, boron can be taken up by the plant roots to the leaf tips. Thus, for turf grasses, where frequent mowing generally occurs, removal of boron can be effective

Chumash Camp 4 Project Recycled Water Quality

Projected irrigation water quality for the Chumash Camp 4 Project cannot be provided, since there is not an existing WWTP from which to take samples. In addition, Boron was not analyzed as part of the water quality results presented in Table 2-6. However, based on the total dissolved solids (TDS) concentration of the local water wells, mineral quality of the recycled water is anticipated to be 700 to 800 mg/L. Table 3-10 provides a general summary of the various water quality parameters relative to their degree of restriction on use for irrigation.

Table 3-10. Guidelines for Irrigation Water Quality Impacts

Parameter	Degree of Restriction on Use		
	None	Slight to Moderate	Severe
Boron, mg/L	<0.7	0.7-1.0	>3.0
Chloride, mg/L	<140	140-350	>350
TDS, mg/L	<450	450-2,000	>2,000
EC, mmhos/cm	<0.7	0.7-3.0	>3.0
SAR = 0-3, and EC (mmhos) =	>0.7	0.7-0.2	>0.2
SAR = 3-6, and EC (mmhos) =	>1.2	1.2-0.3	<0.3
SAR = 6-12, and EC (mmhos) =	>1.9	1.9-0.5	<0.5
SAR = 12-20, and EC (mmhos) =	>2.9	2.9-1.3	<1.3
SAR = 20-40, and EC (mmhos) =	>5.0	5.0-2.9	<2.9

Based on the anticipated water quality of the Chumash Camp 4 recycled water, the recycled water is generally suitable for landscape and irrigation uses for the Project. Based on the water balance, during the warmer season, potable water will also be supplementing the recycled water. The anticipated blend of potable water and recycled water for irrigation use should maintain the mineral quality at a desirable value, in the range of 600 to 700 mg/L. Irrigation with this recycled water is expected to yield good results.

WASTEWATER COLLECTION, TREATMENT, AND DISPOSAL SUMMARY

There are two alternative possible collection systems, depending on whether the decision is made to create 143 five-acre residential lots or to create 143 one-acre residential lots. The result of that decision will affect the layout and dimensions of the collection system. The collection system, regardless of which of these two choices is made, will be greatly affected by the dendritic topography. The topography will cause the landforms to be partially re-shaped in order to control the costs of both roadways and of sewer collection pipelines. There will be pumping stations regardless of the choice made. The number of pumping stations will be determined both by the choice of the two alternatives discussed in this section and in final grading plans which are not part of this section's discussion.

The treatment system will occupy a relatively small footprint (less than an acre) allowing for the treatment process units and a small building to house both some mechanical equipment, an electrical and control room, and an operators station for conducting routine administrative duties and some laboratory testing. The photograph at right shows an example of a small MSABP treatment process module.

The example module illustrates the position of an influent screening unit (to the right and above the module) and the blowers (to the left and on grade). The process can be either above grade, as shown, or below grade. Not shown in this picture are the other process units such as the clarifier, sludge holding, and any tertiary of disinfection.

The effluent storage proposed is a deeply excavated basin that would allow the water to draw and fill without ever completely evacuating the basin. The concept is to fill the basin during cooler, winter months when the vineyard lies dormant and un-irrigated. The spring growth in the vineyard would signal the start of irrigation and would use the stored effluent from the pond as needed and as available. The 50,000 gpd treatment plant does not generate enough effluent and thus the pond is not adequate to meet the needs of a 300-acre vineyard. Potable water will be an important source of supply once the irrigation begins. Thus, it is proposed that a potable water make-up pipeline with air-gap separation, be provided to fill and supplement the storage reservoir when irrigation demand exceeds supply and stored irrigation water supply. During the summer months, it is important for the pond to retain at least five feet of depth for the water to sustain a biological balance in aquatic plant and animal life. If the pond is NOT sustained biologically, it will eventually become more of a nuisance than a benefit.

The water would be pumped from the pond, through a filtered drip system that operates on a schedule controlled by the vineyard operator using the knowledge and understanding required of a viticulturist. An important fact to remember about recycling water is that as soon as the effluent is produced and stored in a downstream system, the effects of nature begin to modify its chemistry and biology – and that means the effort to control the water's quality does not end until it has been applied to the final use.

Wastewater Operator Considerations

A tertiary wastewater facility of this size and complexity will require a Grade III operator, similar to that of the wastewater facility currently serving the Chumash Reservation in Santa Ynez. It is envisioned that a new WWTP for this Project would be operated under the same arrangements as the Chumash Reservation WWTP, being operated under contract by a qualified public agency operator (Santa Ynez CSD) or equivalent.

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APPENDIX D

GRADING AND DRAINAGE FEASIBILITY ANALYSIS

GRADING AND DRAINAGE FEASIBILITY ANALYSIS

FOR CHUMASH CAMP 4 PROPERTY FEE-TO-TRUST APPLICATION ENVIRONMENTAL ASSESSMENT

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CHAPTER 1

INTRODUCTION

The Santa Ynez Band of Chumash Indians (Tribe) proposes a project to develop approximately 1,433 acres of land as part of a trust land acquisition. This grading and drainage technical feasibility study is in support of the Environmental Assessment (EA) prepared in support of the Tribe's application for the Bureau of Indian Affairs (BIA) to take the 1,433 acre Project site into Trust. The EA is being prepared by Analytical Environmental Services (AES), Sacramento, California. The project alternatives evaluated in this EA consist of:

> **Alternative A** (Proposed Project) – 1,433± acre trust land acquisition and development of 143 five-acre residential lots for Tribal members. The remaining land uses would entail 300 acres of vineyards (existing), 206 acres of open space/recreational, 131 acres of riparian corridor and oak woodland conservation, and 3 acres of Special Purpose Zone- Utilities;
>
> **Alternative B** (Reduced Development Intensity Alternative) – Identical trust land acquisition and development of 143 one-acre residential lots for Tribal members. The remaining land uses would entail 775 acres of open space/recreational, 30 acres of Tribal Government/Development (including 80,000 square feet of Tribal facilities), and the same acreages of vineyard, riparian corridor and oak woodland conservation, and utilities land uses as proposed under Alternative A; and
>
> **Alternative C** (No Action Alternative) – No federal action or proposed development. The "No Action" alternative is not discussed further in this report, as no technical evaluation is warranted for this alternative.

A summary of project components under the two development alternatives (A and B) is provided in Table 1-1. Full details of the Project Descriptions and alternatives can be found in the EA prepared by AES for this Project.

ALTERNATIVE A – PROPOSED PROJECT

Alternative A consists of two main components: (1) the placement of 5 parcels totaling approximately 1,433± acres into Federal trust status for the Tribe; and (2) the development of 143 five-acre residential plots with the remaining acreage dedicated to agriculture, open space/recreational, conservation of riparian corridors and oak woodland, and development of utilities. Development of the site would include domestic water connections, a wastewater treatment plant (WWTP), and supporting roads and infrastructure. Alternative A is described in more detail in the following sections.

TABLE 1-1. SUMMARY OF PROJECT DEVELOPMENT ALTERNATIVES[a]

Project Components	Alternative	
	A	B
Land Taken into Trust	1,433± acres	1,433± acres
Residential Development	143 five-acre lots	143 one-acre lots
Designated Tribal Land Uses	300 acres of Agriculture (existing), 206 acres of Open Space/Recreational – General/Trails, 98 acres of Resource Management Zone – Riparian Corridors, 33 acres of Resource Management Zone – Oak Woodland, and 3 acres of Special Purpose Zone- Utilities	300 acres of Agriculture (existing), 755 acres of Open Space/Recreational – General/Trails, and 30 acres of Special Purpose Zone -Tribal Government/Development 98 acres of Resource Management Zone – Riparian Corridors, 33 acres of Resource Management Zone – Oak Woodland, and 3 acres of Special Purpose Zone- Utilities
Water Source	Groundwater	Groundwater
Wastewater Treatment	Onsite WWTP	Onsite WWTP

[a]Source: AES, 2012

Proposed Residential Development

Under Alternative A, the Tribe would develop residential plots on Parcels 2, 3 and 4 of the project site. The proposed housing would consist of up to 143 five-acre residential plots with construction of single-family detached houses of varying sizes ranging from 3,000 to 5,000 square feet. Development on each five-acre plot would include approximately 0.35 acres of disturbance for building pad development, driveway construction, utility installations, and landscaping. Additionally, new domestic water connections, improved access roads, driveways, a new wastewater treatment plant, and utilities would also be constructed to support the residences. A site plan identifying the proposed residential plots is shown in Figure 1-1.

Designated Tribal Land Uses

In addition to the proposed residential development, the Tribe would designate the following land uses on the subject property:

Agricultural

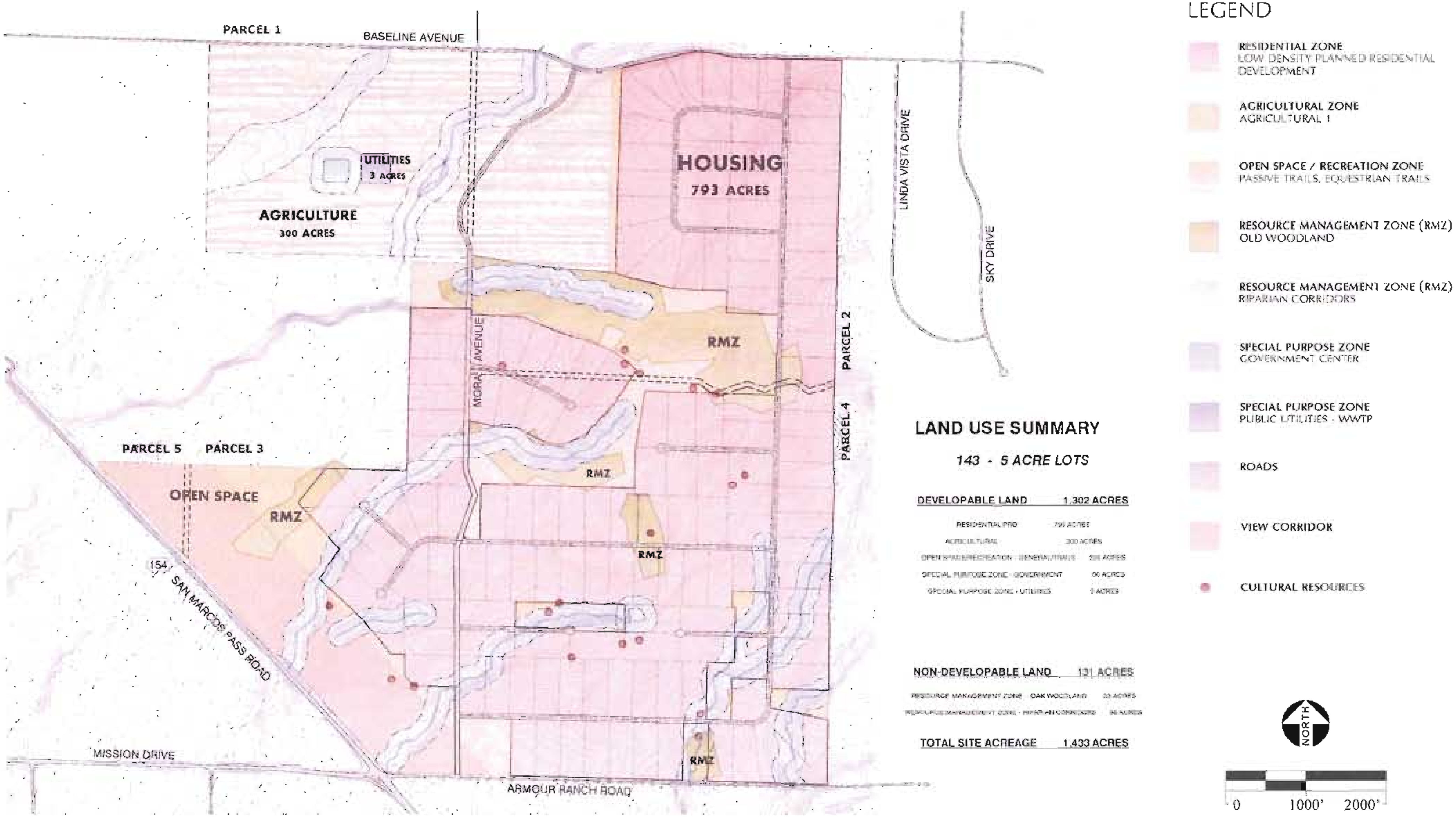
The Tribe would continue operating an existing 240-acre vineyard located on Parcel 1 and a portion of Parcel 2 (refer to Figure 1-1). An additional 60 acres would be designated for agricultural use on Parcel 2 to allow for expansion of the existing vineyard operation. The vineyard is currently in operation and includes a storage reservoir, existing access roadways, and a processing/shipping area. No winemaking facilities are currently located on the project site, and there are no plans to develop a winery on the project site. Various structures are located within the agricultural lands including an old abandoned house and operational horse stables.

Open Space/Recreational – General/Trails

Approximately 206 acres of the project site would be designated as open space and recreation. Passive trails would be designated for pedestrian use and equestrian trails would be developed to provide recreation for residents and guests in coordination with the horse stables located on the existing agricultural lands. The open space/recreational area adjacent to State Route (SR) 154 would be utilized as a viewshed protection zone. No residential development is planned within the zone adjacent to SR-154 to protect the viewshed of the scenic highway.

Resource Management Zone – Riparian Corridors

In accordance with the Tribe's commitment to conservation, 98 acres of riparian corridors would be protected from development and, where necessary, enhanced in accordance with Tribal ordinances. These riparian corridors would be protected/enhanced to ensure adequate stormwater drainage is provided within the project site and to reduce the potential impact from development of the residential plots. These areas would be protected even where located on a specified residential plot (Figure 1-1). A qualified biologist would develop a Riparian Corridor Improvement Plan (Riparian Plan) for these areas. The Riparian Plan would provide for re-establishment of native vegetation in areas where invasive plant species have overwhelmed native vegetation. Where possible, the Riparian Plan will incorporate planting of California Live Oak trees to stabilize stream banks, provide canopy and shading, and ensure the sustainable future of the California Live Oak on the Reservation.



SOURCE: SUMMIT PROJECT MANAGEMENT, 2011; AES 2011

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CHUMASH CAMP 4 FEE-TO-TRUST

Figure 1-1
Fee-To-Trust Land Use Summary - Alternative A

Resource Management Zone – Oak Woodland

In accordance with Tribal ordinances, approximately 33 acres of oak woodland would be protected from development. Within the oak woodland management zone cutting, trimming, and pruning of the oaks would be monitored and controlled, and ground disturbance would be limited within the dripline of any oak tree within the zone.

Roadways

Existing access roads would be improved and new roads constructed to provide access to the proposed residences and existing agricultural operations. Figure 1-1 shows the internal roadway structure that would be developed to provide access to the proposed residential parcels. The rural roadways would be 24-feet wide two-lane asphalt travel ways, with gravel shoulders that would be constructed using standards comparable to Santa Barbara County requirements. Signage would be provided for the new roadways. Crossing of potential Waters of the U.S. would be limited to the extent feasible; however, span bridges would be utilized where necessary. Access and egress from the project site would be provided from one existing easement onto Armour Ranch Road and two existing easements onto Baseline Avenue.

Grading and Drainage

Construction would involve grading and excavation for building pads and roadways. Cut and fill would be balanced to the extent feasible; however, some structural grade fill may be imported to meet engineering requirements. Stormwater runoff generated from development of the residential units and associated roadways would be conveyed by a combination of open channels, storm drains, and culverts. The drainage plan includes the use of several features designed to reduce surface runoff volumes and filter surface runoff prior to release into the existing on-site natural drainage channels. Runoff from the project site would be directed into vegetated swales, which would serve as energy dissipaters and filtering mechanisms for runoff generated on-site prior to release into the on-site drainage channels. Stormwater would be retained on-site within detention basins prior to discharging off the subject property at rates equivalent to pre-development conditions.

ALTERNATIVE B – REDUCED DEVELOPMENT INTENSITY

Alternative B would involve placing the 1,433-acre Camp 4 site into federal trust status for the benefit of the Tribe; however, under Alternative B, the residential parcel lot sizes would be reduced from 5 acres to 1 acre, decreasing the residential acreage from approximately 793± acres to approximately 194± acres. Development on each one-acre plot would include approximately 0.25 acres of disturbance for building pad development, driveway construction, utility installations, and landscaping. Additionally, new domestic water connections, improved access roads, driveways, a new WWTP, and utilities would also be constructed to support the residences. A site plan identifying the proposed residential plots is shown in Figure 1-2. In addition, approximately 30 acres of the project site would be reserved for approximately 80,000 square feet of Tribal government/ development space. The Tribal facilities would include development of a banquet/exhibition hall designed with an agriculture/equestrian theme, associated administrative spaces, a tribal office complex, and a tribal retreat including ceremony room and gymnasium. A breakdown of the components of the proposed Tribal facilities is displayed in Table 1-2. It is anticipated that the Tribal development would include office space for up to 75 Tribal employees and result in up to 100 events per year being held at the facilities. Approximately 400 parking spaces would be provided for the facilities.

The remaining land uses and project components under Alternative B are identical to that proposed under Alternative A including: the construction of 143 residences ranging from 3,000 to 5,000 square feet, domestic water connections, and a WWTP. Public services, water supply, wastewater treatment and disposal, and roadway improvements would all be provided for Alternative B as described for Alternative A.

Table 1-2. Tribal Community Development – Onsite Facilities

Usage	Square Footage (sf)
Community Center	34,280
Community Center Administrative Support	3,110
Tribal Office Complex	12,025
Tribal Retreat	11,480
Circulation (Misc. at 30%)	18,269
Total Development	**79,164**

Protective Measures and Best Management Practices

Protective measures and best management practices (BMPs) pertinent to this grading and drainage feasibility study have been incorporated into the project design to eliminate or substantially reduce potential environmental impacts from the Proposed Project. These measures and BMPs are discussed below.

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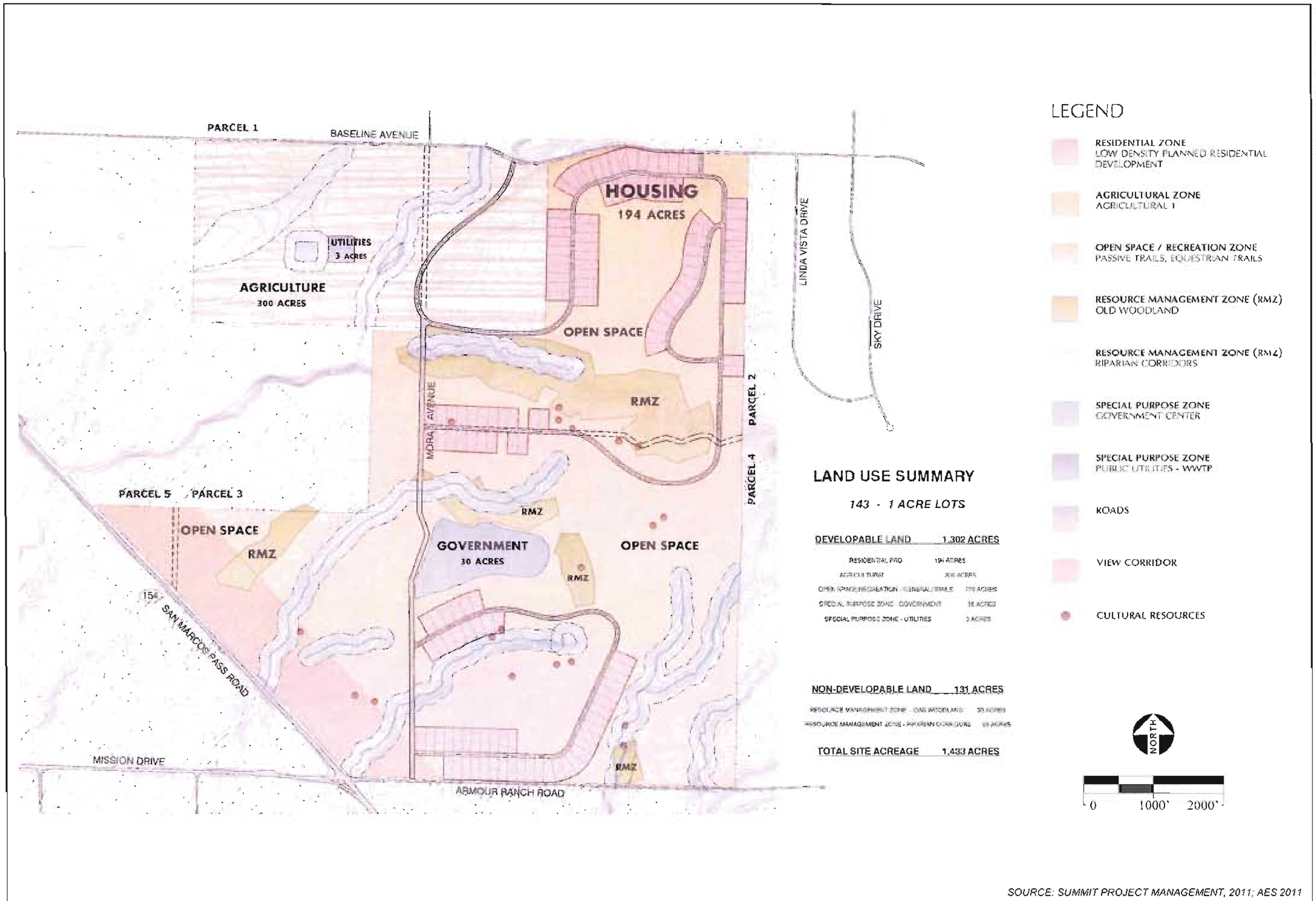


CHUMASH CAMP 4 FEE-TO-TRUST

Figure 1-2
Fee-To-Trust Land Use Summary - Alternative B

Land Resources

All structures would meet the Tribe's building ordinance, which meets or exceeds Uniform Building Code (UBC) requirements.

Water Resources Related to Stormwater

- Areas outside of buildings and roads would be kept as permeable surfaces to the extent practicable; either as vegetation or high infiltration cover, such as mulch, gravel, or turf block. Pedestrian pathways would use a permeable surface where possible, such as crushed aggregate or stone with sufficient permeable joints (areas between stone or brick if used).
- Existing vegetation would be retained where possible.
- Roof downspouts would be directed to splash blocks and not to underground storm drain systems.
- Runoff from rooftops and other impervious areas would be directed to vegetated areas to help treat and infiltrate stormwater prior to leaving the site.
- Runoff from roadways would filter though rock-lined swales and bio-swales.
- Permanent energy dissipaters would be included for drainage outlets.
- Rock rip-rap energy dissipaters would be installed at the point of release of concentrated flow.

CHAPTER 2

GRADING

This chapter will focus on the Grading for the Chumash Camp 4 Project (Project). Based on an area of disturbance of 0.35 acres (per lot) for Alternative A and 0.25 acres for Alternative B, there will not be extensive grading to create the building pads as compared to the amount of grading that will be required to meet the design criteria for the road network. Contained in this Chapter is an outline of the design criteria implemented for the analysis of the interior road network for the Project, the potential impacts of the grading on the site, locations of crossings, and potential mitigations for limiting the amount of grading required for the Project.

Design Criteria

The layout of the road network for Alternatives A and B are shown in Figures 2-1 and 2-2, respectively. The following design criteria were used:

Design Standards:

- A Policy on Geometric Design of Highways and Streets – 6th Ed (AASHTO 2011)
- Private Road and Driveway Standards Rev 1/25/2010 (Santa Barbara County Fire Department)
- Right of Way Width = 60'
- Total Roadway Width = 36' (2 – 12' paved travel lanes, 2 – 6' Class II aggregate base shoulders)
- Curbs will be utilized for drainage on vertical grades greater than 8%
- Maximum Cut Slope = 2.5:1
- Maximum Fill Slope = 2:1
- Maximum Vertical Grade = 15%
- Minimum Horizontal Curve Radius = 40 feet
- Road Classification: Local Rural Road (Mountainous)
- Average Daily Traffic (ADT) = between 400 and 1500 ADT
- Design Speeds: Mora Avenue = 45mph; Cul-de-Sac (neighborhood) roads = 25 mph; remaining roads = 35 mph

GRADING DESIGN

Figures 2-1 and 2-2 depict the layout of the road network for Alternatives A and B respectively. The individual roads have been designated with a number or letter for the ease of reference throughout this document. Refer to Figures 2-1 and 2-2 for the locations of specific road names. The vertical profiles of the road network were determined using the design criteria above with a goal of minimizing the amount of grading required. However, given the existing topography, there are roads that will require significant cut and fill slopes.

The total amount of cut for Alternative A is 180,000 cubic yards (cy) and the total amount of fill is

190,000 cy. This results in the need for a net import of approximately 10,000 cy of material for Alternative A without considering shrinkage of the fill material once it is compacted. For Alternative B, the amount of cut is 75,000 cy and the total amount of fill is 160,000 cy. Therefore, Alternative B results in a projected net import of 85,000 cy, without considering shrinkage. Both Alternatives will require import, although the import for Alternative A is minimal. The estimated import quantity will be reduced by including the amount of asphalt concrete and aggregate base needed for the 24 foot wide road section and the Class II aggregate base shoulders. If additional import is needed, one source of the import could be the excavated material from the on-site drainage basins. These items can be adjusted to achieve a balanced site, once a preferred alternative is selected and the roadway structural section is finalized.

Table 2-1 presents a summary of the design speed, maximum cut and fill depth and width, and maximum vertical grade for the road network for Alternative A. This summary is based on implementation of the design criteria described earlier in this Chapter.

Table 2-1. Summary of Roadway Grading – Alternative A

Road Name	Design Speed(mph)	Maximum Depth of Cut(C) and Fill(F) (ft) (at centerline of Road)	Maximum Width of Cut(C) and Fill(F) (ft) (beyond the 60' ROW)	Maximum Vertical Grade
Road 1	45	17.5'(C)/17.5'(F)	50'(C)/21'(F)	8%
Road 2	35	21.5'(C)/20'(F)	61'(C)/45'(F)	14.4%
Road 3	25	11.5'(C)/27'(F)	32.5'(C)/46'(F)	14.4%
Road A	25	8.5'(C)/15.5'(F)	12'(C)/18.5'(F)	8%
Road B	25	5'(C)/11'(F)	Min (C)/13.5'(F)	9%
Road C	25	21.5'(C)/11'(F)	51'(C)/14'(F)	13%
Road D	20	8'(C)/23'(F)	Min (C)/40'(F)	14%
Road E	25	9.5'(C)/Min (F)	26'(C)/Min (F)	9.5%
Road F	25	6.5'(C)/9'(F)	18'(C)/5.5'(F)	5.6%

The depths of cut and fill at the centerline of the roads range from a minimum of 5' of cut to maximum of 21.5' of cut and a minimum of less than 5' of fill up to a maximum of 27' of fill. A fill slope of 2:1 was used to minimize the encroachment onto adjacent lots. If a flatter fill slope is utilized, the encroachment onto adjacent lots will be increased. Figure 2-1 depicts the locations of the cut and fill outside the 60 foot right of way limits along the road network for Alternative A.

Table 2-2 presents a summary of the design speed, maximum cut and fill depth and width, and maximum vertical grade for the road network for Alternative B. This summary is based on implementation of the design criteria described earlier in this Chapter.

Table 2-2. Summary of Roadway Grading – Alternative B

Road Name	Design Speed(mph)	Maximum Depth of Cut(C) and Fill(F) (ft) (at centerline of Road)	Maximum Width of Cut(C) and Fill(F) (ft) (beyond the 60' ROW)	Maximum Vertical Grade
Road 1	45	17.5'(C)/17.5'(F)	51'(C)/21'(F)	8%
Road 2	25	12'(C)/15'(F)	35'(C)/30'(F)	3%
Road 3	35	21'(C)/24'(F)	90'(C)/80'(F)	14.6%
Road 4	25	Min(C)/8'(F)	Min(C)/15'(F)	4%
Road 5	25	5'(C)/23'(F)	Min (C)/35'(F)	9%

The vertical and horizontal alignment of Road 1 does not change between Alternatives A and B. With the current horizontal alignment of Road 3 (Alternative B), it has the largest amounts of cut and fill due to the existing vertical changes in the terrain. Figure 2-2 visually depicts the locations of the cut and fill slopes outside of the 60 foot right of way for Alternative B.

WATER COURSE CROSSINGS

It is anticipated that Alternative A could have approximately 21 water course crossings. See Figure 2-1 for the approximate locations of the water course crossings. The crossings would range from multiple 18" diameter concrete culverts to larger prefabricated arch plate culverts to prefabricated bridge structures. The type and size of the crossing structures is dependent on the roadway geometrics and the hydraulics of the water courses. The crossings for smaller water courses would be designed based on storm runoff flows induced by a 25 year rain event; while the crossings for the larger water courses where an arch plate culvert or bridge structure would be needed would be designed based on storm runoff flows induced by a 100 year rain event with 2' of freeboard (clearance from highest anticipated flood stage level to bottom of structure).

It is anticipated that Alternative B will require approximately 13 crossings. See Figure 2-2 for approximate locations of the water course crossings. The crossing for Alternative B would be designed using the same criteria outlined above for Alternative A.

GRADING RECOMMENDATIONS

The limits of anticipated grading based on the current road network layout and design criteria, are depicted in Figures 2-1 and 2-2. The following recommendations could be considered that would reduce some of the amount of grading.

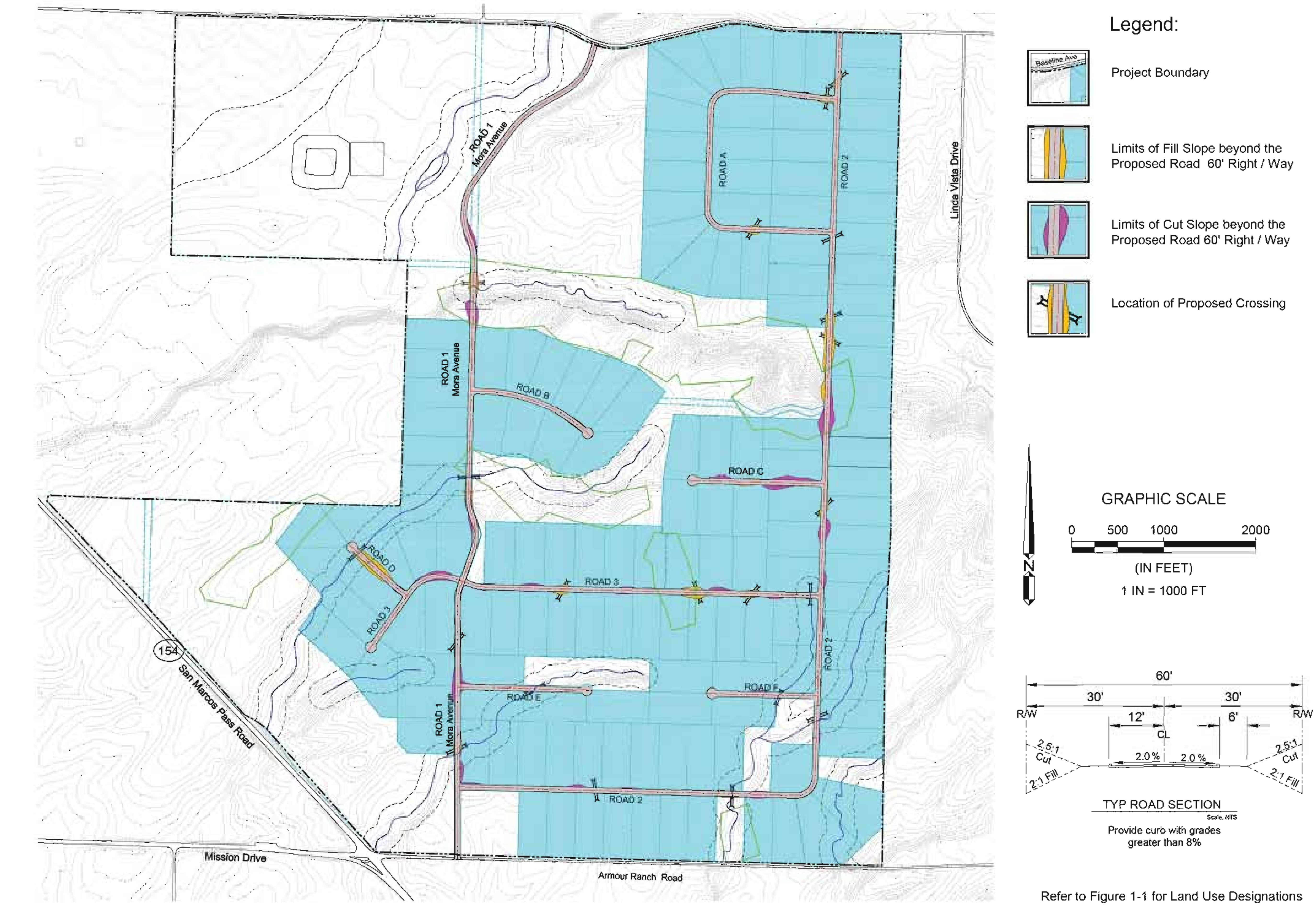
For Roads 2 and 3 of Alternative A, the design speeds could be reduced, thus resulting in a reduced amount of grading to be done. However, the reduction in the grading limits may be minimal. The most likely way to reduce the amount of cut and fill for Alternative A's Roads 2 and 3 would be the installation of retaining walls along with some cut and fill slopes. The goal with the walls would be to minimize the impact of the slopes, but not create a tunnel atmosphere. Architectural treatments could be added to the walls or the walls could be stepped to minimize the visual impacts. For Alternative A's Road C, the grading impacts could be lessened by realigning the road to follow the existing terrain.

The alignment for Road 1 does not change between Alternatives A and B. In order to reduce the amount of cut and fill along Road 1, one option for Alternative A would be to add traffic calming devices such as bulb outs or chacanes in the southern most portion of Road 1, from Armour Ranch Road to Road 3, as it is adjacent to residential lots. This could reduce the speeds on the roadway and therefore would reduce the grading impacts slightly. The largest amount of fill along Road 1 is between Baseline Ave and Road B for Alternative A. This fill could be minimized by spanning the drainage area with a bridge and/or realigning Road 1 to minimize the amount of fill. A bridge still may be required, but the span could be shorter.

One recommendation would be to realign Road 3 to more closely follow the existing terrain. This would not completely eliminate the need for large cut and fill slopes, but it could reduce the amount of grading needed. The horizontal alignment of Road 2 could be revised to follow the natural terrain more closely to reduce the amount of cut needed along this road. A combination of retaining walls and grading could also be used to minimize the grading impacts as well.

The recommendations for Road 1 for Alternative B are similar to those identified above for Alternative A's Road 1. Traffic calming devices could be installed along Road 1 from Armour Ranch Road to the Government Center. This could reduce the speeds on the roadway and therefore would reduce the grading impacts slightly. The largest amount of fill required for Road 1 in Alternative B is between Baseline Ave and Road 3 for Alternative B (See Figure 2-2). This amount of fill could be reduced by spanning the drainage area with a bridge and/or realigning Road 1 to minimize the amount of fill. A bridge still may be required, but the span could be shorter.

The current proposed road network of both Alternative A and B will require extensive cut and fill slopes to meet general road design criteria. With some realignments of roads, the addition of retaining walls, and the reduction of speeds through the installation of traffic calming devices, the grading impacts could be reduced.



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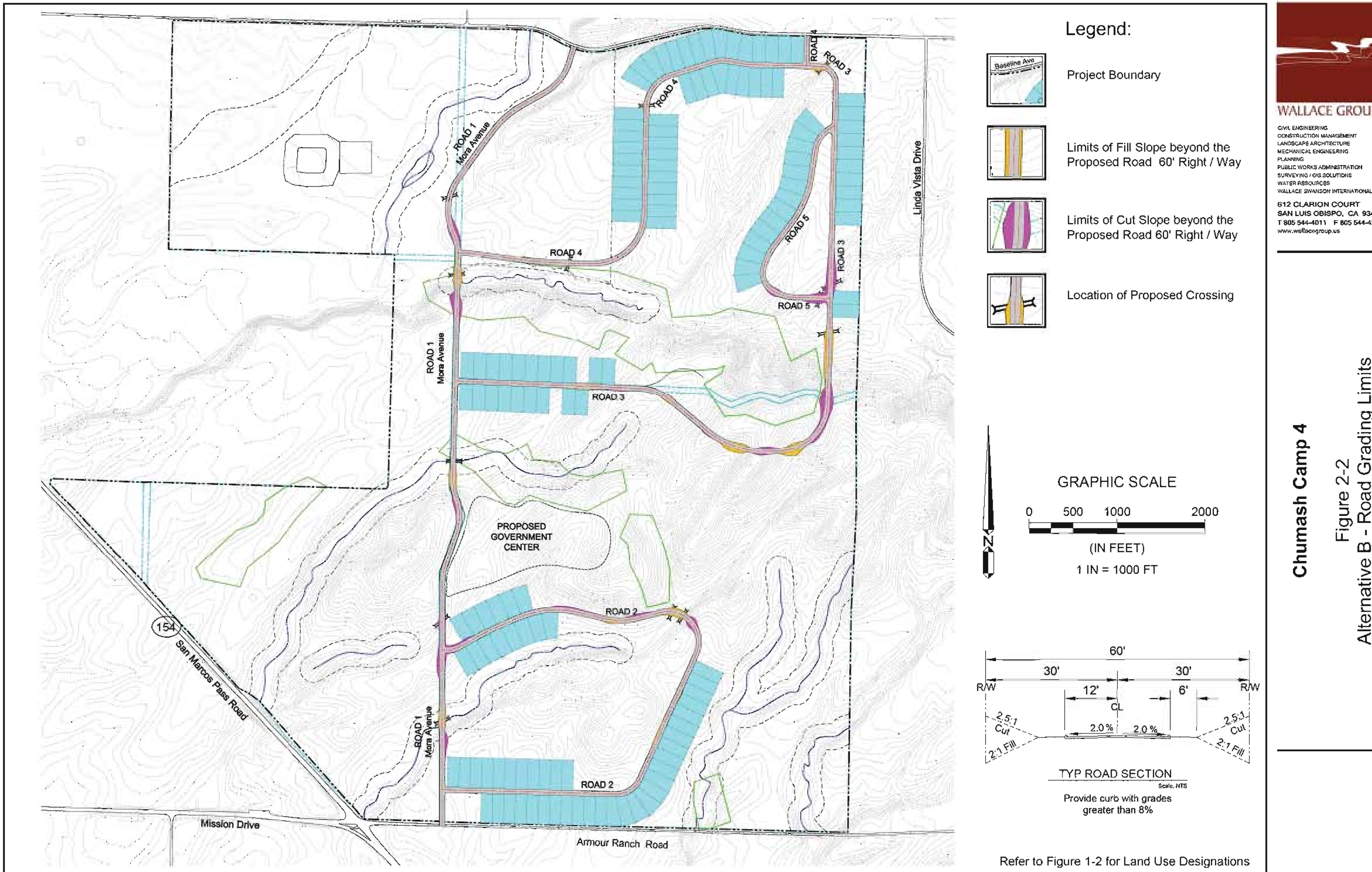
Chumash Camp 4

Figure 2-1
Alternative A - Road Grading Limits



Chumash Camp 4

Figure 2-2
Alternative B - Road Grading Limits

CHAPTER 3

DRAINAGE

This chapter describes the existing hydrology and hydraulics for the Chumash Camp 4 Project (Project) as well as hydrology and hydraulics for Alternatives A and B. The hydrologic analysis forms the basis for assessing drainage features, Low Impact Development (LID) features, as well as overall drainage constraints.

WATERSHED

The terrain of the Chumash Camp 4 Project is generally comprised of rolling hills with average channel slopes ranging from 1% to 4.5%. The project site is largely unimproved, and includes approximately 256 acres of vineyard. The topography delineates characteristics of concentrated flows from watersheds less than 300 acres in size. The flows form tributaries to the east fork of Sanja de Cota Creek. The soils in 95% of the project area are mapped as SCS type D soils. Type D soils are identified as having very slow infiltration rates and high runoff potential. The remaining 5% of the project has been mapped as SCS soil type B. Type B soils have moderate infiltration rates, and are found in the area of the vineyards. Approximately 60% of the site has a K factor of 0.32, indicating erodible soils. The cut of the existing channels are indicative of the erodability of the soils.

The project has been divided into seven sub-watersheds, as shown in Figure 3-1. Based on this exhibit, the total watershed contributory to the project is 5,924 acres (9.25 square miles). Watersheds A and B have large upstream areas that contribute runoff to the site. Watershed A only affects the vineyard, whereas Watershed B also affects the northern portion of the development project. Both watersheds A and B discharge onto adjacent private properties to the north/northwest of the Project area. Sub-area C flows towards a culvert under San Marcos Pass Road. Sub-areas D, E and F drain towards culverts under Armour Ranch Road. Post construction conditions should match pre-construction conditions at all points of off-site discharge to not adversely affect adjacent private property owners or public right of way.

FLOOD ZONES

The Federal Emergency Management Agency (FEMA) has mapped flood zones within the project site. The applicable Flood Insurance Rate Maps (FIRM) are Community Panel Numbers 06083C0814F, 06083C0820F and 06083C1085F dated September 30, 2005. Portions of the site are shown to be situated within a mapped Zone A flood hazard area, as shown in figure 3-2. The flood zone is within the 256 acre vineyard area. FEMA does not have a detailed study of the area.

The new waste water treatment plant (WWTP) is planned for an area between two forks of the flood zone. During final design, the WWTP would be developed outside of the 100 year flood, or above the flood elevation. Road 1 in both Alternatives intersects the flood zone. With the current alignment, Road 1 will be developed above the floodplain with drainage improvements to prevent altering flood elevations or drainage pathways.

HYDROLOGIC METHODOLOGY

The peak flows were calculated for the development and upstream watersheds. Peak flows are necessary to size detention basins and road crossings. A hydrograph analysis using HydroCAD (version 9.10) was used to calculate peak flows and to determine pre and post- development runoff quantities for the project boundary. Input parameters are discussed in the following paragraphs.

LAND USE COEFFICIENTS

Rational coefficients and SCS curve numbers were weighted by percentage of land use tributary to the point of calculation. The SCS curve numbers are based on the soil type and land use identified from National Resource Conservation Service (NRCS) soil maps within the tributary area and developed from Table 2-2 of the SCS/NRCS TR-55 publication used by the HydroCAD program. An NRCS soil map for the project areas is provided in Figure 3-3. The NRCS soil groups exhibit the following general runoff characteristics:

- Group A – Low runoff potential when thoroughly wet
- Group B – Moderately low runoff potential when thoroughly wet
- Group C – Moderately high runoff potential when thoroughly wet
- Group D - High runoff potential when thoroughly wet

SCS Curve Numbers range from 80 to 98 for the studied watersheds during a storm event.

TIME OF CONCENTRATION

The time of concentration was determined by the nomograph provided in Figure 3 of the Santa Barbara County Flood Control and Water Conservation District, Standard Condition of Project Plan Approval, effective January , 2011. Discharge was calculated using the Districts "Program Rational-XL". Velocities were established using the Los Angeles County Flood Control District (LACFCD) Velocity-Discharge-Slope nomograph for natural mountain channels.

UNIT HYDROGRAPH METHOD

The HydroCAD program evaluates pre and post development flows, combines them when necessary and models the total volume of flow through the various drainage features to the point of discharge. Common input parameters were set similar to the Santa Barbara County Public Works Department Flood Control Water Agency memorandum dated January, 2011, with adjustments made to account for the large project size and existing watersheds. The parameters are:

- Runoff Method: SBUH
- Rainfall Distribution: SCS 24-Hr, Type 1 distribution
- Antecedent Moisture Conditions AMC 2
- Hydrograph ordinate time increment: 0.02 hour
- Rainfall Amounts, 24-hour totals: See table 3-2 below

Table 3-2. Rainfall Amount, Inches

Area	Storm Recurrence Interval (Years)		
	10-Year	25-Year	100-Year
Buellton/ Santa Ynez	4.93	5.97	7.45

Source: Santa Barbara County Flood Control and Water Conservation District, Standard Conditions of Project Plan Approval, Effective January, 2011.

PRE-DEVELOPMENT CONDITIONS

The site currently accepts offsite run-off from seven sub-watersheds. Watershed B is the largest offsite watershed at 3623.3 acres; the other watersheds are significantly smaller as shown in Figure 3-1. There are 8 points of discharge under existing conditions. The discharge locations and characteristics in the pre-development conditions should be duplicated in the post-development conditions. The peak run-off flows from offsite are shown in Table 3-3. Peak discharge flows are a combination of off-site flow and onsite flows at the point of discharge shown on figure 3-1. The discharge peak flows are shown in table 3-4.

Table 3-3. Run-Off Peak Flows – Pre-Development Conditions

Location	Storm Event Peak Flows (CFS)[1]		
	10-Year	25-Year	100-Year
A1	476	635	867
B1	2298	3234	4638
B3-OS	198	262	356
B5	124	167	230
D	264	358	495
E	25	34	46
F	96	130	179
G	107	144	197

1. Cubic feet per second

Table 3-4. Discharge Peak Flows – Pre-Development Conditions

Location	Sub-watersheds included	Storm Event Peak Flows (CFS)[1]		
		10-Year	25-Year	100-Year
A2	A1 & A2	672	899	1229
B2	B1 & B2	2594	3632	5184
B3	B3-OS & B3	674	866	1185
B4	B4	47	63	86
B5	B5	124	167	230
C	C	276	374	517
D	D-OS & D	264	358	495
E	E-OS & E	245	329	451
F	F-OS & F	137	185	255
G	G-OS & G	115	154	211

1. Cubic feet per second

POST DEVELOPMENT CONDITIONS

Alternative A is comprised of 143 - 5-acre lots, 24 feet wide roads, with unpaved shoulders. Newly introduced impervious areas would total approximately 3% of the total site. Run-off would be received into Alternative A in the same manner as pre-development conditions.

The project site has been divided into the same seven sub-watersheds with minimal change, as shown in Figure 3-4. Drainage would surface flow, passing through a total of 21 road crossings prior to being discharged from the project site. Approximately seven of the crossings occur in blue line channels, and may require permits from the Army Corps of Engineers, and the US Department of Fish and Wildlife. Underground storm drain pipe will be minimized by using surface swales. The location of the 9 discharge points would remain unchanged. Table 3-5 summarizes the 100 year event prior to the installation of any mitigation measures to reduce discharge.

Table 3-5. Alternative A – Peak Flows

Location	100 Year Storm Event Peak Flows (CFS)[1]		
	Existing	Proposed	Difference
A2	1229	1229	>1
B2	5184	5187	3
B3	1185	1194	9
B4	86	87	1
B5	230	230	>1
C	517	523	6
D	495	502	7
E	451	458	7
F	255	251	1
G	211	211	>1

1. Cubic feet per second

Alternative B is comprised of 143 - 1-acre lots, a 30 acre government center, and 24 feet wide roads with unpaved shoulders. Newly introduced impervious areas would total approximately 4% of the total project site.

The project site has been divided into the same seven sub-watersheds with minimal change, as shown in Figure 3-5. Run-off from the site is primarily surface flow, passing through a total of 13 road crossings prior to being discharged from the project site. Approximately three of the crossings occur in blue line channels, and may require permits from the Army Corps of Engineers, and the US Department of Fish and Wildlife. The use of underground storm drain pipe will be minimized by using surface swales. The location of the 9 discharge points would remain unchanged. Table 3-6 summarizes the 100 year event prior to the installation of any mitigation measures to reduce discharge.

Table 3-6. Alternative B – Peak Flows

Location	100 Year Storm Event Peak Flows (CFS)[1]		
	Existing	Proposed	Difference
A2	1229	1229	0
B2	5184	5192	8
B3	1185	1198	13
B4	86	87	1
B5	230	230	>1
C	517	529	12
D	495	509	14
E	451	455	3
F	255	255	0
G	211	211	0

1. Cubic feet per second

PEAK FLOWS

The design storm events used for design purposes would be consistent with Santa Barbara County Standards and engineering practices. Culvert crossings would be designed for the 25 year storm with overland escape paths for the 100 year storm. Bridge crossings, basins and crossings designed in sump conditions would be designed for the 100 year storm.

DETENTION BASINS

Detention basins would be designed in a manner consistent with the Santa Barbara County Flood Control and Water Conservation District Standards. Basins shall be designed to be free draining.

For Alternative A, 7 detention basins would be required in the project area to discharge run-off at the same rate as in pre-rain conditions for the 2 to 100 year storms. Proposed locations of the basins are shown in Figure 3-4. The basin in sub-watershed B3 would be designed to compensate for an increase in discharge from B4 (1 cfs). The basins for sub-watersheds B2 and B3 would be located in the existing vineyard or in the rear portion of the lots. The basins in sub-watersheds C, D and E would be located in areas designated as Open Space, or Resource Management Zones.

For Alternative B, seven detention basins would be required in the project area to discharge run-off at the same rate as in pre-rain conditions. Proposed locations of the basins are shown in Figure 3-5. The basins would be smaller than the basins proposed for Alternative A, with the exception of the basin associated with the Government Center. The basins would fit into areas designated as open space.

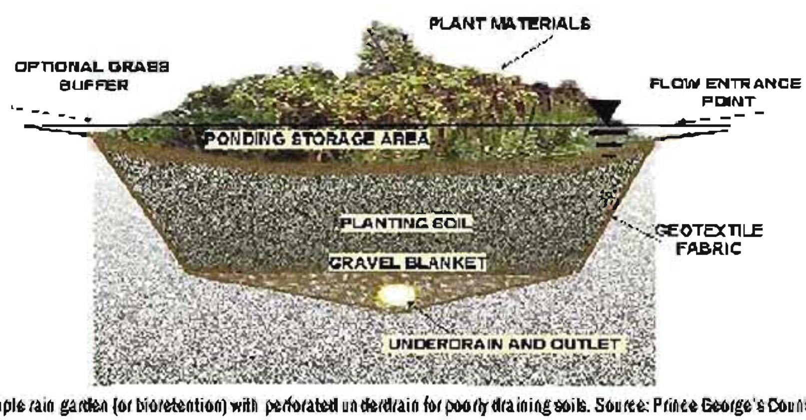
A general drainage basin would be 100 feet by 400 feet, with depths up to 15 feet. Basins would be shaped and designed to match the terrain and the flow requirements.

LOW IMPACT DEVELOPMENT (LID)

Low Impact Development (LID) features would be incorporated into the final lot design for both alternatives to enhance storm water quality. The site provides multiple opportunities for LID design features. Roads are proposed to be of minimal paved widths, lessening the impermeable area. By not designing the roads with curb and gutter, runoff will be slowed, and corresponding Tc values will increase thus allowing for additional infiltration.

Vegetative swales should be designed alongside the unpaved shoulders, helping to further reduce the velocity of the runoff and allow for sediment to drop out of the flow prior to entering existing channels. Swales can be used in areas where the roads are sloped at less than 5%. If the roads are sloped between 5% and 8%, swales can be reinforced with rip rap, or other approved methods, to prevent erosion. Swales also assist in directing drainage to the detention basins, further minimizing the need for underground storm drain pipe. Roads with slopes greater than 8% should have curb or AC dike to prevent erosion which could undercut the pavement.

Biofiltration planters can be incorporated into the open spaces. Rain water harvesting techniques can be used if the planters are revegetated with native plants. Soil in this area is classified as having slow infiltration rates. The final design can account for the infiltration rate by adding perforated pipe at the planter bottom. An example of a typical Biofiltation Planter is shown below.



Example rain garden (or bioretention) with perforated underdrain for poorly draining soils. Source: Prince George's County

Alternative B provides all of the same opportunities for Low Impact Development (LID) as Alternative A. Additional LID features can be incorporated into the final design of the Government Center. This can include permeable pavement in the parking stalls. Landscape strips within parking lots also make for ideal biofiltration planters which promote stormwater quality and are visually pleasing. A photo of a typical biofiltration planter in a landscape strip can be seen below.

DRAINAGE RECOMMENDATIONS

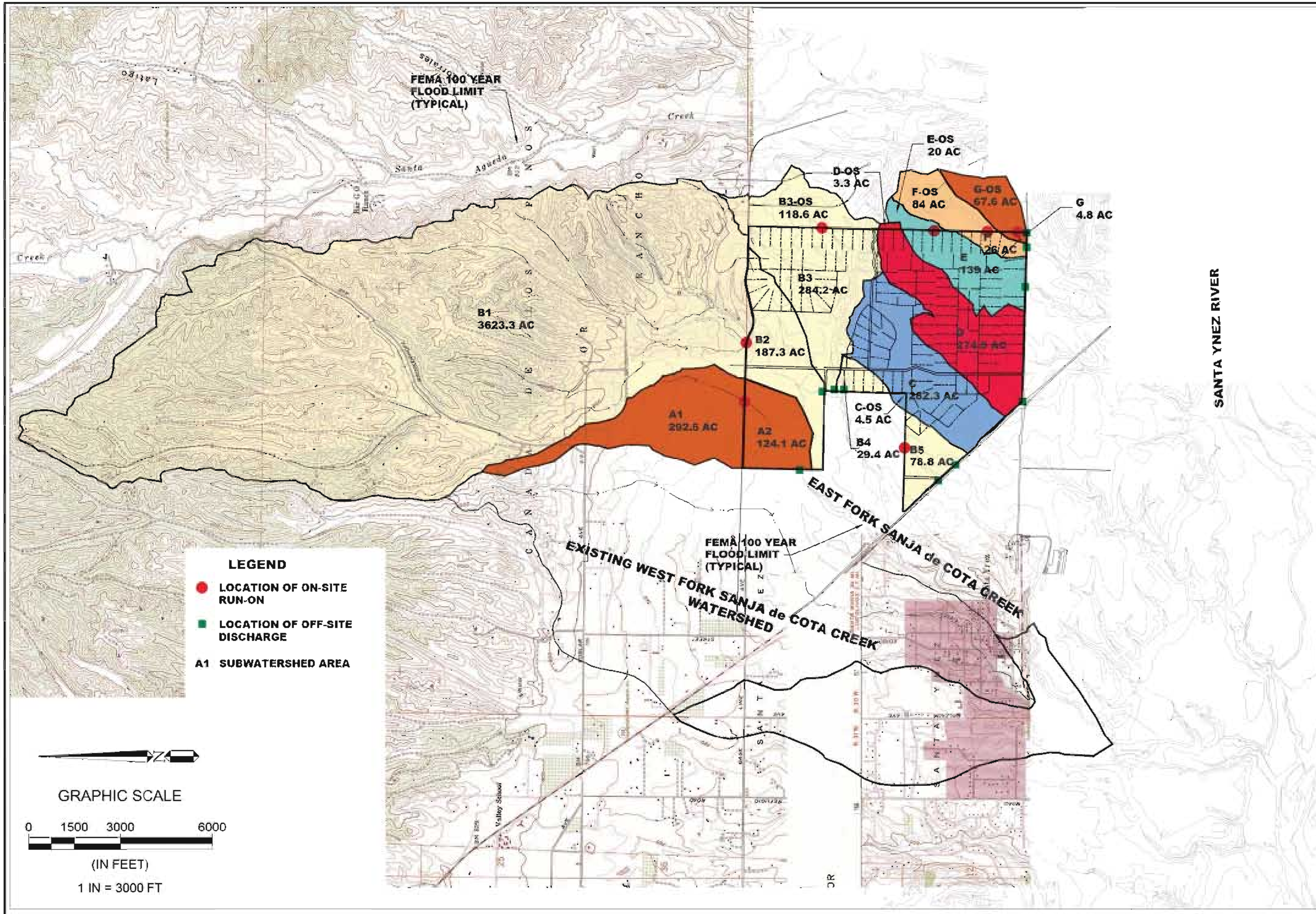
The drainage impacts of the project have been minimized by having a low density project with minimal increase in impervious area. As described in the preceding sections and the project description, the project intends to utilize Low Impact Development practices to reduce erosion, improve storm water quality, lessen the amount of required irrigation, and eliminate any increase in total discharge from the project area.

For Alternative A, additional open space should be incorporated into the site layout to accommodate the drainage basin, particularly in the case of the basins in sub-watersheds B2 and B3. The basins would be located in the rear of the residential yards.

Additionally, as described in Chapter 2 of this report, we recommend that the road alignment be modified to better match the existing terrain. This could reduce the total crossing and amount of grading within the existing drainage channels.

Alternative B appears to have sufficient open space designated around the channels to accommodate detention basin and LID features required to make the site feasible in terms of drainage. The government center should also have open space incorporated in and around it to accommodate the biofiltration swales and detention basin as required during the detailed project design.

The roads in Alternative B will require detailed design that directs drainage away from adjacent sub-watersheds. We also recommend that the road alignment be modified to better match the existing terrain. This could reduce the total crossing and amount of grading within the existing drainage channels.



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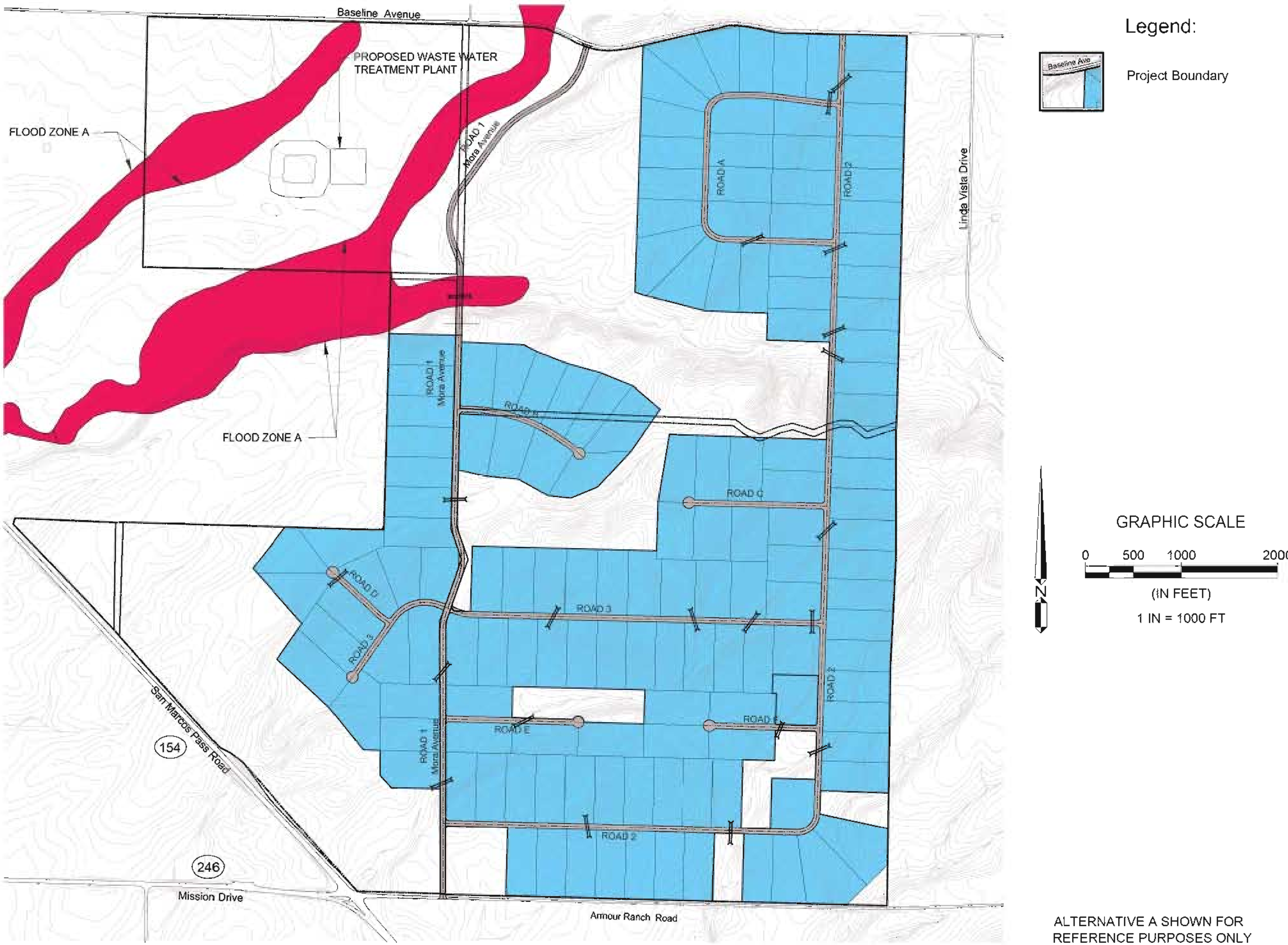
CHUMASH - CAMP 4

FIGURE 3-1
EXISTING WATERSHED AREA MAP



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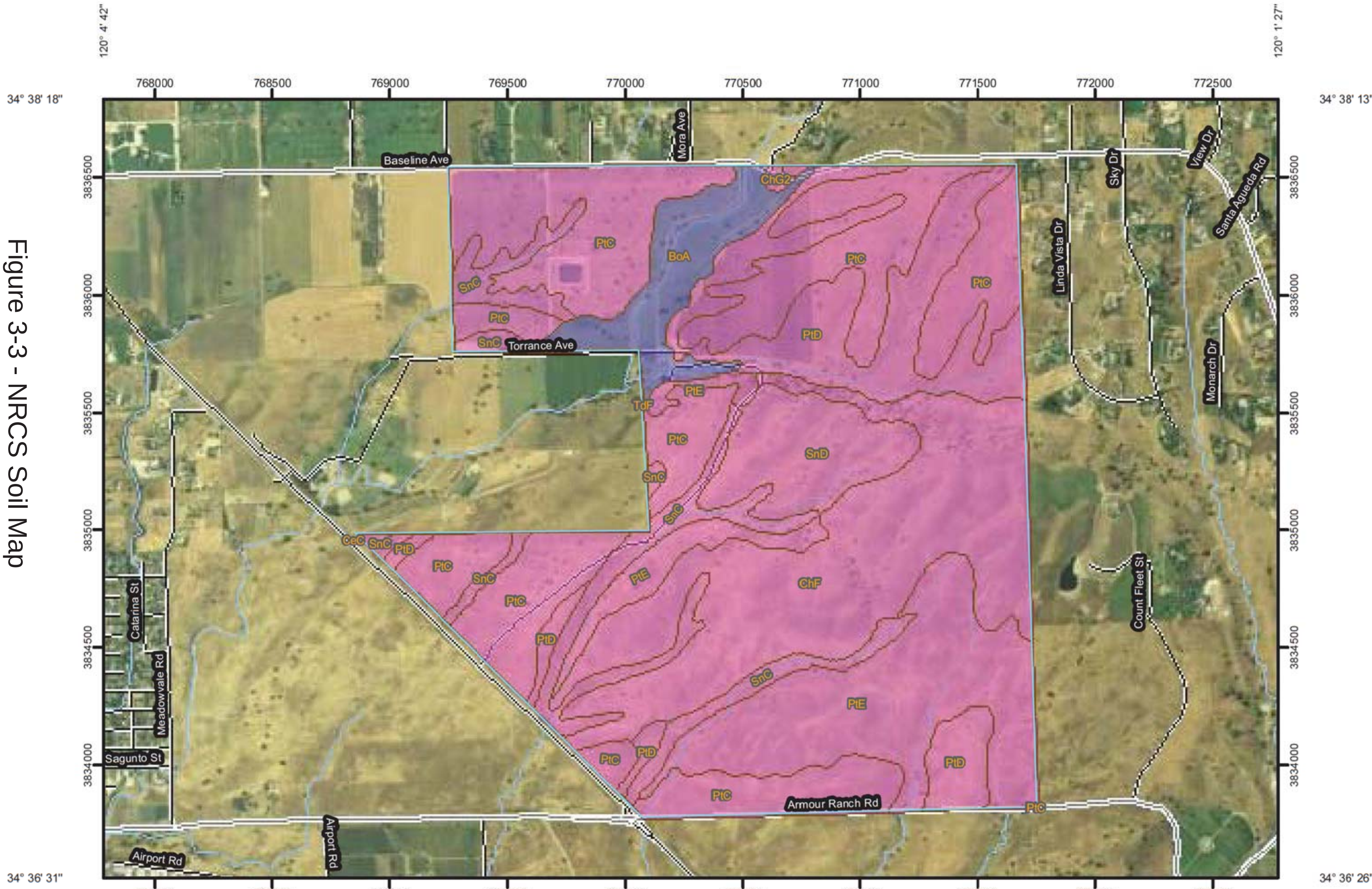
Chumash Camp 4

Figure 3-2
FLOOD HAZARD AREA MAP



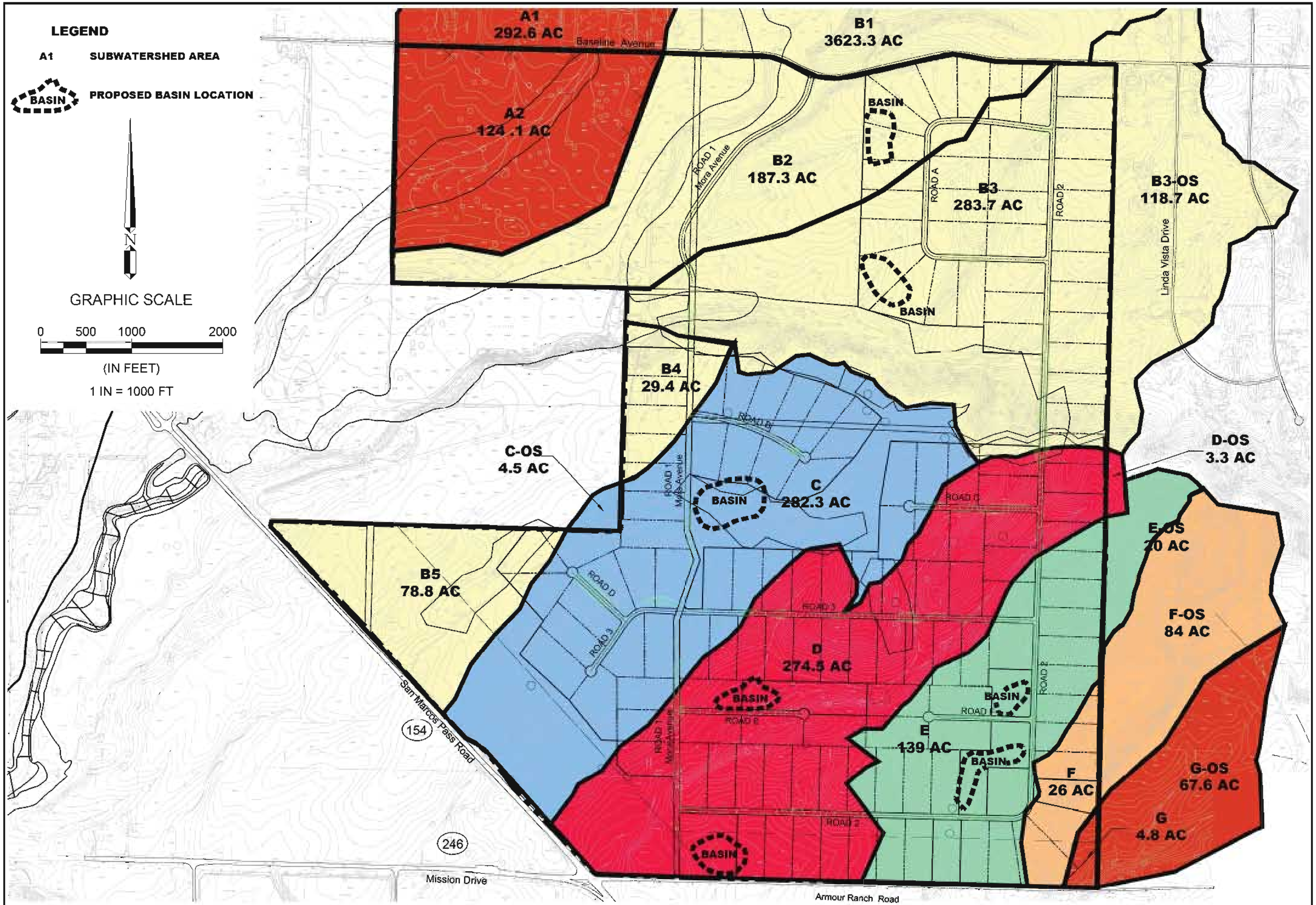
Map Scale: 1:23,700 if printed on A size (8.5" x 11") sheet.

N

Meters: 0, 300, 600, 1,200, 1,800

Feet: 0, 1,000, 2,000, 4,000, 6,000

Figure 3-3 - NRCS Soil Map



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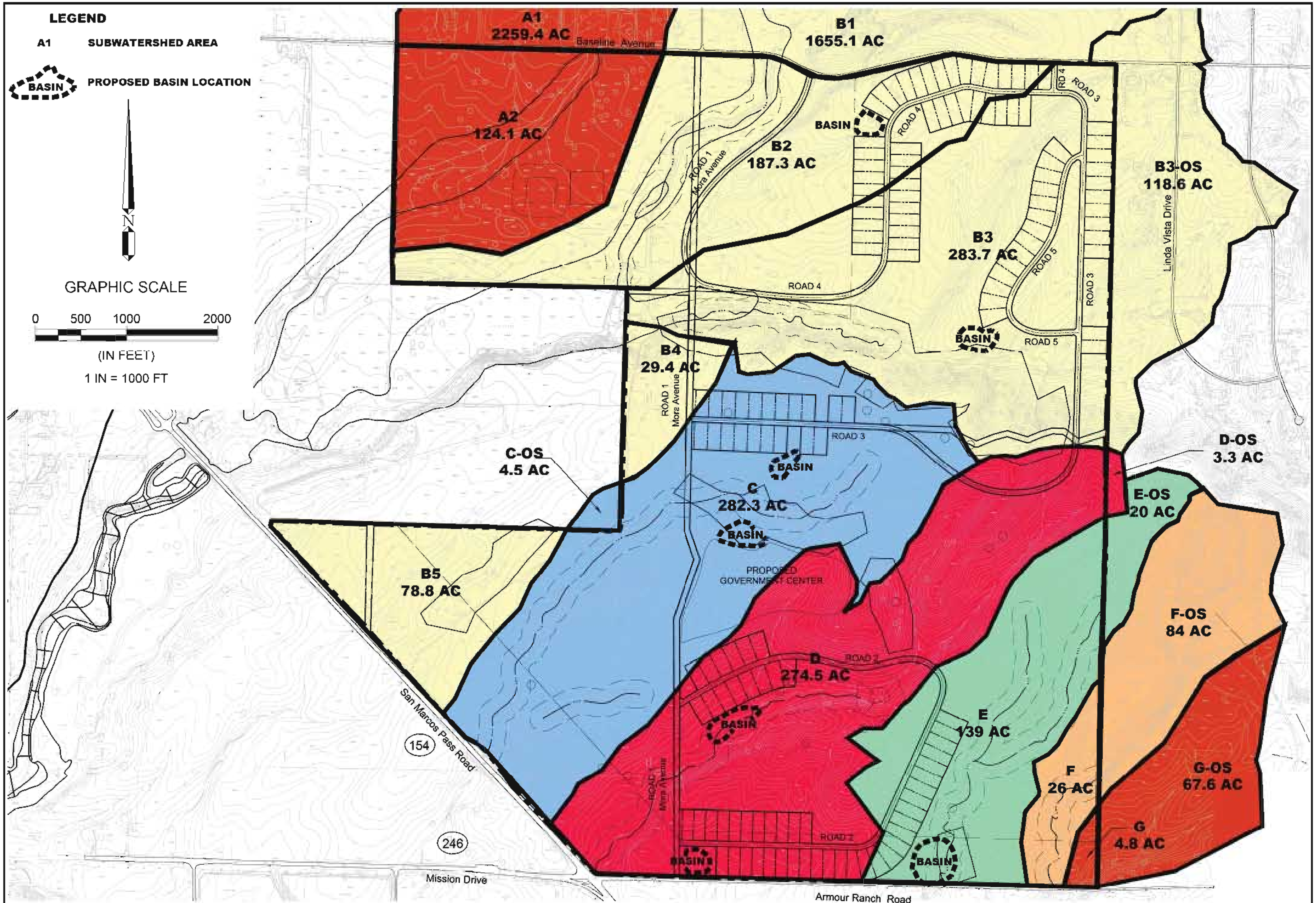
CHUMASH - CAMP 4: ALTERNATIVE A

FIGURE 3-4
WATERSHED AREA MAP



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CHUMASH - CAMP 4: ALTERNATIVE B

FIGURE 3-5
WATERSHED AREA MAP

APPENDIX E

SPECIES LISTS AND BIOLOGICAL ASSESSMENT

Plants and Wildlife Observed within the Project Site.

Plants observed.

Family	Scientific Name	Common Name
Agavaceae	*Chlorogalum pomeridianum* var. *pomeridianum*	Soaproot
Amaranthaceae	*Amaranthus retroflexus*	Pigweed
Apiaceae	*Lomatium* spp.	
Asclepiadaceae	*Asclepias californica*	California milkweed
	Asclepias fasicularis	Narrow-leaf milkweed
Asteraceae	*Acherachaena mollis*	Blow-wives
	Baccharis pilularis	Coyote bush
	Calendula arvensis	Field marigold
	Carduus pycnocephalus	Italian thistle
	Centaurea melitensis	Tocalote
	Centaurea solstitialis	Yellow star-thistle
	Conyza canadensis	Horseweed
	Lasthenia gracilis	Goldfields
	Layia platyglossa	Tidy-tips
	Matricaria discoidea	Pineapple weed
	Silybum murianum	Milk thistle
	Sonchus oleraceus	Prickly lettuce
	Taraxicum officianale	Dandelion
	Amsinckia menziesii	Common fiddleneck
Boraginaceae	*Plagiobothrys nothofulvus*	Popcorn flower
	Plagiobothrys stipitatus var. *micranthus*	Popcorn flower
Brassicaceae	*Brassica nigra*	Wild mustard
	Capsella bursa-pastoris	Shepherds purse
	Hirschfeldia incana	Short pod mustard
	Lepidium nitidum var. *nitidum*	Peppergrass
	Raphanus sativus	Wild radish
Cactaceae	*Opuntia* sp.	Prickly pear cactus
Chenopodaceae	*Atriplex triangularis*	Spearscale
Convolvulaceae	*Convolvulus arvensis*	Field bindweed
Cyperaceae	*Cyperus eragrostis*	Nutsedge
	Eleocharis macrostachya	Creeping spike-rush
Euphorbiaceae	*Croton setigerus*	Doveweed
Fabaceae	*Acmispon wrangelianus*	Foothill lotus
	Lupinus bicolor	Bicolor lupine
	Medicago polymorpha	Bur clover
	Trifolium depauperatum var. *amplectens*	Clover
	Vicia sativa	Spring vetch
Fagaceae	*Quercus lobata*	Valley oak
	Quercus agrifolia	Coast live oak
Geraneaceae	*Erodium cicutarium*	Filaree
	Geranium dissecta	Cutleaf geranium
Lamiaceae	*Lamium amplexicaule*	Henbit

	Mentha arvensis	Field mint
	Mentha pulegium	Pennyroyal
	Trichostema lanceolatum	Vinegar weed
Lythraceae	*Lythrum hyssopifolium*	Hyssop loosestrife
Malvaceae	*Malva parviflora*	Cheeseweed
	Sidalcea sp.	Checkerbloom
Montiaceae	*Calandrinia ciliate*	Red maids
Onagraceae	*Epilobium ciliatum*	Willow herb
Papaveraceae	*Eschscholzia californica*	California poppy
Plantaginaceae	*Plantago erecta*	California plantain
	Plantago lanceoleta	English plantain
Poaceae	*Avena fatua*	Wild oat
	Bromus diandrus	Ripgut brome
	Bromus hordeaceus	Soft chess
	Crypsis alopecuroides	Prickle grass
	Cynodon dactylon	Bermuda grass
	Echinochloa crus-gali	Barnyard grass
	Hordeum murinum	Foxtail barley
	Lolium multiflorum	Italian rye grass
	Poa pratensis	Kentucky bluegrass
	Stipa pulchra	Purple needlegrass
	Vulpia myuros	Zorro fescue
Polemoniaceae	*Navarretia squarrosa*	Skunkweed
Polygonaceae	*Polygonum arenastrum*	Common knotweed
	Polygonum californicum	California knotweed
	Rumex crispus	Curly dock
Ranunculaceae	*Ranunculus californicus* var. *californicus*	California buttercup
Rubiaceae	*Galium aparine*	
Salicaceae	*Populus femontii*	Fremont's cottonwood
Solanaceae	*Datura discolor*	Jimsonweed
	Solanum nigra	Nightshade
Themidaceae	*Dichelostemma capitatum ssp. capitatum*	Bluedicks
	Muilla maritime	Common muilla
Violaceae	*Viola pedunculata*	Johnny-jump-up
Vitaceae	*Vitis vinifera* var.	Wine grape varietal
Zygophyllaceae	*Tibulus terrestris*	Puncture vine

Wildlife observed.

Family	Scientific Name	Common Name
Mammals		
Bovidae	*Bos taurus*	Domestic cow
Canidae	*Canis latrans*	Coyote
Equidae	*Equus caballus*	Domestic horse
Leporidae	*Lepus californicus*	Black-tailed jackrabbit
Sciuridae	*Spermophilus beecheyi*	California ground squirrel
Reptiles		
Phrynosomatidae	*Sceloporus occidentalis*	Western fence lizard
Birds		
Accipitridae	*Buteo jamaicensis*	Red-tailed hawk

Accipitridae	*Buteo lineatus*	Red-shouldered hawk
Cathartidae	*Cathartes aura*	Turkey vulture
Columbidae	*Zenaida macroura*	Mourning dove
Corvidae	*Corvus brachyrhynchos*	American crow
	Corvus corax	Common raven
Cucilidae	*Geococcyx californianus*	Greater roadrunner
Falconidae	*Falco sparverius*	American kestrel
Hirundinidae	*Hirundo rustica*	Barn swallow
Icteridae	*Agelaius phoeniceus*	Red-winged blackbird
	Molothrus ater	Brown-headed cowbird
	Sturnella neglecta	Western meadowlark
Mimidae	*Mimus polyglottos*	Northern mockingbird
Parulidae	*Setophaga coronata*	Yellow-rumped warbler
Picidae	*Melanerpes formicivorus*	Acorn woodpecker
Turdidae	*Sialia mexicana*	Western bluebird

received
11-18-11CB

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2012-SLI-0005

November 16, 2011

Kelly Bayne
1801 7th Street, Suite 100
Sacramento, California 95811

Subject: Species List Request for the SYI-Camp 4 Project, Santa Barbara County, California

Dear Mr. Phillips:

This letter responds to your request, dated October 6, 2011, and received in our office via IPaC the same day, for a list of endangered, threatened, proposed, or candidate species that may occur in the vicinity of the SYI-Camp 4 project, Santa Barbara County, California. The project is for an unspecified development project located at 34.624387° N latitude 120.051079° W longitude.

The U.S. Fish and Wildlife Service's (Service) responsibilities include administering the Endangered Species Act of 1973, as amended (Act), including sections 7, 9, and 10. Section 9 of the Act and its implementing regulations prohibit the taking of any federally listed endangered or threatened species. Section 3(19) of the Act defines take to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Service regulations (50 CFR 17.3) define harm to include significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harassment is defined by the Service as an intentional or negligent action that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. The Act provides for civil and criminal penalties for the unlawful taking of listed species.

Exemptions to the prohibitions against take may be obtained through coordination with the Service in two ways. If the subject project is to be funded, authorized, or carried out by a Federal agency and may affect a listed species, the Federal agency must consult with the Service, pursuant to section 7(a)(2) of the Act. If a proposed project does not involve a Federal agency but may result in the take of a listed animal species, the project proponent should apply for an incidental take permit, pursuant to section 10(a)(1)(B) of the Act. Once you have determined if the proposed project will have a lead Federal agency, we can provide you with more detailed information regarding the section 7 or 10(a)(1)(B) permitting process.

LISTED AND CANDIDATE SPECIES
THAT MAY OCCUR IN THE VICINITY OF
THE PROPOSED PROJECT, SANTA BARBARA COUNTY, CALIFORNIA

<u>Birds</u>		
Least Bell's vireo	*Vireo bellii pusillus*	E
<u>Amphibians</u>		
California red-legged frog	*Rana draytonii*	T
California tiger salamander	*Ambystoma californiense*	E
<u>Invertebrates</u>		
Vernal pool fairy shrimp	*Branchinecta lynchi*	T, CH
<u>Plants</u>		
Gambel's watercress	*Rorippa gambellii*	E
Marsh sandwort	*Arenaria paludicola*	E

Key:
E - Endangered T - Threatened CH - Critical habitat

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Scientific Name - Portrait

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	Accipiter cooperii Cooper's hawk	ABNKC12040			G5	S3	
2	Agelaius tricolor tricolored blackbird	ABPBXB0020			G2G3	S2	SC
3	Agrostis hooveri Hoover's bent grass	PMPOA040M0			G2	S2.2	1B.2
4	Anniella pulchra pulchra silvery legless lizard	ARACC01012			G3G4T3T4Q	S3	SC
5	Arctostaphylos refugioensis Refugio manzanita	PDERI041B0			G2	S2?	1B.2
6	Atriplex serenana var. davidsonii Davidson's saltscale	PDCHE041T1			G5T2?	S2?	1B.2
7	California macrophylla round-leaved filaree	PDGER01070			G2	S2	1B.1
8	Calochortus fimbriatus late-flowered mariposa-lily	PMLIL0D1J2			G3G4	S2.2	1B.2
9	Cordylanthus rigidus ssp. littoralis seaside bird's-beak	PDSCR0J0P2		Endangered	G5T1	S1.1	1B.1
10	Delphinium umbraculorum umbrella larkspur	PDRAN0B1W0			G2G3	S2S3.3	1B.3
11	Emys marmorata western pond turtle	ARAAD02030			G3G4	S3	SC
12	Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1			G4T3	S2.1	1B.1
13	Lonicera subspicata var. subspicata Santa Barbara honeysuckle	PDCPR030R3			G5T2	S2.2	1B.2
14	Oncorhynchus mykiss irideus southern steelhead - southern California DPS	AFCHA0209J	Endangered		G5T2Q	S2	SC
15	Rana draytonii California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3	SC
16	Senecio aphanactis chaparral ragwort	PDAST8H060			G3?	S1.2	2.2
17	Southern California Steelhead Stream	CARE2310CA			G?	SNR	
18	Southern Coast Live Oak Riparian Forest	CTT61310CA			G4	S4	
19	Southern Cottonwood Willow Riparian Forest	CTT61330CA			G3	S3.2	
20	Southern Vernal Pool	CTT44300CA			G?	SNR	
21	Southern Willow Scrub	CTT63320CA			G3	S2.1	
22	Thamnophis hammondii two-striped garter snake	ARADB36160			G3	S2	SC
23	Thelypteris puberula var. sonorensis Sonoran maiden fern	PPTHE05192			G5T3	S2.2?	2.2
24	Thermopsis macrophylla Santa Ynez false lupine	PDFAB3Z0E0		Rare	G1	S1.3	1B.3

CNPS Inventory of Rare and Endangered Plants

Status: Plant Press Manager window with 13 items - Mon, Mar. 19, 2012 15:35 c

- During each visit, we provide you with an empty "Plant Press" for collecting items of interest.
- Several report formats are available. Use the CSV and XML options to download raw data.

Refomat list as: Standard List - with Plant Press controls

DELETE unchecked items | check all | check none

open	save	scientific	common	family	CNPS
	☑	Agrostis hooveri	Hoover's bent grass	Poaceae	List 1B.2
	☑	Arctostaphylos refugioensis	Refugio manzanita	Ericaceae	List 1B.2
	☑	California macrophylla	round-leaved filaree	Geraniaceae	List 1B.1
	☑	Calochortus fimbriatus	late-flowered mariposa lily	Liliaceae	List 1B.2
	☑	Caulanthus amplexicaulis var. barbarae	Santa Barbara jewel-flower	Brassicaceae	List 1B.1
	☑	Cordylanthus rigidus ssp. littoralis	seaside bird's-beak	Orobanchaceae	List 1B.1
	☑	Delphinium umbraculorum	umbrella larkspur	Ranunculaceae	List 1B.3
	☑	Fritillaria ojaiensis	Ojai fritillary	Liliaceae	List 1B.2
	☑	Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Asteraceae	List 1B.1
	☑	Lonicera subspicata var. subspicata	Santa Barbara honeysuckle	Caprifoliaceae	List 1B.2
	☑	Ribes amarum var. hoffmannii	Hoffmann's bitter gooseberry	Grossulariaceae	List 3
	☑	Senecio aphanactis	chaparral ragwort	Asteraceae	List 2.2
	☑	Thermopsis macrophylla	Santa Ynez false lupine	Fabaceae	List 1B.3

DELETE unchecked items | check all | check none

BIOLOGICAL ASSESSMENT

SANTA YNEZ BAND OF CHUMASH INDIANS
CAMP 4 FEE-TO-TRUST

AUGUST 2013

LEAD AGENCY:

U.S. Department of the Interior
Bureau of Indian Affairs
Pacific Region Office
2800 Cottage Way, Room W-2820
Sacramento, CA 95825-1846

BIOLOGICAL ASSESSMENT

SANTA YNEZ BAND OF CHUMASH INDIANS
CAMP 4 FEE-TO-TRUST

AUGUST 2013

LEAD AGENCY:

U.S. Department of the Interior
Bureau of Indian Affairs
Pacific Region Office
2800 Cottage Way, Room W-2820
Sacramento, CA 95825-1846

PREPARED BY:

Analytical Environmental Services
1801 7th Street, Suite 100
Sacramento, CA 95811
(916) 447-3479
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TABLE OF CONTENTS

BIOLOGICAL ASSESSMENT
CHUMASH CAMP 4 FEE-TO-TRUST ACQUISITION

LIST OF FIGURES

ATTACHMENTS

1.0 INTRODUCTION

This Biological Assessment (BA) has been prepared in support of an application to the Bureau of Indian Affairs (BIA) to place the approximately 1,433-acre project site (project site) into federal trust status on the behalf of the Santa Ynez Band of Chumash Indians (Tribe) for the development of 143 five-acre residential lots for tribal members (Proposed Project). This BA has been prepared to document the extent to which the Proposed Project may affect federally listed species and to facilitate consultation with the U.S. Fish and Wildlife Service (USFWS), in accordance with the legal requirements set forth under Section 7 of the federal Endangered Species Act (FESA) (16 U.S.C. 1536 [c]). An Environmental Assessment (EA) has been submitted to the BIA for approval of the project (AES, 2013). The EA evaluates impacts associated with the three alternatives: the Proposed Project, a reduced impact alternative, and a no project alternative. This BA evaluates impacts associated with the Proposed Project because it has the greatest potential impact of the three alternatives. Should the decision maker determine that the preferred project be the reduced impact alternative, the potential impacts would be less than those discussed within this BA.

For the purposes of this BA, federally listed species include those plant and animal species that are listed as endangered or threatened, formally proposed for listing, or candidates for listing under the FESA.

To fulfill its purpose, this BA:

- Characterizes the habitat types present within the project site;
- Evaluates the potential for the occurrence of federally listed endangered, threatened, proposed, or candidate species within the project site;
- Assesses the potential for the Proposed Project to adversely impact federally listed endangered, threatened, proposed, or candidate species; and
- Recommends mitigation measures designed to avoid or minimize project-related impacts.

1.1 THREATENED, ENDANGERED, PROPOSED THREATENED, AND PROPOSED ENDANGERED SPECIES

The following listed species may be affected by the Proposed Action:

- Federal threatened vernal pool fairy shrimp (*Branchinecta lynchi*; VPFS); and
- Federal threatened California red-legged frog (*Rana aurora draytonii*; CRLF).

1.2 CRITICAL HABITAT

The action area addressed within this document falls within critical habitat for:

- Federal threatened vernal pool fairy shrimp (*Branchinecta lynchi*; VPFS).

2.0 PROJECT LOCATION/ACTION AREA

The project site is bound by State Route (SR) 154 to the west, by Armour Ranch Road to the south, by Baseline Avenue to the north, and by residential development/agricultural land to the east (**Figure 1**). The project site is located east of the Town of Santa Ynez, 3.95 miles east of the City of Solvang, and 22.2 miles northwest of the City of Santa Barbara, California. The project site is situated within Section 8, Township 6 North, Range 30 West, of the Santa Ynez, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (quad). The centroid of the project site is 39° 36’ 52.92” North 120° 2’ 55.64” West. Elevation within the project site ranges from approximately 640 feet in the central-west to approximately 810 feet in the northeast. A topographic map and an aerial photograph of the project site are provided in **Figures 2** and **3**, respectively.

3.0 PROJECT DESCRIPTION

3.1 PROJECT COMPONENTS

The Proposed Project consists of two main components: (1) the placement of five parcels totaling approximately 1,433 acres (the five parcels encompass a total of four assessors parcel numbers (APN): APN 141-121-051, APN 141-140-10, APN 141-230-023 and APN 141-240-002) into federal trust status for the Tribe; and (2) the development of 143 five-acre residential plots with the remaining acreage dedicated to agriculture, open space/recreational, conservation of riparian corridors and oak woodland, and development of utilities. Development of the site would include domestic water connections, a wastewater treatment plant (WWTP), and supporting roads and infrastructure. The project design is provided in **Figure 4**. The Proposed Project is described in more detail below.

Land Trust Action

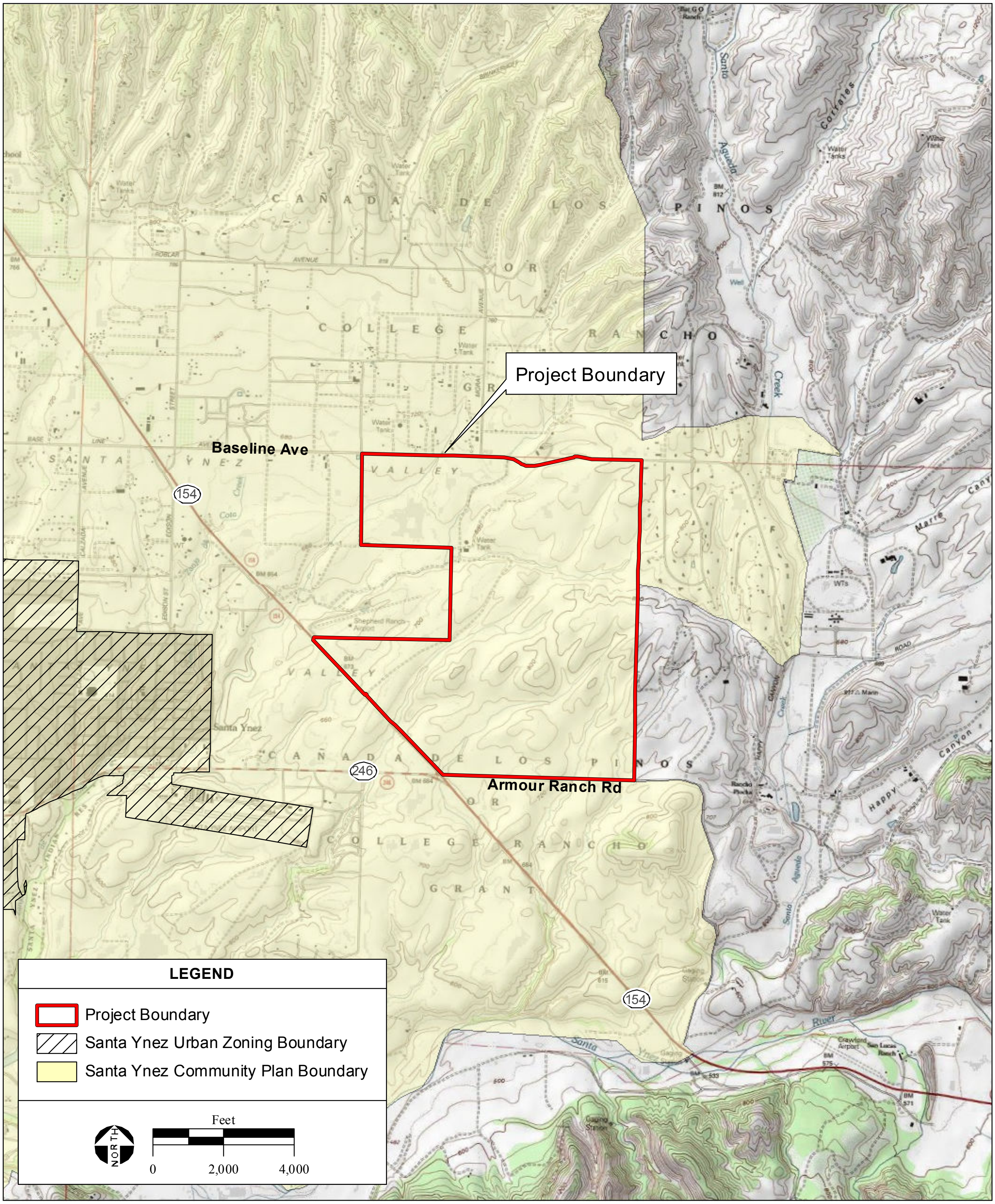
The Proposed Project consists of the fee simple conveyance of five parcels totaling 1,433± acres (referred to as the Camp 4 site) into federal trust status for the benefit of the Tribe. This trust action would shift civil regulatory jurisdiction over the 1,433 acres from the State of California (State) and Santa Barbara County (County) to the Tribe and the BIA.

Proposed Residential Development

The Tribe proposes to develop residential plots on Parcels 2, 3, and 4 of the project site, supplementing the tribal housing on existing trust land. The proposed housing would consist of up to 143 five-acre residential plots with construction of single-family detached houses of varying sizes ranging from 3,000 to 5,000 square feet. The housing development would be phased over time as needed. Development on each five-acre plot would include approximately 0.35 acres of disturbance for building pad development, driveway construction, utility installations, and landscaping. Additionally, new domestic water connections, improved access roads, driveways, a new wastewater treatment plant, and utilities would also be constructed to support the residences.

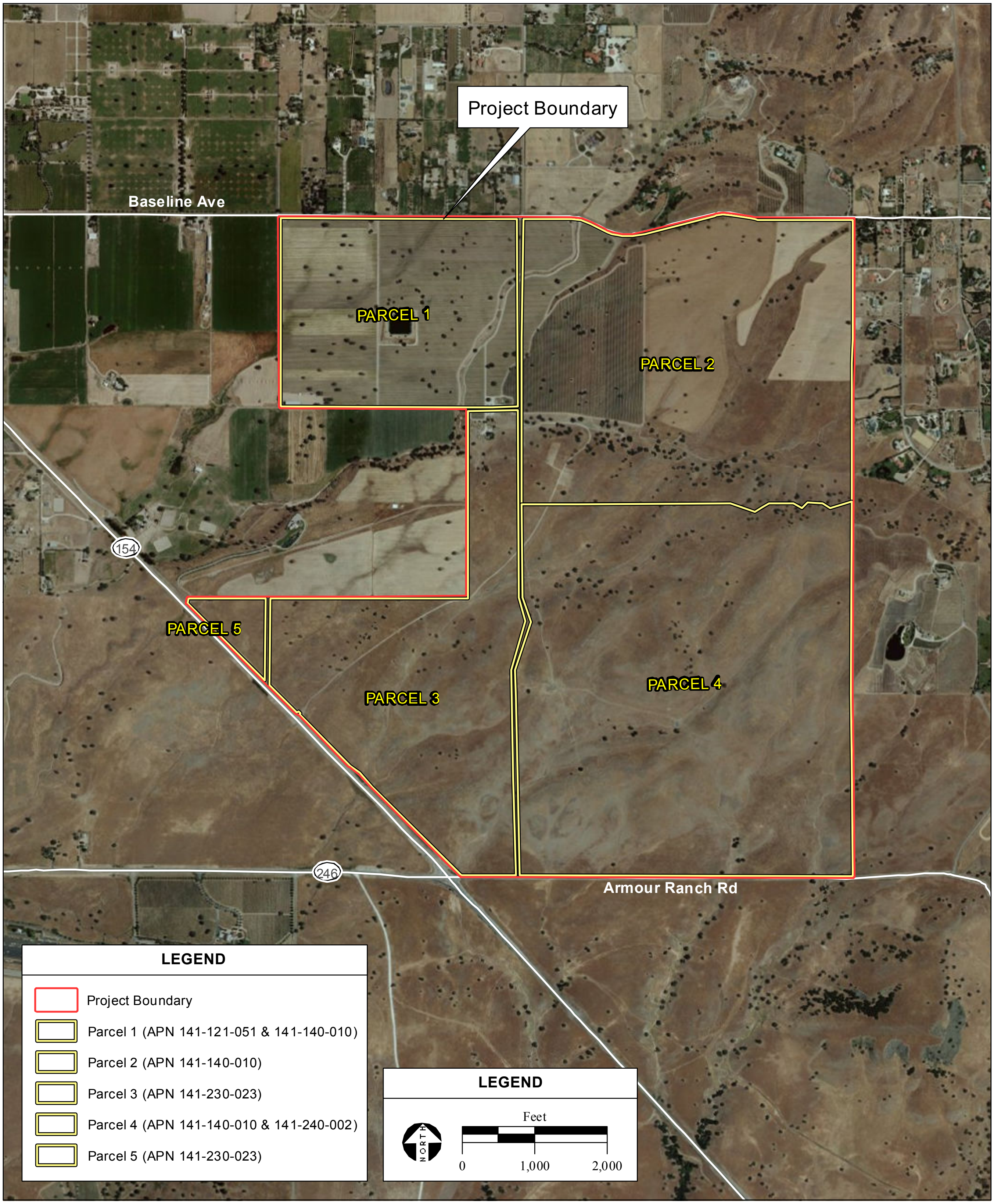
SOURCE: Streetmap World, 2011; AES, 2012

Figure 1
Regional Location



SOURCE: "Los Olivos, CA" & "Santa Ynez" USGS 7.5 Minute Topographic Quadranges, T7N, R 31W & T6N, R29W, Unsectioned Area of Santa Ynez Valley, Mt. Diablo Baseline & Meridian; Santa Barbara County GIS Data, 2012; AES, 2012

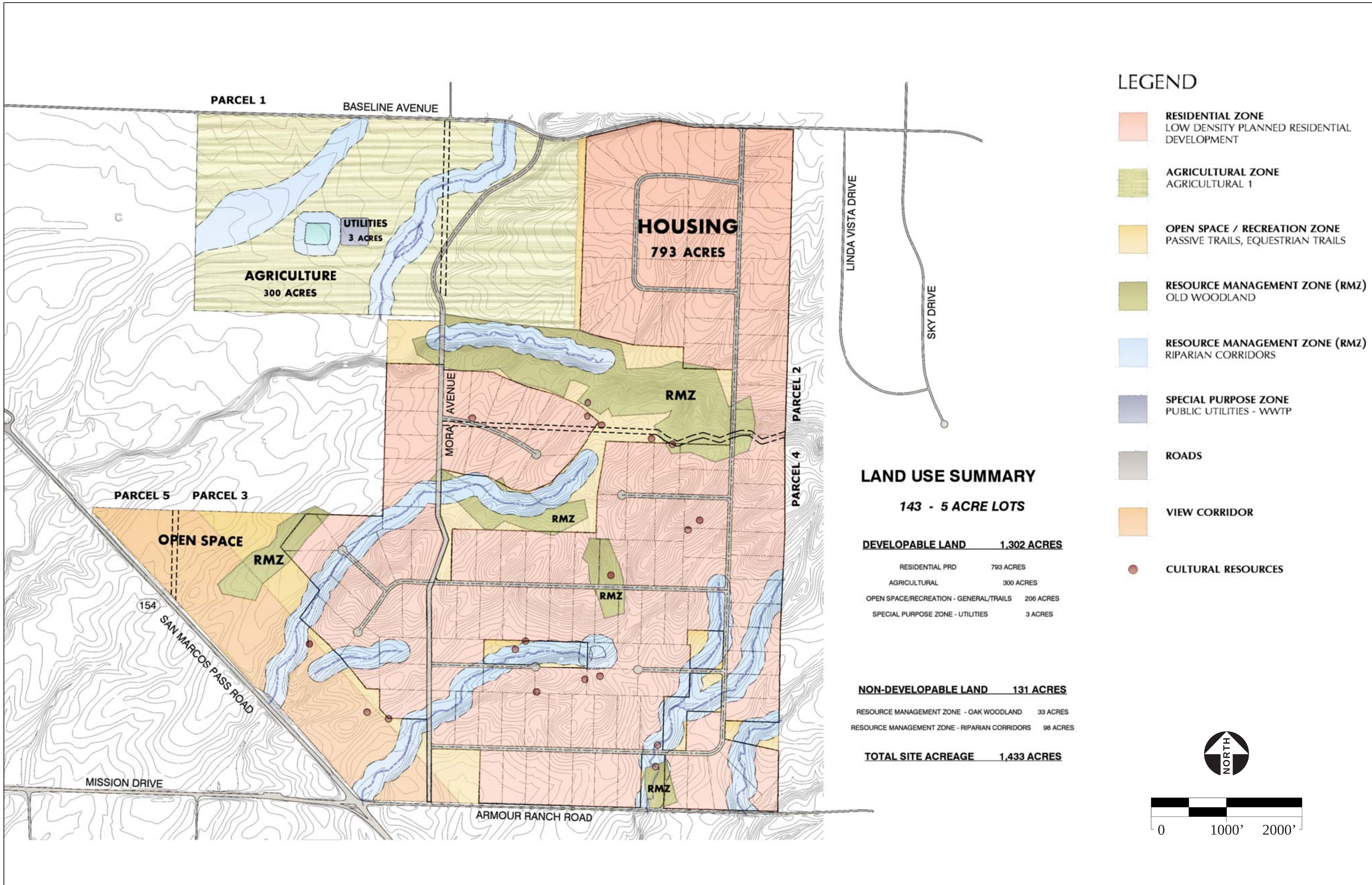
Figure 2
Site and Vicinity



SOURCE: Santa Barbara County GIS Data, 2012; Santa Ynez Band of Chumash Indians, 2011; NAIP Aerial Photograph, 6/17/2009; AES, 2012

Santa Ynez Camp 4 BA / 201551

Figure 3
Aerial Photograph



SOURCE: Summit Project Management, 2011; AES, 2012

Figure 4
Project Design

Designated Tribal Land Uses

In addition to the proposed residential development, the Tribe would designate the following land uses on the subject project site.

The Tribe would continue operating an existing 256-acre vineyard located on Parcel 1 and a portion of Parcel 2. An additional 44 acres would be designated for agricultural use on Parcel 2 to allow for expansion of the existing vineyard operation. The vineyard is currently in operation and includes a storage reservoir, existing access roadways, and a processing/shipping area.

Approximately 206 acres of the project site would be designated as open space and recreation. Passive trails would be designated for pedestrian use and equestrian trails would be developed to provide recreation for residents and guests in coordination with the horse stables located on the existing agricultural lands. The open space areas will be utilized for runoff control and will include the development of detention basins and vegetated swales. The open space/recreational area adjacent to State Route (SR)-154 would be utilized as a viewshed protection zone. No residential development is planned within the zone adjacent to SR-154 to protect the viewshed of the scenic highway.

In accordance with the Tribe's commitment to conservation, 98 acres of land surrounding drainage corridors would be protected from development and, where necessary, enhanced in accordance with tribal ordinances. These corridors would be protected/enhanced to ensure adequate stormwater drainage is provided within the project site and to reduce the potential impact from development of the residential plots. These areas would be protected even where located on a specified residential plot. A qualified biologist would develop a Riparian Corridor Improvement Plan (Riparian Plan) for these areas. The Riparian Plan would provide for re-establishment of native vegetation in areas were invasive plant species have overwhelmed native vegetation.

In accordance with tribal ordinances, approximately 33 acres of oak woodland would be protected from development. Within the oak woodland management zone cutting, trimming, and pruning of the oak (*Quercus* sp.) trees would be monitored and controlled, and ground disturbance would be limited within the dripline of any oak tree within the zone.

Water Supply

The Proposed Project would result in an increased water demand of 380 acre-feet per year (AFY). To meet increased demands, the Tribe would develop an onsite water supply system using groundwater. Two new groundwater wells with a target rated capacity of 750 gallons per minute (gpm) would be developed and located in reasonable proximity to the proposed residential developments in the center or southern portion of the project site. The Tribe would install an onsite domestic water storage tank as well as the appropriate water distribution pipelines to the proposed tribal residences. Water quality would be no less stringent than Federal Safe Drinking Water Act standards. Tertiary treated wastewater would be utilized to meet the irrigation water demands of the vineyard operation, common area landscaping, and other irrigated uses as feasible. The existing agriculture storage reservoir would be used to meet the recycled water storage requirements. The agricultural irrigation demands at the vineyard (265AFY; increased to 300 AFY at full build) would be met through mixing groundwater from the existing agricultural wells and recycled water from the WWTP as described below.

Wastewater Treatment and Disposal

A tertiary WWTP would be constructed on Parcel 1 adjacent to the existing reservoir within the vineyards. The WWTP would be sized to accommodate the proposed wastewater generation rates of the Proposed Project. The treated effluent would be disposed of via recycling for use as agricultural irrigation for the existing agricultural operations, common area landscaping, and other irrigated uses as feasible on the project site. Drainage control would be installed along the perimeter of recycled water irrigation areas to prevent comingling with stormwater runoff. Recycled water runoff would be collected and disposed of via discharge to the WWTP.

Wastewater facilities would include a tertiary WWTP, sewer lift stations, conveyance systems, emergency storage, runoff/spill control, and a recycled water reservoir. The sewer lift stations would be developed within the residential areas as needed. The existing water reservoir located on Parcel 1 would be repurposed to store recycled water from the WWTP, and enlarged if necessary, and the recycled water would be used for irrigation. The existing water reservoir is currently lined and prior to use as a recycled water reservoir, the lining would be inspected and repaired if necessary. The proposed wastewater treatment system would be operated pursuant to U.S. Environmental Protection Agency (EPA) regulations.

Roadways

Existing access roads would be improved and new roads constructed to provide access to the proposed residences and existing agricultural operations. The rural roadways would be 24 feet wide two-lane asphalt travel ways, with gravel shoulders that would be constructed using standards comparable to Santa Barbara County requirements. Signage would be provided for the new roadways. Crossing of potential Waters of the U.S. would be limited to the extent feasible; however, span bridges would be utilized where necessary. Access and egress from the project site would be provided from one existing easement onto Armour Ranch Road and two existing easements onto Baseline Avenue.

Grading and Drainage

Construction would involve grading and excavation for building pads and roadways. Cut and fill would be balanced to the extent feasible; however, some structural grade fill may be imported to meet engineering requirements. Stormwater runoff generated from development of the residential units and associated roadways would be conveyed by a combination of open channels, storm drains, and culverts. Runoff from the project site would be directed into vegetated swales, which would serve as energy dissipaters and filtering mechanisms for runoff generated onsite prior to release into the onsite drainage channels. Stormwater would be retained onsite within detention basins prior to discharging off the subject project site at rates equivalent to pre-development conditions.

Construction Schedule

The project components would be constructed after the project site has been placed into federal trust for the Tribe. It is assumed that construction of the project would begin in 2014 and would be phased over approximately four years as new tribal homes are needed.

3.2 PURPOSE AND NEED

The Tribe's purpose for taking the 1,411.1 acres plus rights of way of land into trust is to fulfill the purpose of the Consolidation and Acquisition Plan by providing housing within the Tribal Consolidation Area to accommodate the Tribe's current members and anticipated growth. The Tribal Consolidation Area constitutes the area historically held for the Tribe by the Roman Catholic Church. This geographical area was subject of the 1897 Quiet Title Action brought by the Roman Catholic Church (Bishop of Monterey) and encompasses approximately 11,500 acres of the College Rancho. These lands are part of the Tribe's ancestral territory and comprise most of its historic territory. These lands where once part of the lands of Mission Santa Ines and part of the subsequent Rancho Canada de los Pinos recognized by the U.S. government as well as being near an individual land grant made to a Santa Ynez Chumash Indian by Mexican Governor Micheltorena. All these lands within the approved Tribal Consolidation Area were considered to have been the property of the Santa Ynez Mission Indians by the Spanish and Mexican governments and the Catholic Church. After California statehood, the Catholic Church carried forward this theory of land tenure by the Santa Ynez Chumash.

The proposed trust land would enable the Tribe to provide housing for its existing tribal members and continue to provide housing for descendants as they come of age. The current Reservation lands are highly constrained due to a variety of physical, social, and economic factors. A majority of the lands held in Trust for Santa Ynez are located in a flood plain. This land is not suitable for much, if any, development because of flooding and drainage problems. The irregular topography and flood hazards are associated with the multiple creek corridors which run throughout the property resulting in severe limitations of efficient land utilization. The current reservation has a residential capability of approximately 26 acres or 18% of the Reservation and an economic development capability of approximately 16 acres or 11% of the Reservation. The remaining 99 acres or 71% of the Reservation is creek corridor and sloped areas which are difficult to impossible to develop. Therefore, the size of the usable portion of the Santa Ynez Reservation amounts to approximately 50 acres, much of which has already been developed.

The Tribe has a population of 136 tribal members and approximately 1300 lineal descendants which it must provide for. Currently, only about 17% of the tribal members and lineal descendants have housing on tribal lands. All current land assignments on the existing Reservation shall continue to be maintained unchanged as it is difficult to cancel any existing land assignment on the Reservation. Article VIII of the Articles of Organization of the Tribe expressly states that only the General Council composed of all adults members of the Tribe over the age of 18 can veto or cancel an existing land assignment on the Reservation. This trust land acquisition is an integral part of the Tribe's efforts to bring tribal members and lineal descendants back to the Tribe, accommodate future generations, and create a meaningful opportunity for those tribal members and lineal descendants to be a part of a tribal community revitalization effort that rebuilds tribal culture, customs and traditions In order to meet these goals, the Tribe needs additional trust land to provide housing for tribal members and lineal descendants who currently are not accommodated with tribal housing.

Based on these constraints, the Tribe is unable to provide adequate housing for its current members, and will be unable to provide housing for future tribal members on the existing Reservation, risking the Tribe's ability to provide for future generations and maintain its cultural foundations within its ancestral lands. The trust transfer of the Camp 4 lands would further the purpose and goals of the Consolidation and Acquisition Plan by providing necessary housing within the Tribal Consolidation Area for its current members and future generations and thereby would protect the Tribe's heritage and culture by ensuring existing and future generations are afforded the ability to live under tribal governance as a community within the Tribe's ancestral and historic land holdings. Secondarily, the trust acquisition of the proposed trust land would also allow full tribal governance over its existing agricultural operations on the property; thereby allowing the Tribe to continue to build economic self sufficiency through diversified tribally-governed commercial enterprises. Under the Proposed Action, the tribal government would be able to fully exercise its sovereignty over its own future growth.

5.0 STUDY METHODS

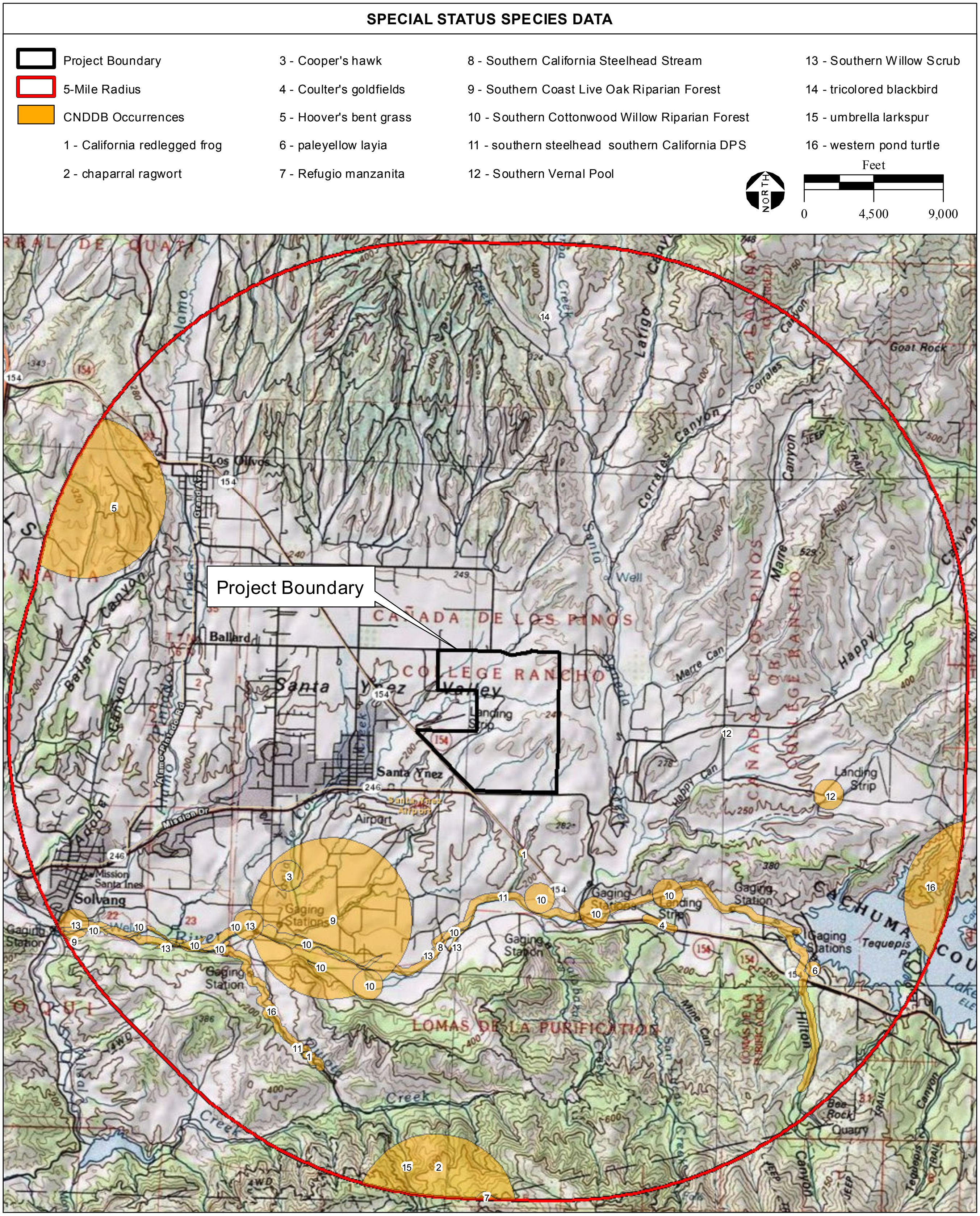
For the purposes of this BA, the Action Area includes the location of any construction activity anticipated to occur within the project site.

5.1 PRELIMINARY DATA GATHERING AND RESEARCH

Prior to conducting the biological and focused botanical surveys, Analytical Environmental Services (AES) obtained biological information for the project site from the following sources: Santa Ynez and Los Olivos quads; color aerial photography of the project site; U.S. Fish and Wildlife Service (USFWS) letter of listed and candidate species that may occur in the vicinity of the Proposed Project, Santa Barbara County, California (USFWS, 2011); California Native Plant Society (CNPS) list of special status plants documented on the Los Olivos and Santa Ynez U.S. Geographical Survey (USGS) 7.5-minute topographic quadrangles (quad) (CNPS, 2012); California Natural Diversity Database (CNDDB) list of special status species documented on the Los Olivos and Santa Ynez quads (CDFG, 2003); and special status species documented within a five-mile radius of the project site (**Figure 5**). The USFWS, CNPS, and CNDDB lists are provided in **Attachment 1**.

Field Surveys and Analysis

AES senior biologist Kelly Bayne, M.S. and botanist Laura Burris conducted general biological surveys of the project site on September 12, 13, and 14, 2011 and focused botanical surveys on March 7, 8, and 9, 2012 and April 23, 24, and 25, 2012. The biological surveys consisted of walking and/or driving throughout the project site to characterize terrestrial and aquatic habitat types, conduct botanical inventories, and document potential habitat to support regionally occurring special status species.



SOURCE: California Natural Diversity Database, 9/2011; "Los Olivos, CA" & "Santa Ynez" USGS 7.5 Minute Topographic Quadranges, T7N, R 31W & T6N, R29W, Unsectioned Area of Santa Ynez Valley, Mt. Diablo Baseline & Meridian; AES, 2012

Figure 5
CNDDB 5-Mile Radius

Botanical inventories were conducted in accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG, 2009). All visible plants and wildlife were noted and identified to the lowest possible taxon necessary to determine rarity and listing status. Lists of all plants and wildlife observed during the 2011 and 2012 surveys are provided in **Attachment 2**.

Global Positioning System (GPS) technology, a Trimble Geo XT™ receiver, was used to locate and map preliminary boundaries of waters of the U.S. during the 2011 and 2012 surveys. The geographic coordinate system used to reference the data was Universal Transverse Mercator (UTM–Zone 10), North American Datum (NAD83) in meters. Potential wetland boundaries were mapped at a level of accuracy of less than one meter. Habitat boundaries were identified during the September 12, 13, and 14, 2011 biological surveys on an aerial photograph. Environmental Systems Research Institute (ESRI) shape files were generated based on the habitat boundaries, potentially jurisdictional waters of the U.S., and other sensitive biological resources mapped within the project site. Geographic analyses were performed using Geographic Information System (GIS) software (ArcView 3.3 GIS, ESRI, Inc.). The ESRI data and GIS software were used to calculate the acreages of habitat types and wetland features.

A list of regionally occurring federally listed species was compiled into a table based on the USFWS, CNDDB, and CNPS lists (**Attachment 3**). The potential for each of the species to occur on the project site was subsequently evaluated based on the results of the 2011 and 2012 surveys, review of applicable literature, and proximity of known occurrences of federally listed species within five miles of the project site. The table provides a list of the distributions, habitat types, and potential for each regionally occurring federally listed species to occur on the project site. Several regionally occurring federally listed species were eliminated for the following reasons: the project site lacks suitable habitat or occurs outside of the known elevation range or geographical distribution. Federally listed species without the potential to occur within the project site are not discussed further.

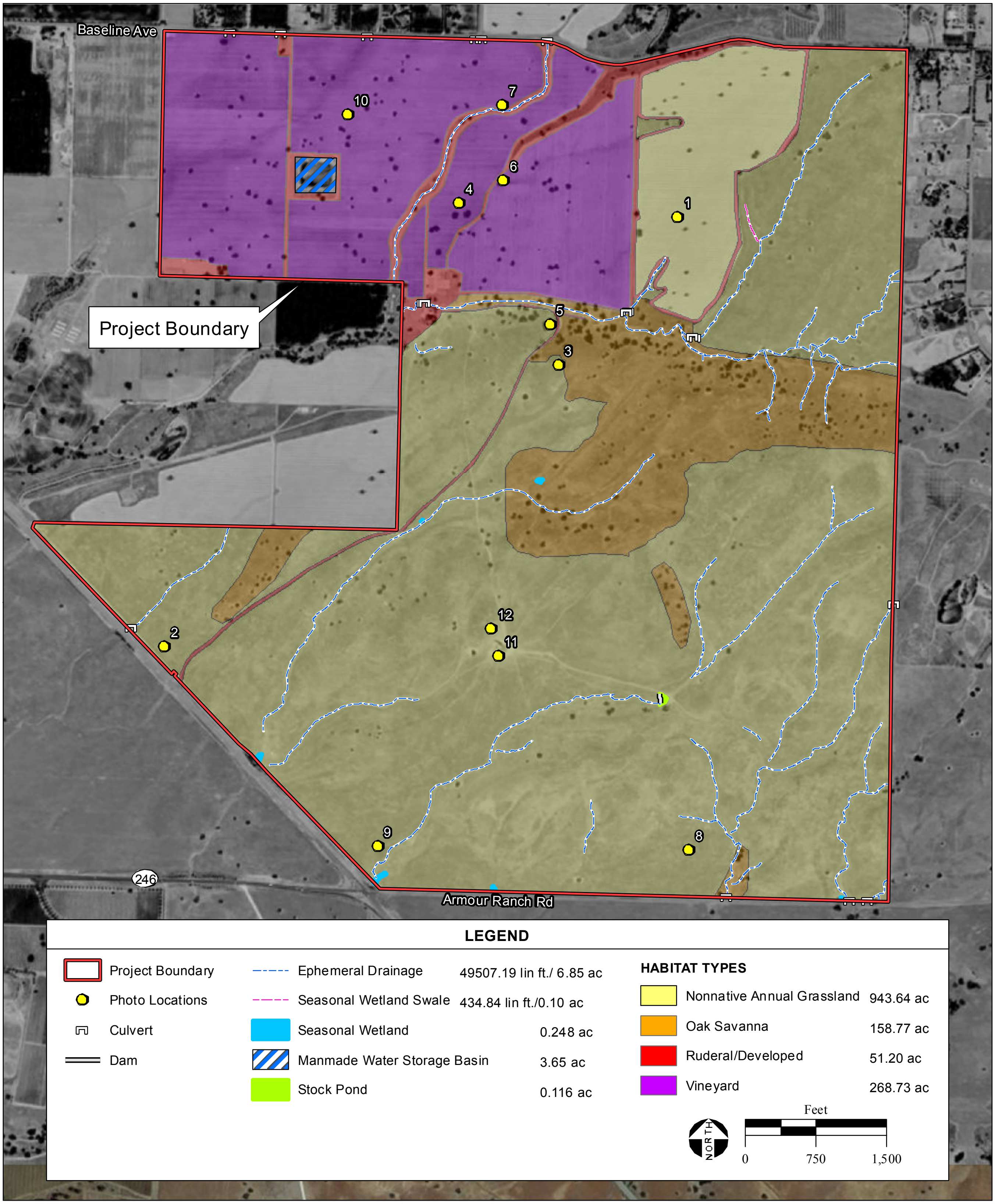
6.0 HABITAT TYPES

Four terrestrial and five aquatic habitat types occur within the project site. The four terrestrial habitat types include: nonnative annual grassland, oak savanna, vineyard, and ruderal/disturbed areas. The five aquatic habitat types include: ephemeral drainage, seasonal wetland swale, seasonal wetland, manmade storage basin, and stock pond. A habitat map of the project site is shown in **Figure 6**. Photographs of the project site are illustrated in **Figures 7a** and **7b**. A critical habitat map is provided in **Figure 8**. Project impacts to habitat types are shown in **Figure 9**.

7.0 FEDERALLY LISTED SPECIES

7.1 FEDERALLY LISTED PLANTS

The project site does not provide habitat for any federally listed plants. No federally listed plants occur within the project site.



SOURCE: Santa Ynez Band of Chumash Indians, 2011; NAIP Aerial Photograph, 6/17/2009; AES, 2012

Figure 6
Habitat Map

PHOTO 1: View northwest of nonnative annual grassland. Photograph taken from the northeastern portion of the project site.

PHOTO 2: View north of nonnative annual grassland. Photograph taken from the western portion of the project site.

PHOTO 3: View north of oak savanna surrounded by nonnative annual grassland. Photograph taken from the central portion of the project site.

PHOTO 4: View northwest of vineyard. Photograph taken from the north-central portion of the project site.

PHOTO 5: View north of ruderal/disturbed areas. Photograph taken from the west-central portion of the project site.

PHOTO 6: View west of ruderal/disturbed areas and vineyard. Photograph taken from the north-central portion of the project site.

SOURCE: AES, 2012

Figure 7a
Site Photographs

PHOTO 7: View north of ruderal/disturbed areas and ephemeral drainage. Photograph taken from the northern portion of the project site.

PHOTO 8: View southeast of nonnative annual grassland, oak savanna, and ephemeral drainage. Photograph taken from the southwestern portion of the project site.

PHOTO 9: View southwest of vernal pool. Photograph taken from the southwestern portion of the project site.

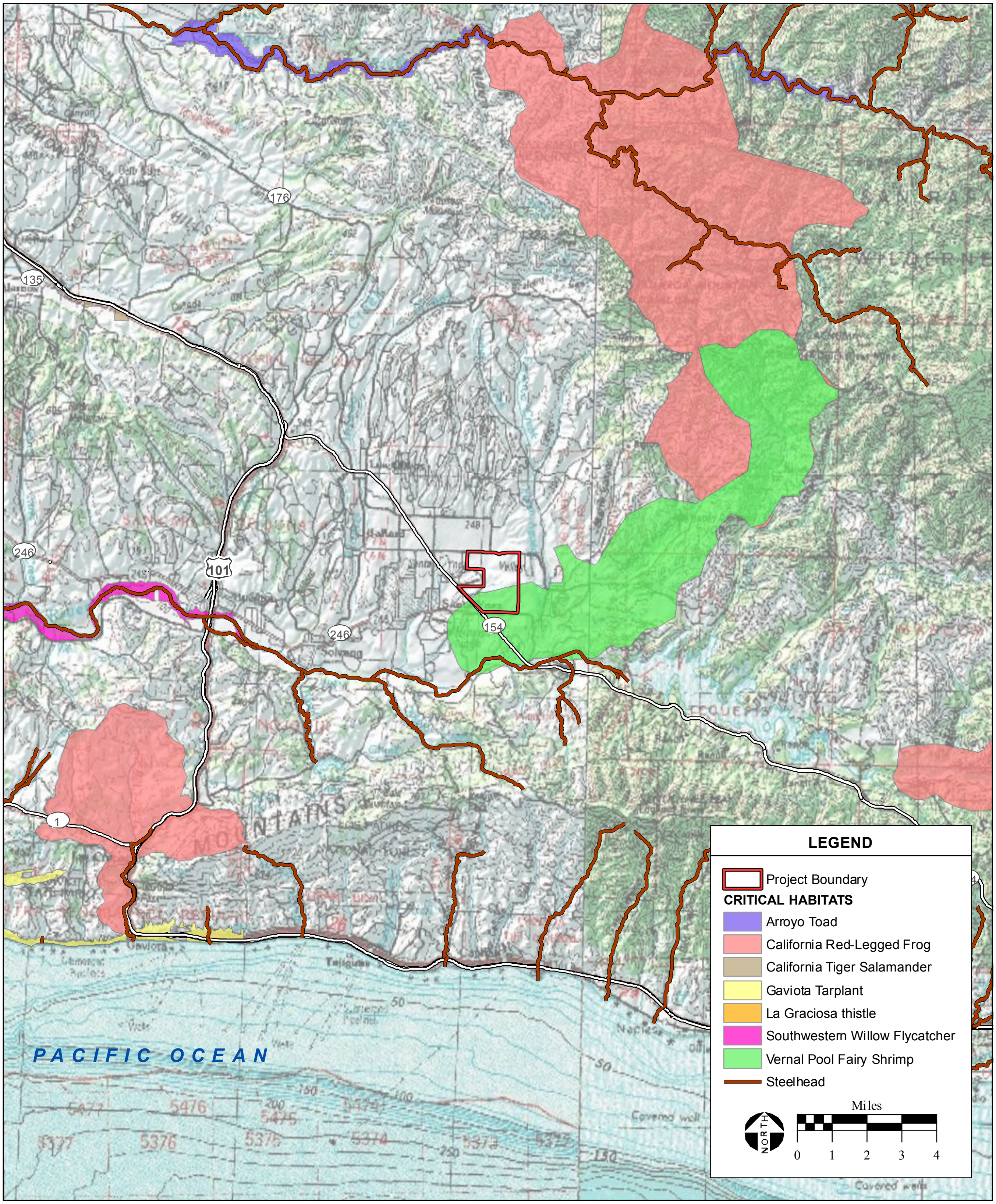
PHOTO 10: View west of manmade basin. Photograph taken from the northwestern portion of the project site.

PHOTO 11: View south of ephemeral drainage just south of levee. Photograph taken from the south-central portion of the project site.

PHOTO 12: View southeast of vernal pool that formed as a result of construction of the manmade levee. Photograph taken from the south-central portion of the project site.

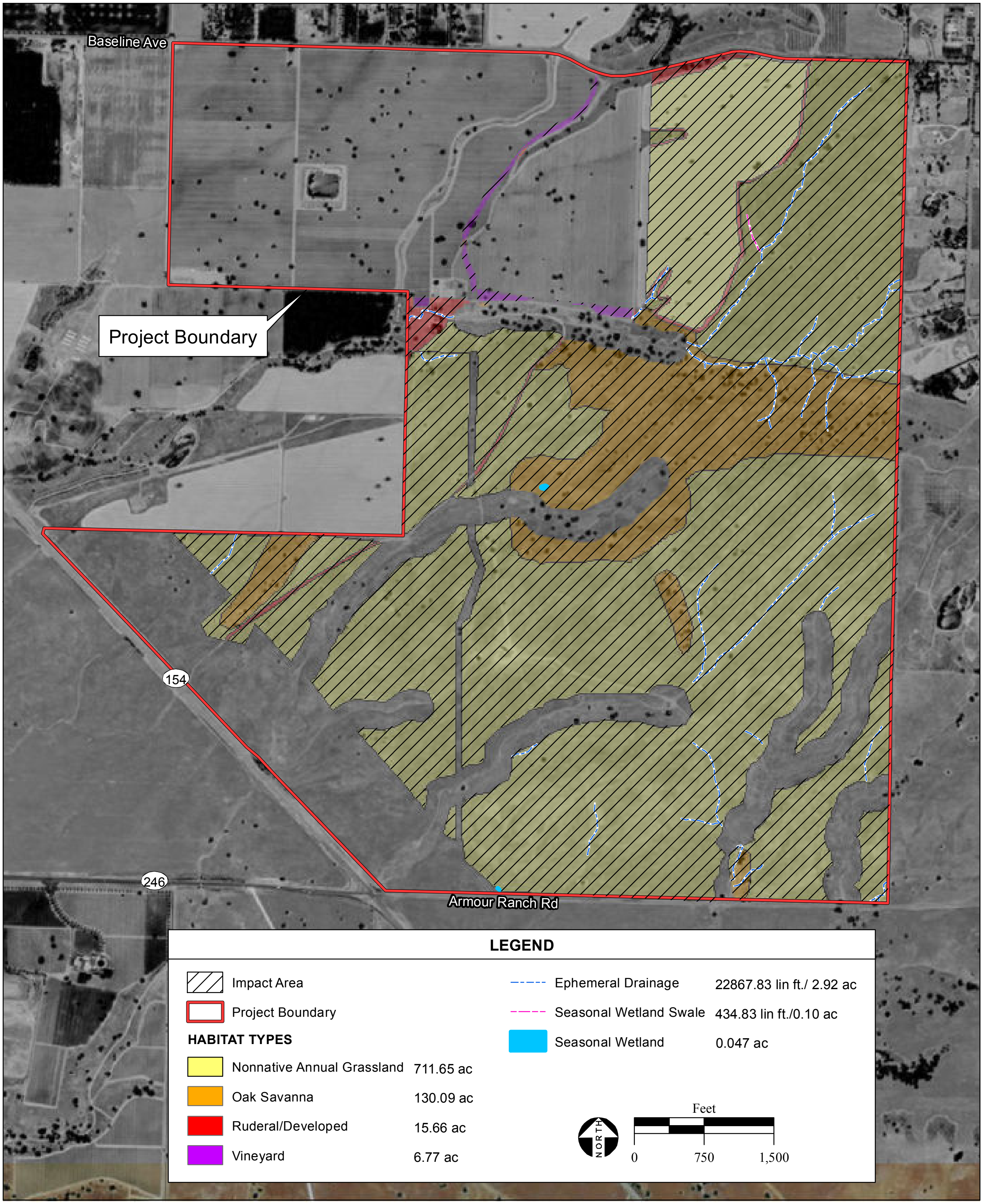
SOURCE: AES, 2012

Figure 7b
Site Photographs



SOURCE: "Santa Maria, CA" USGS 100k Topographic Quadrangle, San Bernadino Baseline and Meridian; USFWS Critical Habitats Surveys, 1977,1994,2002, and 2004-2006; AES, 2012

Figure 8
Critical Habitats



SOURCE: Santa Ynez Band of Chumash Indians, 2011; NAIP Aerial Photograph, 6/17/2009; AES, 2012

Figure 9
Habitat Impact Map

7.2 FEDERALLY LISTED WILDLIFE

Two federally listed wildlife species have the potential to occur within the project site: vernal pool fairy shrimp (*Branchinecta lynchi*; VPFS) and California red-legged frog (*Rana aurora draytonii*; CRLF). These species are discussed in detail below.

***Vernal Pool Fairy Shrimp* (*Branchinecta lynchi; VPFS*)**

Federal Status: Threatened

Biology: VPFS inhabit vernal pools of the Central Valley and Coast Ranges from 10 to 290 meters. VPFS are most commonly found in small swales, earth slumps, or basalt-flow depression basins with grassy or muddy bottoms in unplowed soils, and occasionally in clear depressions less than one meter in diameter in sandstone outcrops surrounded by foothill grasslands. VPFS occur in waters between 4.5 and 23°C, with low to moderate total dissolved solids (48 to 481 parts per million (ppm)), and a pH between 6.3 and 8.5 (Syrdahl, 1993; Eriksen and Belk, 1999). When the vernal pools fill with rainwater, VPFS hatch from eggs (shell-covered dormant embryos) present in the soil from previous years of breeding. Eggs normally hatch when water less than 10°C fills vernal pools. VPFS reach maturity in approximately 18 days under conditions when daytime temperatures reach 20°C, but 41 days are more typical if water remains near 15°C (Gallagher, 1996; Helm, 1998).

Regional Distribution: VPFS are known from Alameda, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kings, Madera, Merced, Monterey, Napa, Placer, Riverside, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Ventura, Yolo, and Yuba counties in California and in southern Oregon (NatureServe, 2011). There are no CNDDB records for VPFS within five miles of the project site. There is only one documented CNDDB record for VPFS within Santa Barbara County. The record is from 2004 and is mapped approximately 48.3 kilometers (30 miles) north of the project site (CNDDB occurrence number: 359). The record states that an estimated 10,000 VPFS adults were observed within a small swale comprised of rocky, clay soil surrounded by grazed blue oak/grassland.

Recovery Plan: VPFS is covered as a federally listed threatened species under the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (Vernal Pool Recovery Plan) (USFWS, 2005a). The USFWS published the Recovery Plan on December 15, 2005. The Vernal Pool Recovery Plan covers 20 federally threatened or endangered species and 13 special status species that inhabit vernal pool ecosystems in California and southern Oregon. The southern portion of the project site occurs within the Santa Barbara Vernal Pool Region within the Lake Cachuma core area of the Vernal Pool Recovery Plan (USFWS, 2005a).

Potential to Occur in the Action Area: The project site provides habitat for VPFS within the seasonal wetlands and is located within a core area of the Vernal Pool Recovery Plan. The seasonal wetlands did not contain water during the September 2011, March 2012, and April 2012 biological surveys of the project site. Because of the factors above and that the no protocol level surveys for VPFS have been conducted, VPFS may occur within the project site.

Potential Impacts: The Proposed Project could impact seasonal wetlands located within a core area of the Vernal Pool Recovery Plan that provide habitat for VPFS. No indirect effects would occur to seasonal wetlands since no other seasonal wetlands with hydrological connectivity occur within 250 feet of the seasonal wetlands proposed to be impacted. The avoidance and minimization measures identified below would ensure that the Proposed Project **may affect but is not likely to adversely affect** VPFS.

Mitigation Measures: The following mitigation measures are required to avoid or minimize potential adverse affects to VPFS. Upon implementation of the mitigation measures identified below, potential impacts to VPFS would be reduced to a less-than-significant level.

- Prior to the final siting of the residential units, utility corridors, roadways, and any other project component that would result in ground disturbance, a qualified biologist shall identify appropriate wetland habitat buffer zones around seasonal wetland habitat within the project site to assure avoidance during construction.
- Prior to construction within 500 feet of a wetland habitat buffer zone, a qualified biologist shall demarcate each buffer zone using appropriate materials such as high visibility construction fencing, which will not be removed until the completion of construction activities within 500 feet of the wetland habitat buffer zone.
- Staging areas shall be located away from the wetland habitat buffer zones. Temporary stockpiling of excavated or imported material shall occur only in approved construction staging areas.
- Prior to construction within 500 feet of a wetland buffer zone, a USFWS-approved biologist shall conduct a habitat sensitivity training related to VPFS for project contractors and personnel. Supporting materials containing training information shall be prepared and distributed. Upon completion of training, all construction personnel shall sign a form stating that they have attended the training and understand all the conservation measures. Training shall be conducted in languages other than English, as appropriate. Proof of this instruction will be kept on file with the Tribe. The Tribe will provide the USFWS with a copy of the training materials and copies of the signed forms by project staff indicating that training has been completed within 30 days of the completion of the first training session. Copies of signed forms will be submitted monthly as additional training occurs for new employees. The crew foreman will be responsible for ensuring that construction personnel adhere to the guidelines and restrictions. If new construction personnel are hired following the habitat sensitivity training, the crew foreman will ensure that the personnel receive the mandatory training before starting work.

***California Red-Legged Frog* (*Rana aurora draytonii; CRLF*)**

Federal Status: Threatened

Biology: CRLF require aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats from sea level to approximately 1,500 meters (75 FR 12816-12959). Breeding aquatic habitats include pools and backwaters within streams, creeks, ponds, marshes, springs, sag ponds, dune ponds, and lagoons. CRLF also breed in artificial impoundments including stock ponds. The breeding period is from November through April. CRLF mate between February and March. The eggs hatch into tadpoles in approximately three weeks. The tadpoles subsequently metamorphose into juveniles between 11 and 20 weeks, which generally occurs between June and September. CRLF use a variety of areas, including aquatic, riparian, and upland habitats. CRLF require a breeding pond, slow-flowing stream reach, or deep pool within a stream with vegetation or other material to which egg masses may be attached. These areas must hold water long enough for tadpoles to complete their metamorphosis into juvenile frogs that can survive outside of water. The CRLF use riparian and upland habitats for foraging, shelter, cover, and dispersal movement (75 FR 12816-12959). Upland habitats include crevices under boulders or rocks and organic debris, such as downed trees or logs; industrial debris; and agricultural features, such as drains, watering troughs, abandoned sheds, or hay-ricks. Beginning with the first rains of fall, CRLF may make overland excursions through upland habitats during the night. CRLF may move distances up to 1.6 kilometers (one mile) throughout one wet season (USFWS, 2002).

Regional Distribution: CRLF are known from Alameda, Butte, Contra Costa, El Dorado, Fresno, Kern, Los Angeles, Marin, Mariposa, Mendocino, Merced, Monterey, Napa, San Benito, San Bernardino, San Diego, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Siskiyou, Solano, Sonoma, Stanislaus, Tehama, Trinity, Tuolumne, and Ventura counties (NatureServe, 2011).

Recovery Plan: The USFWS published the *Recovery Plan for the California Red-legged Frog* (*Rana aurora draytonii*) (CRLF Recovery Plan) on May 28, 2002 (USFWS, 2002). The objective of the CRLF Recovery Plan is to reduce any threats to the species and to improve the status of the CRLF populations sufficiently to warrant delisting. The CRLF Recovery Plan designated eight recovery unit boundaries throughout California and 35 Core Areas within the unit boundaries. Recovery units are "regions of the species' distribution that are distinct from one another based on ecological characteristics, status of the species, threats to the continued existence of the species, or recovery actions needed within the area." Core Areas are "watersheds, or portions thereof, that have been determined to be essential to the recovery of the CRLF." Core Areas have no legal mandate for protection under FESA and solely rely upon voluntary implementation (USFWS, 2002). The project site does not occur within any of the recovery unit boundaries for CRLF.

There are two CNDDB records for CRLF within five miles of the project site. The nearest CNDDB record is from 2003 and is approximately 1.13 kilometers (0.7 miles) south of the project site (occurrence number: 769). The record states that one juvenile CRLF was observed within a narrow riparian corridor within a tributary to the Santa Ynez River below a six-foot high impassible waterfall. The other CNDDB record is from 2002 and is approximately 6.12 kilometers (3.8 miles) southwest of the project site (occurrence number: 665). The record states that eight CRLF adults and 27 juveniles were observed on a bank within a small pool within Quiota Creek (CDFG, 2003).

Potential to Occur in the Action Area: The project site does not provide breeding habitat for CRLF as the manmade water storage basin is concrete lined and lacks vegetation and the ephemeral drainages do not hold permanent water long enough for CRLF larvae to develop into adults (USFWS, 2010). Aquatic features, including manmade ponds that that appear to hold water for the majority of the year, occur to the east and west of the project site, which may provide habitat for CRLF (**Figure 3**). Six of these wetland features occur within 1.6 kilometers (one mile) to the west of the project site and five wetland features within 1.6 kilometers (one mile) to the east of the project site. Because these features occur on private land, they were not ground-truthed during the September 2011, March 2012, and April 2012 surveys. Therefore, it is uncertain whether these features lack barriers between the wetland features and potential upland habitat within the project site and/or whether the wetland features are comprised of emergent vegetation required for CRLF to breed. CRLF has the potential to utilize upland habitat within the project site.

Potential Impacts: The project site does not provide breeding habitat for CRLF. The Proposed Project would have no effect on CRLF breeding habitat because none exists within the proposed action area. The project site provides upland habitat within all land located within 1.6 kilometers of wetland features occurring outside of the eastern and western boundaries of the proposed action area. The Proposed Project could impact CRLF should it be determined that CRLF occupy the wetland features occurring outside of the project site. The avoidance and minimization measures identified below would ensure that the Proposed Project **may affect but is not likely to adversely affect** CRLF.

Mitigation Measures: The following mitigation measures are required to avoid or minimize potential adverse affects to CRLF. Upon implementation of the mitigation measures identified below, potential impacts to CRLF would be reduced to a less-than-significant level.

- A qualified biologist shall conduct a habitat sensitivity training related to CRLF for project contractors and personnel, as identified under the mitigation measures for VPFS.
- A qualified biologist shall conduct a preconstruction survey within 14 days prior to the onset of construction activities occurring within 1.6 kilometers of potential breeding habitat.
- A qualified biologist shall monitor construction activities during initial grading activities within the project site. Should a CRLF be detected within the construction footprint, grading activities shall halt and the USFWS shall be consulted. No grading activities shall commence until the biologist determines that the CRLF has vacated the construction footprint on its own accord and the USFWS authorizes the re-initiation of grading activities.

8.0 CRITICAL HABITAT

8.1 VERNAL POOL FAIRY SHRIMP (*BRANCHINECTA LYNCHI*; VPFS)

The USFWS designated critical habitat for 15 vernal pool species on August 11, 2005 (50 CFR 17) (USFWS, 2005a). The primary constituent elements of critical habitat for VPFS are the habitat components that provide: topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools, providing for dispersal and promoting hydroperiods of adequate length in the pools; depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 18 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction; sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding; and pool structure consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter. The USFWS (2011) list identifies VPFS as having critical habitat within the vicinity of the Proposed Project. The southern portion of the project site occurs within Critical Habitat Unit 31 (**Figure 8**).

No adverse modification would occur to the 330.11 acres of critical habitat for VPFS as a result of the Proposed Action. The Proposed Project will avoid removal of potential habitat in the seasonal wetlands within the action area. The Proposed Action is **not likely to adversely affect** critical habitat for VPFS because of the limited size and the avoidance measures that would be implemented for the species.

8.2 CALIFORNIA RED-LEGGED FROG (*RANA AURORA DRAYTONII*; CRLF)

The USFWS revised the critical habitat designated for CRLF on March 17, 2010 (USFWS, 2010; 75 FR 12816-12959). The USFWS designated approximately 1,636,609 acres of critical habitat within 48 units of 27 counties in California. The project site does not occur within critical habitat for CRLF. The nearest critical habitat units in the vicinity of the project site include SBT-3 and SBT-6. SBT-3 occurs approximately 8.88 kilometers (5.6 miles) northeast of the project site. SBT-6 occurs approximately 8.1 kilometers (5.5) miles south of the project site. The Proposed Project would have no effect on critical habitat for CRLF because none occurs within the project site.

9.0 INTERRELATED AND INTERDEPENDENT EFFECTS

Interrelated and interdependent effects are direct or indirect effects that occur as a result of activities that are closely affiliated with a project. The development of the Proposed Project is an interrelated and interdependent activity to the proposed federal actions. The Proposed Project would not be developed but for the transfer of land into trust. No additional interrelated and interdependent effects would occur as a result of the Proposed Action.

10.0 CUMULATIVE EFFECTS

For the purposes of this BA, cumulative effects are defined as the effects of future state, local, or private activities that are reasonably foreseeable in the Action Area. This BA only discusses future state, local, or private activities occurring outside the Action Area if they result in effects within the Action Area. Future federal actions that are unrelated to the Proposed Project are not considered in this BA because they will be subject to separate consultation pursuant to Section 7 of FESA. No cumulative projects are anticipated to occur in the vicinity of the Action Area. Any future development in the area would be required to mitigate impacts to biological resources based on the California Environmental Quality Act (CEQA), the California Endangered Species Act, the federal Clean Water Act, and the FESA. No significant cumulative effects would occur.

11.0 CONCLUSIONS AND DETERMINATION

The Proposed Project could impact 0.15 acres of seasonal wetlands located within a core area of the Vernal Pool Recovery Plan that provide habitat for VPFS. The avoidance measures including establishment of appropriate buffer zones by a qualified biologist and environmental awareness training and monitoring grading activities within 500 feet of wetland features located within the project site would ensure that the Proposed Action **is not likely to adversely affect** VPFS.

The Proposed Project would have no effect on CRLF breeding habitat because none exists within the proposed action area. The Proposed Project could impact upland habitat for CRLF should it be determined that CRLF occupy the wetland features occurring outside of the project site. The avoidance and minimization measures including conducting preconstruction surveys and environmental awareness training and monitoring grading activities within 1.6 kilometers of the wetland features located outside of the project site would ensure that the Proposed Action **is not likely to adversely affect** CRLF.

12.0 REFERENCES

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ATTACHMENT 1

USFWS, CNDDB, AND CNPS LISTS

received
11-18-11CB

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2012-SLI-0005

November 16, 2011

Kelly Bayne
1801 7th Street, Suite 100
Sacramento, California 95811

Subject: Species List Request for the SYI-Camp 4 Project, Santa Barbara County, California

Dear Mr. Phillips:

This letter responds to your request, dated October 6, 2011, and received in our office via IPaC the same day, for a list of endangered, threatened, proposed, or candidate species that may occur in the vicinity of the SYI-Camp 4 project, Santa Barbara County, California. The project is for an unspecified development project located at 34.624387° N latitude 120.051079° W longitude.

The U.S. Fish and Wildlife Service's (Service) responsibilities include administering the Endangered Species Act of 1973, as amended (Act), including sections 7, 9, and 10. Section 9 of the Act and its implementing regulations prohibit the taking of any federally listed endangered or threatened species. Section 3(19) of the Act defines take to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Service regulations (50 CFR 17.3) define harm to include significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harassment is defined by the Service as an intentional or negligent action that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. The Act provides for civil and criminal penalties for the unlawful taking of listed species.

Exemptions to the prohibitions against take may be obtained through coordination with the Service in two ways. If the subject project is to be funded, authorized, or carried out by a Federal agency and may affect a listed species, the Federal agency must consult with the Service, pursuant to section 7(a)(2) of the Act. If a proposed project does not involve a Federal agency but may result in the take of a listed animal species, the project proponent should apply for an incidental take permit, pursuant to section 10(a)(1)(B) of the Act. Once you have determined if the proposed project will have a lead Federal agency, we can provide you with more detailed information regarding the section 7 or 10(a)(1)(B) permitting process.

LISTED AND CANDIDATE SPECIES
THAT MAY OCCUR IN THE VICINITY OF
THE PROPOSED PROJECT, SANTA BARBARA COUNTY, CALIFORNIA

<u>Birds</u>		
Least Bell's vireo	*Vireo bellii pusillus*	E
<u>Amphibians</u>		
California red-legged frog	*Rana draytonii*	T
California tiger salamander	*Ambystoma californiense*	E
<u>Invertebrates</u>		
Vernal pool fairy shrimp	*Branchinecta lynchi*	T, CH
<u>Plants</u>		
Gambel's watercress	*Rorippa gambellii*	E
Marsh sandwort	*Arenaria paludicola*	E

Key:
E - Endangered T - Threatened CH - Critical habitat

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	Accipiter cooperii Cooper's hawk	ABNKC12040			G5	S3	
2	Agelaius tricolor tricolored blackbird	ABPBXB0020			G2G3	S2	SC
3	Agrostis hooveri Hoover's bent grass	PMPOA040M0			G2	S2.2	1B.2
4	Anniella pulchra pulchra silvery legless lizard	ARACC01012			G3G4T3T4Q	S3	SC
5	Arctostaphylos refugioensis Refugio manzanita	PDERI041B0			G2	S2?	1B.2
6	Atriplex serenana var. davidsonii Davidson's saltscale	PDCHE041T1			G5T2?	S2?	1B.2
7	California macrophylla round-leaved filaree	PDGER01070			G2	S2	1B.1
8	Calochortus fimbriatus late-flowered mariposa-lily	PMLIL0D1J2			G3G4	S2.2	1B.2
9	Cordylanthus rigidus ssp. littoralis seaside bird's-beak	PDSCR0J0P2		Endangered	G5T1	S1.1	1B.1
10	Delphinium umbraculorum umbrella larkspur	PDRAN0B1W0			G2G3	S2S3.3	1B.3
11	Emys marmorata western pond turtle	ARAAD02030			G3G4	S3	SC
12	Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1			G4T3	S2.1	1B.1
13	Lonicera subspicata var. subspicata Santa Barbara honeysuckle	PDCPR030R3			G5T2	S2.2	1B.2
14	Oncorhynchus mykiss irideus southern steelhead - southern California DPS	AFCHA0209J	Endangered		G5T2Q	S2	SC
15	Rana draytonii California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3	SC
16	Senecio aphanactis chaparral ragwort	PDAST8H060			G3?	S1.2	2.2
17	Southern California Steelhead Stream	CARE2310CA			G?	SNR	
18	Southern Coast Live Oak Riparian Forest	CTT61310CA			G4	S4	
19	Southern Cottonwood Willow Riparian Forest	CTT61330CA			G3	S3.2	
20	Southern Vernal Pool	CTT44300CA			G?	SNR	
21	Southern Willow Scrub	CTT63320CA			G3	S2.1	
22	Thamnophis hammondii two-striped garter snake	ARADB36160			G3	S2	SC
23	Thelypteris puberula var. sonorensis Sonoran maiden fern	PPTHE05192			G5T3	S2.2?	2.2
24	Thermopsis macrophylla Santa Ynez false lupine	PDFAB3Z0E0		Rare	G1	S1.3	1B.3

CNPS Inventory of Rare and Endangered Plants

Status: Plant Press Manager window with 13 items - Mon, Mar. 19, 2012 15:35 c

- During each visit, we provide you with an empty "Plant Press" for collecting items of interest.
- Several report formats are available. Use the CSV and XML options to download raw data.

Refomat list as: Standard List - with Plant Press controls

DELETE unchecked items | check all | check none

open	save	scientific	common	family	CNPS
	✔	Agrostis hooveri	Hoover's bent grass	Poaceae	List 1B.2
	✔	Arctostaphylos refugioensis	Refugio manzanita	Ericaceae	List 1B.2
	✔	California macrophylla	round-leaved filaree	Geraniaceae	List 1B.1
	✔	Calochortus fimbriatus	late-flowered mariposa lily	Liliaceae	List 1B.2
	✔	Caulanthus amplexicaulis var. barbarae	Santa Barbara jewel-flower	Brassicaceae	List 1B.1
	✔	Cordylanthus rigidus ssp. littoralis	seaside bird's-beak	Orobanchaceae	List 1B.1
	✔	Delphinium umbraculorum	umbrella larkspur	Ranunculaceae	List 1B.3
	✔	Fritillaria ojaiensis	Ojai fritillary	Liliaceae	List 1B.2
	✔	Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Asteraceae	List 1B.1
	✔	Lonicera subspicata var. subspicata	Santa Barbara honeysuckle	Caprifoliaceae	List 1B.2
	✔	Ribes amarum var. hoffmannii	Hoffmann's bitter gooseberry	Grossulariaceae	List 3
	✔	Senecio aphanactis	chaparral ragwort	Asteraceae	List 2.2
	✔	Thermopsis macrophylla	Santa Ynez false lupine	Fabaceae	List 1B.3

DELETE unchecked items | check all | check none

ATTACHMENT 2

PLANTS AND WILDLIFE OBSERVED

Plants and Wildlife Observed within the Project Site.

Plants observed.

Family	Scientific Name	Common Name
Agavaceae	*Chlorogalum pomeridianum* var. *pomeridianum*	Soaproot
Amaranthaceae	*Amaranthus retroflexus*	Pigweed
Apiaceae	*Lomatium* spp.	
Asclepiadaceae	*Asclepias californica*	California milkweed
	Asclepias fasicularis	Narrow-leaf milkweed
Asteraceae	*Acherachaena mollis*	Blow-wives
	Baccharis pilularis	Coyote bush
	Calendula arvensis	Field marigold
	Carduus pycnocephalus	Italian thistle
	Centaurea melitensis	Tocalote
	Centaurea solstitialis	Yellow star-thistle
	Conyza canadensis	Horseweed
	Lasthenia gracilis	Goldfields
	Layia platyglossa	Tidy-tips
	Matricaria discoidea	Pineapple weed
	Silybum murianum	Milk thistle
	Sonchus oleraceus	Prickly lettuce
	Taraxicum officianale	Dandelion
	Amsinckia menziesii	Common fiddleneck
Boraginaceae	*Plagiobothrys nothofulvus*	Popcorn flower
	Plagiobothrys stipitatus var. *micranthus*	Popcorn flower
Brassicaceae	*Brassica nigra*	Wild mustard
	Capsella bursa-pastoris	Shepherds purse
	Hirschfeldia incana	Short pod mustard
	Lepidium nitidum var. *nitidum*	Peppergrass
	Raphanus sativus	Wild radish
Cactaceae	*Opuntia* sp.	Prickly pear cactus
Chenopodaceae	*Atriplex triangularis*	Spearscale
Convolvulaceae	*Convolvulus arvensis*	Field bindweed
Cyperaceae	*Cyperus eragrostis*	Nutsedge
	Eleocharis macrostachya	Creeping spike-rush
Euphorbiaceae	*Croton setigerus*	Doveweed
Fabaceae	*Acmispon wrangelianus*	Foothill lotus
	Lupinus bicolor	Bicolor lupine
	Medicago polymorpha	Bur clover
	Trifolium depauperatum var. *amplectens*	Clover
	Vicia sativa	Spring vetch
Fagaceae	*Quercus lobata*	Valley oak
	Quercus agrifolia	Coast live oak
Geraneaceae	*Erodium cicutarium*	Filaree
	Geranium dissecta	Cutleaf geranium
Lamiaceae	*Lamium amplexicaule*	Henbit

	Mentha arvensis	Field mint
	Mentha pulegium	Pennyroyal
	Trichostema lanceolatum	Vinegar weed
Lythraceae	*Lythrum hyssopifolium*	Hyssop loosestrife
Malvaceae	*Malva parviflora*	Cheeseweed
	Sidalcea sp.	Checkerbloom
Montiaceae	*Calandrinia ciliate*	Red maids
Onagraceae	*Epilobium ciliatum*	Willow herb
Papaveraceae	*Eschscholzia californica*	California poppy
Plantaginaceae	*Plantago erecta*	California plantain
	Plantago lanceoleta	English plantain
Poaceae	*Avena fatua*	Wild oat
	Bromus diandrus	Ripgut brome
	Bromus hordeaceus	Soft chess
	Crypsis alopecuroides	Prickle grass
	Cynodon dactylon	Bermuda grass
	Echinochloa crus-gali	Barnyard grass
	Hordeum murinum	Foxtail barley
	Lolium multiflorum	Italian rye grass
	Poa pratensis	Kentucky bluegrass
	Stipa pulchra	Purple needlegrass
	Vulpia myuros	Zorro fescue
Polemoniaceae	*Navarretia squarrosa*	Skunkweed
Polygonaceae	*Polygonum arenastrum*	Common knotweed
	Polygonum californicum	California knotweed
	Rumex crispus	Curly dock
Ranunculaceae	*Ranunculus californicus* var. *californicus*	California buttercup
Rubiaceae	*Galium aparine*	
Salicaceae	*Populus femontii*	Fremont's cottonwood
Solanaceae	*Datura discolor*	Jimsonweed
	Solanum nigra	Nightshade
Themidaceae	*Dichelostemma capitatum ssp. capitatum*	Bluedicks
	Muilla maritime	Common muilla
Violaceae	*Viola pedunculata*	Johnny-jump-up
Vitaceae	*Vitis vinifera* var.	Wine grape varietal
Zygophyllaceae	*Tibulus terrestris*	Puncture vine

Wildlife observed.

Family	Scientific Name	Common Name
Mammals		
Bovidae	*Bos taurus*	Domestic cow
Canidae	*Canis latrans*	Coyote
Equidae	*Equus caballus*	Domestic horse
Leporidae	*Lepus californicus*	Black-tailed jackrabbit
Sciuridae	*Spermophilus beecheyi*	California ground squirrel
Reptiles		
Phrynosomatidae	*Sceloporus occidentalis*	Western fence lizard
Birds		
Accipitridae	*Buteo jamaicensis*	Red-tailed hawk
Accipitridae	*Buteo lineatus*	Red-shouldered hawk

Cathartidae	*Cathartes aura*	Turkey vulture
Columbidae	*Zenaida macroura*	Mourning dove
Corvidae	*Corvus brachyrhynchos*	American crow
	Corvus corax	Common raven
Cucilidae	*Geococcyx californianus*	Greater roadrunner
Falconidae	*Falco sparverius*	American kestrel
Hirundinidae	*Hirundo rustica*	Barn swallow
Icteridae	*Agelaius phoeniceus*	Red-winged blackbird
	Molothrus ater	Brown-headed cowbird
	Sturnella neglecta	Western meadowlark
Mimidae	*Mimus polyglottos*	Northern mockingbird
Parulidae	*Setophaga coronata*	Yellow-rumped warbler
Picidae	*Melanerpes formicivorus*	Acorn woodpecker
Turdidae	*Sialia mexicana*	Western bluebird

ATTACHMENT 3

REGIONALLY OCCURRING FEDERALLY LISTED SPECIES

TABLE 1
Regionally Occurring Federally Listed Species

SCIENTIFIC NAME COMMON NAME	FEDERAL STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION	POTENTIAL TO OCCUR ONSITE
Plants					
Arenaria paludicola Marsh sandwort	Endangered	Known from Los Angeles, San Bernardino, Santa Cruz, San Francisco, and San Luis Obispo counties in California and in Washington (CNPS, 2012).	Stoloniferous shrub usually found on sandy openings in marshes and swamps, which are occasionally freshwater or brackish, from 3 to 170 meters (CNPS, 2012).	May-August	No. The project site does not provide habitat for this species.
Nasturtium (=Rorippa) gambellii Gambel's watercress	Endangered	Known from Los Angeles, Orange, Santa Barbara, San Bernardino, San Diego, and San Luis Obispo counties and from Baja California (CNPS, 2012).	Rhizomatous herb occasionally found in brackish or freshwater meadows and swamps from 5 to 330 meters (CNPS, 2012).	April-October	No. The project site does not provide habitat for this species.
Wildlife					
Invertebrates					
Branchinecta lynchi Vernal pool fairy shrimp	Threatened, Critical Habitat	Known from Alameda, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kings, Madera, Merced, Monterey, Napa, Placer, Riverside, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Ventura, Yolo, and Yuba counties in California and in southern Oregon (NatureServe, 2011).	Found commonly in a small swale earth slump or basalt-flow depression basin with grassy or muddy bottoms in unplowed grassland from 10 to 290 meters in the Central Valley and up to 1,159 meters in the South Coast Mountains Region (Eriksen and Belk, 1999).	Wet season: December-May (adults) Dry season: June-November (cysts)	Yes. See text.
Fish					
Oncorhynchus mykiss irideus Southern steelhead	Endangered	Known from Santa Maria River south to the southern extent of San Mateo Creek in San Diego County (Moyle, 2002).	Found in cool, clear, fast-flowing permanent streams and rivers with riffles and ample cover from riparian vegetation or overhanging banks. Spawning occurs in streams with pool and riffle complexes. Requires cold water and gravelly streambed to successfully breed (Moyle, 2002).	January-April	No. The project site does not provide habitat for this species.
Amphibians					
Ambystoma californiense California tiger salamander, Santa Barbara County Population	Endangered	Known from Alameda, Butte, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Monterey, Sacramento, San Benito, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Solano, Sonoma, Stanislaus, Tulare, and Yolo counties (Stebbins, 2003).	Found in vernal pools, ephemeral wetlands, and seasonal ponds, including constructed stockponds, in grassland and oak savannah plant communities from 3 to 1,054 meters (Stebbins, 2003).	November-February (adults) March 15 -May15 (larvae)	No. The project site does not contain habitat for this species.
Rana aurora draytonii California red-legged frog	Threatened	Known along the Coast from Mendocino County to Baja California, and inland through the northern Sacramento valley into the foothills of the Sierra Nevada mountains, south to eastern Tulare County, and possibly eastern Kern County. Currently accepted range excludes the Central valley (NatureServe, 2011).	Found in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation from 0 to 1,160 meters (NatureServe, 2011).	November-June	Yes. See text.

STATUS CODES

FEDERAL: United States Fish and Wildlife Service
FE = Federally Endangered; FT = Federally Threatened; CH = Federally Listed Critical Habitat

APPENDIX F

CULTURAL RESOURCES STUDY (BOUND UNDER SEPARATE COVER)

Cultural Resources Report Provided Under Separate Cover

APPENDIX G

FARMLAND CONVERSION IMPACT RATING FORM

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request March 28, 2012
Name of Project Santa Ynez Camp 4 Environmental Assessment	Federal Agency Involved Bureau of Indian Affairs
Proposed Land Use Mixed Use Development	County and State Santa Barbara, CA
PART II *(To be completed by NRCS)*	Date Request Received By NRCS3/28/2012

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☒ NO ☐	Acres Irrigated 95,091	Average Farm Size 455
Major Crop(s) Wine grapes, Strawberries, Broccoli	Farmable Land In Govt. Jurisdiction Acres: 124,965 % 7.1	Amount of Farmland As Defined in FPPA Acres: 133,988 %7.6	
Name of Land Evaluation System Used California Storie Index	Name of State or Local Site Assessment System None	Date Land Evaluation Returned by NRCS 4/6/2012	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	702.4	221	0	
B. Total Acres To Be Converted Indirectly	166.4	790.6	0	
C. Total Acres In Site	1,433	1,433	1,433	
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	3.0	3.0	0	
B. Total Acres Statewide Important or Local Important Farmland	84.1	84.1	0	
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.001	0.001	0	
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	No Data	No Data	No Data	
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	50	50	None	

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	15(15)	15	15	15	
2. Perimeter In Non-urban Use	10(10)	10	10	10	
3. Percent Of Site Being Farmed	20(20)	1	1	1	
4. Protection Provided By State and Local Government	20(20)	20	20	20	
5. Distance From Urban Built-up Area	15(15)	3	3	3	
6. Distance To Urban Support Services	15(15)	4	4	4	
7. Size Of Present Farm Unit Compared To Average	10(10)	10	10	10	
8. Creation Of Non-farmable Farmland	10(10)	10	10	10	
9. Availability Of Farm Support Services	5(5)	5	5	5	
10. On-Farm Investments	20(20)	4	4	4	
11. Effects Of Conversion On Farm Support Services	10(10)	1	1	1	
12. Compatibility With Existing Agricultural Use	10(10)	8	4	0	
TOTAL SITE ASSESSMENT POINTS	160	91	87	83	
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	50	50	None	
Total Site Assessment *(From Part VI above or local site assessment)*	160	91	87	83	
TOTAL POINTS *(Total of above 2 lines)*	260	141	137	83	

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form: Analytical Environmental Services	Date: 4/9/2012

(See Instructions on reverse side) **Form AD-1006 (03-02)**

APPENDIX H

PHASE I ENVIRONMENTAL SITE ASSESSMENT

PHASE I ENVIRONMENTAL SITE ASSESSMENT

SANTA YNEZ BAND OF CHUMASH INDIANS
CAMP 4 FEE-TO-TRUST

AUGUST 2013

PREPARED FOR:

U.S. Department of the Interior
Bureau of Indian Affairs
Pacific Region Office
2800 Cottage Way, Room W-2820
Sacramento, CA 95825-1846

PREPARED BY:

Analytical Environmental Services
1801 7th Street, Suite 100
Sacramento, CA 95811
(916) 447-3479
www.analyticalcorp.com

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CHUMASH CAMP 4 FEE-TO-TRUST
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SECTION 1.0
INTRODUCTION

1.1 PURPOSE

This Phase I Environmental Site Assessment (Phase I ESA) has been prepared in conformance with the American Society for Testing and Materials (ASTM) Standard Practice E 1527-05, which specifies the appropriate inquiry requirement for the innocent landowner defense under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Bureau of Indian Affairs (BIA) guidelines (602 DM Chapter 2). This Phase I ESA encompasses five legal parcels (Santa Barbara County Assessor's parcel numbers (APNs) 141-121-051, 141-140-010, 141-230-023, and 141-240-002) totaling approximately 1,433 acres, located within an unincorporated area of Santa Barbara County, 22.2 miles northwest of the City of Santa Barbara, California (**Figure 1**). As such, the use of the term "Subject Property" refers to the five parcels totaling approximately 1,433 acres, unless otherwise stated. The purpose of this Phase I ESA is to identify Recognized Environmental Conditions (RECs) that may affect future uses of the Subject Property.

This Phase I ESA covers the Subject Property and surrounding known sources of contamination, up to 1.0 mile from the Subject Property. A site reconnaissance inspection of the Subject Property and adjacent properties was performed and relevant database listings of hazardous materials sites, waste generators, and underground storage tanks were reviewed (EDR, 2013). AES also reviewed historical topographic maps and aerial photographs of the Subject Property.

1.2 RECOGNIZED ENVIRONMENTAL CONDITIONS

The term REC refers to the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Additionally, the term historical REC refers to an environmental condition associated with the Subject Property, including a past release of any hazardous substance or petroleum product that has since been remediated, which in the past would have been considered a REC. Historical RECs will therefore be included in this Phase I ESA (ASTM, 2006).

SOURCE: Streetmap World, 2011; AES, 2013

Santa Ynez Camp 4 Phase I ESA / 201551 ■

Figure 1
Regional Location

1.3 LIMITATIONS AND EXCEPTIONS

No Phase I ESA can completely eliminate uncertainty regarding the potential for RECs in connection with a property. Conformance of this assessment with ASTM Standard Practice E 1527-05 will reduce, but not eliminate uncertainty regarding the potential for RECs in connection with the Subject Property. While AES has made every effort to discover and interpret available historical and current information on the property within the time available, the possibility of undiscovered contamination remains. AES's report is a best-effort collection and interpretation of available information consistent with industry standards for the completion of Phase I ESAs.

This Phase I ESA is based on a site reconnaissance of the Subject Property, a visual reconnaissance of adjacent properties, searches of government hazardous materials databases, and interviews with individuals familiar with current and historical uses of the Subject Property. Physical testing of soil or groundwater was not within the scope of this assessment. Asbestos containing building materials (ACM) and lead-based paint surveys were not included. Information was obtained for this Phase I ESA to comply with ASTM guidelines.

1.4 METHODOLOGY

A variety of data sources were consulted in completing this Phase I ESA. The following sub-sections describe the methods used and the data sources consulted to accomplish each task.

1.4.1 HISTORICAL REVIEW

Previous land uses and history of the Subject Property were researched in an effort to identify RECs at or near the Subject Property. Historical aerial photographs (**Appendix A**) and topographic maps (**Appendix B**) from different decades were examined for the presence of aboveground storage tanks, industrial buildings, gas station canopies and/or pump islands, as well as other indications of bulk hazardous material storage within the study area. Due to the rural location, the Subject Property is unmapped in the Sanborn Fire Insurance Library: thus, no records were available for review. This unmapped property report is included in **Appendix C**.

1.4.2 DATABASE SEARCHES

Database searches were conducted for records of known storage tank sites and known sites of hazardous materials generation, storage, and/or release. Available information from federal, state, and local agency lists consists of: (a) known or potential hazardous waste sites and landfills; (b) sites currently under investigation for environmental violations; (c) sites which manufacture, generate, use, store, and/or dispose of hazardous materials or hazardous wastes; (d) sites which have underground storage tanks (USTs) and/or above-ground storage tanks (ASTs); and (e) sites with recorded violations of regulations concerning USTs and hazardous materials/hazardous wastes. The database search is intended to identify facilities that may have the potential to impact surface and subsurface conditions on the Subject Property. A full listing of documented sites within the vicinity of the Subject Property is included in **Appendix D**.

1.4.3 SITE RECONNIASSANCE

Jacqueline McCrory from AES conducted a reconnaissance inspection of the Subject Property and adjacent properties on July 16, 2013. The purpose of the site reconnaissance is to examine the property for obvious physical indications of improper hazardous substance or petrochemical disposal, such as stained soil or asphalt, stressed vegetation, sumps, partially buried drums, bulk underground and above-ground fuel storage tanks, and other obvious signs of hazardous materials involvement. In addition, adjacent properties were visually inspected to the extent possible without trespassing on private property to determine if current land uses would affect the planned uses of Subject Property.

1.5 DEVIATIONS AND DATA GAPS

ASTM Standard E 1527-05 requires any significant data gaps, deviations, and deletions from the ASTM Standard to be identified and addressed in the Phase I ESA. A significant data gap would be one that affected the ability to identify a REC on the Subject Property or adjacent properties.

Due to the location of the Subject Property, Sanborn Fire Insurance maps were not available for the Subject Property. Because there is no historical data or physical indications that the property has ever been developed or occupied by a business that would have produced hazardous materials, the lack of Sanborn Fire Insurance maps is not considered a significant data gap for this Phase I ESA.

1.6 CREDENTIALS

Jacqueline McCrory prepared this report under the professional supervision of David Zweig, P.E., who qualifies as an environmental professional (EP) as defined in the ASTM Standard E 1527-05 [40 CFR §312.10(b)]. Resumes for Jacqueline McCrory and David Zweig are included as **Appendix G**.

SECTION 2.0
SITE DESCRIPTION

2.1 LOCATION AND LEGAL DESCRIPTION

The Subject Property is located within an unincorporated area of Santa Barbara County, east of the Town of Santa Ynez, 3.95 miles east of the City of Solvang, and 22.2 miles northwest of the City of Santa Barbara, California (**Figures 2** and **3**). The Santa Barbara County Assessor's parcel numbers (APNs) for the Subject Property are 141-121-051, 141-140-010, 141-230-023, and 141-240-002 (**Table 2-1**).

TABLE 2-1
SUBJECT PROPERTY PARCELS

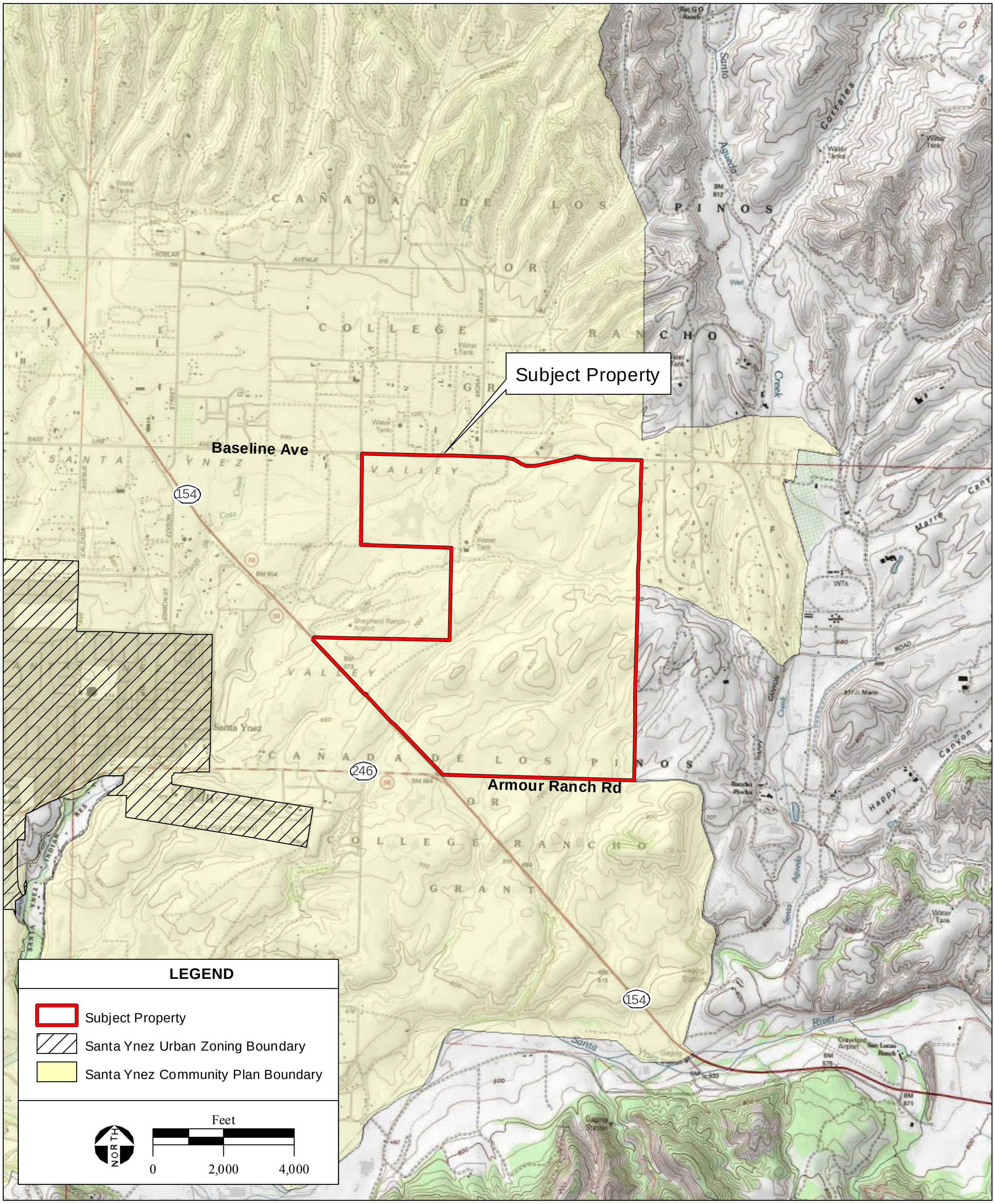
Parcel	APN(s)	Area (Acres)
1	141-121-051 141-140-010	194.9
2	141-140-010	683.3
3	141-230-023 141-140-010	257.7
4	141-240-002 141-140-010	260.5
5	141-230-023	14.7
Right of ways	N/A	21.9
	Total Area:	1433.0

SOURCE: AES, 2013

2.2 SITE AND VICINITY CHARACTERISTICS

The Subject Property is comprised of a total of approximately 1,433 acres, including an active vineyard operation covering approximately 240 acres (Parcel 1 and a portion of Parcel 2), an operating horse stable (Parcel 1) and a ranch house with a barn structure (northeast corner of Parcel 3). The remainder of the Subject Property is undeveloped pastureland consisting of rolling hills and elevated terraces used for cattle grazing.

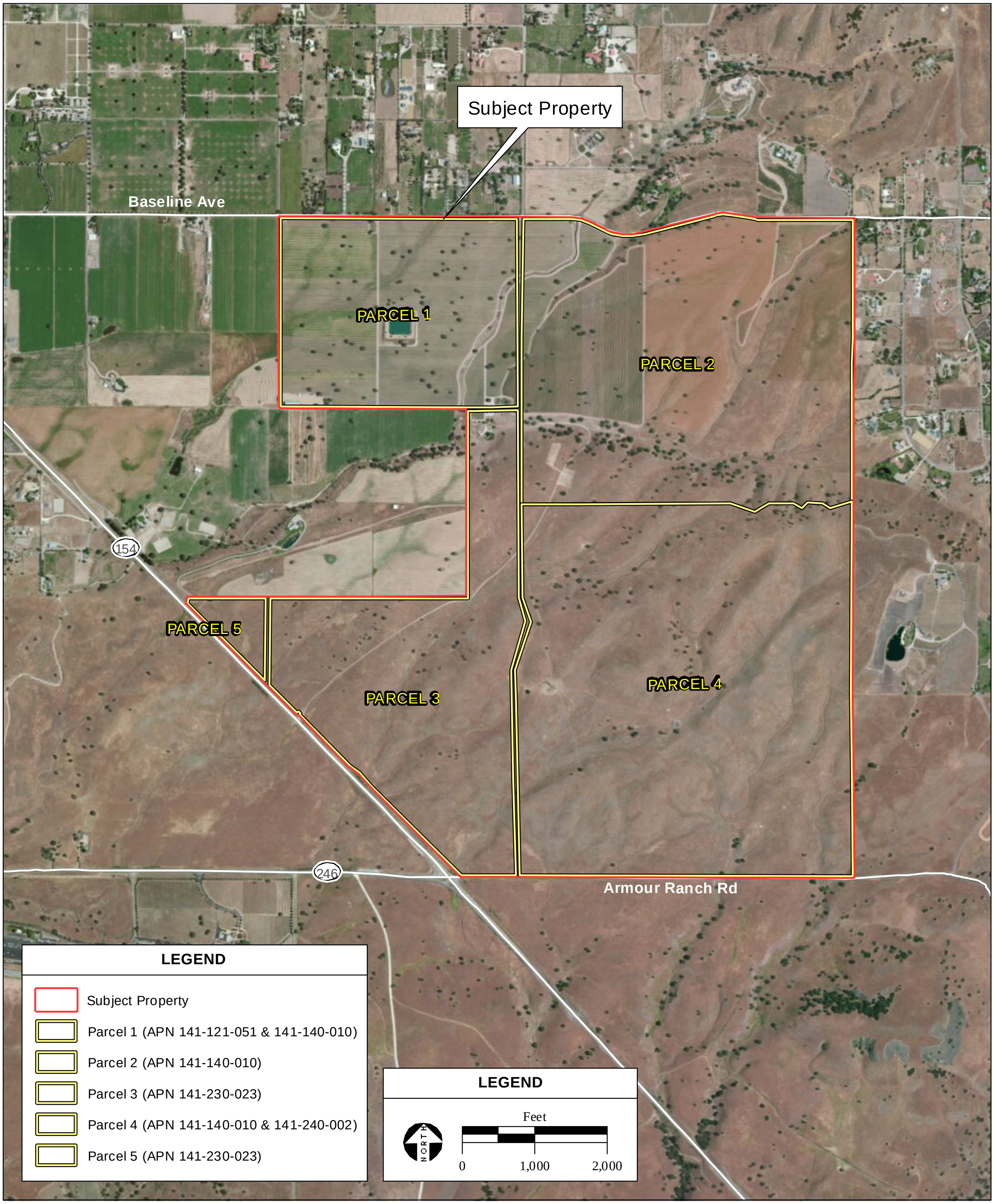
The Subject Property is bordered on the north and east by agricultural land and rural residences, on the west by agricultural land and oak savannah, and on the south by oak savannah. Surrounding land uses consist of agricultural fields, commercial equestrian facilities, low-density rural residences, and undeveloped pasture lands.



SOURCE: "Los Olivos, CA" & "Santa Ynez" USGS 7.5 Minute Topographic Quadranges, T7N, R 31W & T6N, R29W, Unsectioned Area of Santa Ynez Valley, Mt. Diablo Baseline & Meridian; Santa Barbara County GIS Data, 2012; AES, 2013

Santa Ynez Camp 4 Phase I ESA / 201551 ■

Figure 2
Site and Vicinity



SOURCE: Santa Barbara County GIS Data, 2012; Santa Ynez Band of Chumash Indians, 2011; NAIP Aerial Photograph, 6/17/2009; AES, 2013

Santa Ynez Camp 4 Phase I ESA / 201551

Figure 3
Aerial Photograph

Regional access is provided by State Route 154 (SR-154) and State Route 246 (SR-246). SR-154 extends in a general northwest direction adjacent to the western boundaries of Parcels 3 and 5, providing access to the Subject Property from the City of Santa Barbara to the southeast and from Highway 101 approximately 5.7 miles northwest of the Subject Property. SR-246 runs in a general west/east direction, originating in the City of Lompoc approximately 26 miles east of the Subject Property, terminating at the intersection with SR-154 at the southwest corner of the Subject Property. SR-246 becomes Armour Ranch Road east of the SR-154 intersection along the southern boundary of the Subject Property. Site access is provided from the west via a gated unimproved roadway from SR-154, from the north via two main gated unimproved roadways from Baseline Avenue, and from the south via a gated entrance from Armour Ranch Road. No site access is provided from the eastern boundary of the Subject Property.

2.3 LOCAL ENVIRONMENTAL RECORDS SOURCES

The EDR Report (**Appendix D**), the State Water Resources Control Board (SWRCB) Geotracker website (SWRCB, 2013), and the California Department of Toxic Substances Control (DTSC) databases (DTSC, 2013) provided search and documentation of the available Santa Barbara County hazardous materials data. No documentation was found that indicates the current or past use of hazardous materials on the Subject Property.

Department of Planning and Zoning

Zoning designations on the Subject Property were reviewed through information provided by the County of San Barbara. The Subject Property is zoned Agricultural II (AG-II-100) (County of Santa Barbara, 2009).

Electrical Utility Company

Pacific Gas and Electric (PG&E) provides electricity and natural gas services to developments within the area. Overhead electric lines are located along both sides of Baseline Avenue to the north of the Subject Property with an overhead electric line providing service to the vineyard maintenance structure along the southern boundary of Parcel 1.

Other Local Environmental Records Sources

The DTSC and SWRCB websites were reviewed for listings of underground storage tanks (USTs), leaking underground storage tanks (LUSTs), or spill cases in association with petroleum chemicals at the Subject Property (SWRCB, 2013; DTSC, 2013). No listing of USTs, LUSTs, and spill cases at the Subject Property or within the immediate vicinity of the Subject Property.

2.4 HYDROLOGY

Drainage flows on the Subject Property are influenced by several ephemeral drainages and seasonal wetland swales. There is also a manmade water storage basin located on Parcel 1 that is used by the vineyard operation. There are eight points of off-site stormwater discharge under existing conditions. Runoff from the northern and western portion of the Subject Property discharges via drainages onto adjacent private properties to the north/northwest of the Subject Property. Runoff from the remaining area of the Subject Property flows into an existing culvert beneath SR-154 to the southeast. The remaining area of the Subject Property drains into culverts beneath Armour Ranch Road to the south.

2.5 GEOLOGY AND SOIL

The Subject Property is located within the Transverse Mountain Range Geomorphic Province. The Traverse Mountain Range extends 310 miles in an east to west direction in contrast to the main fault structure of California and associated south to north trending ranges. The Subject Property is located north of the Santa Ynez Mountain Range, the western-most sub-range of the Traverse Range (Dibblee, 1988), within the Monterey Formation. The Subject Property is composed of ten primary soil types including Botella loams, Chamise loams, Positas loams, Santa Ynez loams and Terrance escarpments (NRCS, 2011). The hydrologic group rating for soils in this area is generally Class D, which indicates soils that exhibit very slow water infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer. Soils are well drained and not hydric.

2.6 CURRENT USES OF THE SUBJECT PROPERTY

A site reconnaissance survey of the Subject Property were performed by Jacqueline McCrory on July 16, 2013. The Subject Property contains a vineyard operation covering approximately 240 acres (Parcel 1 and a portion of Parcel 2), an operating horse stable (Parcel 1), and a ranch house with a barn (northeast corner of Parcel 3). The remainder of the Subject Property is undeveloped pastureland consisting of rolling hills and elevated terraces used for cattle grazing. Site photos showing conditions of the Subject Property during the site visit are shown in **Figure 4** in **Section 3.0**.

2.7 HISTORIC USES OF THE SUBJECT PROPERTY

2.7.1 AERIAL PHOTOGRAPHS

Available historic aerial photographs (**Appendix A**) were reviewed for information regarding past uses of the Subject Property and surrounding areas. The following aerial photographs were available for review: 1938 (1”=500’), 1940 (1”=500’), 1954 (1’=500’), 1967 (1”= 500’), 1975 (1”= 500’), and 1989 (1”= 500’). Aerial photographs were of varying scale and clarity. Historical aerial images offer detailed review of previous land uses on the Subject Property and adjacent properties.

The aerial photographs of the Subject Property dated 1938, 1940, 1954, 1967, 1975, and 1989 provide photographs of the interior portion of the Subject Property (southeastern corner of Parcel 2). The aerial photographs indicate the presence of an internal dirt roadway leading to the area which is developed with the small ranch house in the northern portion of Parcel 3.

2.7.2 HISTORIC TOPOGRAPHIC MAPS

Available historic USGS Topographic Quadrangles **(Appendix B)** were reviewed for information regarding past uses of the Subject Property. The *Los Olivos* Topographic Quadrangle maps dated 1905, 1910, 1947, 1959, 1978, 1995, 1974, 1982, and 1995 were available for review.

The 1947 historic topographic map indicates the presence of two structures on the Subject Property in the location of the existing ranch house and barn structure.

2.8 SANBORN FIRE INSURANCE MAPS

Sanborn Fire Insurance Maps do not provide coverage of the Subject Property. Documentation of the lack of coverage is included in **Appendix C**.

2.9 OTHER PHYSICAL SETTING SOURCES

Wetlands Map

Water resources on the Subject Property include eight ephemeral drainages, a manmade water storage basin located on the northwestern portion of the Subject Property, a vernal pool, and several seasonal wetlands. A copy of the Overview Map is included in the regulatory database report in **Appendix D.**

Floodplain Map

The Subject Property is included within the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) numbers 06083C0814F, 06083C0820F, and 06083C1085F which identify that the riparian corridors on Parcels 1 and 2 within the existing vineyard and within the northern most portion of Parcel 3 are designated as Zone A, or areas subject to inundation by the one percent annual chance flood event (**Figure 3-3**). There are no habitable structures within the Zone A designated areas on the Subject Property. The remaining parcels (Parcels 3, 4, and 5) are located in Zone X, which is defined as an area that is determined to be outside the 100- and 500-year floodplains (FEMA, 2011). A copy of the floodplain map is included in **Appendix E.**

SECTION 3.0
SITE RECONNAISSANCE AND INTERVIEWS

3.1 OBJECTIVE

The objective of the site reconnaissance is to identify current or historic hazardous materials involvement on the Subject Property or in the vicinity of the Subject Property. Hazardous materials involvement or signature environmental conditions include the presence or likely presence of any hazardous materials or petroleum products that indicate an existing release, past release, or a threat of release into any structure on the property, soil, or groundwater. Signs of possible hazardous materials involvement would include any indications of underground storage tanks (USTs) existing on the Subject Property; stained soils and/or unusual odors originating from the Subject Property; indications of any excavation or removal of soils, including patched asphalt and large debris piles; and other obvious signs of hazardous materials involvement.

Interviews included contacting individuals familiar with the Subject Property and adjacent properties that are knowledgeable of historic and existing conditions relative to hazardous materials.

3.2 SITE RECONNAISSANCE FINDINGS

A site reconnaissance survey of the Subject Property were performed by Jacqueline McCrory of AES on July 16, 2013 for the Subject Property. Adjacent properties were observed to the extent possible without trespassing. **Figures 4a** and **4b** provides photographs that show the site conditions at the time of the site visit. Notable features and environmental conditions are summarized below:

- The majority of the Subject Property is composed of undeveloped pastureland used for cattle grazing. (**Photos 1 and 2**).
- Approximately 240 acres of the Subject Property are currently developed with a vineyard (**Photo 3**).
- A ranch house with a barn and storage facilities are located on the northeast corner of Parcel 3 (**Photo 4**).
- A discarded propane tank was observed adjacent to the ranch house (**Photo 5**).
- A culvert is located adjacent to the southwest boundary of the Subject Property beneath SR-154 (**Photo 6**).

PHOTO 1: Undeveloped grazing land.

PHOTO 2: View of oak savanna.

PHOTO 3: View of operational vineyard.

PHOTO 4: View of Ranch house and barn.

PHOTO 5: Discarded non-functioning propane tank.

PHOTO 6: Surface water culvert beneath CA 154.

SOURCE: AES, 2013

Figure 4a
Site Photographs

PHOTO 7: View of active agricultural production area.

PHOTO 8: View of covered equipment storage area.

PHOTO 9: View of maintenance equipment.

PHOTO 10: View of gasoline, diesel and waste oil storage containers.

PHOTO 11: View of above ground storage containers.

PHOTO 12: View of irrigation reservoir.

SOURCE: AES, 2013

Figure 4b
Site Photographs

- Active agricultural production areas are located in the northwest portion of the Subject Property (**Photo 7**).
- A covered storage area is located in the northwest portion of the Subject Property (**Photo 8**).
- Agricultural and maintenance equipment is stored beneath the covered structure in the northwest portion of the Subject Property (**Photo 9**).
- Gasoline, diesel, and waste oil storage containers are located in the northwest portion of the Subject Property (**Photo 10**). Storage containers are located within secondary spill containers.
- Three above ground storage containers containing ammonia sulfate, sulfur, tools, four-wheel drive vehicles, and gopher bait are located in the northwest portion of the Subject Property (**Photo 11**).
- An irrigation reservoir is located in the northwest portion of the Subject Property (**Photo 12).**

3.3 ADJACENT PROPERTIES

A survey of adjacent properties was performed to the extent possible without trespassing during the July 16, 2013 site visit. The purpose was to identify adjacent businesses and determine if current land uses would affect the planned use of the Subject Property. Adjacent land uses are described below.

- North: Baseline Avenue, agricultural land and rural residences.
- South: Armour Ranch Road and undeveloped oak savannah.
- West: CA 154, agricultural land and oak savannah.
- East: Agricultural land and rural residences.

3.4 INTERVIEWS AND QUESTIONNAIRES

A standard property owner questionnaire and user questionnaire was completed in July 2013. The questionnaire is included as **Appendix F**.

SECTION 4.0
RECORDS REVIEW

4.1 DATABASE SEARCH

Database searches were conducted for records of known storage tank sites and known sites of hazardous materials generation, storage, and/or contamination. Databases were searched for sites and listings up to 1.0 mile from a point roughly equivalent to the center of the Subject Property. The environmental database review was accomplished by using the services of a computerized search firm, *Environmental Data Resources, Inc*. (EDR). EDR uses a geographic information system to plot locations of past or current hazardous materials involvement. AES reviewed the EDR report to determine if the Subject Property and adjacent sites are listed on regulatory agency databases. The purpose is to determine if adjacent sites contain recognized environmental conditions (REC) that would impact surface and/or subsurface conditions on the Subject Property. Included in the EDR database report is a list of "unmapped sites." No unmapped sites appear to be located within the applicable search radius of the Subject Property. Therefore, these sites were not researched further. The complete list of reviewed databases is provided in the EDR report, included in **Appendix D,** and is summarized in **Table 4-1**. Information on past and/or current hazardous materials involvement involving adjacent properties is summarized in **Section 4.2.2**.

TABLE 4-1
Environmental Data Resources (EDR)
Summary of Agency Databases

Agency Database	Minimum Search Distance	Property Listed	Sites Listed (Distance from Subject Property)
The United States Environmental Protection Agency (EPA), National Priorities List (NPL), Proposed NPL, Delisted NPL	1.0 miles	No	0
EPA, Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)	0.50 miles	No	0
EPA, CERCLIS – No Further Remedial Action Planned (NFRAP)	0.50 miles	No	0
EPA, Resource Conservation and Recovery Information System (RCRIS) Corrective Action Reports (CORRACTS)	1.0 miles	No	0
EPA, RCRA - for Treatment, Storage, and Disposal facilities (TSDFs)	0.50 miles	No	0

Agency Database	Minimum Search Distance	Property Listed	Sites Listed (Distance from Subject Property)
EPA, RCRA - for Hazardous Waste Generators (large quantity generators [LQG])	0.25 miles	No	0
EPA, RCRA - for Hazardous Waste Generators (small quantity generators [SQG])	0.25 miles	No	0
EPA, RCRA - for Hazardous Waste Generators (conditionally exempt small quantity generators [CESQG])	0.25 miles	No	0
EPA, Engineering Controls Sites List (US ENG CONTROLS) List	0.50 miles	No	0
EPA, Sites with Institutional Controls (US INST CONTROLS) List	0.50 miles	No	0
EPA, (LUCIS)	0.50 miles	No	0
United States Coast Guard, National Response Center, Emergency Response Notification System (ERNS)	TP	No	0
State and tribal equivalent NPL (RESPONSE)	1.0 mile	No	0
State and tribal equivalent CERCLIS (ENVIROSTOR)	1.0 mile	No	0
State and tribal landfill and/or solid waste disposal site lists (SWF/LF)	0.5 miles	No	0
State and tribal leaking storage tank lists (LUST)	0.5 miles	No	0
State and tribal leaking storage tank lists (SLIC)	0.5 miles	No	0
State and tribal leaking storage tank lists (INDIAN LUST)	0.5 miles	No	0
State and Tribal registered storage tank lists (UST)	0.25 miles	No	0
State and Tribal registered storage tank lists (AST)	0.25 miles	No	0
State and Tribal registered storage tank lists (Indian UST)	0.25 miles	No	0
State and Tribal registered storage tank lists (FEMA UST)	0.25 miles	No	0

Agency Database	Minimum Search Distance	Property Listed	Sites Listed (Distance from Subject Property)
State and Tribal voluntary cleanup sites (VCP)	0.5 miles	No	0
State and Tribal voluntary cleanup sites (Indian VCP)	0.5 miles	No	0
Local Brownfields Lists (US BROWNFIELDS)	0.5 miles	No	0
Local lists of landfill/solid waste disposal sites (ODI)	0.5 miles	No	0
Local lists of landfill/solid waste disposal sites (DEBRIS REGION 9)	0.5 miles	No	0
Local lists of landfill/solid waste disposal sites (WMUDS/SWAT)	0.5 miles	No	0
Local lists of landfill/solid waste disposal sites (SWRCY)	0.5 miles	No	0
Local lists of landfill/solid waste disposal sites (HAULERS)	TP	No	0
Local lists of landfill/solid waste disposal sites (INDIAN ODI)	0.5 miles	No	0
Local lists of hazardous waste/contaminated sites (US CDL)	TP	No	0
Local lists of hazardous waste/contaminated sites (US HIST Cal-Sites)	1.0 miles	No	0
Local lists of hazardous waste/contaminated sites (SCH)	0.25 miles	No	0
Local lists of hazardous waste/contaminated sites (Toxic Pits)	1.0 miles	No	0
Local lists of hazardous waste/contaminated sites (CDL)	TP	No	0
Local lists of hazardous waste/contaminated sites (US HIST CDL)	TP	No	0

Agency Database	Minimum Search Distance	Property Listed	Sites Listed (Distance from Subject Property)
Local Lists of Registered Storage Tanks (CA FID UST)	0.25 miles	No	0
Local Lists of Registered Storage Tanks (HIST UST)	0.25 miles	No	0
Local Lists of Registered Storage Tanks (SWEEPS UST)	0.25 miles	No	0
Local land records (LIENS 2)	TP	No	0
Local land records (LIENS)	TP	No	0
Local land records (DEED)	0.5 miles	No	0
Records of emergency release reports (HMIRS)	TP	No	0
Records of emergency release reports (CHMIRS)	TP	No	0
Records of emergency release reports (LDS)	TP	No	0
Records of emergency release reports (MCS)	TP	No	0
Records of emergency release reports (SPILLS 90)	TP	No	0

[1]TP=Target Property
Source: Environmental Data Resources, 2013

4.2 HAZARDOUS MATERIALS INVOLVEMENT

A regulatory agency database search was performed to identify locations of past and/or current hazardous materials involvement. Regulatory agency databases were searched for records of known storage tank sites and known sites of hazardous materials generation, storage, or contamination, or where violations pertaining to storage, use, or disposal of hazardous materials have occurred. Databases were searched for sites and listings up to 1.0 mile from a point roughly equivalent to the center of Subject Property. Although a site may be listed within the database report, this does not mean the site is currently contaminated or will impact the environmental quality of the Subject Property. It should be noted that the database search is only as accurate as the data entered into the government agency-maintained databases and the date on which those databases were last updated. Installation of underground storage tanks (USTs) or hazardous material releases, if not reported to the appropriate agency, would not be listed on any of the databases searched.

4.2.1 SUBJECT PROPERTY

The Subject Property is not indicated as a site of documented hazardous materials storage or releases.

4.2.2 ADJACENT PROPERTIES

No listed sites are documented within one mile of the Subject Property (**Appendix D**).

SECTION 5.0
FINDINGS AND CONCLUSIONS

This Phase I ESA was performed in conformance with the scope and limitations of ASTM Standard Practice E1527-05. Based on information gathered while conducting this Phase I ESA, the following environmental conditions were observed:

- Parcel 1 – A majority of the parcel contains active vineyard agriculture. A vineyard maintenance area is located in the southwestern corner of the parcel, including a metal structure which covers approximately 15 farm vehicles. Three aboveground storage tanks (ASTs) containing gasoline, diesel, and waste oil are located within a secondary containment structures. Eight empty 55-gallon drums, twelve empty 5-gallon paint containers, and six 25-gallon fuel tanks are located within or adjacent to the temporary storage sheds located within the maintenance area. No spills or improper storage of chemicals were noted during the site reconnaissance.

  Groundwater wells and associated infrastructure, including a water storage basin is located in the middle of the parcel approximately 1,200 feet northeast of the maintenance area. An AST is located next to the groundwater well system. Large aboveground storage tanks, containing fertilizers and pesticides are located in maintenance area. An operating horse stable, residential structure and barn are located on the southwestern corner of the parcel.

- Parcel 2 – The parcel is comprised of vineyard agriculture, with the remainder of the parcel consisting of undeveloped grassland.

- Parcels 3, 4, and 5 are comprised of undeveloped grassland.

- No spills or improper storage of chemicals were noted during the site reconnaissance.

This Phase I ESA was prepared in conformance with the scope and limitations of ASTM Practice E 1527-05. Any exceptions to, or deletions from, this practice are described in **Section 1.0** of this Phase I ESA. Based on site reconnaissance, property owner interviews and questionnaires, and information in the EDR report (**Appendix D**), no RECs were identified on or in the immediate vicinity of the Subject Property that would likely to pose a significant impact to the environmental integrity of the Subject Property. Based upon available information, no subsurface environmental investigations of the Subject Property are recommended at this time.

SECTION 6.0
REPORT AUTHORS AND REFERENCES

The undersigned declare to the best of their professional opinion that they meet the definition of Environmental Professional. Jacqueline McCrory, Site Assessor, prepared this report under the professional supervision of David Zweig, Professional Engineer, who qualifies as an environmental professional (EP) as defined in the ASTM Standard E1527-05, the All Appropriate Inquiries Rule codified in §312.10 of 40 CFR 312, and has the specific qualifications based on education, training, and experience to assess a property of the nature, and setting of the Subject Property. The signatures of Jacqueline McCrory and David Zweig, P.E. appear below, and their resumes are included as **Appendix G**.

REPORT PREPARATION

Analytical Environmental Services
1801 7th Street, Suite 100
Sacramento, CA 95811

Site Assessor: ______________________
Jacqueline McCrory, Site Assessor

Senior Reviewer: ______________________
David Zweig, P.E.

REFERENCES

American Society for Testing and Materials (ASTM) 2006. Practice E1527-05: "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment

County of Santa Barbara. 2009. Santa Ynez Valley Community Plan; Adopted October 6, 2009. Available online at: http://longrange.sbcountyplanning.org/planareas/santaynez/documents/Board%20of%20Supervisors%20Adoption/Electronic%20Docket/Master%20Final%2010-15-09.pdf. Accessed December, 2011.

Department of Toxic Substances Control (DTSC). 2013. Envirostor Database Search: Santa Ynez. Dated July 22, 2013.

Dibblee, T.W. and Ehrenspeck, H.E., ed., 1988, Geologic map of the Santa Ynez and Tajiguas quadrangles, Santa Barbara County, California: Dibblee Geological Foundation, Map DF-15, scale 1:24000.

Environmental Data Resources, Inc. (EDR), Radius Map Report with GeoCheck, Inquiry No. 3664353.2s, dated July 12, 2013.

Federal Emergency Management Agency, Flood Insurance Rate Map, Community/Panel Numbers 06083C0814F, 06083C0820F, and 06083C1085F, effective 2005.

Natural Resources Conservation Service (NRCS), 2011. Soil Survey of Santa Barbara County. Natural Resources Conservation Service Web Soil Survey. Available online at: http://websoilsurvey.nrcs.usda.gov/. Accessed December, 2011.

SWRCB, 2013. Geotracker Database . Available online at: www.geotracker.swrcb.ca.gov. Accessed July 25, 2013.

APPENDICES

APPENDIX A

HISTORICAL AERIAL PHOTOGRAPHS

Santa Ynez Camp 4
4500 Baseline Ave
Santa Ynez, CA 93460

Inquiry Number: 3664353.5
July 17, 2013

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

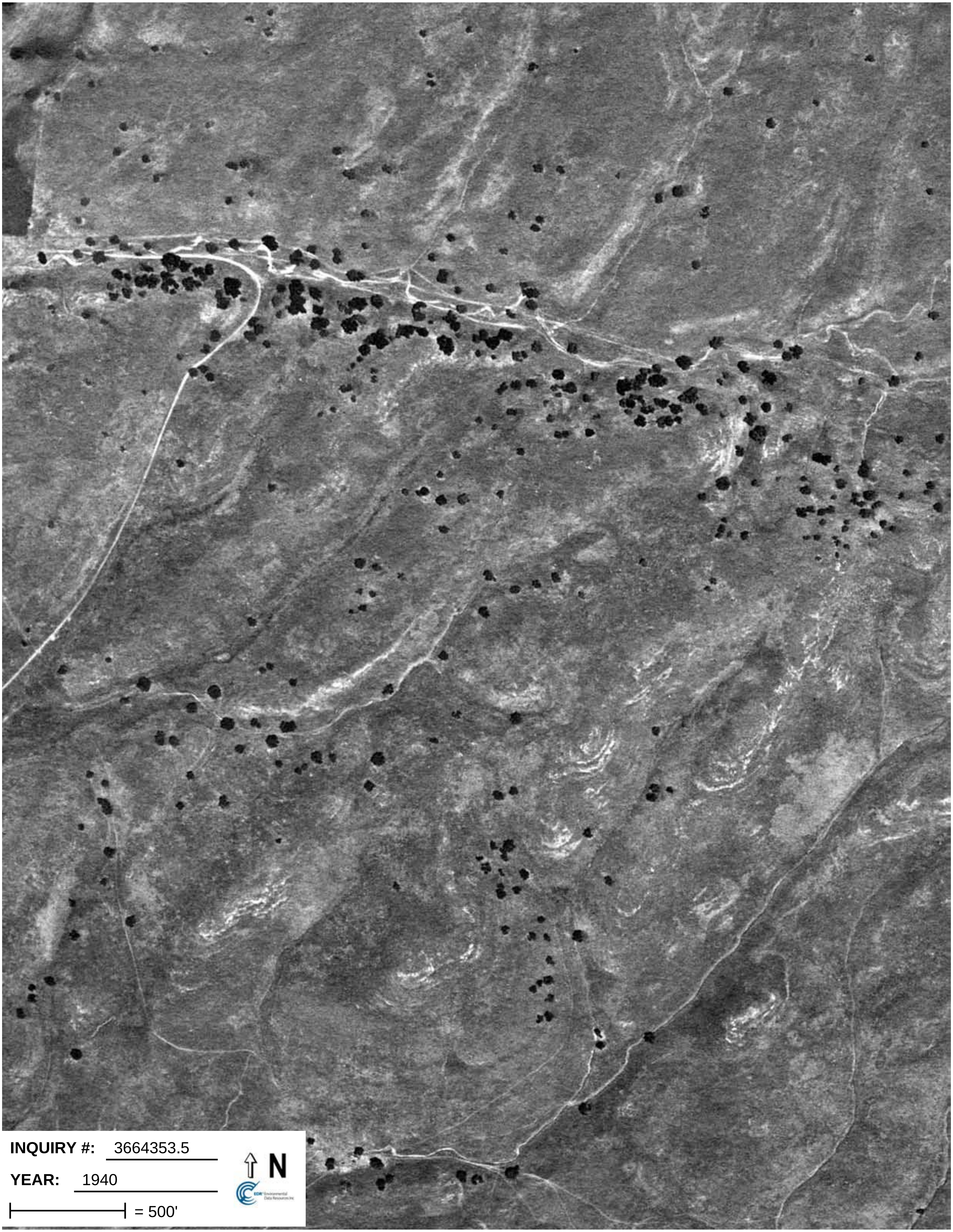
Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Date EDR Searched Historical Sources:
Aerial Photography July 17, 2013

Target Property:
4500 Baseline Ave
Santa Ynez, CA 93460

Year	***Scale***	***Details***	***Source***
1938	Aerial Photograph. Scale: 1"=500'	Flight Year: 1938	Fairchild
1940	Aerial Photograph. Scale: 1"=500'	Flight Year: 1940	USDA
1954	Aerial Photograph. Scale: 1"=500'	Flight Year: 1954	Pacific Air
1967	Aerial Photograph. Scale: 1"=500'	Flight Year: 1967	Mark Hurd
1975	Aerial Photograph. Scale: 1"=500'	Flight Year: 1975	AMI
1989	Aerial Photograph. Scale: 1"=500'	Flight Year: 1989	USGS


INQUIRY #: 3664353.5
YEAR: 1938
= 500'
N

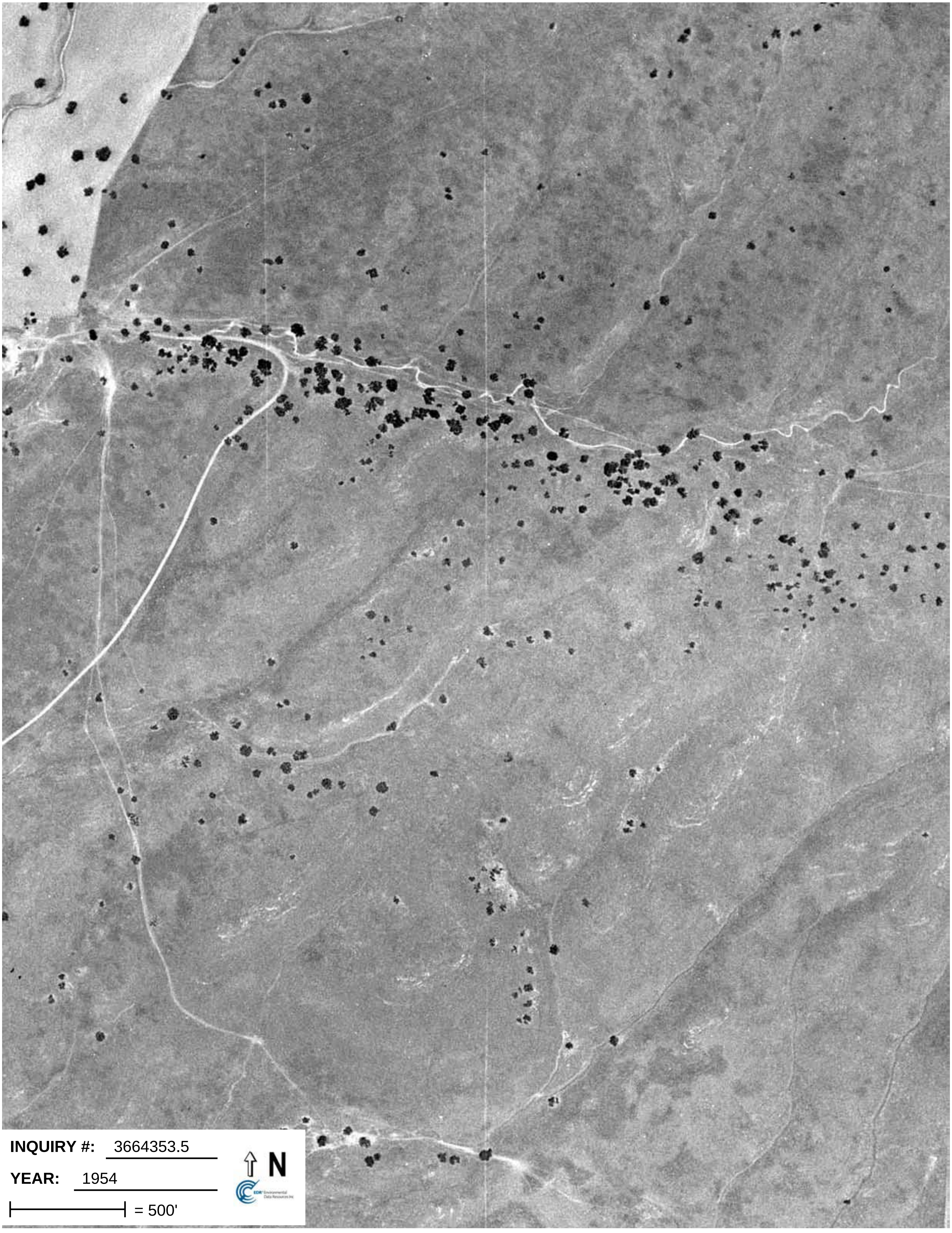


INQUIRY #: 3664353.5

YEAR: 1940

= 500'

N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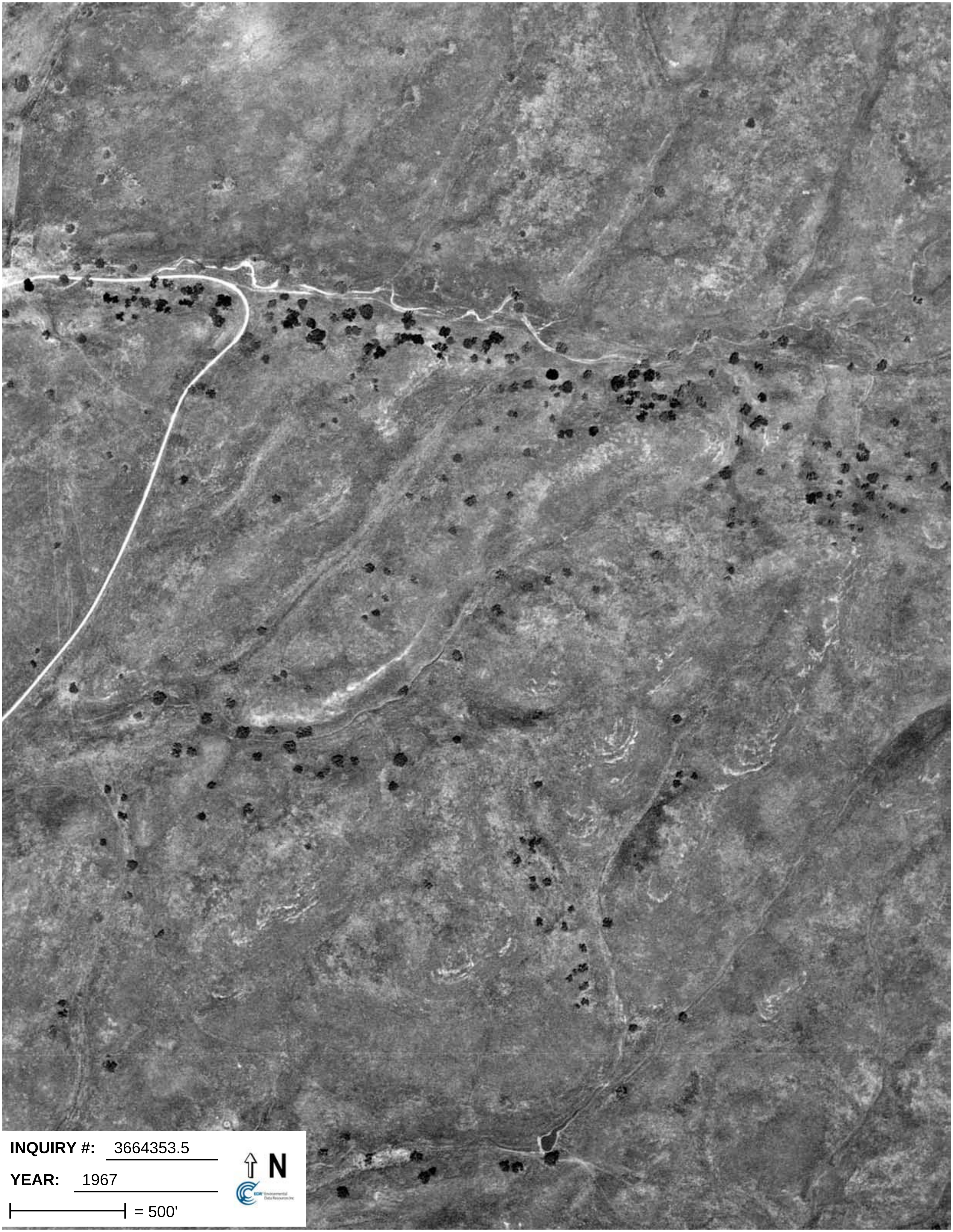
YEAR: 1954
= 500'
N


INQUIRY #: 3664353.5
YEAR: 1967
= 500'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3664353.5
YEAR: 1975
= 500'
N


INQUIRY #: 3664353.5
YEAR: 1989
= 500'
N

APPENDIX B

HISTORICAL TOPOGRAPHIC MAPS

Santa Ynez Camp 4
4500 Baseline Ave
Santa Ynez, CA 93460

Inquiry Number: 3664353.4
July 12, 2013

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Historical Topographic Map

N	TARGET QUAD NAME: LOMPOC MAP YEAR: 1905 SERIES: 30 SCALE: 1:125000	SITE NAME: Santa Ynez Camp 4 ADDRESS: 4500 Baseline Ave Santa Ynez, CA 93460 LAT/LONG: 34.6232 / -120.0451	CLIENT: Analytical Environmental Serv. CONTACT: Jacqueline Mccrory INQUIRY#: 3664353.4 RESEARCH DATE: 07/12/2013

Historical Topographic Map

N	TARGET QUAD	SITE NAME: Santa Ynez Camp 4	CLIENT: Analytical Environmental Serv.
	NAME: SOUTHERN CA SHEET 3	ADDRESS: 4500 Baseline Ave, Santa Ynez, CA 93460	CONTACT: Jacqueline Mccrory
	MAP YEAR: 1910	LAT/LONG: 34.6232 / -120.0451	INQUIRY#: 3664353.4
	SERIES: 60		RESEARCH DATE: 07/12/2013
	SCALE: 1:250000		

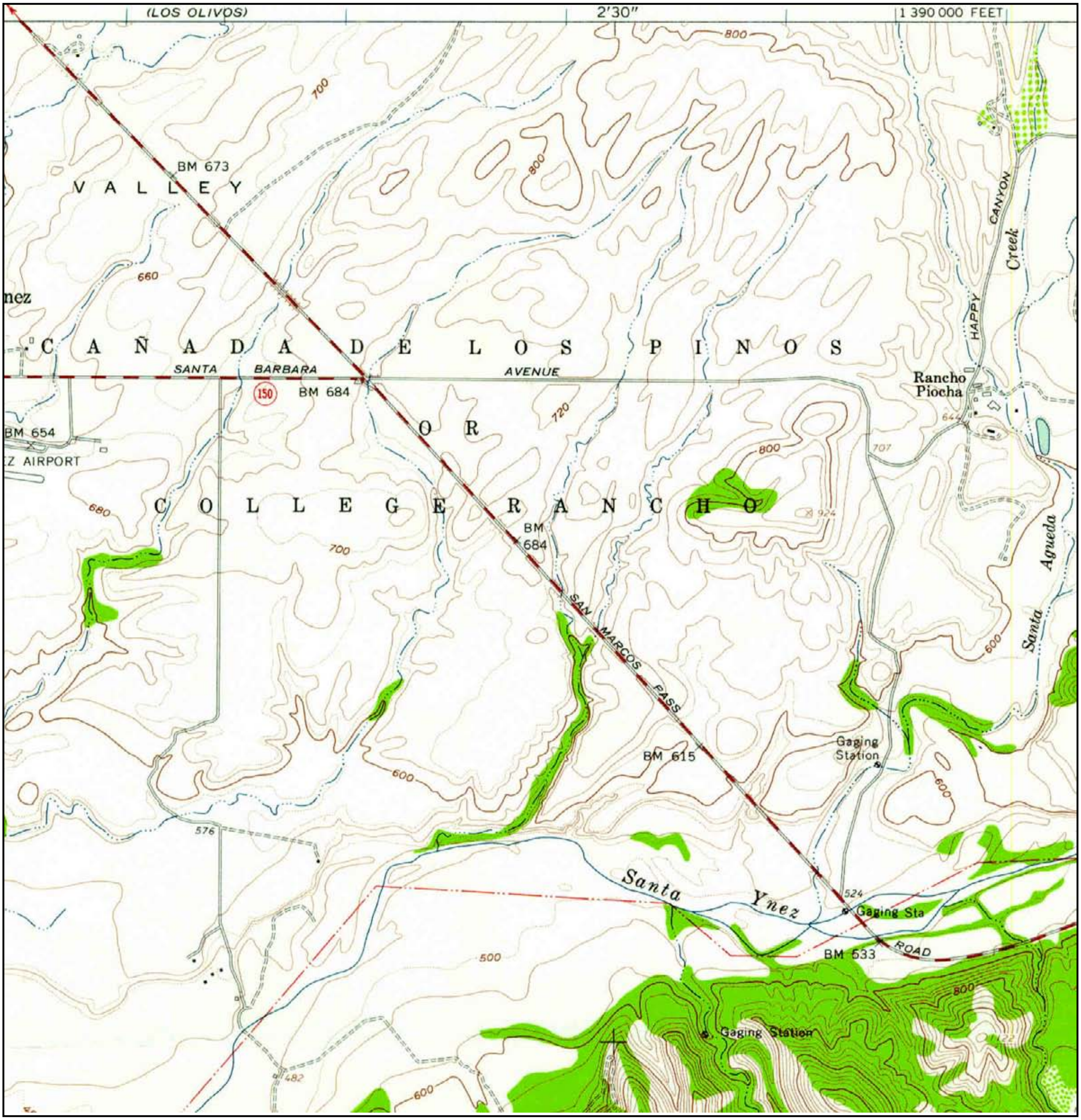
Historical Topographic Map

	TARGET QUAD		SITE NAME:	Santa Ynez Camp 4	CLIENT:	Analytical Environmental Serv.
N	NAME:	LOS OLIVOS	ADDRESS:	4500 Baseline Ave	CONTACT:	Jacqueline Mccrory
	MAP YEAR:	1947		Santa Ynez, CA 93460	INQUIRY#:	3664353.4
			LAT/LONG:	34.6232 / -120.0451	RESEARCH DATE:	07/12/2013
	SERIES:	15				
	SCALE:	1:50000				

Historical Topographic Map

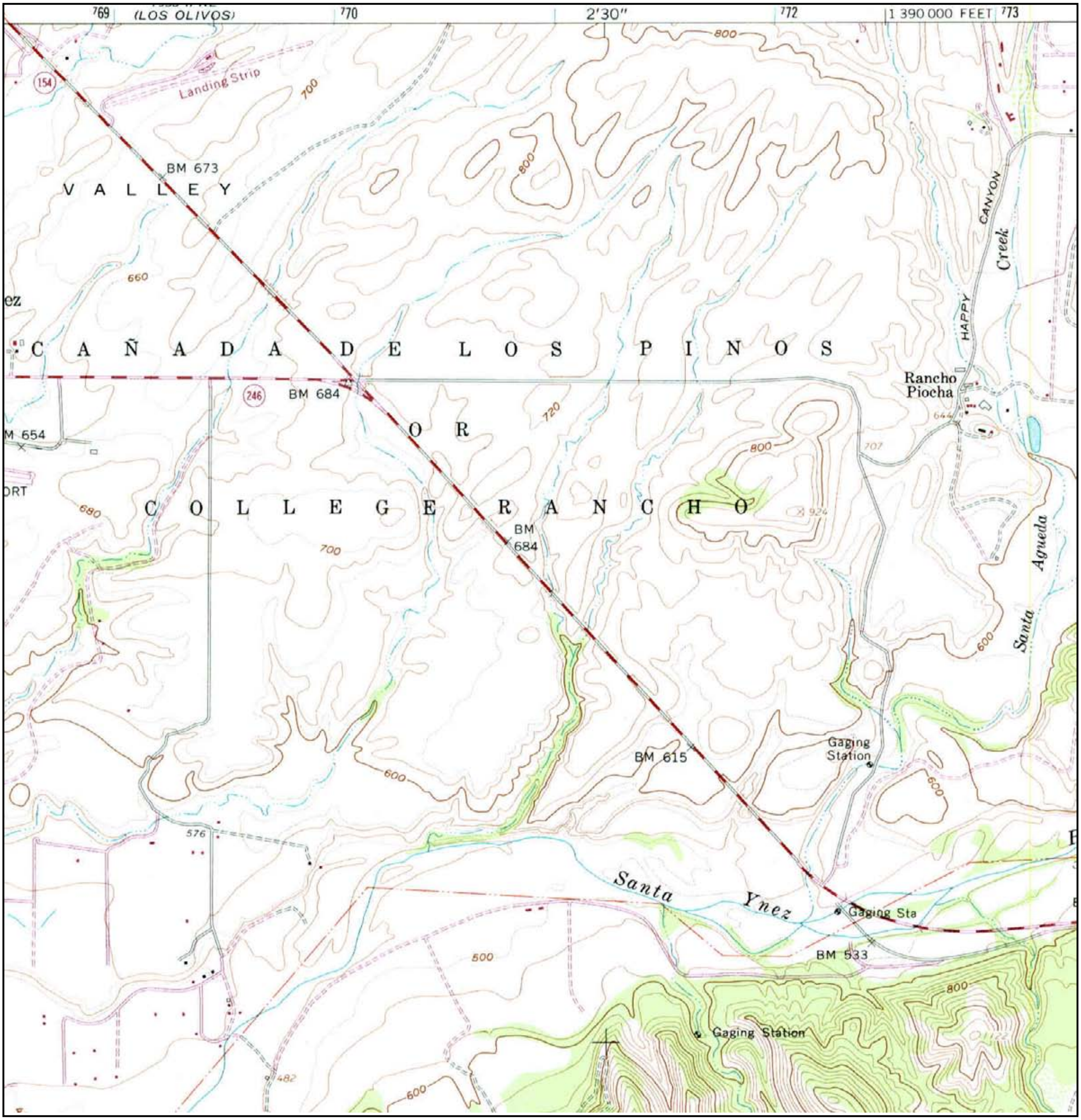
N	TARGET QUAD NAME: LOS OLIVOS MAP YEAR: 1959 SERIES: 15 SCALE: 1:62500	SITE NAME: Santa Ynez Camp 4 ADDRESS: 4500 Baseline Ave Santa Ynez, CA 93460 LAT/LONG: 34.6232 / -120.0451	CLIENT: Analytical Environmental Serv. CONTACT: Jacqueline Mccrory INQUIRY#: 3664353.4 RESEARCH DATE: 07/12/2013

Historical Topographic Map



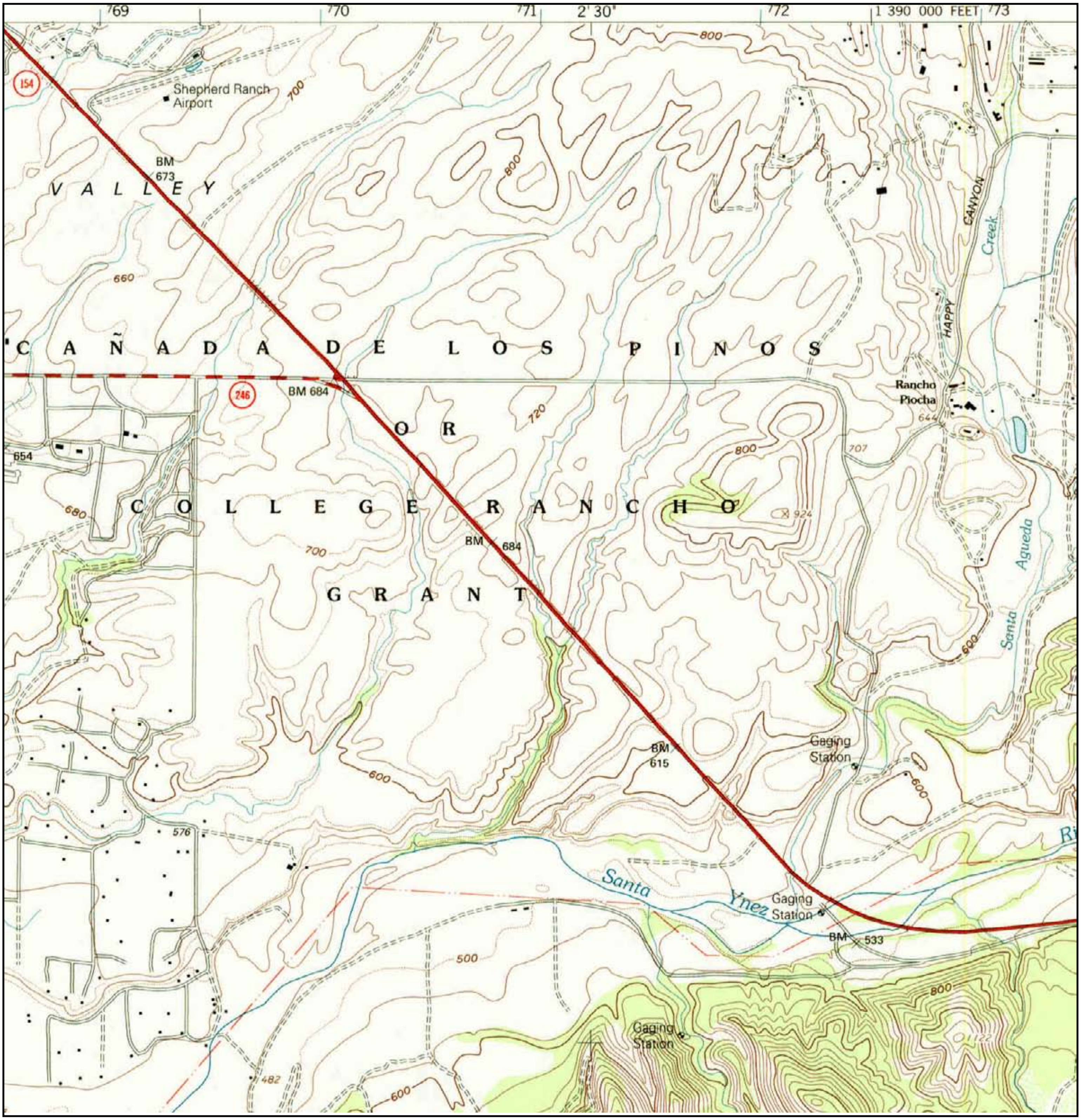
N			
	TARGET QUAD NAME: SANTA YNEZ MAP YEAR: 1959 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Santa Ynez Camp 4 ADDRESS: 4500 Baseline Ave Santa Ynez, CA 93460 LAT/LONG: 34.6232 / -120.0451	CLIENT: Analytical Environmental Serv. CONTACT: Jacqueline Mccrory INQUIRY#: 3664353.4 RESEARCH DATE: 07/12/2013

Historical Topographic Map



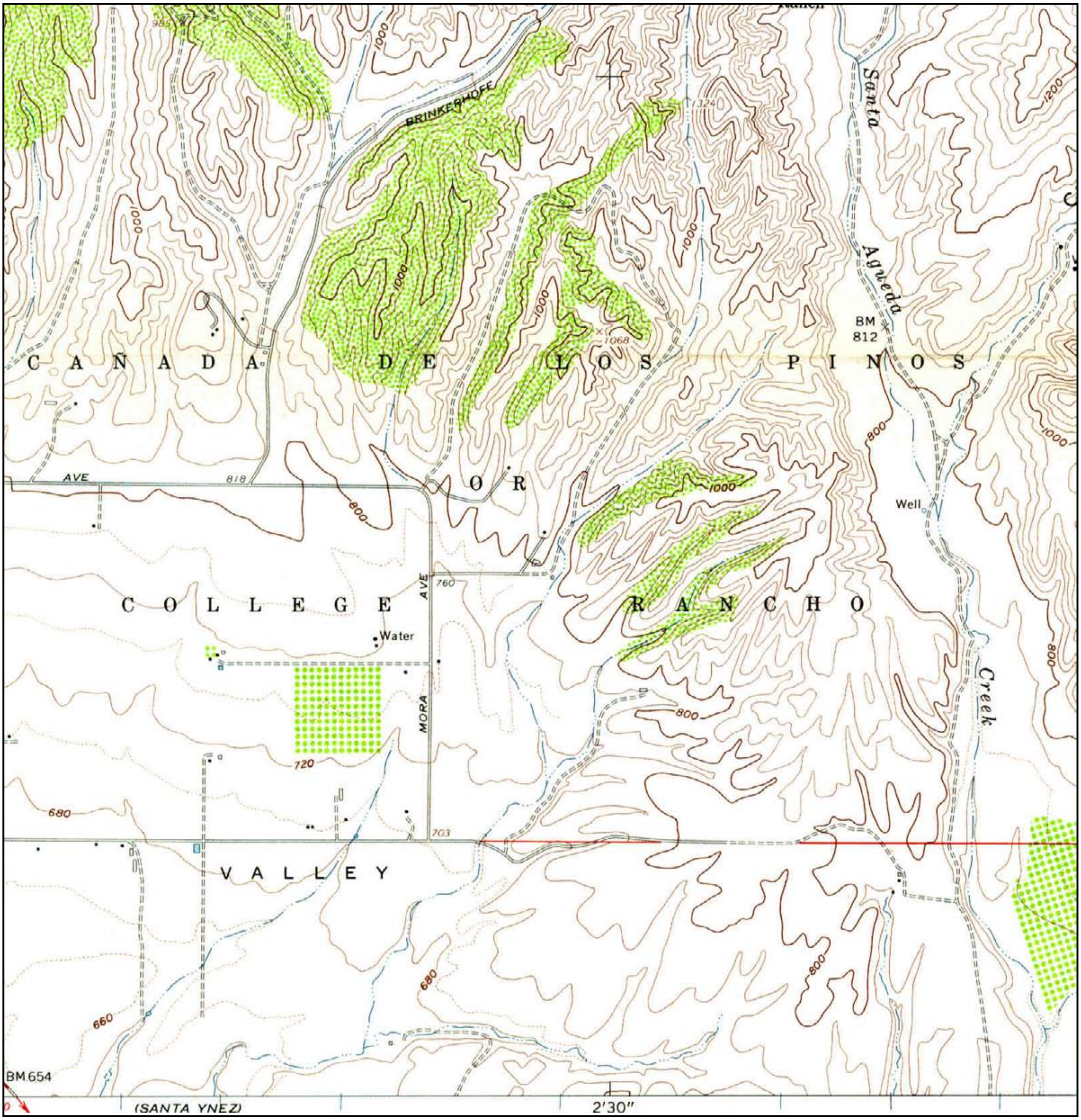
N	TARGET QUAD NAME: SANTA YNEZ MAP YEAR: 1978 PHOTOINSPECTED FROM : 1959 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Santa Ynez Camp 4 ADDRESS: 4500 Baseline Ave Santa Ynez, CA 93460 LAT/LONG: 34.6232 / -120.0451	CLIENT: Analytical Environmental Serv. CONTACT: Jacqueline Mccrory INQUIRY#: 3664353.4 RESEARCH DATE: 07/12/2013

Historical Topographic Map



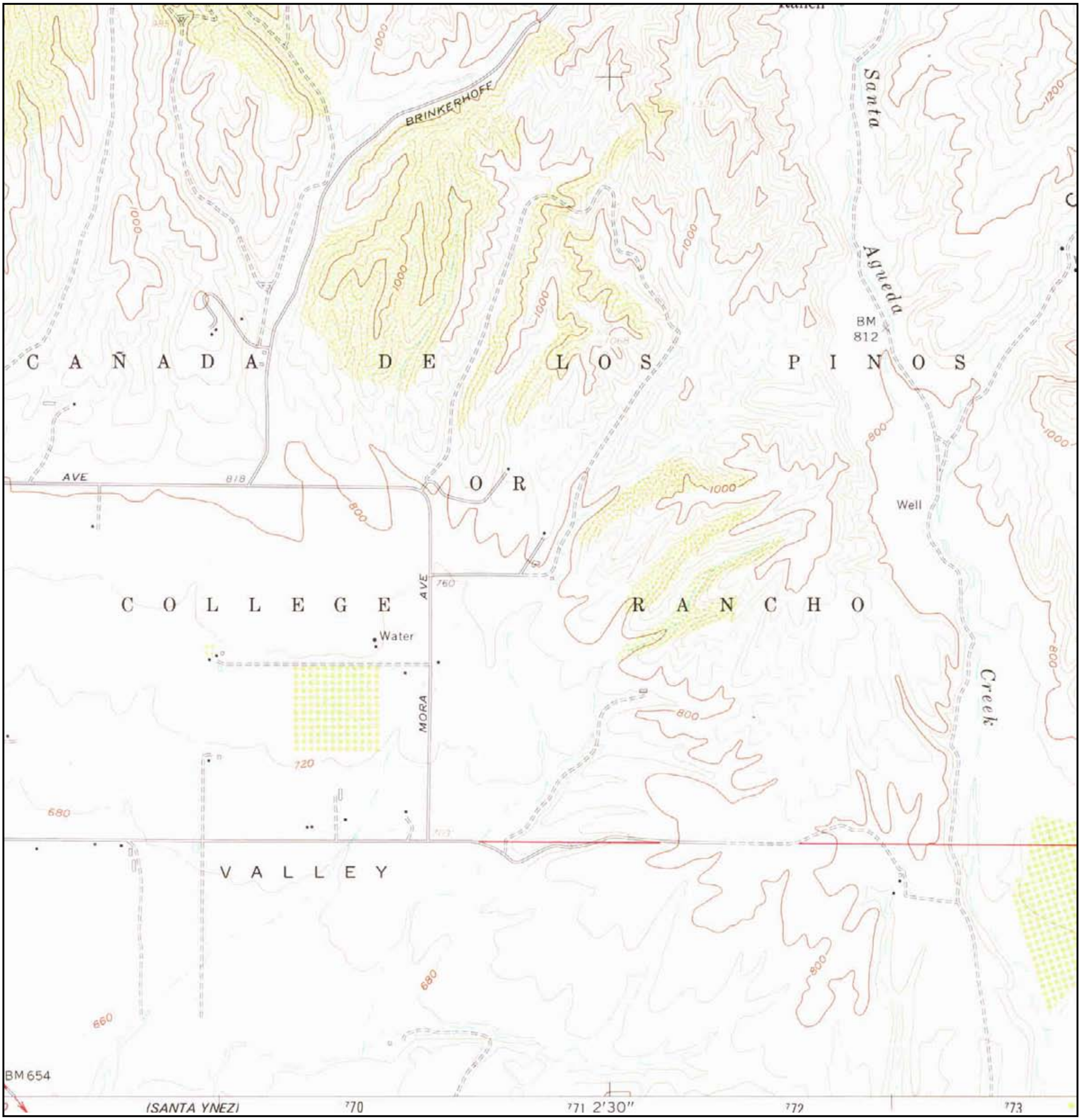
N	TARGET QUAD NAME: SANTA YNEZ MAP YEAR: 1995 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Santa Ynez Camp 4 ADDRESS: 4500 Baseline Ave Santa Ynez, CA 93460 LAT/LONG: 34.6232 / -120.0451	CLIENT: Analytical Environmental Serv. CONTACT: Jacqueline Mccrory INQUIRY#: 3664353.4 RESEARCH DATE: 07/12/2013

Historical Topographic Map



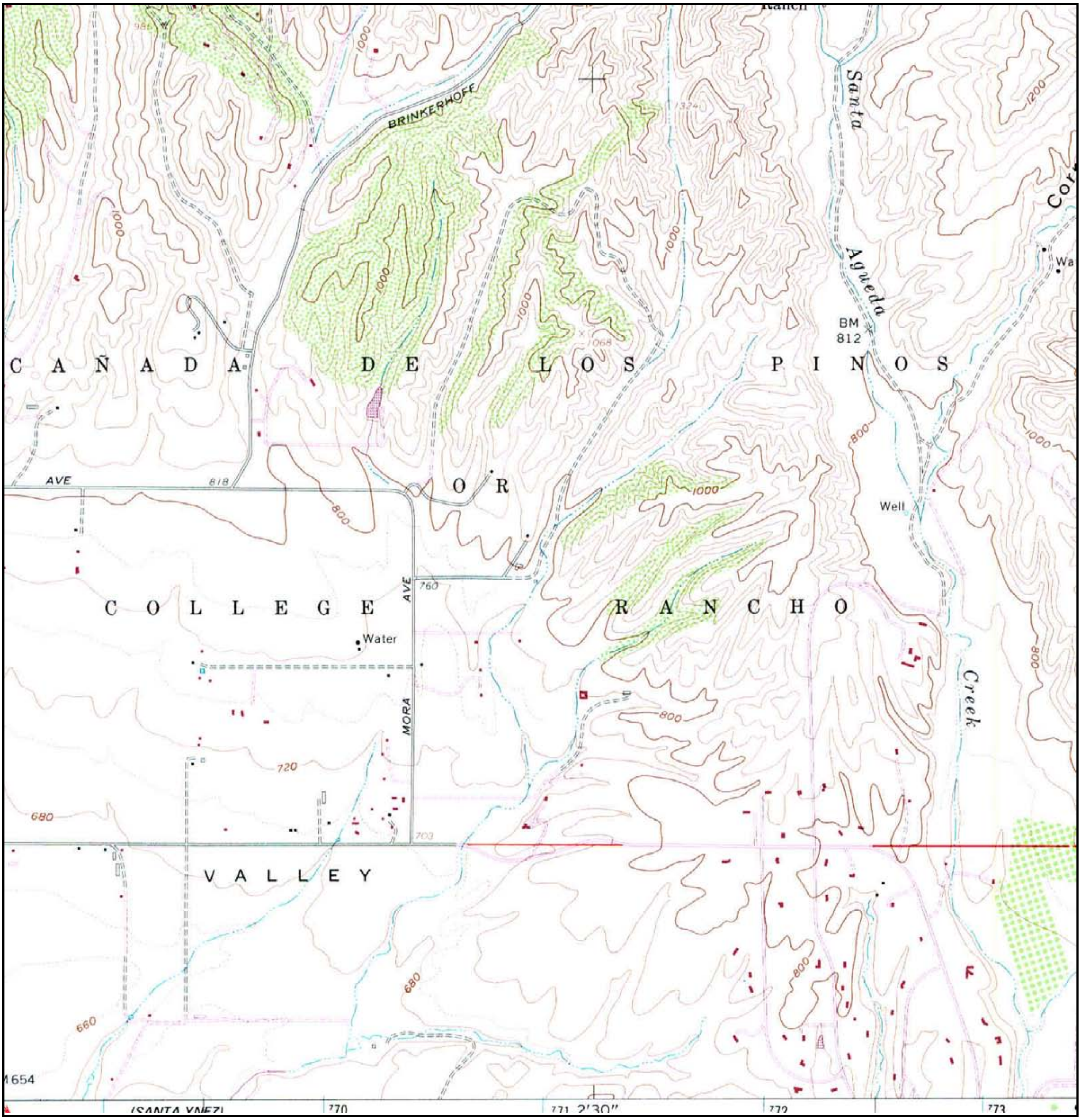
N	ADJOINING QUAD NAME: LOS OLIVOS MAP YEAR: 1959 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Santa Ynez Camp 4 ADDRESS: 4500 Baseline Ave Santa Ynez, CA 93460 LAT/LONG: 34.6232 / -120.0451	CLIENT: Analytical Environmental Serv. CONTACT: Jacqueline Mccrory INQUIRY#: 3664353.4 RESEARCH DATE: 07/12/2013

Historical Topographic Map



N	ADJOINING QUAD NAME: LOS OLIVOS MAP YEAR: 1974 PHOTOINSPECTED FROM : 1959 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Santa Ynez Camp 4 ADDRESS: 4500 Baseline Ave Santa Ynez, CA 93460 LAT/LONG: 34.6232 / -120.0451	CLIENT: Analytical Environmental Serv. CONTACT: Jacqueline Mccrory INQUIRY#: 3664353.4 RESEARCH DATE: 07/12/2013

Historical Topographic Map



N	ADJOINING QUAD NAME: LOS OLIVOS MAP YEAR: 1982 PHOTOREVISED FROM :1959 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Santa Ynez Camp 4 ADDRESS: 4500 Baseline Ave Santa Ynez, CA 93460 LAT/LONG: 34.6232 / -120.0451	CLIENT: Analytical Environmental Serv. CONTACT: Jacqueline Mccrory INQUIRY#: 3664353.4 RESEARCH DATE: 07/12/2013

Historical Topographic Map

N ↑	ADJOINING QUAD NAME: LOS OLIVOS MAP YEAR: 1995 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Santa Ynez Camp 4 ADDRESS: 4500 Baseline Ave Santa Ynez, CA 93460 LAT/LONG: 34.6232 / -120.0451	CLIENT: Analytical Environmental Serv. CONTACT: Jacqueline Mccrory INQUIRY#: 3664353.4 RESEARCH DATE: 07/12/2013

APPENDIX C

SANBORN NO COVERAGE DOCUMENT

Santa Ynez Camp 4
4500 Baseline Ave
Santa Ynez, CA 93460

Inquiry Number: 3664353.3
July 12, 2013

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

7/12/13

Site Name:	**Client Name:**
Santa Ynez Camp 4	Analytical Environmental Serv.
4500 Baseline Ave	1801 7th Street
Santa Ynez, CA 93460	Sacramento, CA 95811
EDR Inquiry # 3664353.3	Contact: Jacqueline Mccrory

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Analytical Environmental Serv. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Santa Ynez Camp 4
Address: 4500 Baseline Ave
City, State, Zip: Santa Ynez, CA 93460
Cross Street:
P.O. # NA
Project: Chumash Camp 4 Fee-to-Trust EA
Certification # FEAB-465A-9C5E

Sanborn® Library search results
Certification # FEAB-465A-9C5E

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

Analytical Environmental Serv. (the client) is permitted to make up to THREE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

APPENDIX D

ENVIRONMENTAL DATA RESOURCES (EDR) DATABASE REPORT

Santa Ynez Camp 4
4500 Baseline Ave
Santa Ynez, CA 93460

Inquiry Number: 3664353.2s
July 12, 2013

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION **PAGE**

GEOCHECK ADDENDUM

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

4500 BASELINE AVE
SANTA YNEZ, CA 93460

COORDINATES

Latitude (North):	34.6232000 - 34˚ 37' 23.52''
Longitude (West):	120.0451000 - 120˚ 2' 42.36''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	770918.8
UTM Y (Meters):	3835033.8
Elevation:	760 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34120-E1 SANTA YNEZ, CA
Most Recent Revision:	1978
North Map:	34120-F1 LOS OLIVOS, CA
Most Recent Revision:	1982

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2012
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL. . . . . National Priority List

EXECUTIVE SUMMARY

Proposed NPL - - - - - - - - - - - - - - - Proposed National Priority List Sites
NPL LIENS - - - - - - - - - - - - - - - - - - Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL - - - - - - - - - - - - - - - - National Priority List Deletions

Federal CERCLIS list

CERCLIS - Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY - - - - - - - - - Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP - - - - - - - - - - - - - - - CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS - - - - - - - - - - - - - - - - - Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF - - - - - - - - - - - - - - - - RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG - - - - - - - - - - - - - - - - - - RCRA - Large Quantity Generators
RCRA-SQG - - - - - - - - - - - - - - - - - - RCRA - Small Quantity Generators
RCRA-CESQG - - - - - - - - - - - - - - - RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS - - - - - - - - - Engineering Controls Sites List
US INST CONTROL - - - - - - - - - - Sites with Institutional Controls
LUCIS - Land Use Control Information System

Federal ERNS list

ERNS - Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE - - - - - - - - - - - - - - - - - State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR - - - - - - - - - - - - - - - EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF - Solid Waste Information System

State and tribal leaking storage tank lists

LUST - Geotracker’s Leaking Underground Fuel Tank Report

SLIC - Statewide SLIC Cases
INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
CDL - Clandestine Drug Labs
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST - Facility Inventory Database
HIST UST - Hazardous Substance Storage Container Database
SWEEPS UST - SWEEPS UST Listing

Local Land Records

LIENS 2 - CERCLA Lien Information
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System

EXECUTIVE SUMMARY

CHMIRS .... California Hazardous Material Incident Report System
LDS .... Land Disposal Sites Listing
MCS .... Military Cleanup Sites Listing
SPILLS 90 .... SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR .... RCRA - Non Generators
DOT OPS .... Incident and Accident Data
DOD .... Department of Defense Sites
FUDS .... Formerly Used Defense Sites
CONSENT .... Superfund (CERCLA) Consent Decrees
ROD .... Records Of Decision
UMTRA .... Uranium Mill Tailings Sites
US MINES .... Mines Master Index File
TRIS .... Toxic Chemical Release Inventory System
TSCA .... Toxic Substances Control Act
FTTS .... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS .... FIFRA/TSCA Tracking System Administrative Case Listing
SSTS .... Section 7 Tracking Systems
ICIS .... Integrated Compliance Information System
PADS .... PCB Activity Database System
MLTS .... Material Licensing Tracking System
RADINFO .... Radiation Information Database
FINDS .... Facility Index System/Facility Registry System
RAATS .... RCRA Administrative Action Tracking System
RMP .... Risk Management Plans
CA BOND EXP. PLAN .... Bond Expenditure Plan
UIC .... UIC Listing
NPDES .... NPDES Permits Listing
Cortese .... "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE .... Hazardous Waste & Substance Site List
CUPA Listings .... CUPA Resources List
Notify 65 .... Proposition 65 Records
DRYCLEANERS .... Cleaner Facilities
WIP .... Well Investigation Program Case List
ENF .... Enforcement Action Listing
HAZNET .... Facility and Manifest Data
EMI .... Emissions Inventory Data
INDIAN RESERV .... Indian Reservations
SCRD DRYCLEANERS .... State Coalition for Remediation of Drycleaners Listing
COAL ASH DOE .... Steam-Electric Plant Operation Data
COAL ASH EPA .... Coal Combustion Residues Surface Impoundments List
HWT .... Registered Hazardous Waste Transporter Database
HWP .... EnviroStor Permitted Facilities Listing
Financial Assurance .... Financial Assurance Information Listing
LEAD SMELTERS .... Lead Smelter Sites
2020 COR ACTION .... 2020 Corrective Action Program List
US AIRS .... Aerometric Information Retrieval System Facility Subsystem
PRP .... Potentially Responsible Parties
WDS .... Waste Discharge System
EPA WATCH LIST .... EPA WATCH LIST
US FIN ASSUR .... Financial Assurance Information
PCB TRANSFORMER .... PCB Transformer Registration Database

EXECUTIVE SUMMARY

PROC - Certified Processors Database
MWMP - Medical Waste Management Program Listing

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP - EDR Proprietary Manufactured Gas Plants
EDR US Hist Auto Stat - - - - - - - - EDR Exclusive Historic Gas Stations
EDR US Hist Cleaners - - - - - - - - EDR Exclusive Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

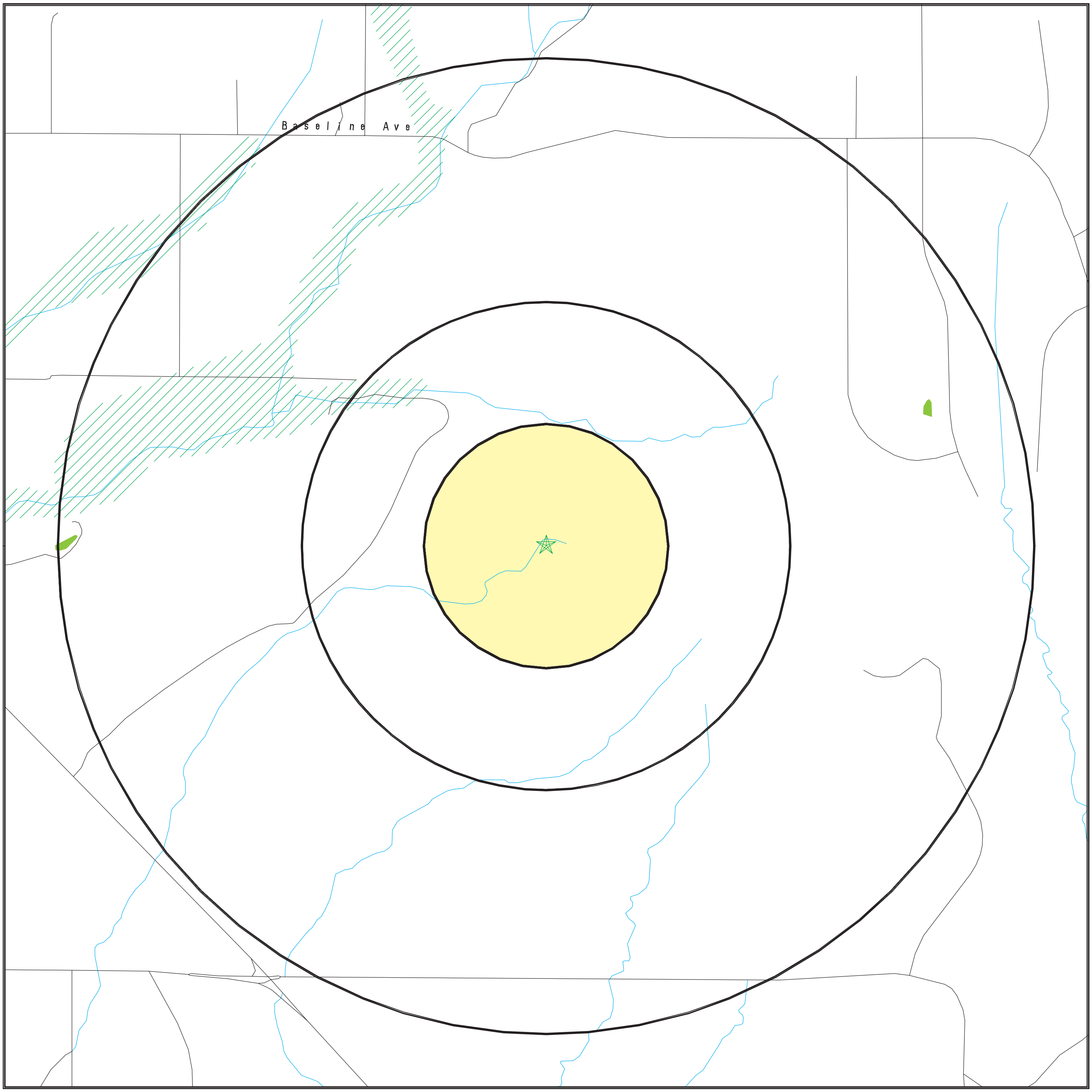
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

Site Name	Database(s)
SANTA BARBARA CO. ROAD YARD	CUPA,SWEEPS UST
SANTA YNEZ UNION HIGH SCHOOL	SWEEPS UST
CORNER STORE	SWEEPS UST
VERIZON WIRELESS - ZACA CREEK	CUPA,EMI
SANTA YNEZ VALLEY HIGH SCHOOL	CUPA
GAINEY VINEYARD #1	CUPA,WDS
SUN WEST AVIATION INC	CUPA
SANTA LUCIA FARMS	LF
SANTA YNEZ HIGH SCHOOL	LUST
CORNER STORE	LUST
FORMER GAS CARD CLUB	LUST
CHUMASH GAS STATION #1	UST
CHUMASH GAS STATION #2	UST
SANTA YNEZ VALLEY UNION HIGH S	HIST UST
SANTA YNEZ VALLEY UHSD	HAZNET
1X SANTA YNEZ VALLEY UNION HIGH SC	HAZNET
CELLCO - SANTA YNEZ	FINDS
EXXON MOBIL PRDCTN CO SANTA YNEZ U	FINDS
VERIZON - SANTA YNEZ PEAK	FINDS
SANTA YNEZ	FINDS

OVERVIEW MAP - 3664353.2s



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
National Priority List Sites
Dept. Defense Sites

0 1/4 1/2 1 Miles

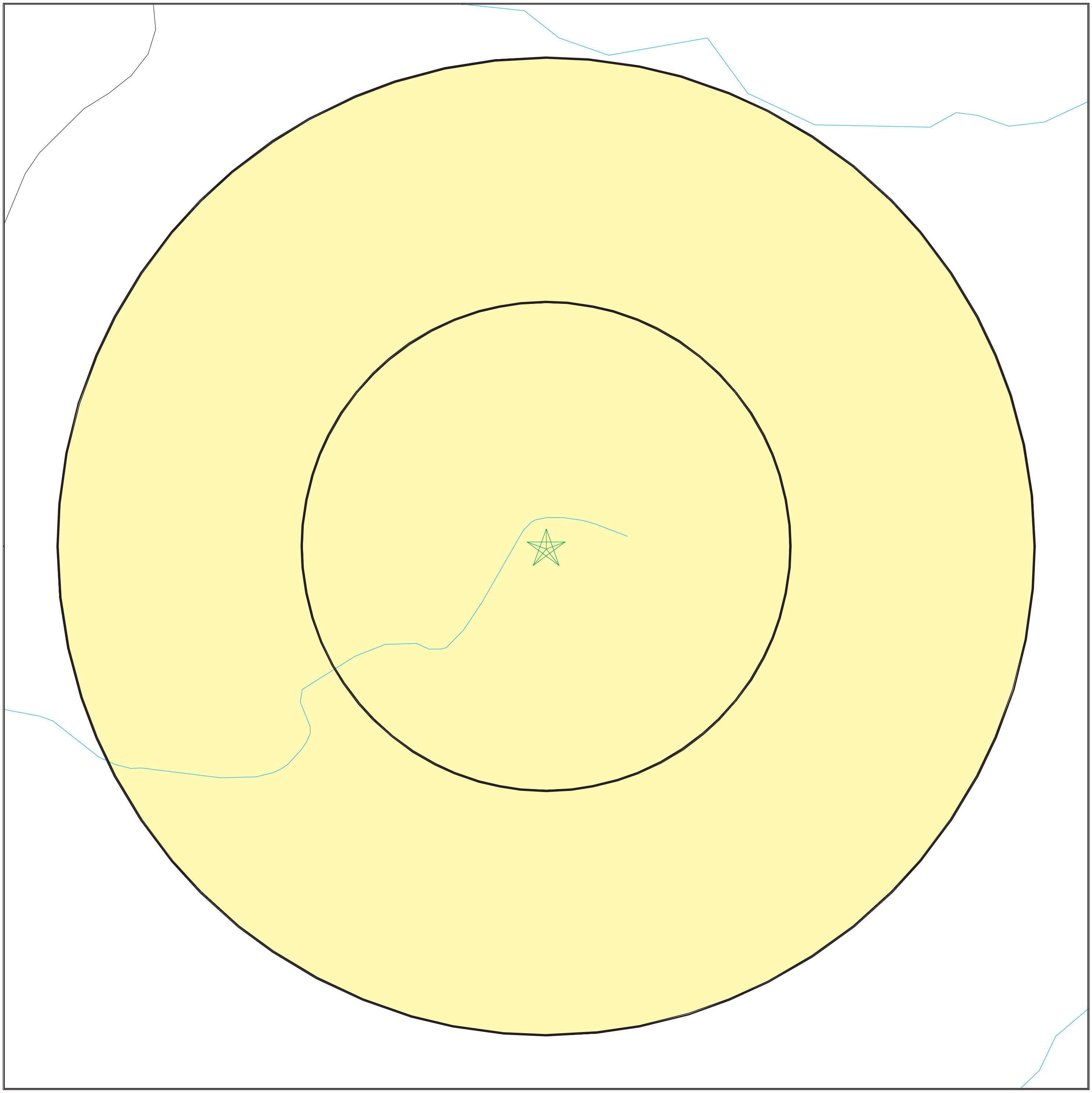
Indian Reservations BIA
Oil & Gas pipelines from USGS
100-year flood zone
500-year flood zone
National Wetland Inventory

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Santa Ynez Camp 4	CLIENT:	Analytical Environmental Serv.
ADDRESS:	4500 Baseline Ave	CONTACT:	Jacqueline Mccrory
	Santa Ynez CA 93460	INQUIRY #:	3664353.2s
LAT/LONG:	34.6232 / 120.0451	DATE:	July 12, 2013 5:44 pm

DETAIL MAP - 3664353.2s



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Santa Ynez Camp 4	CLIENT:	Analytical Environmental Serv.
ADDRESS:	4500 Baseline Ave Santa Ynez CA 93460	CONTACT:	Jacqueline Mccrory
		INQUIRY #:	3664353.2s
LAT/LONG:	34.6232 / 120.0451	DATE:	July 12, 2013 5:45 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SLIC	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
SWEEPS UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
Cortese	0.500		0	0	0	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
PROC	0.500		0	0	0	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID Direction Distance Elevation	MAP FINDINGS Site	Database(s)	EDR ID Number EPA ID Number
	NO SITES FOUND		

Count: 20 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
SANTA YNEZ	1000395457	SANTA YNEZ VALLEY UNION HIGH S	2975 E. HWY 246	93460	HIST UST
SANTA YNEZ	1008152335	EXXON MOBIL PRDCTN CO SANTA YNEZ U	FEDERAL OCS LEASE P 0188		FINDS
SANTA YNEZ	1011992933	SANTA YNEZ	UNKNOWN		FINDS
SANTA YNEZ	1012312163	CELLCO - SANTA YNEZ	END OF REFUGIO ROAD		FINDS
SANTA YNEZ	1015925015	VERIZON - SANTA YNEZ PEAK	SANTA YNEZ PEAK		FINDS
SANTA YNEZ	S100927990	SANTA YNEZ UNION HIGH SCHOOL	2975 E HWY 246	93460	SWEEPS UST
SANTA YNEZ	S103986772	SANTA YNEZ VALLEY HIGH SCHOOL	2975 E HWY 246	93460	CUPA
SANTA YNEZ	S105427599	SANTA YNEZ HIGH SCHOOL	2975 HWY 246 E	93460	LUST
SANTA YNEZ	S105427623	CORNER STORE	3545 HWY 246 E		LUST
SB COUNTY	S105427633	FORMER GAS CARD CLUB	3101 HWY 246 E	93460	LUST
SANTA YNEZ	S106446883	GAINEY VINEYARD #1	3950 E HWY 246	93460	CUPA,WDS
SANTA YNEZ	S106924915	CORNER STORE	3545 E HWY 246	93460	SWEEPS UST
SANTA YNEZ	S106931879	SANTA BARBARA CO. ROAD YARD	3910 E HWY 246	93460	CUPA,SWEEPS UST
SANTA YNEZ	S107863493	SANTA LUCIA FARMS	1924 WEST HWY 154 / SAN MARCOS		LF
SANTA YNEZ	S109283019	VERIZON WIRELESS - ZACA CREEK	2051 HWY 101	93460	CUPA,EMI
SANTA YNEZ	S110741818	SUN WEST AVIATION INC	3910 E HWY 246 #G9	93460	CUPA
SANTA YNEZ	S112836928	1X SANTA YNEZ VALLEY UNION HIGH SC	2975 E HWY 246	93460	HAZNET
SANTA YNEZ	S113015051	SANTA YNEZ VALLEY UHSD	2975 E HWY 246	93460	HAZNET
SOLVANG	U004149993	CHUMASH GAS STATION #1	3101 E HWY 246	93463	UST
SANTA YNEZ	U004149995	CHUMASH GAS STATION #2	3545 E HWY 246	93460	UST

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: EPA
Telephone: N/A
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 07/22/2013
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/04/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 10/09/2012
Date Made Active in Reports: 12/20/2012
Number of Days to Update: 72

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/08/2013
Next Scheduled EDR Contact: 10/21/2013
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 12

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2013
Next Scheduled EDR Contact: 05/09/2013
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 6

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/01/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 07/01/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 07/01/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 07/01/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 07/01/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 03/14/2013
Date Data Arrived at EDR: 03/29/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 06/10/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 03/14/2013
Date Data Arrived at EDR: 03/29/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 06/10/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/20/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/17/2013
Date Made Active in Reports: 02/15/2013
Number of Days to Update: 29

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 07/01/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 05/06/2013
Date Data Arrived at EDR: 05/07/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 49

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/07/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 05/06/2013
Date Data Arrived at EDR: 05/07/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 49

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/07/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/20/2013
Date Data Arrived at EDR: 05/21/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 35

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/21/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 06/27/2013
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/17/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 06/27/2013
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/17/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/01/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 162

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/01/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 02/08/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Semi-Annually

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 03/01/2013
Date Data Arrived at EDR: 03/01/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

State and tribal registered storage tank lists

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 06/27/2013
Number of Days to Update: 10

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/17/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-327-5092
Last EDR Contact: 07/03/2013
Next Scheduled EDR Contact: 10/21/2013
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 02/06/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 65

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 02/21/2013
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 45

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 08/27/2012
Date Data Arrived at EDR: 08/28/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/28/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 43

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/03/2012
Date Made Active in Reports: 11/05/2012
Number of Days to Update: 94

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 02/08/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 11/07/2012
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 156

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 05/06/2013
Date Data Arrived at EDR: 05/07/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 49

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/07/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/28/2012
Date Data Arrived at EDR: 10/02/2012
Date Made Active in Reports: 10/16/2012
Number of Days to Update: 14

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 07/02/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/10/2012
Date Data Arrived at EDR: 12/11/2012
Date Made Active in Reports: 12/20/2012
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/07/2013
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/10/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 03/18/2013
Date Data Arrived at EDR: 03/19/2013
Date Made Active in Reports: 03/27/2013
Number of Days to Update: 8

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/17/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 04/26/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 20

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/12/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 59

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/03/2013
Next Scheduled EDR Contact: 09/16/2013
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 05/06/2013
Date Data Arrived at EDR: 05/07/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 49

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/07/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/14/2013
Number of Days to Update: 41

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/03/2013
Next Scheduled EDR Contact: 09/16/2013
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/06/2013
Date Data Arrived at EDR: 04/25/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 03/15/2013
Date Data Arrived at EDR: 03/15/2013
Date Made Active in Reports: 03/27/2013
Number of Days to Update: 12

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/10/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/11/2013
Date Data Arrived at EDR: 03/12/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 13

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/11/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 55

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 07/01/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 03/12/2013
Date Data Arrived at EDR: 05/01/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 55

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/01/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 06/27/2013
Number of Days to Update: 10

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/17/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 06/17/2013
Date Data Arrived at EDR: 06/17/2013
Date Made Active in Reports: 06/27/2013
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/17/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/15/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 07/01/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/07/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 15

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 06/10/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 01/15/2013
Date Made Active in Reports: 03/13/2013
Number of Days to Update: 57

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 12/18/2012
Date Data Arrived at EDR: 03/13/2013
Date Made Active in Reports: 04/12/2013
Number of Days to Update: 30

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/11/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/05/2013
Date Data Arrived at EDR: 04/18/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 22

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/04/2013
Next Scheduled EDR Contact: 09/16/2013
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 09/01/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 131

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/29/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/07/2013
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 04/15/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2012
Date Data Arrived at EDR: 01/16/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 114

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/14/2013
Date Data Arrived at EDR: 03/20/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 112

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 07/10/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/09/2013
Date Data Arrived at EDR: 04/11/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 29

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/12/2013
Next Scheduled EDR Contact: 10/21/2013
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 03/08/2013
Date Data Arrived at EDR: 03/21/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 111

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 06/13/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 46

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 52

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/30/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 05/20/2013
Date Data Arrived at EDR: 05/21/2013
Date Made Active in Reports: 06/12/2013
Number of Days to Update: 22

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/21/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Quarterly

UIC: UIC Listing

A listing of underground control injection wells.

Date of Government Version: 03/05/2013
Date Data Arrived at EDR: 03/19/2013
Date Made Active in Reports: 03/27/2013
Number of Days to Update: 8

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/21/2013
Next Scheduled EDR Contact: 12/31/2012
Data Release Frequency: Varies

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 04/01/2013
Date Data Arrived at EDR: 04/02/2013
Date Made Active in Reports: 05/14/2013
Number of Days to Update: 42

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 07/05/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 06/18/2013
Next Scheduled EDR Contact: 10/07/2013
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 12/11/2012
Date Data Arrived at EDR: 12/12/2012
Date Made Active in Reports: 01/04/2013
Number of Days to Update: 23

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 06/18/2013
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 04/29/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 17

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/26/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 14

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/07/2013
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/15/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 05/20/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Quarterly

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/18/2013
Date Data Arrived at EDR: 03/19/2013
Date Made Active in Reports: 03/27/2013
Number of Days to Update: 8

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/17/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/06/2013
Date Data Arrived at EDR: 03/12/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 13

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 06/10/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/18/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/14/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/15/2013
Date Data Arrived at EDR: 04/16/2013
Date Made Active in Reports: 05/17/2013
Number of Days to Update: 31

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/16/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/28/2013
Date Data Arrived at EDR: 05/29/2013
Date Made Active in Reports: 06/27/2013
Number of Days to Update: 29

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/29/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Quarterly

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/21/2013
Date Data Arrived at EDR: 05/22/2013
Date Made Active in Reports: 06/27/2013
Number of Days to Update: 36

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/20/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/03/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 01/29/2013
Date Data Arrived at EDR: 02/14/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/03/2013
Next Scheduled EDR Contact: 10/21/2013
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

2020 COR ACTION: 2020 Corrective Action Program List
The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/17/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: N/A

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 12/18/2012
Date Data Arrived at EDR: 04/04/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 97

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 07/03/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Quarterly

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Quarterly

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/30/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-5962
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Annually

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 02/18/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/10/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Quarterly

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Proprietary Historic Dry Cleaners - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Auto Stat: EDR Proprietary Historic Gas Stations - Cole

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/15/2013
Date Data Arrived at EDR: 04/16/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 30

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/28/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/15/2013
Date Data Arrived at EDR: 04/16/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 30

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/28/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 03/13/2013
Date Data Arrived at EDR: 03/14/2013
Date Made Active in Reports: 04/04/2013
Number of Days to Update: 21

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 06/18/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 10/16/2012
Date Data Arrived at EDR: 10/17/2012
Date Made Active in Reports: 11/13/2012
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 04/26/2013
Next Scheduled EDR Contact: 04/29/2013
Data Release Frequency: Varies

CALVERAS COUNTY:

CUPA Facility Listing

Cupa Facility Listing

Date of Government Version: 04/16/2013
Date Data Arrived at EDR: 04/17/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 29

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 01/04/2013
Date Data Arrived at EDR: 01/14/2013
Date Made Active in Reports: 03/01/2013
Number of Days to Update: 46

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 06/13/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 04/09/2013
Date Data Arrived at EDR: 04/10/2013
Date Made Active in Reports: 05/14/2013
Number of Days to Update: 34

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 01/09/2013
Date Data Arrived at EDR: 01/10/2013
Date Made Active in Reports: 02/25/2013
Number of Days to Update: 46

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/20/2013
Date Data Arrived at EDR: 05/21/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 35

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 03/31/2013
Date Data Arrived at EDR: 04/16/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 30

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/15/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 03/15/2013
Date Data Arrived at EDR: 03/19/2013
Date Made Active in Reports: 03/27/2013
Number of Days to Update: 8

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 05/02/2012
Date Made Active in Reports: 06/11/2012
Number of Days to Update: 40

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/29/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/26/2012
Date Data Arrived at EDR: 06/27/2012
Date Made Active in Reports: 08/17/2012
Number of Days to Update: 51

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/10/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/12/2013
Date Data Arrived at EDR: 02/13/2013
Date Made Active in Reports: 03/21/2013
Number of Days to Update: 36

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 06/10/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/23/2013
Date Data Arrived at EDR: 01/25/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 33

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 07/08/2013
Next Scheduled EDR Contact: 10/07/2013
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 10/31/2012
Date Data Arrived at EDR: 12/28/2012
Date Made Active in Reports: 01/25/2013
Number of Days to Update: 28

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/15/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/24/2013
Date Data Arrived at EDR: 04/24/2013
Date Made Active in Reports: 05/17/2013
Number of Days to Update: 23

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/24/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/20/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/30/2013
Date Data Arrived at EDR: 02/21/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 32

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 04/29/2013
Date Made Active in Reports: 05/17/2013
Number of Days to Update: 18

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/26/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/15/2013
Date Data Arrived at EDR: 04/16/2013
Date Made Active in Reports: 05/17/2013
Number of Days to Update: 31

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/15/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/15/2013
Date Data Arrived at EDR: 04/16/2013
Date Made Active in Reports: 05/17/2013
Number of Days to Update: 31

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 11/26/2012
Date Data Arrived at EDR: 11/28/2012
Date Made Active in Reports: 01/21/2013
Number of Days to Update: 54

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 07/03/2013
Next Scheduled EDR Contact: 10/21/2013
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/28/2013
Date Data Arrived at EDR: 05/29/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 27

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 02/25/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

MONO COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility List
CUPA Facility List

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/08/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 17

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 06/03/2013
Next Scheduled EDR Contact: 09/16/2013
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 03/14/2013
Date Data Arrived at EDR: 03/15/2013
Date Made Active in Reports: 03/27/2013
Number of Days to Update: 12

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 12/05/2011
Date Data Arrived at EDR: 12/06/2011
Date Made Active in Reports: 02/07/2012
Number of Days to Update: 63

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/03/2013
Next Scheduled EDR Contact: 09/16/2013
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/03/2013
Next Scheduled EDR Contact: 09/16/2013
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 03/08/2013
Date Data Arrived at EDR: 03/08/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 17

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 05/17/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/01/2013
Date Data Arrived at EDR: 05/15/2013
Date Made Active in Reports: 06/12/2013
Number of Days to Update: 28

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/10/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 05/01/2013
Date Data Arrived at EDR: 05/15/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 41

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/10/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 05/01/2013
Date Data Arrived at EDR: 05/15/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 41

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/10/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 03/12/2013
Date Data Arrived at EDR: 03/13/2013
Date Made Active in Reports: 03/27/2013
Number of Days to Update: 14

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 06/10/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/23/2013
Date Data Arrived at EDR: 04/24/2013
Date Made Active in Reports: 05/17/2013
Number of Days to Update: 23

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/18/2013
Next Scheduled EDR Contact: 10/07/2013
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/23/2013
Date Data Arrived at EDR: 04/24/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 22

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/18/2013
Next Scheduled EDR Contact: 10/07/2013
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/04/2013
Date Data Arrived at EDR: 04/11/2013
Date Made Active in Reports: 05/14/2013
Number of Days to Update: 33

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/05/2013
Next Scheduled EDR Contact: 10/21/2013
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/04/2013
Date Data Arrived at EDR: 04/12/2013
Date Made Active in Reports: 05/16/2013
Number of Days to Update: 34

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/05/2013
Next Scheduled EDR Contact: 10/21/2013
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/05/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 20

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/13/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 08/17/2012
Date Data Arrived at EDR: 08/20/2012
Date Made Active in Reports: 10/03/2012
Number of Days to Update: 44

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 06/10/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2012
Date Data Arrived at EDR: 11/06/2012
Date Made Active in Reports: 11/30/2012
Number of Days to Update: 24

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/26/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 06/10/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/10/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/10/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/25/2013
Date Data Arrived at EDR: 03/25/2013
Date Made Active in Reports: 04/18/2013
Number of Days to Update: 24

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/18/2013
Next Scheduled EDR Contact: 10/07/2013
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List

Cupa Facility List.

Date of Government Version: 02/26/2013
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 27

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/09/2013
Date Data Arrived at EDR: 04/10/2013
Date Made Active in Reports: 05/14/2013
Number of Days to Update: 34

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/13/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/18/2013
Date Data Arrived at EDR: 03/19/2013
Date Made Active in Reports: 03/27/2013
Number of Days to Update: 8

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/17/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/20/2013
Next Scheduled EDR Contact: 06/10/2013
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/05/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 20

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 06/03/2013
Next Scheduled EDR Contact: 09/16/2013
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/04/2013
Date Data Arrived at EDR: 03/06/2013
Date Made Active in Reports: 03/25/2013
Number of Days to Update: 19

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/03/2013
Next Scheduled EDR Contact: 09/16/2013
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 05/16/2013
Date Data Arrived at EDR: 05/17/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 39

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/13/2013
Next Scheduled EDR Contact: 08/26/2013
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 05/28/2013
Date Data Arrived at EDR: 05/29/2013
Date Made Active in Reports: 06/27/2013
Number of Days to Update: 29

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 03/15/2013
Date Data Arrived at EDR: 03/15/2013
Date Made Active in Reports: 03/27/2013
Number of Days to Update: 12

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/20/2013
Date Data Arrived at EDR: 03/28/2013
Date Made Active in Reports: 05/14/2013
Number of Days to Update: 47

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/12/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/20/2013
Date Data Arrived at EDR: 03/28/2013
Date Made Active in Reports: 05/13/2013
Number of Days to Update: 46

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/12/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 04/01/2013
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/14/2013
Number of Days to Update: 41

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/02/2013
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/14/2013
Number of Days to Update: 41

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/25/2013
Next Scheduled EDR Contact: 10/14/2013
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 03/13/2013
Date Data Arrived at EDR: 03/14/2013
Date Made Active in Reports: 03/27/2013
Number of Days to Update: 13

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 06/10/2013
Next Scheduled EDR Contact: 09/23/2013
Data Release Frequency: Semi-Annually

TUOLUMNE COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 01/14/2013
Date Data Arrived at EDR: 01/16/2013
Date Made Active in Reports: 02/27/2013
Number of Days to Update: 42

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 05/15/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 04/26/2013
Date Data Arrived at EDR: 05/22/2013
Date Made Active in Reports: 06/25/2013
Number of Days to Update: 34

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/20/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites

Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/03/2013
Next Scheduled EDR Contact: 10/21/2013
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/18/2013
Next Scheduled EDR Contact: 06/03/2013
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/28/2013
Date Data Arrived at EDR: 02/01/2013
Date Made Active in Reports: 03/20/2013
Number of Days to Update: 47

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 06/11/2013
Next Scheduled EDR Contact: 08/12/2013
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2013
Date Data Arrived at EDR: 03/28/2013
Date Made Active in Reports: 05/13/2013
Number of Days to Update: 46

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/12/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 03/25/2013
Date Data Arrived at EDR: 03/29/2013
Date Made Active in Reports: 05/13/2013
Number of Days to Update: 45

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/07/2013
Next Scheduled EDR Contact: 10/07/2013
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List

CUPA facility listing for Yuba County.

Date of Government Version: 05/24/2013
Date Data Arrived at EDR: 05/24/2013
Date Made Active in Reports: 06/27/2013
Number of Days to Update: 34

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 05/20/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/20/2013
Date Data Arrived at EDR: 05/21/2013
Date Made Active in Reports: 06/27/2013
Number of Days to Update: 37

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/21/2013
Next Scheduled EDR Contact: 09/02/2013
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/28/2012
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2013
Next Scheduled EDR Contact: 07/29/2013
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 05/01/2013
Date Data Arrived at EDR: 05/09/2013
Date Made Active in Reports: 07/10/2013
Number of Days to Update: 62

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/09/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/23/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 57

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/23/2013
Next Scheduled EDR Contact: 08/05/2013
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 39

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/28/2013
Next Scheduled EDR Contact: 09/09/2013
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/27/2012
Number of Days to Update: 70

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/28/2013
Next Scheduled EDR Contact: 09/30/2013
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association’s annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

SANTA YNEZ CAMP 4
4500 BASELINE AVE
SANTA YNEZ, CA 93460

TARGET PROPERTY COORDINATES

Latitude (North):	34.6232 - 34˚ 37’ 23.52’’
Longitude (West):	120.0451 - 120˚ 2’ 42.36’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	770918.8
UTM Y (Meters):	3835033.8
Elevation:	760 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34120-E1 SANTA YNEZ, CA
Most Recent Revision:	1978
North Map:	34120-F1 LOS OLIVOS, CA
Most Recent Revision:	1982

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

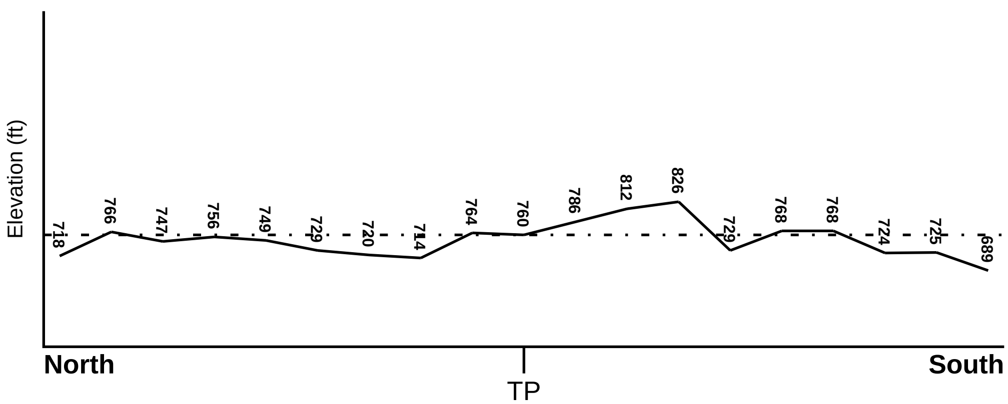
TOPOGRAPHIC INFORMATION

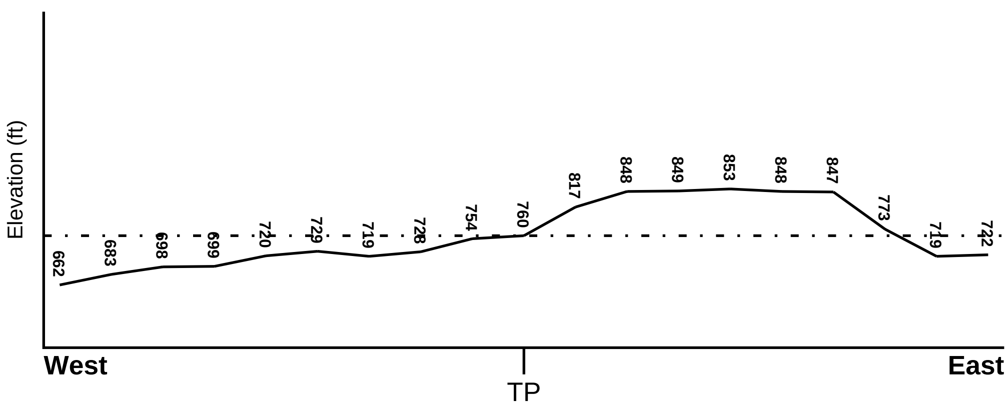
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 760 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
SANTA BARBARA, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06083C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
SANTA YNEZ	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

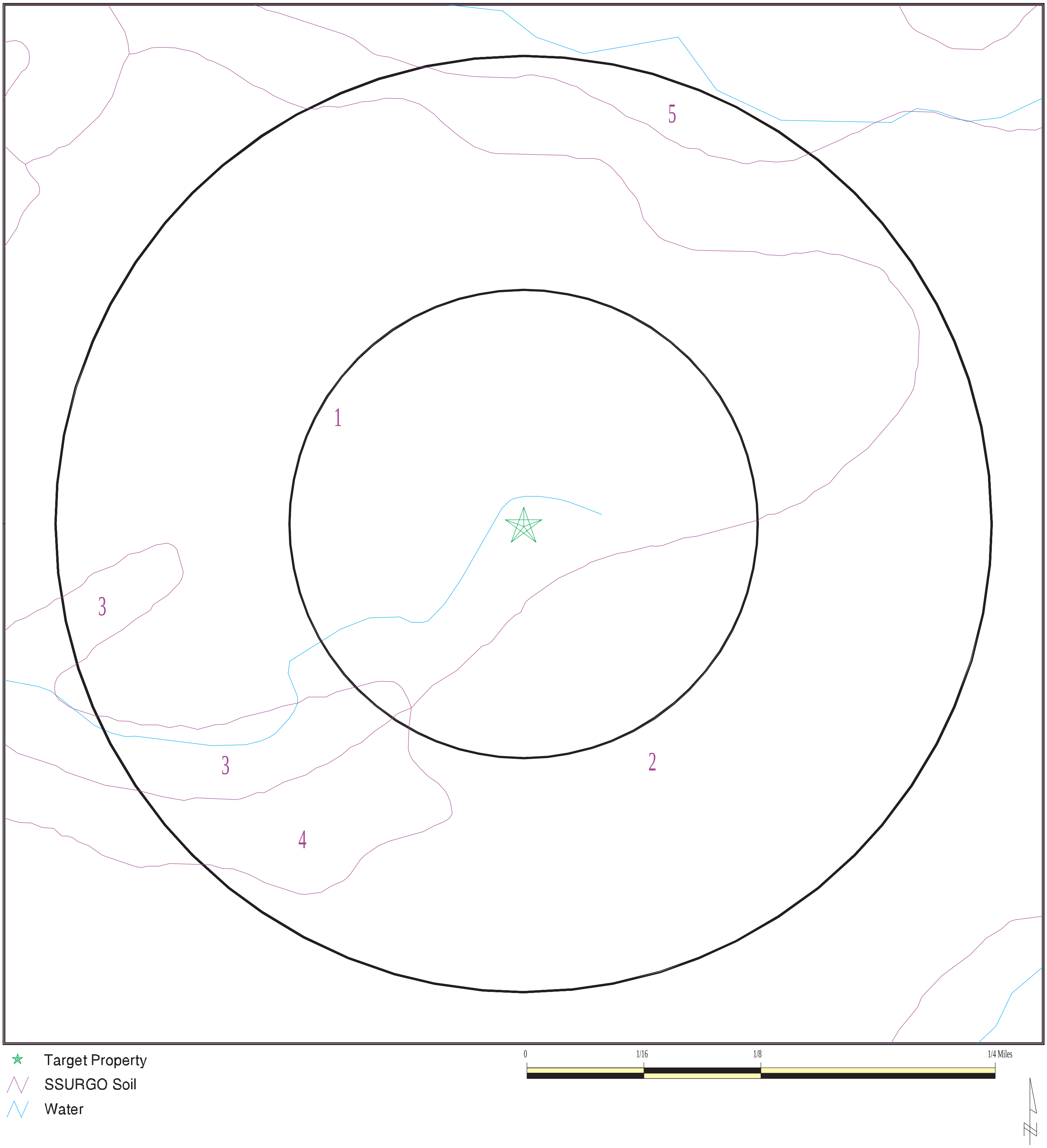
Era:	Cenozoic
System:	Tertiary
Series:	Pliocene
Code:	Tpc *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Continental Deposits

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3664353.2s



Target Property
SSURGO Soil
Water

SITE NAME:	Santa Ynez Camp 4	CLIENT:	Analytical Environmental Serv.
ADDRESS:	4500 Baseline Ave	CONTACT:	Jacqueline Mccrory
	Santa Ynez CA 93460	INQUIRY #:	3664353.2s
LAT/LONG:	34.6232 / 120.0451	DATE:	July 12, 2013 5:46 pm

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Santa Ynez

Soil Surface Texture: gravelly fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	25 inches	gravelly fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 1.4 Min: 0.42	Max: 6.5 Min: 5.6
2	25 inches	31 inches	gravelly clay	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 1.4 Min: 0.42	Max: 6.5 Min: 5.6
3	31 inches	59 inches	very gravelly clay	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 1.4 Min: 0.42	Max: 6.5 Min: 5.6

Soil Map ID: 2

Soil Component Name: Chamise

Soil Surface Texture: shaly loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	18 inches	shaly loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 5.5 Min: 5.1
2	18 inches	24 inches	shaly clay	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 5.5 Min: 5.1
3	24 inches	37 inches	very shaly clay	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 5.5 Min: 5.1
4	37 inches	59 inches	very shaly clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 5.5 Min: 5.1

Soil Map ID: 3

Soil Component Name: Santa Ynez

Soil Surface Texture: gravelly fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	25 inches	gravelly fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 1.4 Min: 0.42	Max: 6.5 Min: 5.6
2	25 inches	31 inches	gravelly clay	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 1.4 Min: 0.42	Max: 6.5 Min: 5.6
3	31 inches	59 inches	very gravelly clay	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 1.4 Min: 0.42	Max: 6.5 Min: 5.6

Soil Map ID: 4

Soil Component Name: Positas

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 6 Min: 5.6
2	20 inches	48 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 6 Min: 5.6
3	48 inches	59 inches	very gravelly clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 6 Min: 5.6

Soil Map ID: 5

Soil Component Name: Positas

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 6 Min: 5.6
2	20 inches	48 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 6 Min: 5.6
3	48 inches	59 inches	very gravelly clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 4 Min: 1.4	Max: 6 Min: 5.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000148993	1/2 - 1 Mile WNW
A2	USGS40000148994	1/2 - 1 Mile WNW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

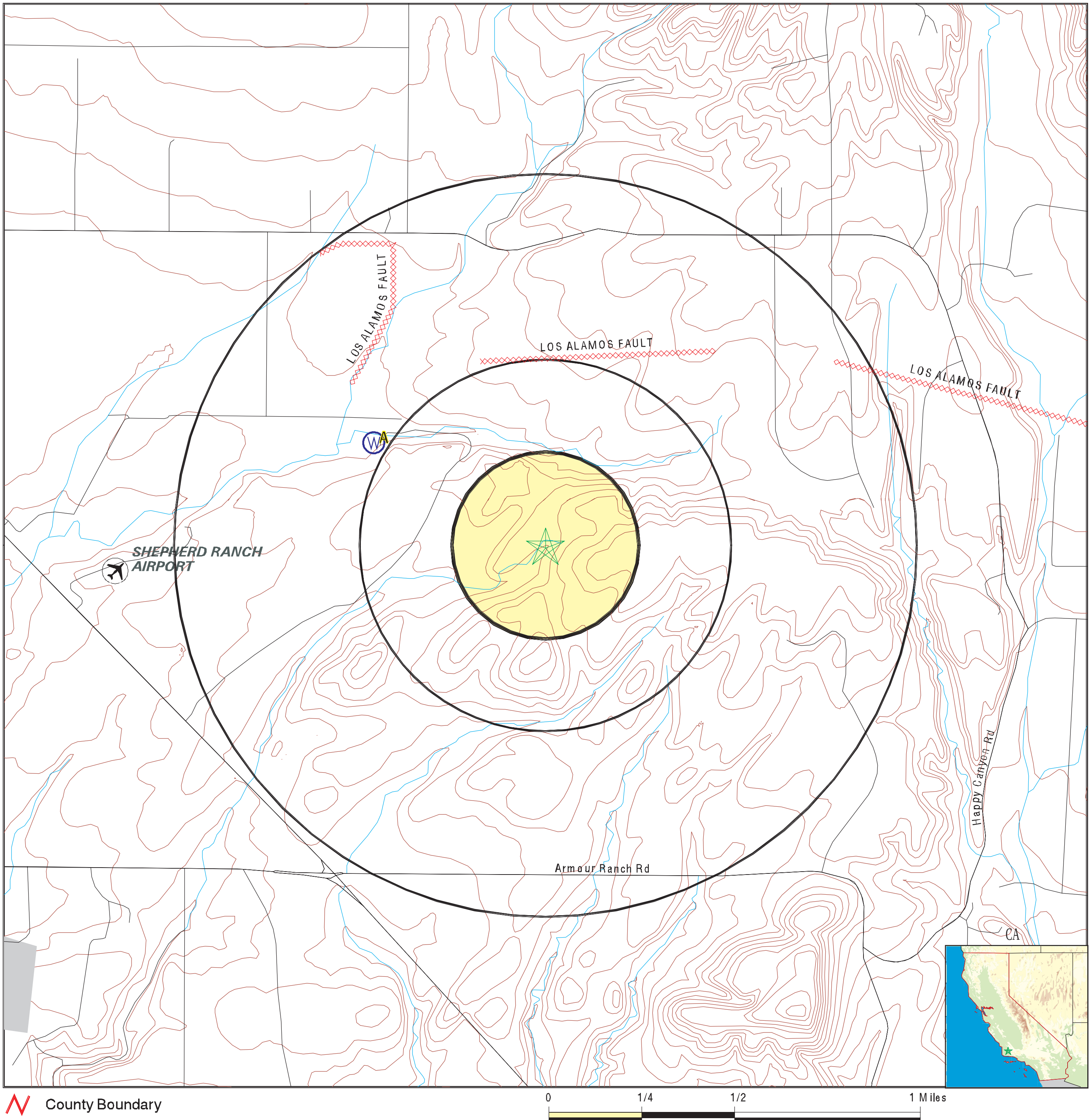
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

PHYSICAL SETTING SOURCE MAP - 3664353.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: Santa Ynez Camp 4 ADDRESS: 4500 Baseline Ave Santa Ynez CA 93460 LAT/LONG: 34.6232 / 120.0451	CLIENT: Analytical Environmental Serv. CONTACT: Jacqueline Mccrory INQUIRY #: 3664353.2s DATE: July 12, 2013 5:46 pm

Map ID Direction Distance Elevation	Database	EDR ID Number
A1 **WNW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS40000148993**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-343738120030801		
Monloc name:	006N030W04M001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18060010	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.627209
Longitude:	-120.0532003	Sourcemap scale:	Not Reported
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	672.00
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19340101	Welldepth:	151
Welldepth units:	ft	Wellholedepth:	152
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 4

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1945-04-09	51.01		1942-02-02	55.37	
1942-02-01	55.00				
1934-04-14	70				

Note: Other conditions existed that would affect the measured water level.

A2 **WNW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS40000148994**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-343738120030802		
Monloc name:	006N030W04M002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18060010	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.627209
Longitude:	-120.0532003	Sourcemap scale:	Not Reported

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	672.00
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	86
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1945-04-09	50.99		1942-02-02	55.29	
1942-02-01	55.00				

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93460	20	2

Federal EPA Radon Zone for SANTA BARBARA County: 1

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93460

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	5.800 pCi/L	50%	50%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

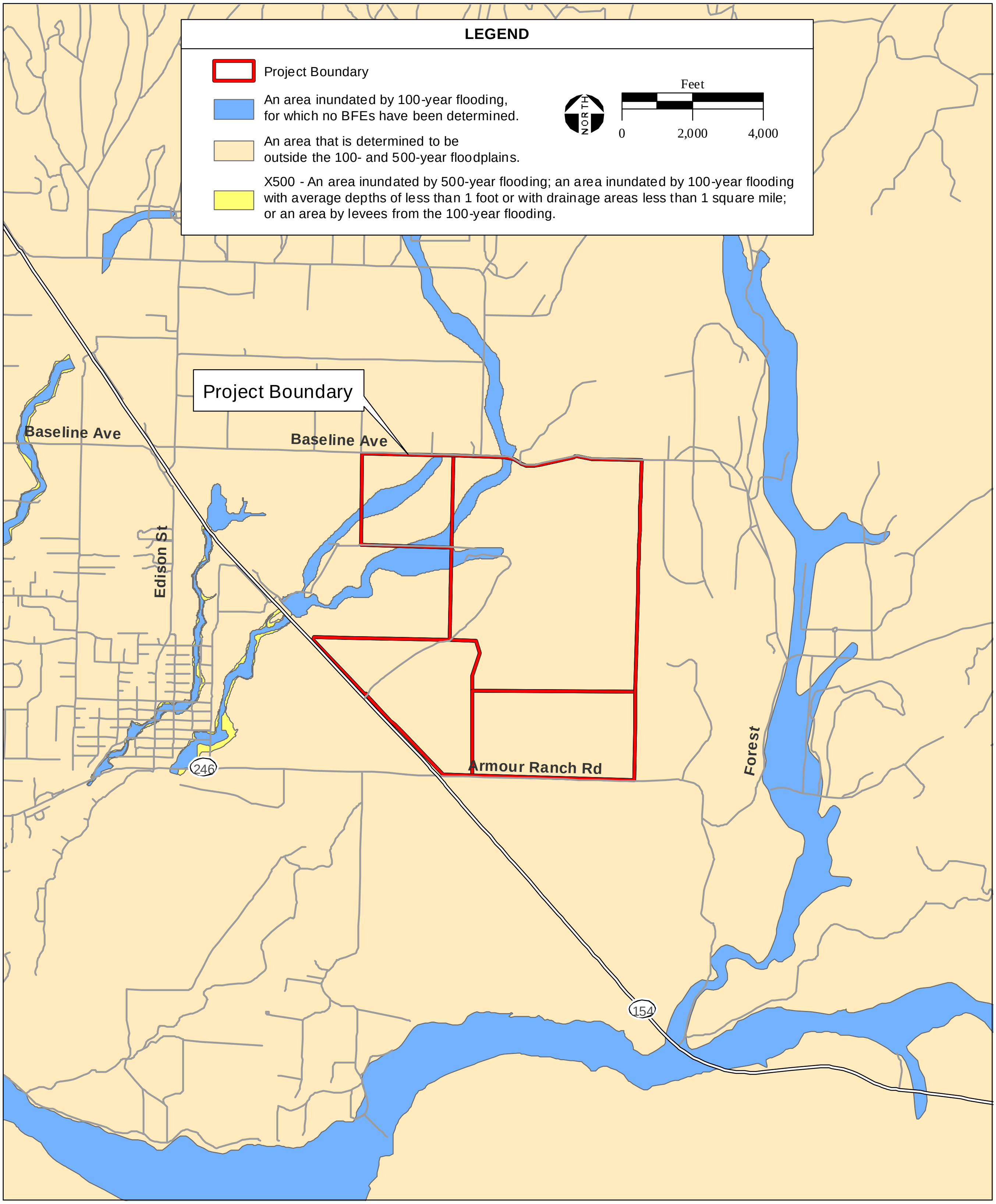
Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

Appendix E

FEMA Map



SOURCE: FEMA FIRM Data, 2005; FEMA Q3 Flood Data, 1996; AES, 2012

Figure 3-3
FEMA Flood Zones

APPENDIX F

PROPERTY OWNER AND USER QUESTIONNAIRES

Analytical Environmental Services

July 22, 2013

RE: Phase I Environmental Site Assessment for Camp 4 APNs 141-121-051, 141-140-10, 141-230-023 and 141-240-002

Please complete the questionnaire below with regard to the indicated property. You are being asked to provide this information and insight to assist in the preparation of an environmental site assessment for this property. Please provide as much information as you can to assist in this effort and feel free to attach extra sheets/reports if the space provided is insufficient.

Please fax/send the completed form to:

Analytical Environmental Services
Attn: Trenton Wilson
1801 7th Street, Suite 100
Sacramento, CA 95814
twilson@analyticalcorp.com

Telephone (916) 447-3479
Fax (916) 447-1665

Thank you for your help and cooperation.

ENVIRONMENTAL QUESTIONAIRE

Property Address: Camp 4 APNs 141-121-051, 141-140-10, 141-230-023 and 141-240-002

Question	Answer	Responses to "Yes" Questions
1. Is the property or any adjoining property currently used for industrial purposes?	Property: NO UNK YES Adjoining: NO UNK YES	
2. To the best of your knowledge, has the property or any adjoining property been used for industrial purposes in the past?	Property: NO UNK YES Adjoining: NO UNK YES	
3. Is the property or any adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Property: NO UNK YES Adjoining: NO UNK YES	
4. To the best of your knowledge, has the property or any adjoining property been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Property: NO UNK YES Adjoining: NO UNK YES	
5. Has fill dirt been brought onto the property that originated from a contaminated site or that is of an unknown origin?	NO UNK YES	

ENVIRONMENTAL QUESTIONAIRE

6. Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than five gallons (19 liters) in the aggregate, stored on or used at the property or at the facility?	New?: NO UNK YES Past?: NO UNK YES	
7. Are there currently, or to the best of your knowledge have there been previously, any industrial drums (typically 55 gallon [208 liters]) or sacks of chemicals located on the property or at the facility?	New?: NO UNK YES Past?: NO UNK YES	
8. Are there currently, or to the best of your knowledge have there been previously, any pits, ponds, or lagoons located on the property in connection with waste treatment or waste disposal?	New?: NO UNK YES Past?: NO UNK YES	
9. Is there currently, or to the best of your knowledge has there been previously, any areas of stained soil on the property?	New?: NO UNK YES Past?: NO UNK YES	
10. Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered storage tanks (above or underground) located on the property?	New?: NO UNK YES Past?: NO UNK YES	

ENVIRONMENTAL QUESTIONAIRE

11. Are there currently, or to the best of your knowledge have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?	New?: NO UNK YES Past?: NO UNK YES	
12. Are there currently, or to the best of your knowledge have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting foul odors?	New?: NO UNK YES Past?: NO UNK YES	
13. If the property is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environment/health agency?	NO UNK YES	
14. Does the owner or occupant of the property have any knowledge of environmental liens or governmental notification relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property?	NO UNK YES	

ENVIRONMENTAL QUESTIONAIRE

15. Has the owner or occupant of the property been informed of the past or current existence of hazardous substances or petroleum products or environmental violations with respect to the property or any facility located on the property?	NO UNK YES	
16. Does the owner or occupant of the property have any knowledge of any environmental site assessment of the property or facility that indicated the presence of hazardous substances or petroleum products on, or contamination of, the property or recommended further assessment of the property?	NO UNK YES	
17. Does the owner or occupant of the property know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substance or petroleum products involving the property by any owner or occupant of the property?	NO UNK YES	
18. Does the property discharge waste water on or adjacent to the property other than storm water into a sanitary sewer system?	NO UNK YES	

ENVIRONMENTAL QUESTIONAIRE

19. To the best of your knowledge, have any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried, and/or burned on the property?	NO UNK YES	
20. Is there a transformer, capacitor, or any hydraulic equipment for which there are any records indicating the presence of PCBs?	NO UNK YES	

21. How do you currently use the property and how have you used the property in the past (please be specific).

- Cattle grazing
- Bison Grazing
- Vineyard Operation
- Horse Stables

22. What is your understanding of how the property was used before your ownership/occupancy?

Ranching & Farming

ENVIRONMENTAL QUESTIONAIRE

I hereby certify that to the best of my knowledge all of the information provided in this environmental questionnaire is true and correct.

Signature: ______________________

Print Name/Address: William Wyatt, 100 Via Diana Ln. Santa Ynez

Phone: 805-688-7997

Date complete: 7-23-13

Relation to property: owner _____ operator _____ manager ✓ tenant _____

APPENDIX G

RESUMES

DAVID ZWEIG, PE, PRINCIPAL-IN-CHARGE

Education: B.S., Civil Engineering, University of California, Berkeley
Registration: California Registered PE (#C048031)

Mr. Zweig is experienced in Environmental Impact Reporting, Phase I and Phase II Environmental Site Assessments (ESAs), water permitting and regulatory compliance, and project management. Prior to forming AES, Mr. Zweig was the Sacramento Office Manager for Environmental Science Associates. He led ESA's Engineering group in the areas of environmental analysis; hazardous materials; water project permitting and regulatory compliance; water quality studies, water rights; and public infrastructure project coordination. Mr. Zweig has provided technical oversight and completed numerous Phase I and Phase II hazardous materials investigations for public agencies and private parties throughout California and the U.S. Mr. Zweig is very familiar with the regulatory issues faced by private industry and public agencies, and is adept at facilitating compliance with the matrix of environmental laws. Mr. Zweig meets the qualifications of a Registered Environmental Assessor II.

Project Experience

- **1144 Star View Road Phase I ESA**, Sonoma County, CA
- **1398 Gumview Road Phase I ESA**, Sonoma County, CA
- **1486 Gumview Road Phase I ESA**, Sonoma County, CA
- **18 East Fulton Road Phase I ESA**, Sonoma County, CA
- **Ernst Property Phase I ESA**, Sonoma County, CA
- **Jordan Vineyard Phase I ESA**, Sonoma County, CA
- **15th Street Phase I ESA**, City of Sacramento, CA
- **2000 O Street 3 Parcel Phase I ESA**, City of Sacramento, CA
- **3031 F Street Phase I ESA**, City of Sacramento, CA
- **825 15th Street Phase I ESA**, City of Sacramento, CA
- **Bear River Casino 18-acre Property Phase I ESA**, Humboldt County, CA
- **Coyote Valley Band of Pomo Phase I ESA**, Mendocino County, CA
- **D Street Dwellings Project Phase I ESA**, City of Sacramento, CA
- **Enterprise Rancheria 40-acre Property Phase I ESA**, Butte County, CA
- **1001 Van Ness Avenue +0.75-acre Phase I ESA**, San Francisco, CA
- **Fearrian 125-acre Property Phase I ESA**, Humboldt County, CA
- **Ho-Chunk Beloit Casino Phase I**, City of Beloit, WI
- **Ione Band of Miwok Indians 228.04-acres Fee-to-Trust Project Phase I ESA**, Amador County, CA
- **L Street 0.22-acre Parcel Phase I ESA**, City of Sacramento, CA
- **McKinley Village Residential Infill Peer Review of Phase I/II**, City of Sacramento, CA
- **MJL Properties 0.36-acre Parcel: 3516 Fair Oaks Boulevard Phase I ESA**, City of Sacramento, CA
- **North Fork Casino 305-acre Property Phase I ESA**, Madera County, CA
- **O Street Phase I ESA**, City of Sacramento, CA
- **Overnite Transportation, 10000 Waterman Road 54.7-acre Phase I ESA**, Elk Grove, CA
- **Pauma Band of Luiseno Indians Phase I ESA**, San Diego County, CA
- **Samish Indian Nation Phase I ESA**, City of Anacortes, WA
- **San Pasqual 3.25-acre Property Overview/Phase I ESA**, San Diego, CA
- **Scotts Valley, 2 Parcel-155 Parr Boulevard Phase I ESA**, Contra Costa County, CA
- **Sugarloaf Ranch Phase I ESA**, City of Woodland, CA
- **Thloe Tribal Ranch Phase I ESA**, Yolo County, CA

Jacqueline McCrory

Analyst II (Environmental Specialist)

Education: M.S. Candidate, Environmental Management, University of San Francisco; B.A., Environmental Studies, Anthropology Minor, University of California, Santa Cruz

Certification: Basic Wetland Delineation Certificate

Ms. McCrory is an environmental scientist experienced in analyzing environmental impacts of development projects for the preparation of CEQA and NEPA compliance documents. Areas of particular expertise include geology and soils, agriculture, biology, aesthetics, and land use. Ms. McCrory currently serves as an environmental analyst on various CEQA/NEPA documents for a variety of local, state, and federal agencies. Ms. McCrory also has experience with data collection and analyses, as well as conducting wildlife surveys, vegetation monitoring, and habitat restoration.

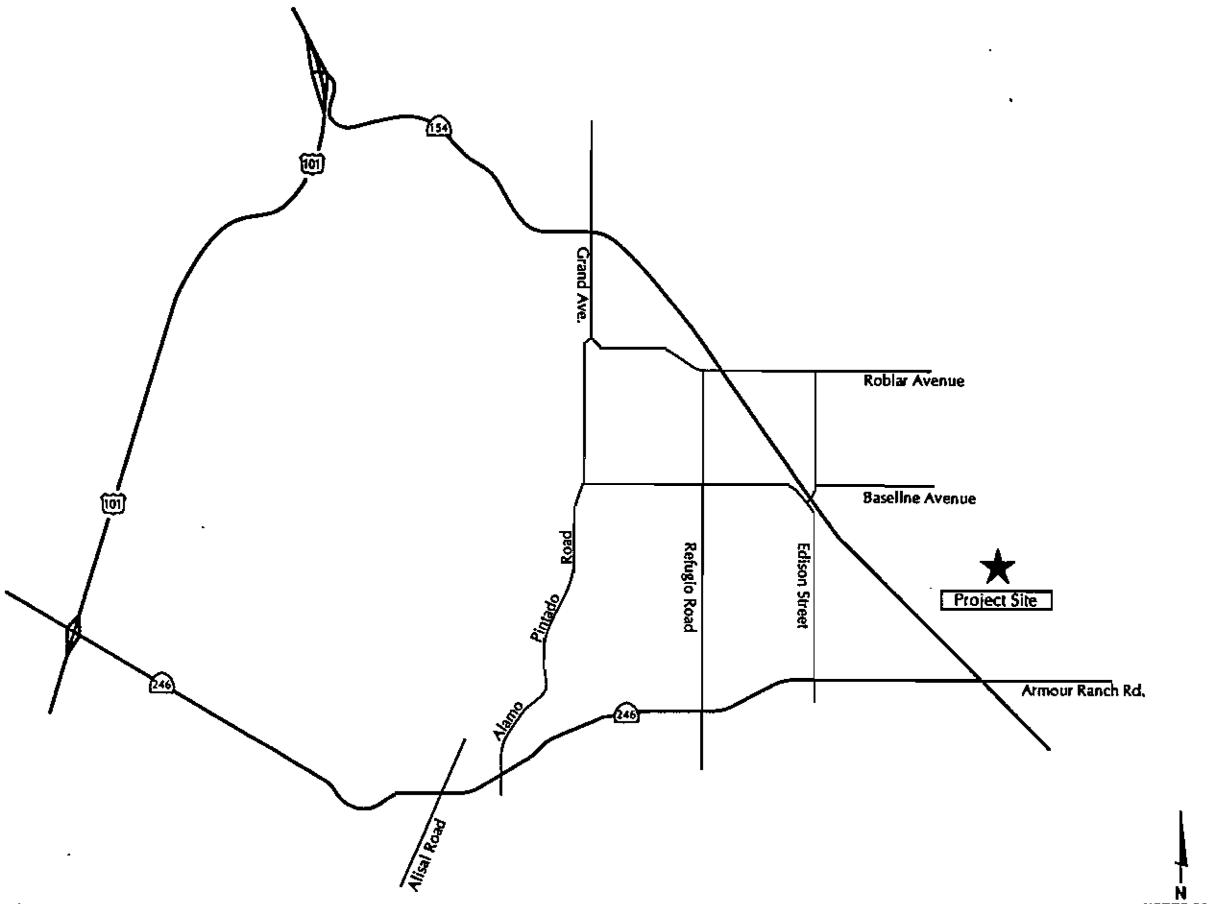
- **Barstow Casino and Resort Two-Part Determination Fee-to-Trust EIS/TEIR**, Los Coyotes, San Bernardino County, CA
- **Easterly Wastewater Treatment Plant Tertiary Facilities Project EIR & CEQA-Plus**, City of Vacaville, Solano County, CA
- **Harrah's Rincon Casino Resort Expansion EE**, Rincon San Luiseno Band of Mission Indians, San Diego County, CA
- **Ho-Chunk Beloit Casino EIS**, City of Beloit, WI
- **Ho-Chunk Beloit Casino Phase I**, City of Beloit, WI
- **Jasud Estate Vineyards Timberland Conversion Project EIR**, Napa County, CA
- **Langtry Farms Reservoir Enlargement Project EIR**, Lake County, CA
- **Lemon Street Flood Control and Habitat Enhancement MND**, Vallejo Sanitation and Flood Control District, City of Vallejo, Solano County, CA
- **Lytton Casino EA**, Bureau of Indian Affairs, CA
- **Lytton Rancheria Fee-to-Trust and Residential Development Project EA**, Sonoma County, CA
- **Menominee Casino and Hotel NEPA EIS**, Kenosha, WI
- **Millerton Road Widening IS/MND and EA**, Table Mountain Rancheria, Bureau of Reclamation, and Fresno County, CA
- **Paskenta Natural Gas Well Project NEPA Environmental Assessment**, Paskenta Nomlaki Reservation, Tehama County, CA
- **Placer County SMD3 Wastewater Treatment Plant Abandonment EIR/EA**, USACE and Placer County, CA
- **Samish Indian Nation Fee-to-Trust Gas Station Project EA**, Skagit County, WA
- **Santa Ynez Band of Chumash Indians 6.9-acre Fee-to-Trust EA**, Santa Barbara County, CA
- **Seminole Fee-to-Trust Project EIS**, Seminole Tribe of Florida, Broward County, FL
- **Spokane West Plains Casino Development Project EIS**, Spokane County, WA
- **Table Mountain Rancheria 23.1-acre Fee-to-Trust Project EO**, Bureau of Indian Affairs, Fresno County, CA
- **Table Mountain Rancheria 23.1-acre Phase I**, Fresno County, CA
- **Walt Ranch Erosion Control Plan EIR**, Napa County, CA

APPENDIX I

TRAFFIC IMPACT STUDY

CHUMASH CAMP 4 RESIDENTIAL FEE-TO-TRUST PROJECT
SANTA YNEZ, CALIFORNIA

TRAFFIC IMPACT STUDY



April 12, 2012 ATE #12018

Prepared For:

Analytical Environmental Services
1801 7th Street, Suite 100
Sacramento, CA 95811

ASSOCIATED TRANSPORTATION ENGINEERS
100 N. Hope Avenue, Suite 4, Santa Barbara, CA 93110-1686 • (805) 687-4418 • FAX (805) 682-8509

ASSOCIATED TRANSPORTATION ENGINEERS
100 N. Hope Avenue, Suite 4, Santa Barbara, CA 93110 • (805) 687-4418 • FAX (805) 682-8509

Since 1978

Richard L. Pool, P.E.
Scott A. Schell, AICP, PTP

April 12, 2012

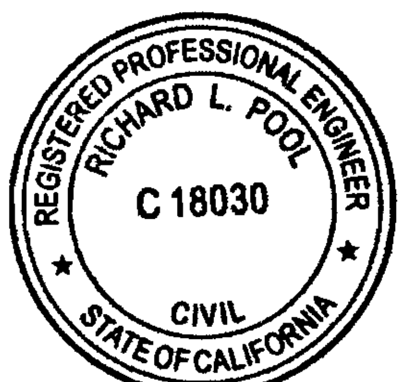
Trenton Wilson
Analytical Environmental Services
1801 7th Street, Suite 100
Sacramento, CA 95811

TRAFFIC IMPACT STUDY FOR THE
CHUMASH CAMP 4 RESIDENTIAL FEE-TO-TRUST PROJECT, SANTA YNEZ, CALIFORNIA

Associated Transportation Engineers (ATE) has prepared the following traffic impact study for the Chumash Camp 4 Residential Fee-to-Trust Project. The study addresses potential traffic and circulation impacts associated with the project and identifies improvements where appropriate. It is understood that the results of the traffic impact study will be incorporated into the Environmental Assessment being prepared by Analytical Environmental Services.

Associated Transportation Engineers

Richard L. Pool, PE
President



CONTENTS

TABLES

FIGURES

INTRODUCTION

The following report presents the results of the traffic impact study prepared by Associated Transportation Engineers (ATE) for the Chumash Camp 4 Residential Fee-To-Trust Project (the "Project"). The report provides information regarding existing and future traffic conditions within the project study-area and recommends improvements where necessary. The report also contains an analysis of the access and circulation plan proposed for the Project.

PROJECT DESCRIPTION

The Project is proposing a fee-to-trust land acquisition for the proposed $\pm$1,433-acre site to allow for development of residential housing for Chumash tribe members. The site is located northeast of the SR 154/SR 246 intersection in the Santa Ynez area of Santa Barbara County (see Figure 1 - Project Site Location). Two alternatives have been developed for the site, both of which are analyzed in this traffic study. Alternative A includes 143 five-acres lots for single family dwelling units (see Figure 2 - Alternative A Site Plan). Alternative B includes 143 one-acres lots for single family dwelling units plus 30 acres of Tribal Government Development (see Figure 3 - Alternative B Site Plan). The Tribal Government Development would include a banquet/exhibition hall designed with an agriculture/equestrian theme, associated administrative spaces, a tribal office complex, and a tribal retreat including ceremony room and gymnasium. The facilities would be open to Tribal residents as a gathering place for socializing and recreation. The banquet/exhibition facilities would occasionally be made available to the public for the purposes of hosting exhibitions, business meetings, conferences, or events by appointment. No gaming would occur on the subject property. Access for the Project (both alternatives) is proposed via 2 connections to Baseline Avenue and 1 connection to Armour Ranch Road (see Figures 2 and 3).

SCOPE OF WORK AND STUDY METHODOLOGY

Scoping Process. Teleconference calls were held between AES/ATE/Caltrans and AES/ATE/Santa Barbara County to discuss the Project and the traffic study requirements. The scope of work for the traffic study was then developed by ATE. The scope of work is outlined below.

Traffic Scenarios. Traffic operations are analyzed for the following scenarios:

1) Existing Conditions (2012)
2) Near-Term Conditions (2014 without the Project)
3) Near-Term + Project Conditions (2014 with the Project)
4) Cumulative Conditions (2030 without the Project)
5) Cumulative + Project Conditions (2030 with the Project)

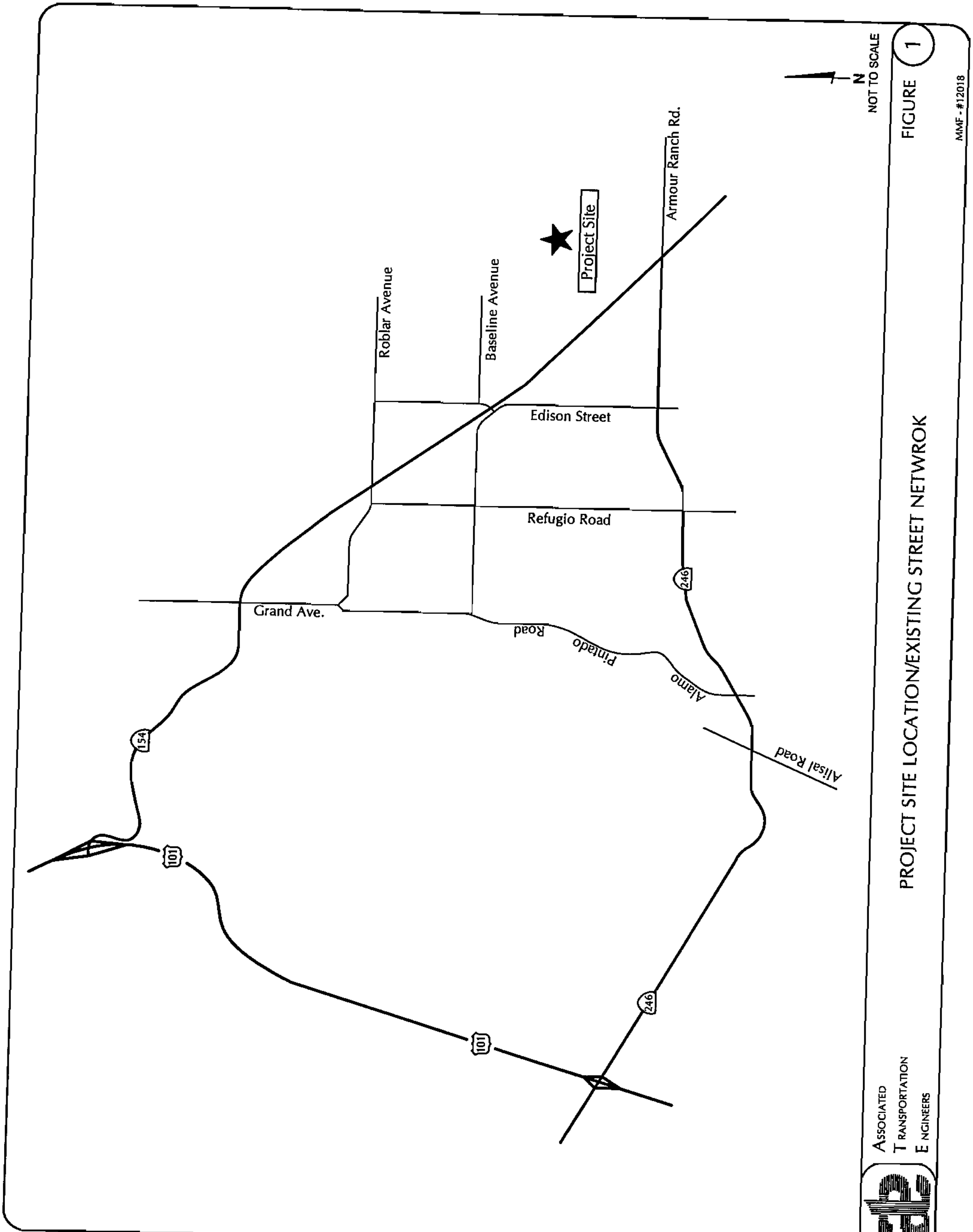
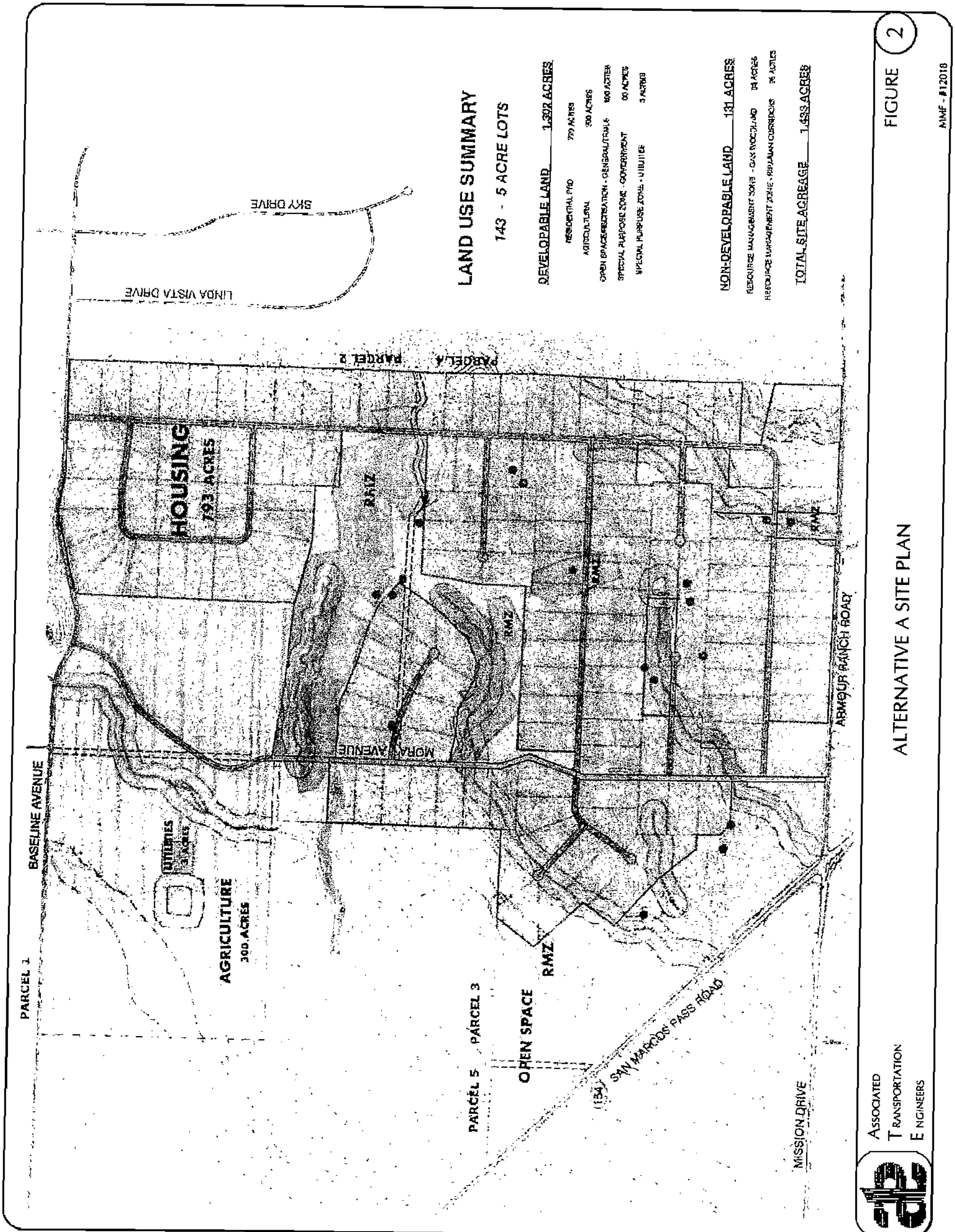
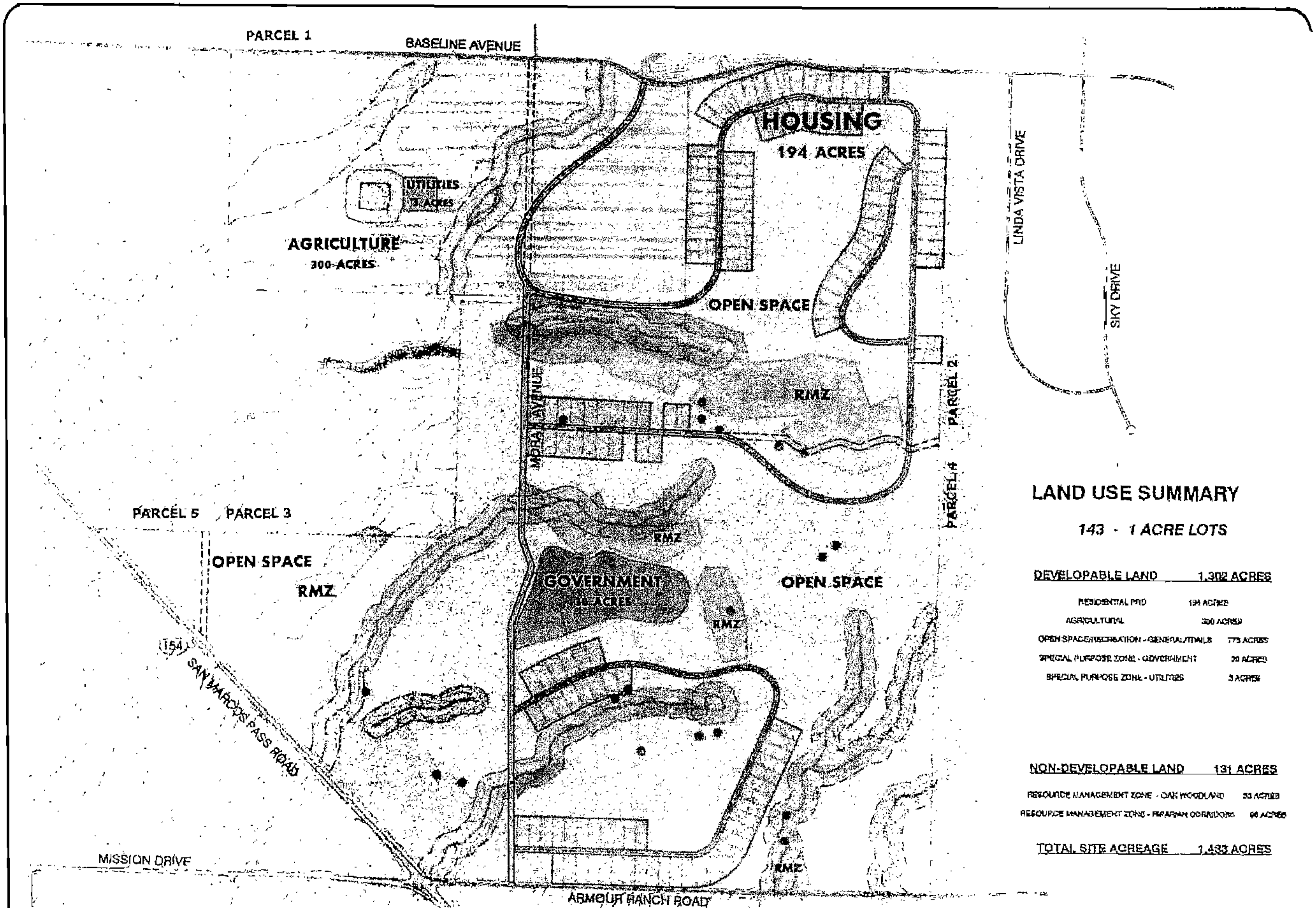


FIGURE 1
N
NOT TO SCALE
MMF - #12018
Armour Ranch Rd.
Project Site
Roblar Avenue
Baseline Avenue
Edison Street
Refugio Road
Grand Ave.
Pintado Road
Alamo
Alisal Road
246
154
101
101
246
PROJECT SITE LOCATION/EXISTING STREET NETWROK
Associated
Transportation
Engineers



ALTERNATIVE A SITE PLAN

FIGURE 2



Associated Transportation Engineers

ALTERNATIVE B SITE PLAN

FIGURE 3

MMF - #12018

Study-Area Facilities. The key roadways and intersections included in the traffic study were identified based on the level of traffic that would be generated by the Project and the location of the Project's access connections to the surrounding roadway network. Both local and regional facilities are analyzed in the study since traffic generated by the Project would use both County roads and State Highways. The roadways and intersections included in the study are listed in Table 1.

Table 1
Study-Area Roadways and Intersections

County Roadway Segments	State Highway Segments	State Highway Intersections
Baseline Ave east of Edison St	SR 154 north of Edison St	SR 154/U.S. 101 SB
Armour Ranch Rd east of SR 154	SR 154 south of SR 246	SR 154/U.S. 101 NB
	SR 246 west of SR 154	SR 154/Grand Ave
		SR 154/Roblar Ave
		SR 154/Edison St
		SR 246/Alisal Rd
		SR 246/Alamo Pintado Rd
		SR 246/Refugio Rd
		SR 246/Edison St
		SR 246/SR 154

Existing Traffic Volumes. Counts were collected in March 2012 for the key roadway segments and intersections where existing data is no longer representative of Existing conditions (traffic counts collected for this study are contained in the Technical Appendix for reference). "Average Daily Traffic" volumes represent traffic that travels on a specific roadway segment over an average 24-hour period. Average Daily Traffic (ADT) volumes were collected on the key roadway segments using machine traffic counters. Because traffic flow on a roadway network is most constrained at intersections, detailed traffic analyses also examine the operations at key intersections during peak travel periods. Turning movements were counted at the study-area intersections from 7:00 to 9:00 A.M. and from 4:00 to 6:00 P.M. The one-hour period containing the highest volume of traffic is considered the peak hour.

Future Traffic Forecasts. Near-Term traffic conditions (2014 without the Project) were forecast using a list of approved and pending projects located within the Santa Ynez Valley planning area. Cumulative traffic conditions (2030 without the Project) were taken from the traffic study prepared for the Santa Ynez Valley Community Plan EIR.[1] The 20-Year Buildout forecasts contained in the Santa Ynez Valley Community Plan were used for the analysis. The 20-Year forecasts are based on 20-year buildout land uses provided by the County for the Santa Ynez Valley area, growth within the adjacent cities of Buellton and Solvang, plus cumulative growth from outside of the Santa Ynez Valley.

LEVEL OF SERVICE STANDARDS

The following level of service standards have been adopted for the street network that serves the Project. For reference, "Levels of Service" (LOS) A through F are used to rate traffic operations. Generally, LOS A indicates free flow operations with no delays; LOS B indicates stable flow with very little delay; LOS C indicates stable flow with low to moderate delays; LOS D indicates flows approaching unstable conditions with moderate to heavy delays; LOS E indicates unstable flow with significant delays; and LOS F indicates forced flow conditions resulting from volumes that are well above capacity.

Santa Barbara County Level of Service Standards

Armour Ranch Road and Baseline Avenue fall under the jurisdiction of Santa Barbara County. Through adoption of the Santa Ynez Valley Community Plan, the County adopted LOS B as the minimum standard for traffic operations for Armour Ranch Road and Baseline Avenue.

Caltrans Level of Service Standards

SR 154 and SR 246 fall under the jurisdiction of Caltrans. Caltrans District 5 established level of service goals for State Route 154 and State Route 246 in their Transportation Concept Reports.[2] The Transportation Concept Reports show LOS D as the minimum operating standard for both SR 154 and SR 246.

EXISTING CONDITIONS

Street Network

The principal components of the roadway network within the vicinity of the Project site are illustrated in Figure 1 and discussed below.

---

1 Traffic and Circulation Study for the Santa Ynez Valley Community Plan, Associated Transportation Engineers, April 2008.

2 Transportation Concept Report State Route 154, California Department of Transportation District 5, February 2007.

Transportation Concept Report State Route 246, California Department of Transportation District 5, May 2004.

U.S. Highway 101 is a four-lane freeway that serves as the major north-south link through Santa Barbara County and is the principal inter-city route along the Pacific Coast. The highway provides the principal connection between the Santa Ynez Valley and Santa Maria and San Luis Obispo to the north; and the Santa Barbara-Goleta area to the south.

SR 154 is a two-lane California state highway that provides regional access to the Santa Ynez Valley. SR 154 extends from U.S. Highway 101 north of the Los Olivos Township through the Santa Ynez Valley to the Santa Barbara-Goleta area to the south. SR 154 is divided by a double yellow centerline with passing lanes provided intermittently.

SR 246 is a two-lane California state highway that also provides regional access to the Santa Ynez Valley. SR 154 extends in an east-west direction within the Santa Ynez Valley area between SR 154 on the east and U.S. Highway 101 on the west. SR 246 is the major east-west route within the Santa Ynez Valley and is used by a significant number of local drivers as an intra-community route within the valley.

Edison Street is a two-lane County roadway that extends in a north-south direction on the east and west sides of SR 154.

Baseline Avenue is a two-lane County roadway that extends in an east-west direction on the east and west sides of SR 154. Baseline Avenue is classified as an S-3 roadway by the County.

Armour Ranch Road is a two-lane County roadway that extends east of SR 154. Armour Ranch Road is classified as an S-3 roadway by the County.

County Roadway Operations

Traffic operations were analyzed for the County roads (Baseline Avenue and Armour Ranch Road) by comparing the Existing traffic volumes to the "Acceptable Capacity" ratings adopted by the County. Table 2 shows the Existing traffic volumes and Acceptable Capacity ratings for the County roads. As shown, the County roadway segments carry volumes within their Acceptable Capacity ratings - indicating that they operate at LOS B or better - which meets the County's standards.

Table 2
Existing Operations - County Roadways

Roadway	Roadway Classification	Geometry	Existing ADT	Acceptable Capacity(a)
Baseline Avenue e/o Edison Street	County S-3	2 Lanes	1,600	5,530
Armour Ranch Road e/o SR 154	County S-3	2 Lanes	700	5,530

(a) Acceptable Capacity rating = 70% of Design Capacity and equates to County's LOS B standard adopted for the Santa Ynez area.

State Highway Operations

Operations for SR 154 and SR 246 were analyzed using the operations procedures outlined in the Highway Capacity Manual (HCM).[3] More specifically, operations for SR 154 were assessed using the HCM procedures for 2-lane highways since SR 154 is an uninterrupted flow highway. This method focuses on average travel speeds and the ability to pass for each direction of travel during the peak hour period. Operations for SR 246 between SR 154 and Solvang were assessed using the HCM procedures for signalized intersections since the flow of traffic is controlled by traffic signals on this segment of highway. This method focuses on average delays at each intersection during peak hour periods.

Figures 4 and 5 shows the Existing A.M. and P.M. peak hour traffic volumes used in the level of service analyses. Table 3 shows the Existing levels of service for the SR 154 segments north and south of the project site. Table 4 shows the Existing levels of service for the intersections along the SR 154 and SR 246 highway segments.

As shown in Table 3, both SR 154 and SR 246 operate at LOS D (or better) during the peak hour periods. As shown in Table 4, the intersections along SR 154 and SR 246 currently operate at LOS C or better during the A.M. and P.M. peak hours. The Existing conditions analysis shows that traffic operations along both SR 154 and SR 246 are within Caltrans' LOS D standard.

Table 3
Existing Operations - State Highway Segments

Highway Segment	Classification	Peak Hour LOS
SR 154 n/o Edison Street	State Highway	LOS D/LOS C(a)
SR 154 s/o SR 246-Armour Ranch Road	State Highway	LOS D/LOS D(a)
SR 246 from SR 154 to Solvang	State Highway	LOS B-C(b)

(a) Northbound/Southbound LOS reported based on travel speeds and ability to pass using P.M. peak hour flows.
(b) Signalized segment - LOS based on delays at intersections (See Table 4).

3 2010 Highway Capacity Manual, Transportation Research Board, 2010.

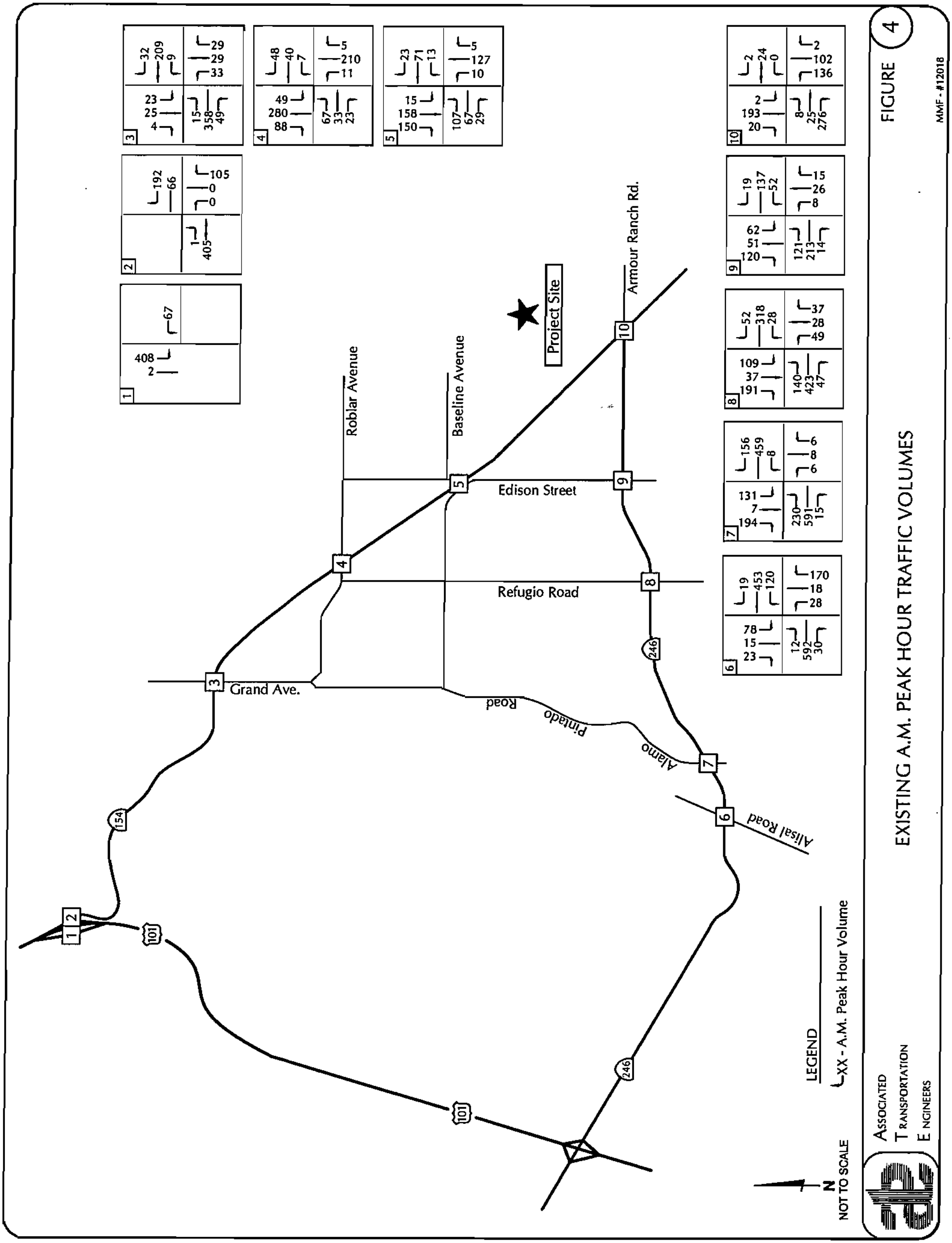
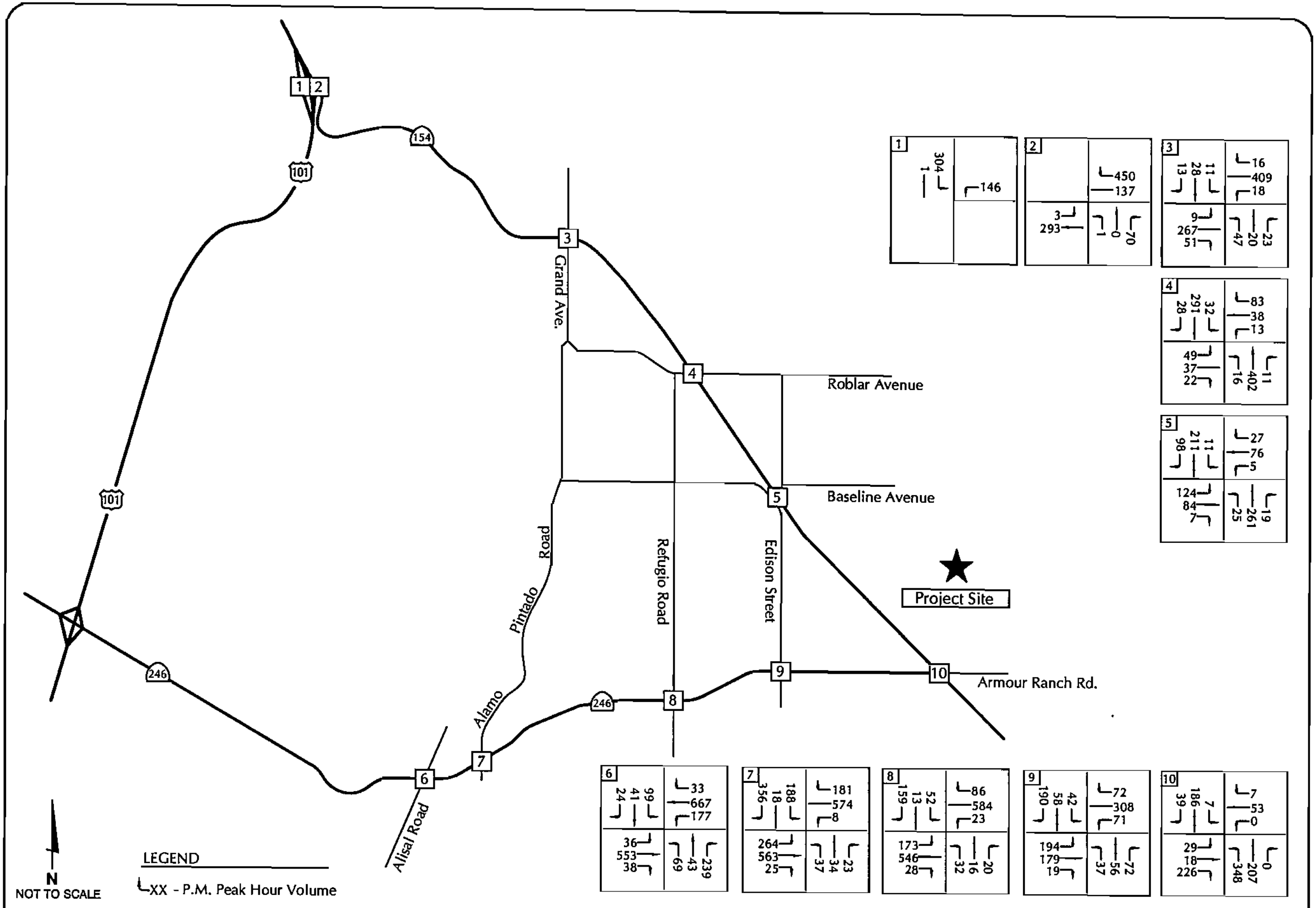


FIGURE 4
MMF - #12018
EXISTING A.M. PEAK HOUR TRAFFIC VOLUMES
Project Site
Armour Ranch Rd.
Roblar Avenue
Baseline Avenue
Edison Street
Refugio Road
Grand Ave.
Pintado Road
Alamo
Alisal Road
154
101
246
LEGEND
XX - A.M. Peak Hour Volume
NOT TO SCALE
N
ASSOCIATED
TRANSPORTATION
ENGINEERS



ASSOCIATED TRANSPORTATION ENGINEERS

EXISTING P.M. PEAK HOUR TRAFFIC VOLUMES

FIGURE 5

MMF - #12018

Table 4
Existing Operations - State Highway Intersections

Intersection	Control	Delay / LOS	
		A.M. Peak	P.M. Peak
SR 154/U.S. 101 SB	STOP Sign	11.2 Sec/LOS B	10.1 Sec/LOS B
SR 154/U.S. 101 NB	STOP Sign	11.7 Sec/LOS B	10.3 Sec/LOS B
SR 154/Grand Avenue	STOP Sign	14.6 Sec/LOS B	16.2 Sec/LOS C
SR 154/Roblar Avenue	STOP Sign	15.0 Sec/LOS B	17.6 Sec/LOS C
SR 154/Edison Street	STOP Sign	11.1 Sec/LOS B	13.2 Sec/LOS B
SR 246/Alisal Road	Signal	22.1 Sec/LOS C	21.6 Sec/LOS C
SR 246/Alamo Pintado Road	Signal	19.4 Sec/LOS B	22.8 Sec/LOS C
SR 246/Refugio Road	Signal	17.3 Sec/LOS B	26.8 Sec/LOS C
SR 246/Edison Street	Signal	16.7 Sec/LOS B	21.4 Sec/LOS C
SR 246/SR 154	STOP Sign	10.8 Sec/LOS B	14.7 Sec/LOS C

PROJECT-GENERATED TRAFFIC

Project Trip Generation

Trip generation estimates were developed for the Project using rates contained in the Institute of Transportation Engineers' (ITE) trip generation report.[4] The ITE rates for Single Family Detached Housing (ITE Land Use Code #210) was selected to develop the trip generation estimates for Alternative A. The ITE rates for Single Family Detached Housing (ITE Land Use Code #210) and Recreational Community Center (ITE Land Use Code #495) were selected to develop the trip generation estimates for Alternative B. Table 3 presents the trip generation estimates for Alternative A and Alternative B (the trip generation calculation worksheet is included in the Technical Appendix for reference).

As shown in Table 5, Alternative A is forecast to generate a 1,369 average daily trips, with 107 trips occurring during the A.M. peak hour and 144 trips occurring during the P.M. peak hour. Alternative B is forecast to generate a 3,199 average daily trips, with 237 trips occurring during the A.M. peak hour and 260 trips occurring during the P.M. peak hour.

4 Trip Generation, Institute of Transportation Engineers, 8th Edition, 2008.

Table 5
Project Trip Generation

Alternative & Land Uses	Size	ADT		A.M. Peak Hour		P.M. Peak Hour	
		Rate	Trips	Rate	Trips	Rate	Trips
Alternative A							
Single Family Residential	143 Units	9.57	1,369	0.75	107	1.01	144
Alternative B							
Single Family Residential	143 Units	9.57	1,369	0.75	107	1.01	144
Community Center	80,000 SF	22.88	1,830	1.62	130	1.45	116
Total			3,199		237		260

Trip rates per unit for Single Family Residential and per 1,000 SF for Community Center.

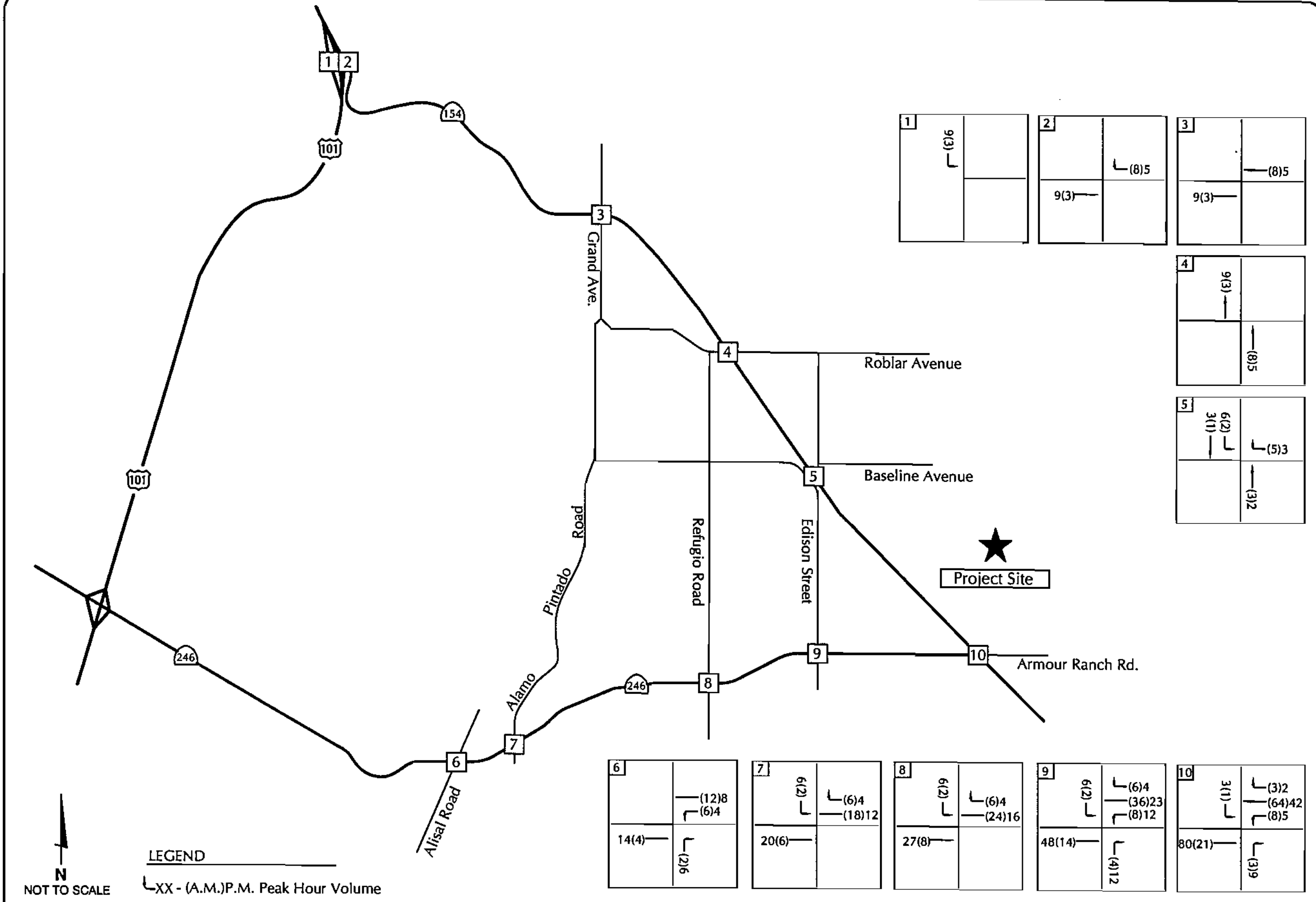
Project Trip Distribution & Assignment

Traffic generated by Alternative A and Alternative B was distributed to the study-area street network based on the trip distribution pattern shown in Table 6. The trip distribution pattern was developed by considering area population, surrounding land uses, existing traffic patterns and probable orientation of project trip types. Once distributed, the trips generated by the project were assigned to the key roadways and intersections within the study area. Figures 6 and 7 show the assignment of project-generated traffic for Alternative A and Alternative B.

Table 6
Project Trip Distribution

Origin/Destination	Direction	Distribution %	
		Residential	Community Center
U.S. 101 north of Los Olivos	North	10%	5%
SR 154 south of Santa Ynez	South	10%	5%
SR 246 west of Solvang	West	10%	5%
Santa Ynez Valley	West	70%	60%
Internal(a)	NA	0%	25%
Total			**100%**

(a) 25% of Community Center traffic is anticipated to be local trips within the Project site.



ASSOCIATED TRANSPORTATION ENGINEERS

TRIP DISTRIBUTION AND ASSIGNMENT - ALTERNATIVE A

FIGURE 6

MMF - #12018

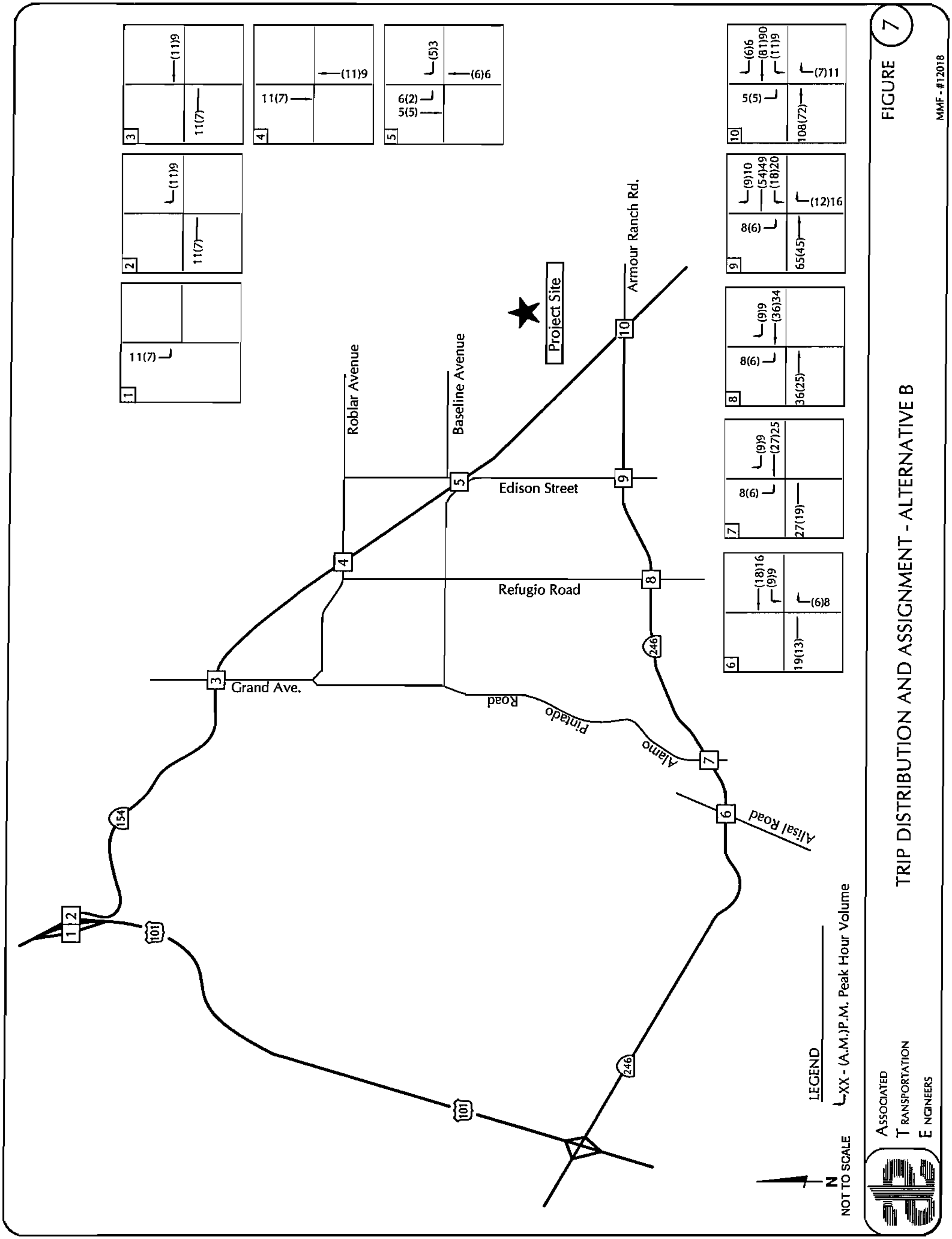


FIGURE 7
TRIP DISTRIBUTION AND ASSIGNMENT - ALTERNATIVE B
MMF - #12018
1
11(7)
2
11(7)
(11)9
3
11(7)
(11)9
4
11(7)
(11)9
5
6(2)
5(5)
(5)3
(6)6
6
19(13)
(18)16
(9)9
(6)8
7
8(6)
27(19)
(9)9
(27)25
8
8(6)
36(25)
(9)9
(36)34
9
8(6)
65(45)
(9)10
(54)49
(18)20
(12)16
10
5(5)
108(72)
(6)6
(81)90
(11)9
(7)11
Project Site
Armour Ranch Rd.
Roblar Avenue
Baseline Avenue
Edison Street
Refugio Road
Grand Ave.
Alamo Pintado Road
Alisal Road
154
101
246
LEGEND
XX - (A.M.)P.M. Peak Hour Volume
N
NOT TO SCALE
Associated Transportation Engineers

NEAR-TERM CONDITIONS

Near-Term traffic conditions were forecast using a list of approved and pending projects located within the Santa Ynez planning area (the list of approved/pending projects is contained in the Technical Appendix for reference). ITE trip rates were used to estimate traffic generation for the approved/pending projects (a worksheet shown the trip generation calculations is contained in the Technical Appendix for reference). Figures 8 and 9 shows the Near-Term traffic volume forecasts. Levels of service for Near-Term Conditions are compared to Near-Term + Project Conditions in the following section.

NEAR-TERM + PROJECT CONDITIONS

Alternative A

Traffic that would be generated by Alternative A was added to the Near-Term traffic volume forecasts in order to assess potential impacts. Figures 10 and 11 show the Near-Term + Alternative A traffic forecasts.

County Roadway Impacts. Near-Term Conditions and Near-Term + Alternative A forecasts for the County roadways adjacent to the Project site are shown in Table 7. As shown, the County roadway segments are forecast to carry volumes within their Acceptable Capacity ratings under Near-Term + Alternative A Conditions - indicating that they would operate at LOS B or better - which meets County's adopted standard. Thus, Alternative A would not significantly impact the County roadways adjacent to the Project site.

Table 7
Near-Term + Alternative A - County Roadway Operations

Roadway	ADT Volume			
	Near-Term	Project Added	Near-Term + Project	Acceptable Capacity(a)
Baseline Avenue e/o Edison Street	1,640	205	1,845	5,530
Armour Ranch Road e/o SR 154	700	1,164	1,864	5,530

(a) Acceptable Capacity rating equates to County's LOS B standard adopted for the Santa Ynez area.

State Highway Impacts. Near-Term and Near-Term + Alternative A level of service forecasts for SR 154 and SR 246 are shown in Tables 8 and 9. As shown in Table 8, the SR 154 highway segments are forecast to operate at LOS C-D under Near-Term and Near-Term + Alternative A conditions - which meets the Caltrans LOS D standard. Most of the key intersections along SR 246 are forecast to operate at LOS B or LOS C under Near-Term and Near-Term + Alternative A conditions (see Table 9).

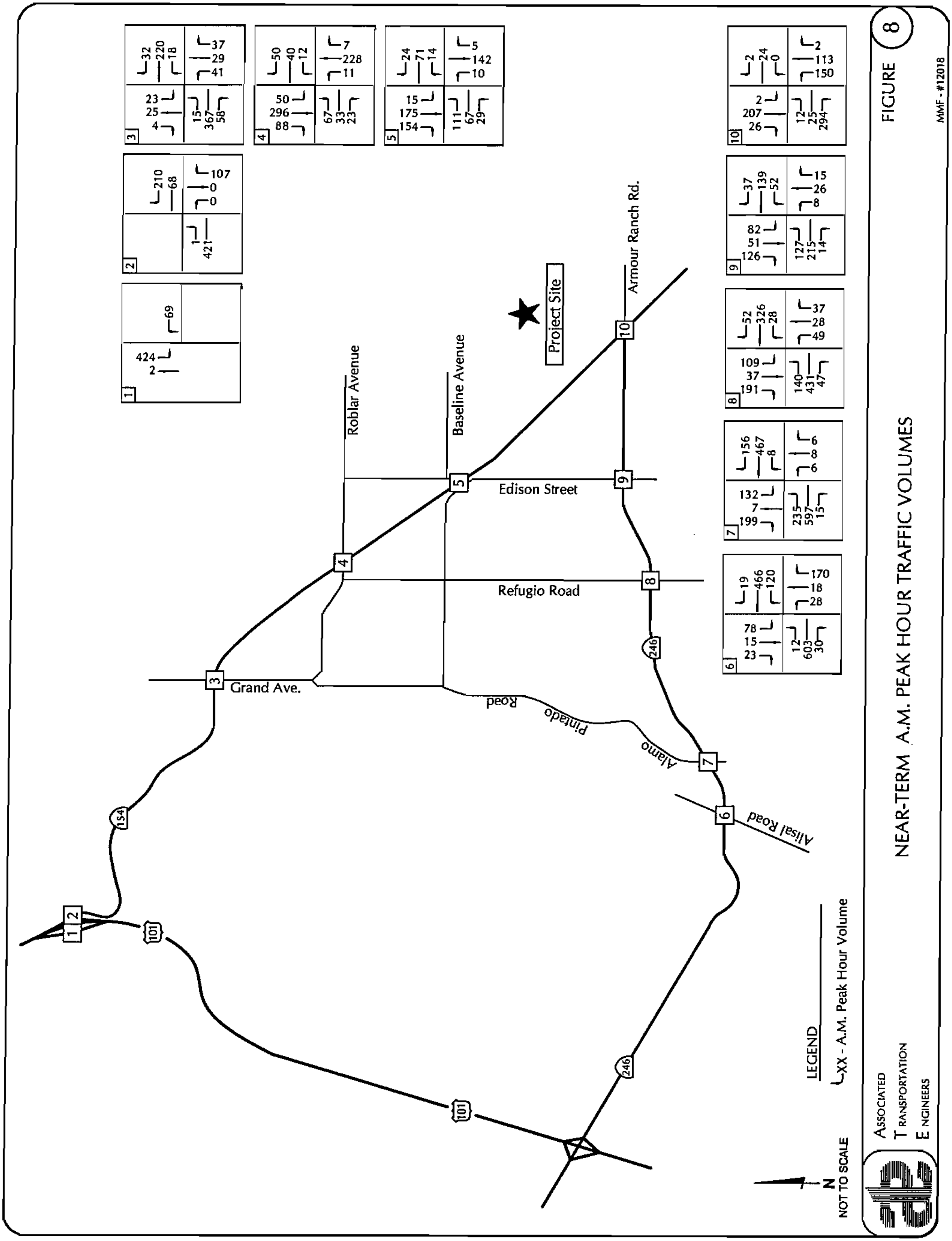
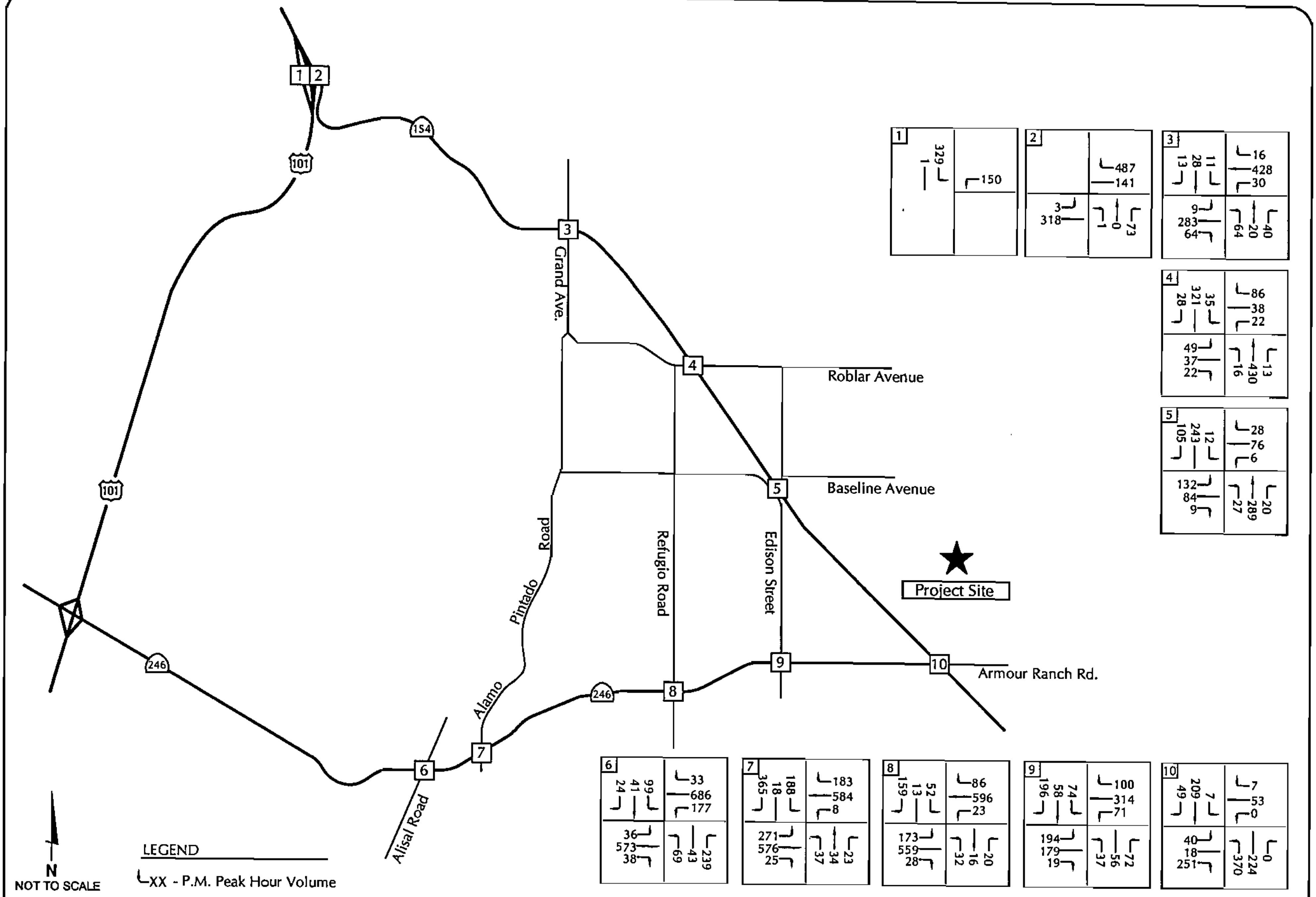


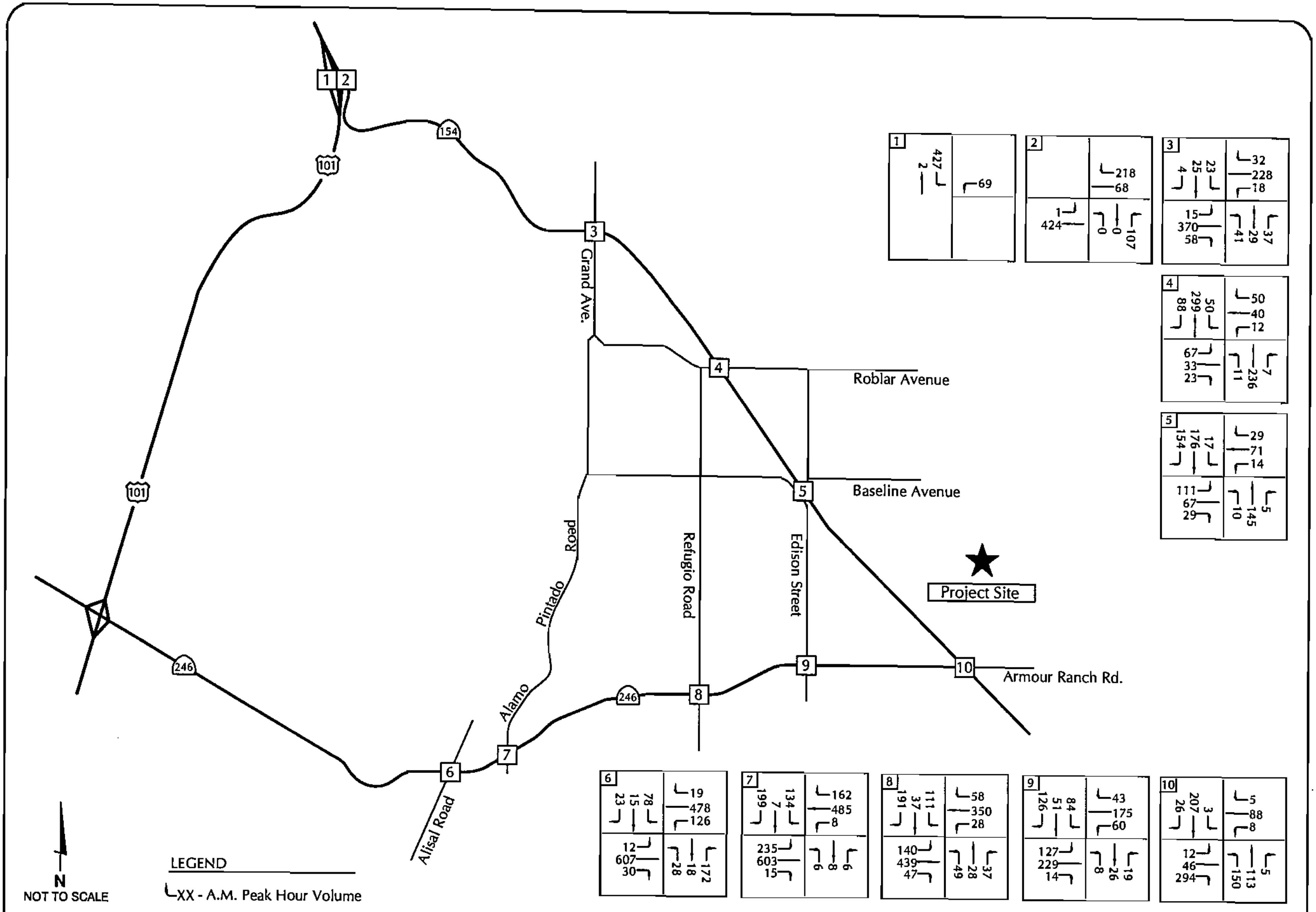
FIGURE 8
NEAR-TERM A.M. PEAK HOUR TRAFFIC VOLUMES
MMF - #12018
Project Site
Armour Ranch Rd.
Baseline Avenue
Roblar Avenue
Edison Street
Refugio Road
Grand Ave.
Pintado Road
Alamo
Alisal Road
LEGEND
XX - A.M. Peak Hour Volume
NOT TO SCALE
ASSOCIATED TRANSPORTATION ENGINEERS



NEAR-TERM P.M. PEAK HOUR TRAFFIC VOLUMES

FIGURE 9

MMF - #12018

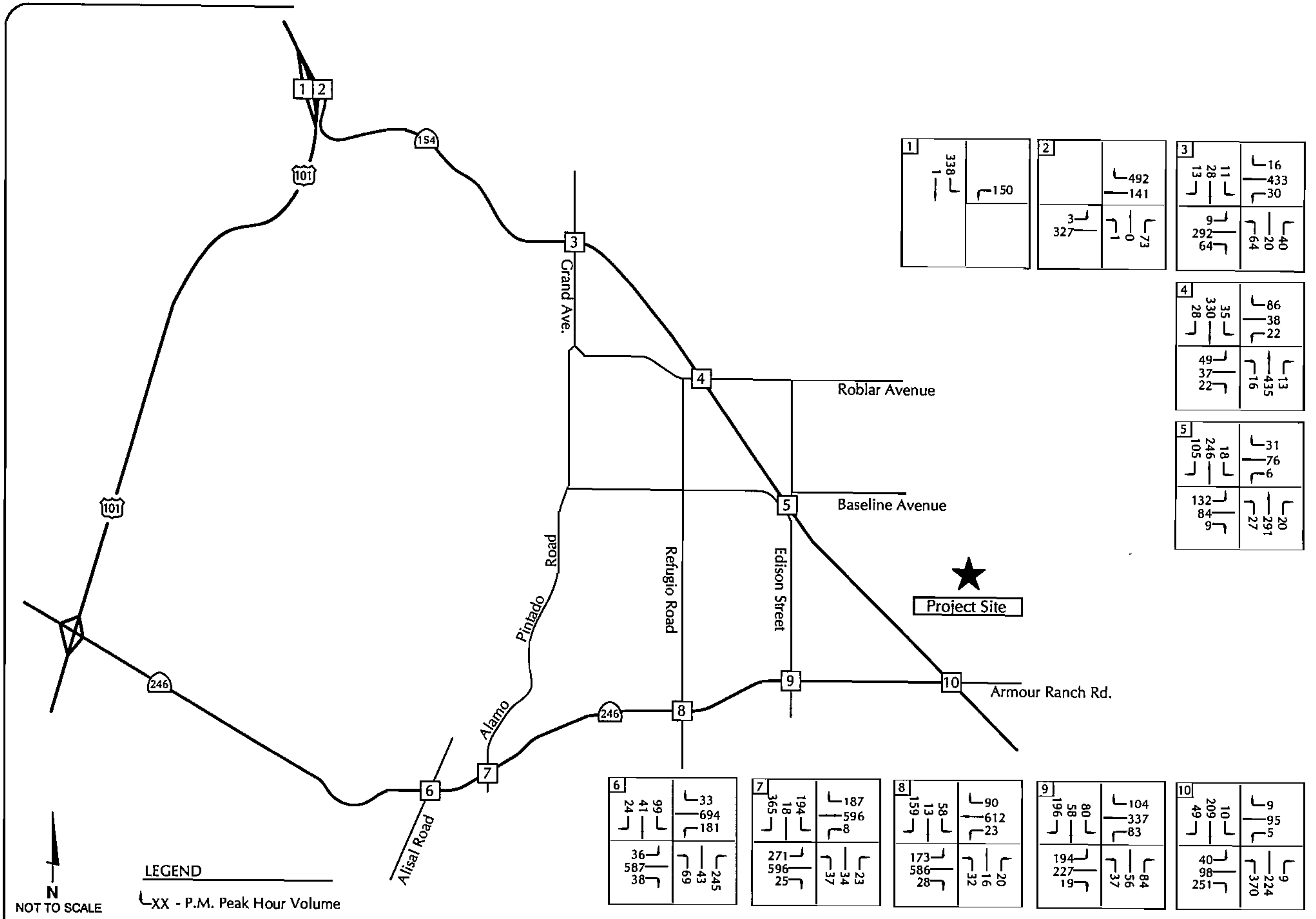


ASSOCIATED TRANSPORTATION ENGINEERS

NEAR-TERM + PROJECT A.M. PEAK HOUR TRAFFIC VOLUMES - ALTERNATIVE A

FIGURE 10

MMF - #12018



ASSOCIATED TRANSPORTATION ENGINEERS

NEAR-TERM + PROJECT P.M. PEAK HOUR TRAFFIC VOLUMES - ALTERNATIVE A

FIGURE 11

MMF - #12018

As shown in Table 9, the SR 246/SR 154 intersection is forecast to degrade to LOS F during the P.M. peak hour period with the traffic that would added by Alternative A. The level of service analysis shows that there would not be a sufficient number of gaps in the SR 154 traffic stream for Alternative A traffic to cross SR 154 when traveling to/from the Project site. Improvements required to accommodate the Near-Term + Alternative A traffic forecasts are presented in the Mitigation Measures section of the report.

Table 8
Near-Term + Alternative A - State Highway Segment Operations

Highway Segment	Peak Hour LOS	
	Near-Term	**Near-Term + Project**
SR 154 n/o Edison Street(a)	LOS D/LOS C	LOS D/LOS C
SR 154 s/o SR 246-Armour Ranch Road(a)	LOS D/LOS D	LOS D/LOS D
SR 246 from SR 154 to Solvang(b)	LOS B-C	LOS B-C

(a) Northbound/Southbound LOS based on travel speeds and ability to pass using P.M. peak hour flows.
(b) Signalized segment - LOS based on delays at intersections (See Table 9).

Table 9
Near-Term + Alternative A - State Highway Intersection Operations

Intersection	Delay / LOS			
	Near-Term		Near-Term + Project	
	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
SR 154/U.S. 101 SB	11.5 Sec/LOS B	10.4 Sec/LOS B	11.6 Sec/LOS B	10.5 Sec/LOS B
SR 154/U.S. 101 NB	11.9 Sec/LOS B	10.6 Sec/LOS B	11.9 Sec/LOS B	10.6 Sec/LOS B
SR 154/Grand Ave	15.3 Sec/LOS C	18.0 Sec/LOS C	15.4 Sec/LOS C	18.4 Sec/LOS C
SR 154/Roblar Ave	15.9 Sec/LOS C	19.8 Sec/LOS C	16.1 Sec/LOS C	20.2 Sec/LOS C
SR 154/Edison Street	11.6 Sec/LOS B	14.9 Sec/LOS B	11.7 Sec/LOS B	15.1 Sec/LOS C
SR 246/Alisal Rd	22.4 Sec/LOS C	22.2 Sec/LOS C	21.5 Sec/LOS C	22.8 Sec/LOS C
SR 246/Alamo Pintado Rd	19.7 Sec/LOS B	26.2 Sec/LOS C	20.0 Sec/LOS B	26.6 Sec/LOS C
SR 246/Refugio Rd	16.9 Sec/LOS B	27.3 Sec/LOS C	16.8 Sec/LOS B	28.1 Sec/LOS C
SR 246/Edison St	16.8 Sec/LOS B	23.6 Sec/LOS C	17.6 Sec/LOS B	23.6 Sec/LOS C
SR 246/SR 154	11.1 Sec/LOS B	19.0 Sec/LOS C	12.7 Sec/LOS B	**>50.0 Sec/LOS F**

Bolded values exceed Caltrans LOS D standard.

Alternative B

Traffic that would be generated by Alternative B was added to the Near-Term traffic volume forecasts in order to assess potential impacts. Figures 12 and 13 show the Near-Term + Alternative B traffic forecasts.

County Roadway Impacts. Near-Term Conditions and Near-Term + Alternative B forecasts for the County roadways adjacent to the Project site are shown in Table 10. As shown, the County roadway segments are forecast to carry volumes within their Acceptable Capacity ratings under Near-Term + Alternative B Conditions - indicating that they would operate at LOS B or better - which meets County's adopted standard. Thus, Alternative B would not significantly impact the County roadways adjacent to the Project site.

Table 10
Near-Term + Alternative B - County Roadway Operations

	ADT Volume			
Roadway	Near-Term	Project Added	Near-Term + Project	Acceptable Capacity(a)
Baseline Avenue e/o Edison Street	1,640	411	2,051	5,530
Armour Ranch Road e/o SR 154	700	2,330	3,030	5,530

(a) Acceptable Capacity rating equates to County's LOS B standard adopted for the Santa Ynez area.

State Highway Impacts. Near-Term and Near-Term + Alternative B level of service forecasts for SR 154 and SR 246 are shown in Tables 11 and 12. As shown in Table 11, the SR 154 highway segments are forecast to operate at LOS C-D under Near-Term and Near-Term + Alternative B conditions - which meets the Caltrans LOS D standard. Most of the key intersections along SR 246 are forecast to operate at LOS B or LOS C under Near-Term and Near-Term + Alternative B conditions (see Table 12).

As shown in Table 12, the SR 246/SR 154 intersection is forecast to degrade to LOS F during the P.M. peak hour period with traffic that would added by Alternative B. The level of service analysis shows that there would not be a sufficient number of gaps in the SR 154 traffic stream for Alternative B traffic to cross SR 154 when traveling to/from the Project site. Improvements required to accommodate the Near-Term + Alternative B traffic forecasts are presented in the Mitigation Measures section of the report.

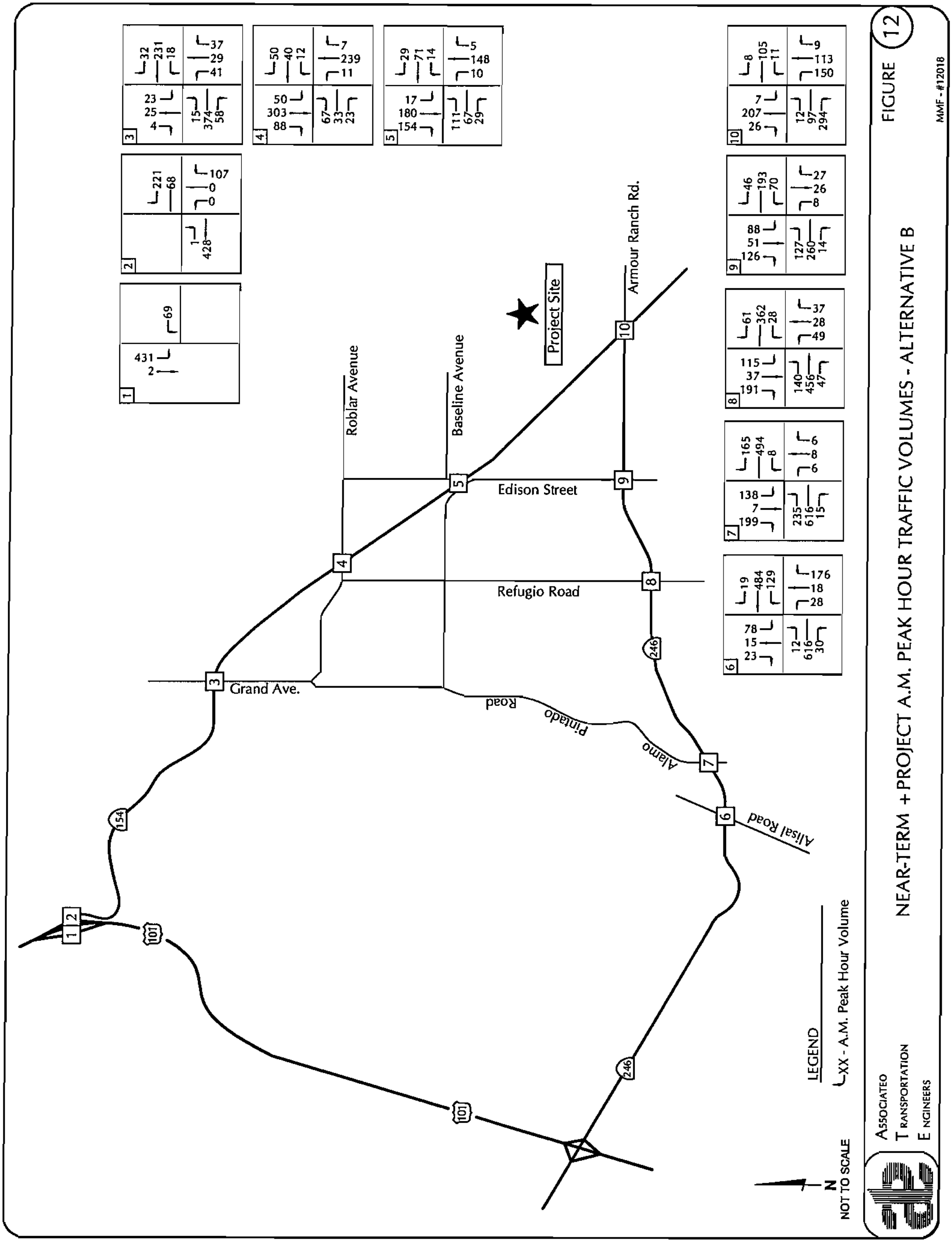


FIGURE 12
NEAR-TERM + PROJECT A.M. PEAK HOUR TRAFFIC VOLUMES - ALTERNATIVE B
MMF - #12018
Project Site
Armour Ranch Rd.
Baseline Avenue
Roblar Avenue
Edison Street
Refugio Road
Grand Ave.
Pintado Road
Alamo
Alisal Road
154
101
246
LEGEND
XX - A.M. Peak Hour Volume
N
NOT TO SCALE
ASSOCIATED
TRANSPORTATION
ENGINEERS

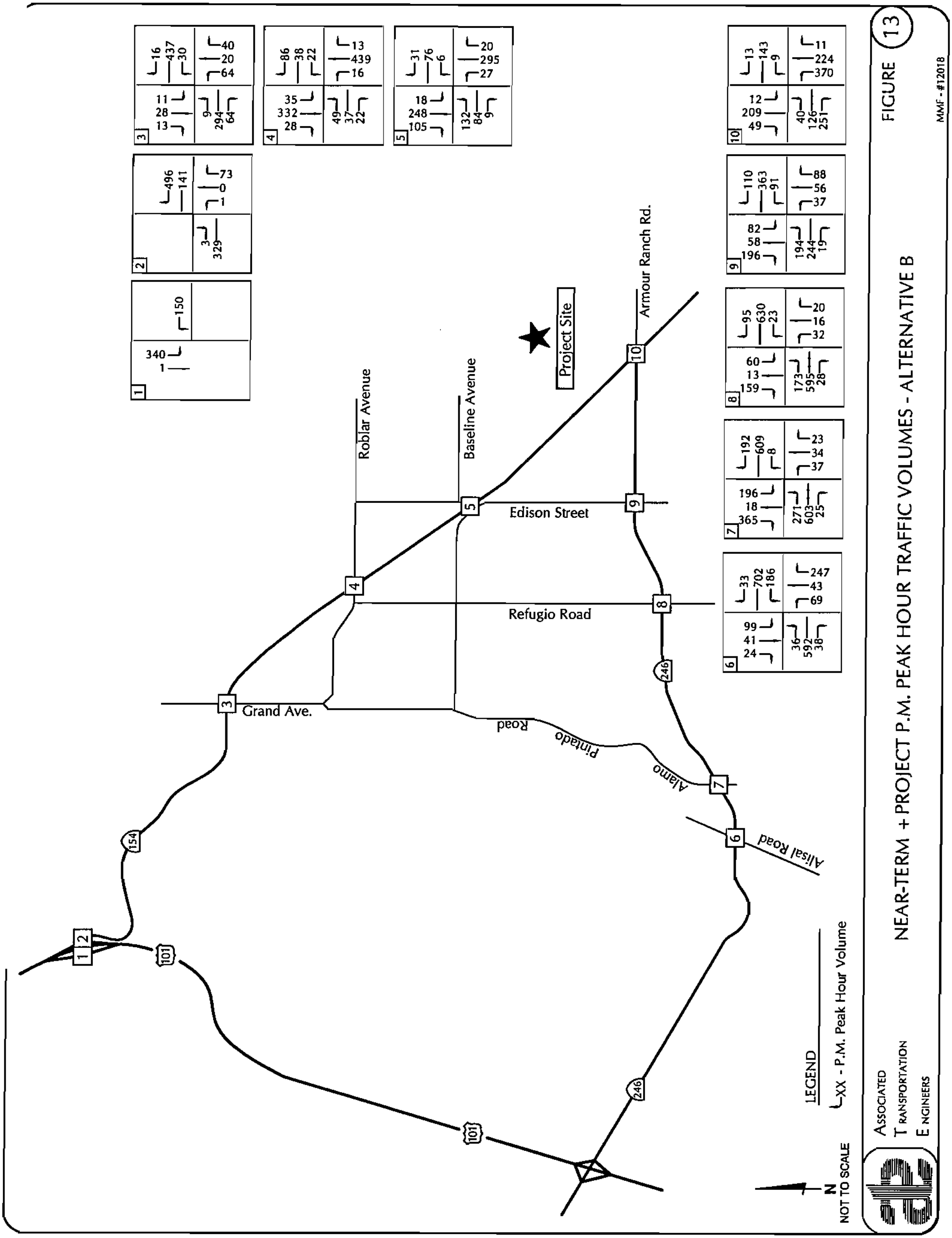


FIGURE 13
NEAR-TERM + PROJECT P.M. PEAK HOUR TRAFFIC VOLUMES - ALTERNATIVE B
MMF - #12018
Project Site
Armour Ranch Rd.
Roblar Avenue
Baseline Avenue
Edison Street
Refugio Road
Grand Ave.
Pintado Road
Alamo
Alisal Road
LEGEND
XX - P.M. Peak Hour Volume
NOT TO SCALE
N
ASSOCIATED TRANSPORTATION ENGINEERS

Table 11
Near-Term + Alternative B - State Highway Segment Operations

Highway Segment	Peak Hour LOS	
	Near-Term	Near-Term + Project
SR 154 n/o Edison Street(a)	LOS D/LOS C	LOS D/LOS C
SR 154 s/o SR 246-Armour Ranch Road(a)	LOS D/LOS D	LOS D/LOS D
SR 246 from SR 154 to Solvang(b)	LOS B-C	LOS B-C

(a) Northbound/Southbound LOS based on travel speeds and ability to pass using P.M. peak hour flows.
(b) Signalized segment - LOS based on delays at intersections (See Table 12).

Table 12
Near-Term + Alternative B - State Highway Intersection Operations

Intersection	Delay / LOS			
	Near-Term		Near-Term + Project	
	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
SR 154/U.S. 101 SB	11.5 Sec/LOS B	10.4 Sec/LOS B	11.7 Sec/LOS B	10.5 Sec/LOS B
SR 154/U.S. 101 NB	11.9 Sec/LOS B	10.6 Sec/LOS B	12.0 Sec/LOS B	10.7 Sec/LOS B
SR 154/Grand Ave	15.3 Sec/LOS C	18.0 Sec/LOS C	15.5 Sec/LOS C	18.5 Sec/LOS C
SR 154/Roblar Ave	15.9 Sec/LOS C	19.8 Sec/LOS C	16.3 Sec/LOS C	20.4 Sec/LOS C
SR 154/Edison St	11.6 Sec/LOS B	14.9 Sec/LOS B	11.8 Sec/LOS B	15.3 Sec/LOS C
SR 246/Alisal Rd	22.4 Sec/LOS C	22.2 Sec/LOS C	20.8 Sec/LOS C	23.3 Sec/LOS C
SR 246/Alamo Pintado Rd	19.7 Sec/LOS B	26.2 Sec/LOS C	20.2 Sec/LOS C	27.0 Sec/LOS C
SR 246/Refugio Rd	16.9 Sec/LOS B	27.3 Sec/LOS C	17.7 Sec/LOS B	27.3 Sec/LOS C
SR 246/Edison St	16.8 Sec/LOS B	23.6 Sec/LOS C	19.0 Sec/LOS B	22.2 Sec/LOS C
SR 246/SR 154	11.1 Sec/LOS B	19.0 Sec/LOS C	14.3 Sec/LOS B	**>50.0 Sec/LOS F**

Bolded values exceed Caltrans LOS D standard.

CUMULATIVE CONDITIONS

Cumulative traffic forecasts were derived from the traffic study prepared for the Santa Ynez Valley Community Plan. The 20-Year Buildout forecasts were used for the analysis. Figures 14 and 15 shows the Cumulative traffic volume forecasts. Levels of service for Cumulative Conditions are compared to Cumulative + Project Conditions in the following section.

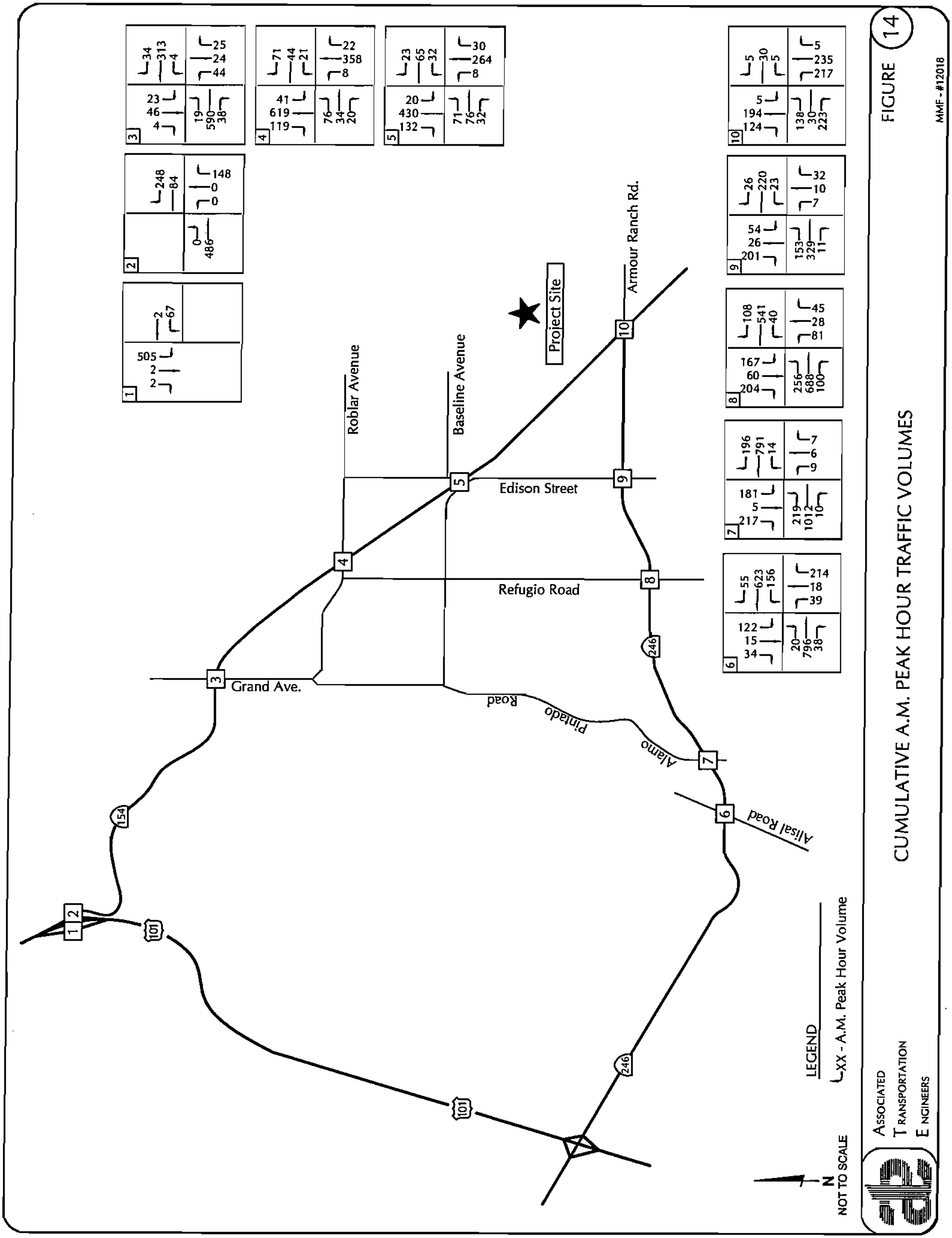


FIGURE 14
MMF - #12018
CUMULATIVE A.M. PEAK HOUR TRAFFIC VOLUMES
Project Site
Armour Ranch Rd.
Baseline Avenue
Roblar Avenue
Edison Street
Refugio Road
Grand Ave.
Pintado Road
Alamo
Alisal Road
LEGEND
XX - A.M. Peak Hour Volume
NOT TO SCALE
N
ASSOCIATED
TRANSPORTATION
ENGINEERS

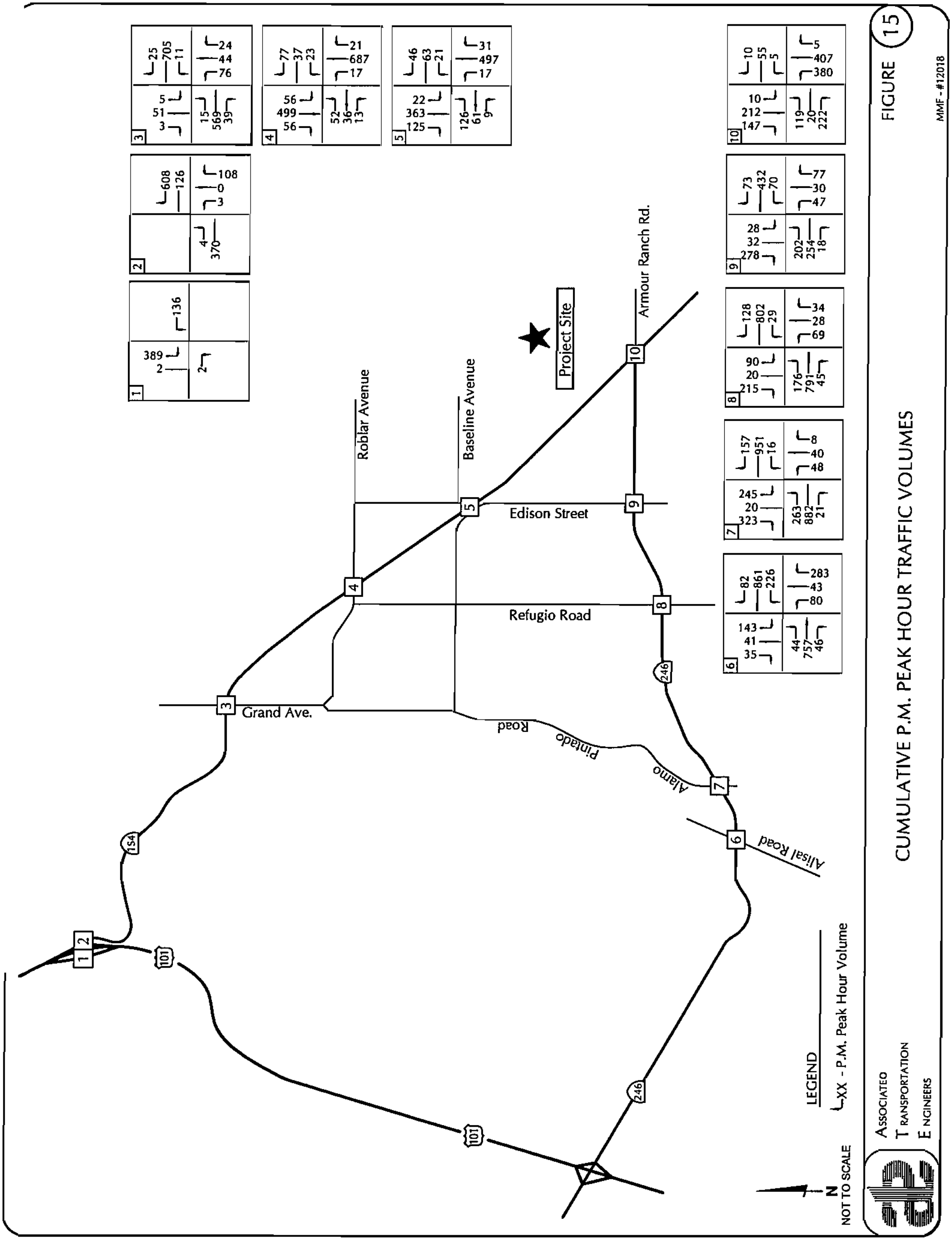


FIGURE 15
MMF - #12018
CUMULATIVE P.M. PEAK HOUR TRAFFIC VOLUMES
Project Site
Armour Ranch Rd.
Roblar Avenue
Baseline Avenue
Edison Street
Refugio Road
Grand Ave.
Pintado Road
Alamo
Alisal Road
LEGEND
XX - P.M. Peak Hour Volume
NOT TO SCALE
N
Associated
Transportation
Engineers

CUMULATIVE PROJECT + CONDITIONS

Alternative A

Alternative A traffic was added to the Cumulative traffic forecasts in order to assess potential impacts. Figures 16 and 17 show the Cumulative + Alternative A traffic forecasts.

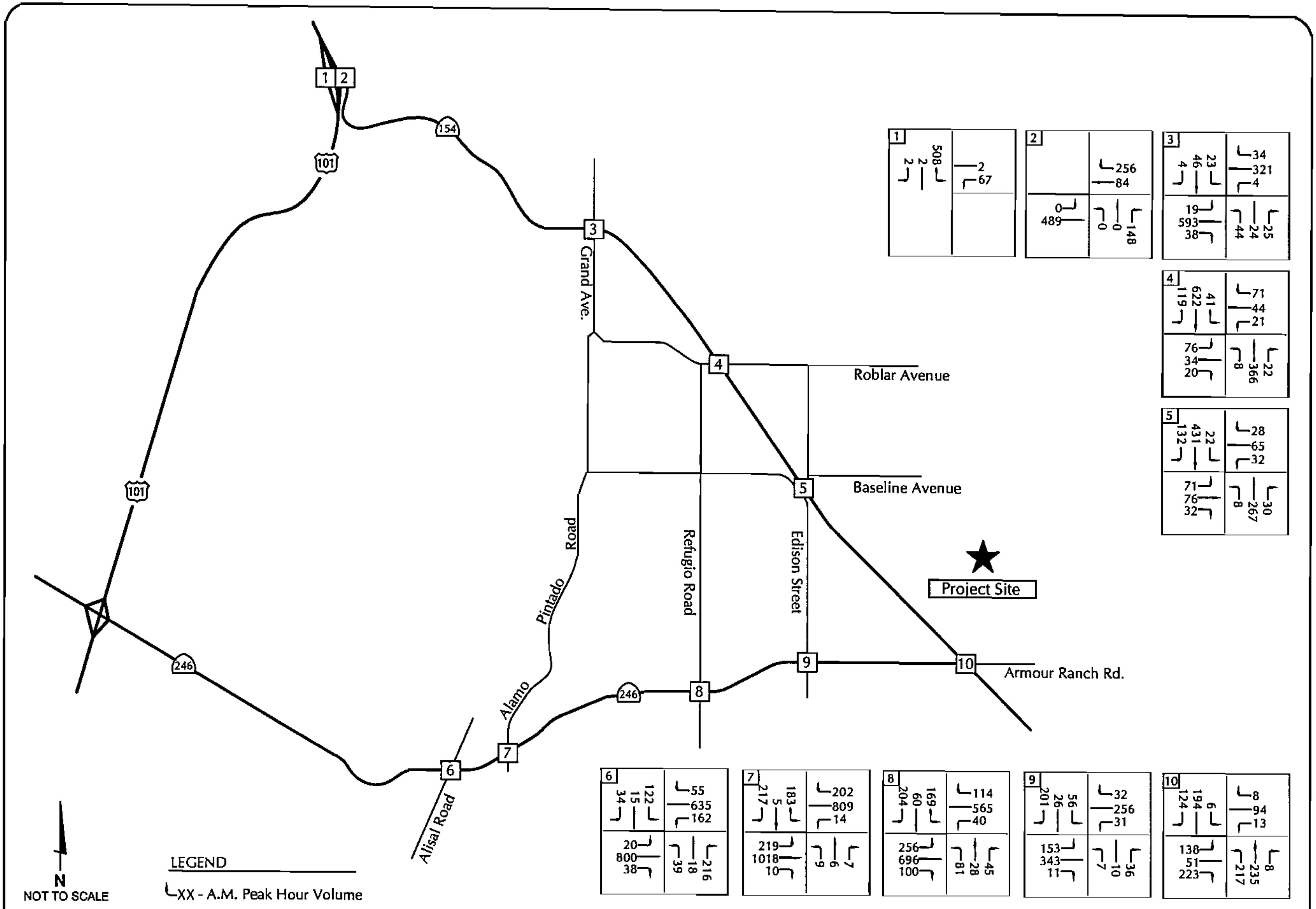
County Roadway Impacts. Cumulative and Cumulative + Alternative A forecasts for the County roadways adjacent to the Project site are shown in Table 13. As shown, the County roadway segments are forecast to carry volumes within their Acceptable Capacity ratings under Cumulative + Alternative A Conditions - indicating that they would operate at LOS B or better - which meets County's adopted standard. Thus, Alternative A would not significantly impact the County roadways adjacent to the Project site.

Table 13
Cumulative + Alternative A - County Roadway Operations

	ADT Volume			
Roadway	Cumulative	Project Added	Cumulative + Project	Acceptable Capacity(a)
Baseline Avenue e/o Edison Street	1,800	205	2,005	5,530
Armour Ranch Road e/o SR 154	900	1,164	2,064	5,530

(a) Acceptable Capacity rating equates to County's LOS B standard adopted for the Santa Ynez area.

State Highway Impacts. Cumulative and Cumulative + Alternative A level of service forecasts for SR 154 and SR 246 are shown in Tables 14 and 15. As shown in Table 14, operations on SR 154 are forecast to degrade to LOS E in the northbound direction during the peak hour period, which exceeds the Caltrans LOS D standard. Furthermore, as shown in Table 15, several of the key intersections along SR 154 and SR 246 are forecast to degrade to LOS E or LOS F, also exceeding the Caltrans LOS D standard. Improvements required to accommodate the Cumulative + Alternative A traffic forecasts are presented in the Mitigation Measures section of the report.



ASSOCIATED TRANSPORTATION ENGINEERS

CUMULATIVE + PROJECT A.M. PEAK HOUR TRAFFIC VOLUMES - ALTERNATIVE A

FIGURE 16

MMF - #12018

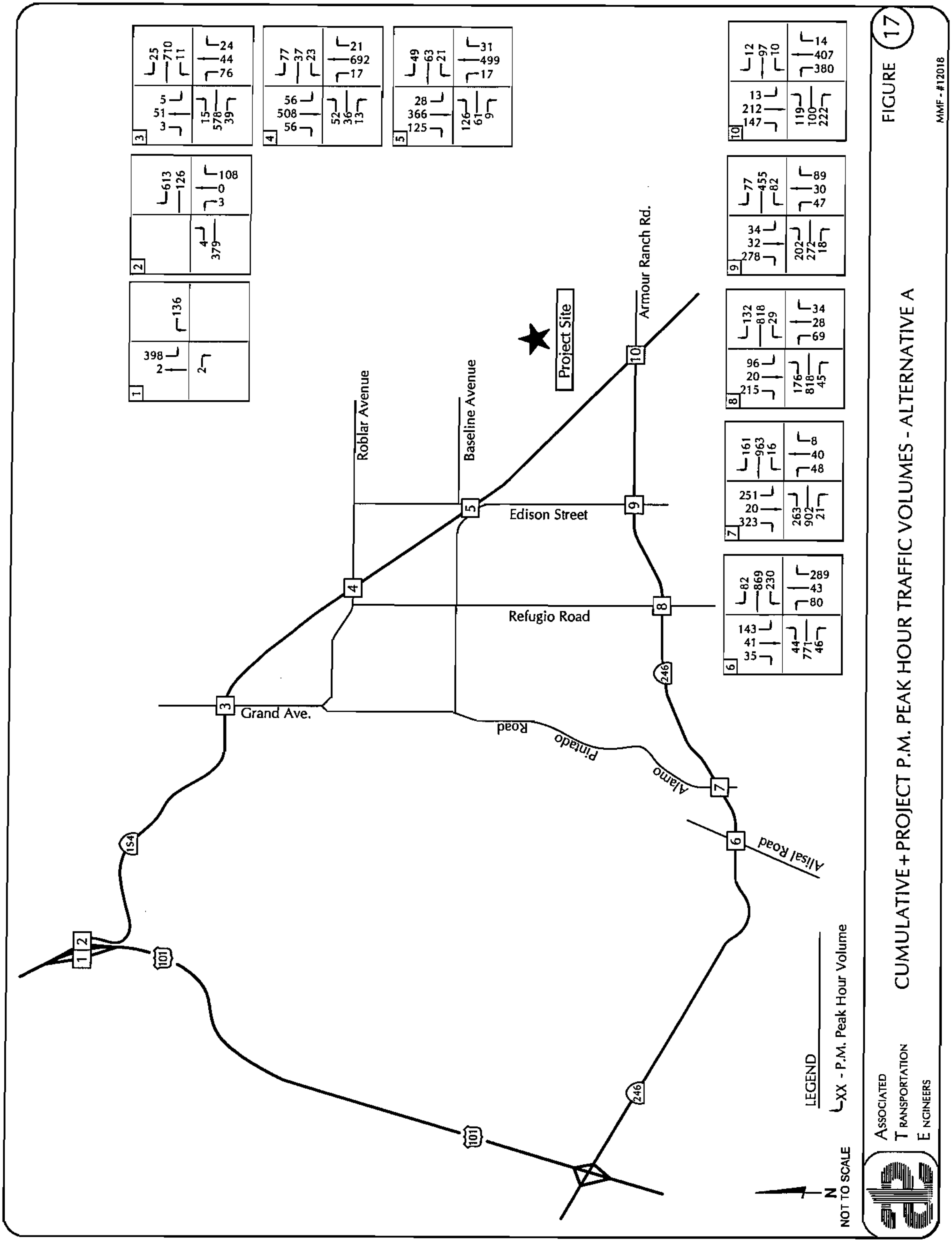


FIGURE 17
CUMULATIVE + PROJECT P.M. PEAK HOUR TRAFFIC VOLUMES - ALTERNATIVE A
MMF - #12018
Project Site
Armour Ranch Rd.
Roblar Avenue
Baseline Avenue
Edison Street
Refugio Road
Grand Ave.
Pintado Road
Alamo
Alisal Road
154
101
246
LEGEND
XX - P.M. Peak Hour Volume
N
NOT TO SCALE
ASSOCIATED TRANSPORTATION ENGINEERS

Table 14
Cumulative + Alternative A - State Highway Segment Operations

Highway Segment	Peak Hour LOS	
	Cumulative	Cumulative + Project
SR 154 n/o Edison Street(a)	**LOS E**/LOS D	**LOS E**/LOS D
SR 154 s/o SR 246-Armour Ranch Road(a)	**LOS E**/LOS C	**LOS E**/LOS C
SR 246 from SR 154 to Solvang(b)	LOS B-**LOS F**	LOS B-**LOS F**

Bolded values exceed Caltrans LOS D standard.

(a) Northbound/Southbound LOS based on travel speeds and ability to pass using P.M. peak hour flows.

(b) Signalized segment - LOS based on delays at intersections (See Table 15).

Table 15
Cumulative + Alternative A - State Highway Intersection Operations

Intersection	Delay / LOS			
	Cumulative		Cumulative + Project	
	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
SR 154/U.S. 101 SB	13.7 Sec/LOS B	11.3 Sec/LOS B	13.8 Sec/LOS B	11.5 Sec/LOS B
SR 154/U.S. 101 NB	13.4 Sec/LOS B	11.5 Sec/LOS B	13.4 Sec/LOS B	11.5 Sec/LOS B
SR 154/Grand Ave	23.0 Sec/LOS C	**>50.0 Sec/LOS F**	23.7 Sec/LOS C	**>50.0 Sec/LOS F**
SR 154/Roblar Ave	**>50.0 Sec/LOS F**	**>50.0 Sec/LOS F**	**>50.0 Sec/LOS F**	**>50.0 Sec/LOS F**
SR 154/Edison St	**39.0 Sec/LOS E**	**>50.0 Sec/LOS F**	**40.8 Sec/LOS E**	**>50.0 Sec/LOS F**
SR 246/Alisal Rd	29.7 Sec/LOS C	46.6 Sec/LOS D	30.9 Sec/LOS C	49.4 Sec/LOS D
SR 246/Alamo Pintado Rd	46.7 Sec/LOS D	**74.6 Sec/LOS E**	48.9 Sec/LOS D	**77.7 Sec/LOS E**
SR 246/Refugio Rd	34.2 Sec/LOS C	**68.4 Sec/LOS E**	33.7 Sec/LOS C	**66.9 Sec/LOS E**
SR 246/Edison St	16.6 Sec/LOS B	22.1 Sec/LOS C	16.6 Sec/LOS B	22.1 Sec/LOS C
SR 246/SR 154	28.7 Sec/LOS D	**>50.0 Sec/LOS F**	**>50.0 Sec/LOS F**	**>50.0 Sec/LOS F**

Bolded values exceed Caltrans LOS D standard.

Alternative B

Alternative B traffic was added to the Cumulative traffic forecasts in order to assess potential impacts. Figures 18 and 19 show the Cumulative + Alternative B traffic forecasts.

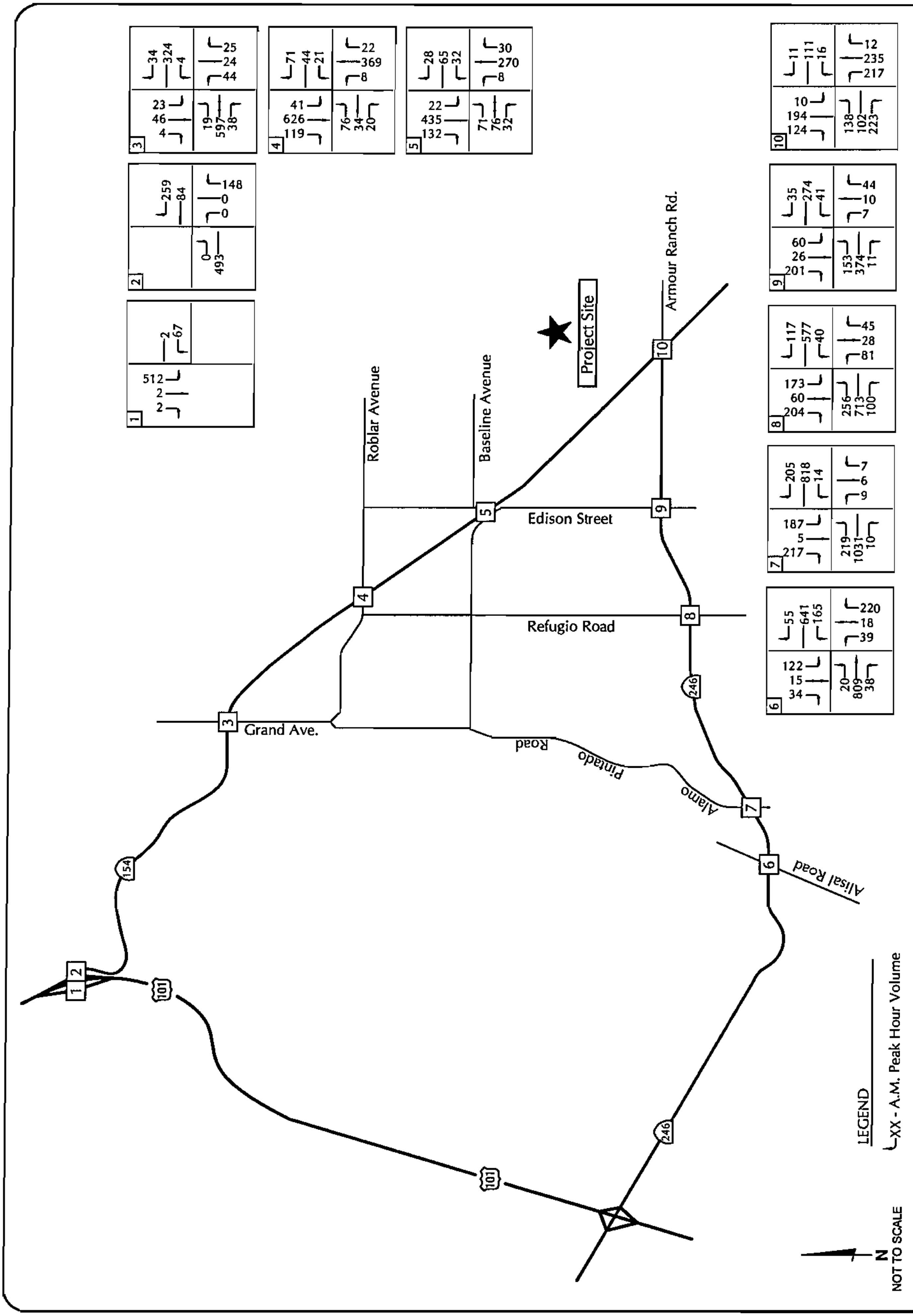


FIGURE 18

CUMULATIVE + PROJECT A.M. PEAK HOUR TRAFFIC VOLUMES - ALTERNATIVE B

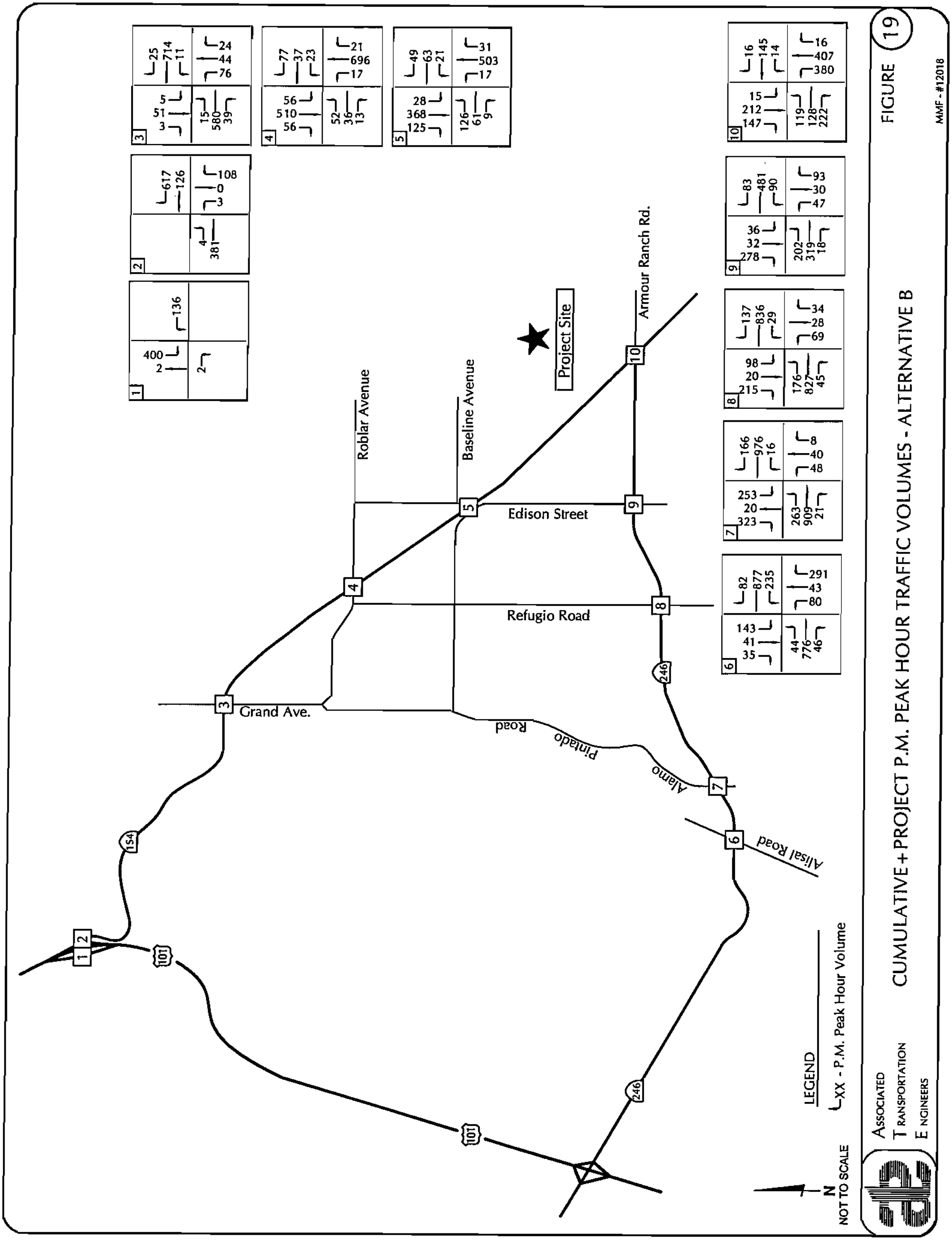


FIGURE 19
MMF - #12018
CUMULATIVE + PROJECT P.M. PEAK HOUR TRAFFIC VOLUMES - ALTERNATIVE B
Project Site
Armour Ranch Rd.
Roblar Avenue
Baseline Avenue
Edison Street
Refugio Road
Grand Ave.
Pintado Road
Alamo
Alisal Road
101
154
246
LEGEND
XX - P.M. Peak Hour Volume
N
NOT TO SCALE
Associated Transportation Engineers

County Roadway Impacts. Cumulative and Cumulative + Alternative B forecasts for the County roadways adjacent to the Project site are shown in Table 16. As shown, the County roadway segments are forecast to carry volumes within their Acceptable Capacity ratings under Cumulative + Alternative B Conditions - indicating that they would operate at LOS B or better - which meets County's adopted standard. Thus, Alternative B would not significantly impact the County roadways adjacent to the Project site.

Table 16
Cumulative + Alternative B - County Roadway Operations

	ADT Volume			
Roadway	**Cumulative**	**Project Added**	**Cumulative + Project**	**Acceptable Capacity(a)**
Baseline Avenue e/o Edison Street	1,800	411	2,211	5,530
Armour Ranch Road e/o SR 154	900	2,330	3,230	5,530

(a) Acceptable Capacity rating equates to County's LOS B standard adopted for the Santa Ynez area.

State Highway Impacts. Cumulative and Cumulative + Alternative B level of service forecasts for SR 154 and SR 246 are shown in Tables 17 and 18. Operations on SR 154 are forecast to degrade to LOS E in the northbound direction during the peak hour period, which exceeds the Caltrans LOS D standard (see Table 17). Additionally, several of the key intersections along SR 154 and SR 246 are forecast to degrade to LOS E or LOS F, also exceeding the Caltrans LOS D standard (see Table 18).

Table 17
Cumulative + Alternative B - State Highway Segment Operations

	Peak Hour LOS	
Highway Segment	**Cumulative**	**Cumulative + Project**
SR 154 n/o Edison Street(a)	**LOS E**/LOS D	**LOS E**/LOS D
SR 154 s/o SR 246-Armour Ranch Road(a)	**LOS E**/LOS C	**LOS E**/LOS C
SR 246 from SR 154 to Solvang(b)	LOS B-**LOS F**	LOS B-**LOS F**

Bolded values exceed Caltrans LOS D standard.
(a) Northbound/Southbound LOS based on travel speeds and ability to pass using P.M. peak hour flows.
(b) Signalized segment - LOS based on delays at intersections (See Table 15).

Table 18
Cumulative + Alternative B - State Highway Intersection Operations

Intersection	Delay / LOS			
	Cumulative		Cumulative + Project	
	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak
SR 154/U.S. 101 SB	13.7 Sec/LOS B	11.3 Sec/LOS B	13.9 Sec/LOS B	11.5 Sec/LOS B
SR 154/U.S. 101 NB	13.4 Sec/LOS B	11.5 Sec/LOS B	13.5 Sec/LOS B	11.6 Sec/LOS B
SR 154/Grand Ave	23.0 Sec/LOS C	**>50.0 Sec/LOS F**	24.0 Sec/LOS C	**>50.0 Sec/LOS F**
SR 154/Roblar Ave	**>50.0 Sec/LOS F**	**>50.0 Sec/LOS F**	**>50.0 Sec/LOS F**	**>50.0 Sec/LOS F**
SR 154/Edison St	**39.0 Sec/LOS E**	**>50.0 Sec/LOS F**	**43.2 Sec/LOS E**	**>50.0 Sec/LOS F**
SR 246/Alisal Rd	29.7 Sec/LOS C	46.6 Sec/LOS D	32.3 Sec/LOS C	51.5 Sec/LOS D
SR 246/Alamo Pintado Rd	46.7 Sec/LOS D	**74.6 Sec/LOS E**	51.2 Sec/LOS D	**79.9 Sec/LOS E**
SR 246/Refugio Rd	34.2 Sec/LOS C	**68.4 Sec/LOS E**	35.1 Sec/LOS D	**72.0 Sec/LOS E**
SR 246/Edison St	16.6 Sec/LOS B	22.1 Sec/LOS C	18.7 Sec/LOS B	23.7 Sec/LOS C
SR 246/SR 154	28.7 Sec/LOS D	**>50.0 Sec/LOS F**	**>50.0 Sec/LOS F**	**>50.0 Sec/LOS F**

Bolded values exceed Caltrans LOS D standard.

MITIGATION MEASURES

Near Term Measures

SR 246/SR 154. The SR 246/SR 154 intersection is forecast to degrade to LOS F during the P.M. peak hour under Near-Term + Project conditions (both alternatives). Caltrans is planning a safety improvement project for the intersection. The two alternatives being studied are 1) reconstructing the intersection into a modern roundabout, and 2) revising the lane geometry and signalizing the intersection. The Caltrans improvement project is currently in the "Project Approval/Environmental Document" (PA/ED) phase. The preferred alternative is the roundabout since it would bring down speeds at the intersection and significantly reduce injury accidents. According to Caltrans' operational analyses, the roundabout alternative would provide LOS A operations during A.M. and P.M. peak hour periods assuming Year 2035 traffic and the signalized alternative would provide LOS B-C operations during A.M. and P.M. peak hour periods assuming Year 2035 traffic. Either of the two improvements would be required to accommodate Near-Term + Project traffic.

Cumulative Measures

The Cumulative analysis found that traffic operations along SR 154 and SR 246 are forecast to degrade to LOS E or LOS F, as listed below. It is important to note that these locations would operate at LOS E/LOS F with and without the Project.

<u>Cumulative Impacts</u>
SR 154 north of Edison Street (LOS E)
SR 154 south of SR 246-Armour Ranch Road (LOS E)
SR 154/Grand Avenue (P.M. Peak Hour = LOS F)
SR 154/Roblar Avenue (A.M. & P.M. Peak Hour = LOS F)
SR 154/Edison Street (A.M. Peak Hour = LOS E / P.M. Peak Hour = LOS F)
SR 246/Alamo Pintado Road (P.M. Peak Hour = LOS E)
SR 246/Refugio Road (P.M. Peak Hour = LOS E)
SR 246/SR 154 (A.M. & P.M. Peak Hour = LOS F)

The following mitigations are consistent with what is being planned by the County for the Santa Ynez area since they were derived from the adopted Santa Ynez Community Plan. The Project's contribution to the mitigation measures are listed in Table 19 at the end of this section.

SR 154 Corridor

<u>Roundabout Intersections</u>. The first option for the SR 154 corridor is the installation of modern roundabouts at the major cross street intersections. Evenly spaced single-lane roundabouts would provide acceptable levels of service along the corridor. Based on future traffic volume forecasts, intersection spacing, and forecasted levels of service, single-lane roundabouts would be provided at the following four locations:

SR 154/Grand Avenue
SR 154/Roblar Avenue
SR 154/Edison Street
SR 154/SR 246-Armour Ranch Road

The operational analyses found that the single-lane roundabouts will operate at LOS A during the P.M. peak hour period with the 20-Year Buildout traffic forecast, thus meeting the Caltrans LOS D standard. The roundabouts would provide relatively free-flow operations along SR 154 with minor delays for traffic entering or crossing SR 154 at the collector road connections.

<u>Signalized Intersections</u>. The second option for the SR 154 corridor is installing signals at evenly spaced intersections. Based on future traffic volumes, intersection spacing, forecasted levels of service, and signal warrants, signalized intersections would be provided at:

SR 154/Grand Avenue
SR 154/Roblar Avenue
SR 154/Edison Street
SR 154/SR 246-Armour Ranch Road

The operational analysis found that the SR 154 corridor will operate at LOS B under 20-Year Buildout conditions during the P.M. peak hour period with the signalized option, thus meeting the Caltrans LOS D standard. The signalized corridor would provide relatively free-flow operations along SR 154 with minor delays for traffic entering or crossing SR 154 at the signalized collector road connections.

SR 246 Corridor

Roundabout Intersections. The first option for the SR 246 corridor is the installation of evenly spaced roundabouts. Based on future traffic volume forecasts, intersection spacing, and forecasted levels of service, two-lane roundabouts should be provided at the following locations:

SR 246/Alamo Pintado Road
SR 246/Edison Street
SR 246/Refugio Road
SR 246-Armour Ranch Road/SR 154

It is noted that the SR 246/Alamo Pintado Road intersection lies within the City of Solvang. The City prepared a Project Study Report to address the future deficiency. The project is now in the PA/ED phase and preferred alternative is to convert the intersections into a modern roundabout. The project is anticipated to be constructed in Year 2015.

The operational analyses found that the two-lane roundabouts will operate at LOS A during the P.M. peak hour period with the 20-Year Buildout traffic forecast, thus meeting the Caltrans LOS D standard. The roundabouts would provide relatively free-flow operations along SR 154 with minor delays for traffic entering or crossing SR 246 at the roundabouts.

Signalized Intersections. This mitigation option found that SR 246 would need to be widened to provide 2 eastbound and 2 westbound lanes on the signalized approaches at the following intersections in order to accommodate the 20-Year Buildout peak hour flows.

SR 246/Alamo Pintado Road
SR 246/Edison Street
SR 246/Refugio Road
SR 246-Armour Ranch Road/SR 154

The operational analyses found that the signalized option would provide LOS B, thus meeting the Caltrans LOS D standard. Evenly spaced signals along the SR 246 corridor would also provide gaps in the SR 246 traffic stream and thereby also reduce delays for traffic to enter or cross SR 246 at the local road connections between the signalized intersections.

Project Contributions

Table 19 shows the Project's contribution to the cumulative mitigations. The Project's contribution to the mitigations were calculated using the Caltrans formula derived from the Caltrans traffic study guidelines.[5]

Table 19
Proportionate Share Percentages

Intersection	Proportionate Share % (A.M./P.M.)	
	Alternative A	Alternative B
SR 154/Grand Ave	3.1% / 2.1%	4.9% / 3.0%
SR 154/Roblar Ave	1.9% / 2.5%	3.1% / 3.5%
SR 154/Edison St	2.6% / 3.1%	4.2% / 4.4%
SR 154/SR 246	15.7% / 23.0%	25.3% / 32.7%
SR 246/Alamo Pintado Rd	3.6% / 5.6%	6.7% / 8.9%
SR 246/Edison St	21.6% / 33.0%	36.2% / 44.1%
SR 246/Refugio Rd	4.4% / 7.1%	8.1% / 11.1%

Proportionate Share Percentage = Project Trips / Cumulative+Project Volume - Existing Volume

SITE ACCESS AND CIRCULATION

Alternative A

Access for Alternative A is proposed via 2 connections to Baseline Avenue and 1 connection to Armour Ranch Road (see Figure 2). Traffic signals would not be warranted at access connections. Instead, Stop signs should be provided on the northbound roadway connections to Baseline Avenue and on the southbound roadway connection to Armour Ranch Road. Review of the on-site circulation system found that traffic signals would not be warranted. The interior roads system would provide adequate access to the residential lots.

5 Guide for the Preparation of Traffic Impact Studies, Caltrans, December 2002.

Alternative B

Access for Alternative B would be provided via 2 connections to Baseline Avenue and 1 connection to Armour Ranch Road (see Figure 3). Traffic signals would not be warranted at access connections. Instead, Stop signs should be provided on the northbound roadway connections to Baseline Avenue and on the southbound roadway connection to Armour Ranch Road. Review of the on-site circulation system found that traffic signals would not be warranted. The interior roads system would provide adequate access to the residential lots.

■ ■ ■

REFERENCES AND PERSONS CONTACTED

Associated Transportation Engineers

Richard L. Pool, PE, Principal Engineer
Dan Dawson, PTP, Supervising Transportation Planner
Matthew Farrington, Transportation Planner I

References

2010 Highway Capacity Manual, Transportation Research Board, 2010.

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Transportation Concept Report State Route 246, California Department of Transportation District 5, May 2004.

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Persons Contacted

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Frank Boyle, Caltrans
Chris Shaeffer, Caltrans
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TECHNICAL APPENDIX

CONTENTS:

LEVEL OF SERVICE DEFINITIONS

The ability of a roadway system to carry traffic is most often expressed in terms of "Levels of Service" (LOS). LOS A through F are used, with LOS A indicating very good operations and LOS F indicating poor operations. More complete level of service definitions for intersections are listed Table A. The delay ranges for signalized and unsignalized intersections are shown in Table B.

Table A
Level of Service Definitions

LOS	Definition
A	Conditions of free unobstructed flow, no delays and all signal phases sufficient in duration to clear all approaching vehicles.
B	Conditions of stable flow, very little delay, a few phases are unable to handle all approaching vehicles.
C	Conditions of stable flow, delays are low to moderate, full use of peak direction signal phases is experienced.
D	Conditions approaching unstable flow, delays are moderate to heavy, significant signal time deficiencies are experienced for short durations during the peak traffic period.
E	Conditions of unstable flow, delays are significant, signal phase timing is generally insufficient, congestion exists for extended duration throughout the peak period.
F	Conditions of forced flow, travel speeds are low and volumes are well above capacity. This condition is often caused when vehicles released by an upstream signal are unable to proceed because of back-ups from a downstream signal.

Table B
Levels of Service Delay Ranges

LOS	Unsignalized Delay	Signalized V/C Ratio
A	< 10.0	< 10.0
B	10.1-15.0	10.1-20.0
C	15.1-25.0	20.1-35.0
D	25.1-35.0	35.1-55.0
E	35.1-50.0	55.1-80.0
F	> 50.0	> 80.0

PROJECT TRIP GENERATION CALCULATIONS

Associated Transportation Engineers
Trip Generation Worksheet With In/Out Splits

CHUMASH CAMP 4 PROJECT (#12016)

ALTERNATIVE A

LAND-USE	SIZE	ADT		A.M. PEAK HOUR						P.M. PEAK HOUR					
		RATE	TRIPS	RATE	TRIPS	IN%	TRIPS	OUT%	TRIPS	RATE	TRIPS	IN%	TRIPS	OUT%	TRIPS
SINGLE FAMILY HOUSING (a)	143	9.57	1,369	0.750	107	25%	27	75%	80	1.01	144	64%	92	36%	52
PROJECT TOTAL:			1,369		107		27		80		144		92		52

ALTERNATIVE B

LAND-USE	Size	ADT		A.M. PEAK HOUR						P.M. PEAK HOUR					
		RATE	TRIPS	RATE	TRIPS	IN%	TRIPS	OUT%	TRIPS	RATE	TRIPS	IN%	TRIPS	OUT%	TRIPS
SINGLE FAMILY HOUSING (a)	143	9.57	1,369	0.750	107	25%	27	75%	80	1.01	144	64%	92	36%	52
COMMUNITY CENTER/TRIBAL RETREAT (b)	60,000	22.88	1,830	1.620	130	61%	79	39%	51	1.45	116	37%	43	63%	73
PROJECT TOTAL:			3,199		237		106		131		260		135		125

(a) ITE 8TH EDITION RATES FOR SINGLE FAMILY HOMES (LAND USE #210)
(b) ITE 8TH EDITION RATES FOR RECREATIONAL COMMUNITY CENTER (LAND USE #495)

CUMULATIVE PROJECT LIST - TRIP GENERATION WORKSHEET

Associated Transportation Engineers
Trip Generation Worksheet - With In/Out Splits

CUMULATIVE PROJECT TRIP GENERATION - WEEKDAY

Land Use	Size	Multi-Trip	ADT		A.M.						P.M.					
			Rate	Trips	Rate	Trips	In %	Trips	Out %	Trips	Rate	Trips	In %	Trips	Out %	Trips
Thomson Parcel	3	1.00	9.57	29	0.750	2	25%	1	75%	1	1.01	3	63%	2	37%	1
Marcelino Springs	3	1.00	9.57	29	0.750	2	25%	1	75%	1	1.01	3	63%	2	37%	1
Kalsow Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Valley Sand & Soil				20												
Stull Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Coffey Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Ricci Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
McCombs Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Higgins/Marlino Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Lorenzen Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Meyer Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Lash Commercial	5,645	1.00	46.55	263	1.400	8	61%	5	39%	3	4.55	26	44%	11	56%	15
Granite Mining (ATE #10016)				70		7		3		4		0				
Skytt Family Lot Split	3	1.00	9.57	29	0.750	2	25%	1	75%	1	1.01	3	63%	2	37%	1
Hanson Parcel (SFD)	2	1.00	9.57	19	0.750	2	25%	1	75%	1	1.01	2	63%	1	37%	1
Estelle Vineyard Estates	11	1.00	9.57	105	0.750	8	25%	2	75%	6	1.01	11	63%	7	37%	4
Haas Tract	8	1.00	9.57	77	0.750	6	25%	2	75%	4	1.01	8	63%	5	37%	3
Edison SL Service Ctr/Car Wash	10	0.38	152.84	581	11.930	45	51%	23	49%	22	13.94	53	51%	27	49%	26
Tumbull Tract	3	1.00	9.57	29	0.750	2	25%	1	75%	1	1.01	3	63%	2	37%	1
Gavlak Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
SY Valley Airport	8	1.00	1.97	16	0.000	0	25%	0	75%	0	0.00	0	63%	0	37%	0
SY Valley SR. Housing	22	1.00	3.48	77	0.130	3	38%	1	62%	2	0.16	4	63%	3	37%	1
Bar Z Lot Split	2	1.00	9.57	19	0.750	2	25%	1	75%	1	1.01	2	63%	1	37%	1
Valley Compost Facility	10	1.00	2.00	20	0.000	0	25%	0	75%	0	0.00	0	63%	0	37%	0
Mattei's Tavern (ATE #07084)	64	1.00	8.17	1	0.560	36	51%	18	49%	18	0.59	38	53%	20	47%	18
Cottages (To Be Removed)	-3	1.00	9.57	-29	0.750	-2	25%	-1	75%	-1	1.01	-3	63%	-2	37%	-1
Duplex/Triplex (to Be Removed)	-5	1.00	6.65	-33	0.510	-3	25%	-1	75%	-2	0.62	-3	63%	-2	37%	-1
Vincent Winery				24								4	25%	1	75%	3
De Werd Winery				25								7	25%	2	75%	5
TTT Winery				16								3	25%	1	75%	2
Lamer Winery				35								9	25%	2	75%	7
Claxton Winery				41								9	25%	2	75%	7
El Camino Real Winery				40								9	25%	2	75%	7
Bridlewood Winery				14								1	25%	0	75%	1
Project Total:				**1,607**		**129**		**58**		**71**		**201**		**98**		**103**

S/O SR246

Land Use	Size	Multi-Trip	ADT Rate	ADT Trips	A.M. Rate	A.M. Trips	In %	Trips	Out %	Trips	P.M. Rate	P.M. Trips	In %	Trips	Out %	Trips
Thomson Parcel	3	1.00	9.57	29	0.750	2	25%	1	75%	1	1.01	3	63%	2	37%	1
SUB-TOTAL:				***29***		***2***		***1***		***1***		***3***		***2***		***1***

SANTA YNEZ AREA

Land Use	Size	Multi-Trip	ADT Rate	ADT Trips	A.M. Rate	A.M. Trips	In %	Trips	Out %	Trips	P.M. Rate	P.M. Trips	In %	Trips	Out %	Trips
Coffay Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Ricci Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
McCombs Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Edison St. Service Ctr/Car Wash	10	0.38	152.84	581	11.930	45	51%	23	49%	22	13.94	53	51%	27	49%	26
SY Valley Airport	8	1.00	1.97	16	0.000	0	25%	0	75%	0	0.00	0	63%	0	37%	0
SY Valley SR. Housing	22	1.00	3.48	77	0.130	3	38%	1	62%	2	0.16	4	63%	3	37%	1
Claxton Wnery				41								9	25%	2	75%	7
SUB-TOTAL:				***745***		***51***		***24***		***27***		***69***		***35***		***34***

BASELINE RD. E/O SR154

Land Use	Size	Multi-Trip	ADT Rate	ADT Trips	A.M. Rate	A.M. Trips	In %	Trips	Out %	Trips	P.M. Rate	P.M. Trips	In %	Trips	Out %	Trips
Stull Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Henson Parcel (SFD)	2	1.00	9.57	19	0.750	2	25%	1	75%	1	1.01	2	63%	1	37%	1
SUB-TOTAL:				***29***		***3***		***1***		***2***		***3***		***2***		***1***

ROBLAR AVE. E/O SR154

Land Use	Size	Multi-Trip	ADT Rate	ADT Trips	A.M. Rate	A.M. Trips	In %	Trips	Out %	Trips	P.M. Rate	P.M. Trips	In %	Trips	Out %	Trips
Estelle Vineyard Estates	11	1.00	9.57	105	0.750	8	25%	2	75%	6	1.01	11	63%	7	37%	4
Vincent Winery				24								4	25%	1	75%	3
TTT Winery				16								3	25%	1	75%	2
Bridlewood Winery				26								3	25%	1	75%	2
Tumbull Tract	3	1.00	9.57	29	0.750	2	25%	1	75%	1	1.01	3	63%	2	37%	1
SUB-TOTAL:				***200***		***10***		***3***		***7***		***24***		***12***		***12***

BAILLARD AREA

Land Use	Size	Multi-Trip	ADT Rate	ADT Trips	A.M. Rate	A.M. Trips	In %	Trips	Out %	Trips	P.M. Rate	P.M. Trips	In %	Trips	Out %	Trips
Kalsow Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Higgins/Martino Lot Split	1	1.00	9.57	10	0.750	1	25%	0	75%	1	1.01	1	63%	1	37%	0
Gavlak Lot Split	2	1.00	9.57	19	0.750	2	25%	1	75%	1	1.01	2	63%	1	37%	1
SUB-TOTAL:				***39***		***4***		***1***		***3***		***4***		***3***		***1***

LOS OLIVOS AREA

Land Use	Size	Multi-Trip	ADT Rate	ADT Trips	A.M. Rate	A.M. Trips	In %	Trips	Out %	Trips	P.M. Rate	P.M. Trips	In %	Trips	Out %	Trips
Valley Sand & Soil				20												
Lash Commercial	5,645	1.00	46.55	263	1.400	8	61%	5	39%	3	4.55	26	44%	11	56%	15
De Werd Winery	9,856	1.00		25								7	25%	2	75%	5
El Camino Real Winery				40								9	25%	2	75%	7
Mattei's Tavern				461		36		18		18		32		16		16
SUB-TOTAL:				***809***		***44***		***23***		***21***		***74***		***31***		***43***

TWO-LANE HIGHWAY LEVEL OF SERVICE CALCULATION WORKSHEETS

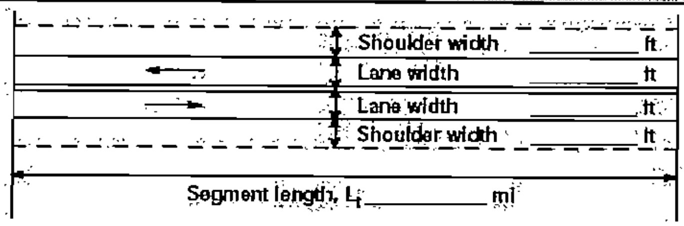
Reference 1	SR 154 n/o Edison Street
Reference 2	SR 154 s/o SR 246-Armour Ranch Road

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	EXISTING

Project Description:

Input Data



Analysis direction vol., V_d	412veh/h	Class I highway / Class II highway / Class III highway	
Opposing direction vol., V_o	320veh/h	Terrain	Level / Rolling
Shoulder width ft	6.0	Grade Length mi	Up/down
Lane Width ft	12.0	Peak-hour factor, PHF	0.88
Segment Length mi	1.0	No-passing zone	90%
		% Trucks and Buses, P_T	4 %
		% Recreational vehicles, P_R	2%
		Access points *mi*	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.3
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	0.988
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF*f_{g,ATS}*f_{HV,ATS})$	472	368

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample[3], S_{FM}		Base free-flow speed[4], BFFS	60.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	3.4 mi/h	Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.8 mi/h
		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	49.8 mi/h
		Percent free flow speed, PFFS	83.4 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	0.996
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	468	365
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	47.6	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	41.7	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	71.0	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, *v/c*	0.28
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1680
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1693

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	83.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	468.2
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.00
Bicycle level of service (Exhibit 15-4)	C
Notes	

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information

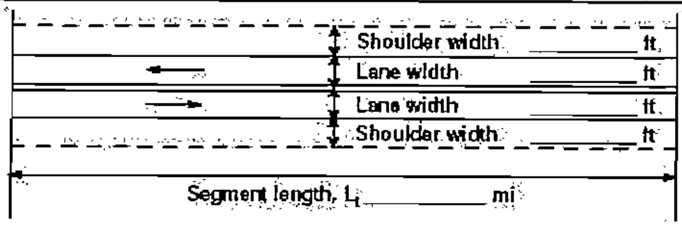
Analyst	DLD
Agency or Company	ATE
Date Performed	4/5/2012
Analysis Time Period	P.M. PEAK

Site Information

Highway / Direction of Travel	SR 154 SOUTHBOUND
From/To	N/O BASELINE
Jurisdiction	CALTRANS
Analysis Year	EXISTING

Project Description:

Input Data



☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Analysis direction vol., V_d	320veh/h	
Opposing direction vol., V_o	412veh/h	
Shoulder width ft	6.0	
Lane Width ft	12.0	
Segment Length mi	1.0	
Grade Length mi	Up/down	
Peak-hour factor, PHF	0.88	
No-passing zone	90%	
% Trucks and Buses, P_T	4 %	
% Recreational vehicles, P_R	2%	
Access points *mi*	1/mi	

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.3	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.988	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	368	472

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, *v*		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.8 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	50.4 mi/h
		Percent free flow speed, PFFS	84.4 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.1	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^* f_{HV,PTSF} * f_{g,PTSF})$	365	468
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	41.8	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	41.7	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF} * (v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	60.1	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, *v/c*	0.22
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*84.4*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*363.6*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*2.87*
Bicycle level of service (Exhibit 15-4)	*C*

Notes

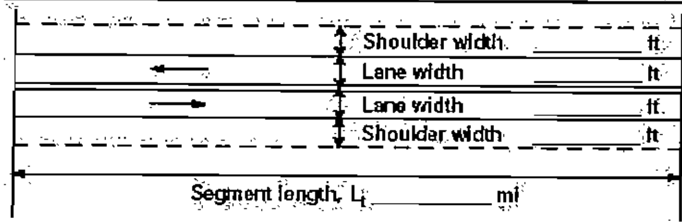
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	2014

Project Description:

Input Data



Class I highway Class II highway Class III highway

Terrain Level Rolling

Grade Length mi Up/down

Peak-hour factor, PHF 0.88

No-passing zone 90%

% Trucks and Buses, P_T 4 %

% Recreational vehicles, P_R 2%

Access points *mi* 1/mi

Analysis direction vol., V_d 449veh/h

Opposing direction vol., V_o 360veh/h

Shoulder width ft 6.0

Lane Width ft 12.0

Segment Length mi 1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.3
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	0.988
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	514	414

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample[3], S_{FM}		Base free-flow speed[4], BFFS	60.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	3.2 mi/h	Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.8 mi/h
		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	49.4 mi/h
		Percent free flow speed, PFFS	82.8 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF} * f_{g,PTSF})$	510	409
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	49.6	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	39.8	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF} *(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	71.7	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, *v/c*	0.31
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1680
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

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Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*82.6*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*510.2*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*3.04*
Bicycle level of service (Exhibit 15-4)	*C*
Notes	

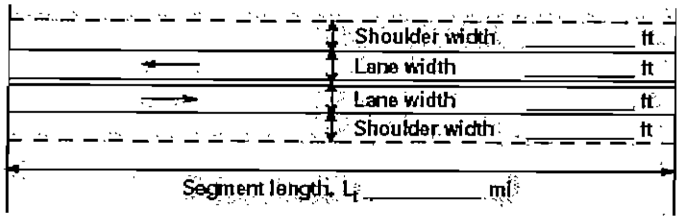
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	2014

Project Description:

Input Data



☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses, P_T	4 %
% Recreational vehicles, P_R	2%
Access points *mi*	1/mi

Analysis direction vol., V_d	360veh/h
Opposing direction vol., V_o	449veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.3	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.988	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF*f_{g,ATS}*f_{HV,ATS})$	414	514

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample[3], S_{FM}		Base free-flow speed[4], BFFS	60.0 mi/h
Total demand flow rate, both directions, *v*		Adj. for lane and shoulder width,[4] f_{LS} (Exhibit 15-7)	0.0 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.5 mi/h	Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.8 mi/h
		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	50.0 mi/h
		Percent free flow speed, PFFS	83.7 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	409	510
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	45.4	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	39.8	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	63.1	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, *v/c*	0.25
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*83.7*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*409.1*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*2.93*
Bicycle level of service (Exhibit 15-4)	C
Notes	

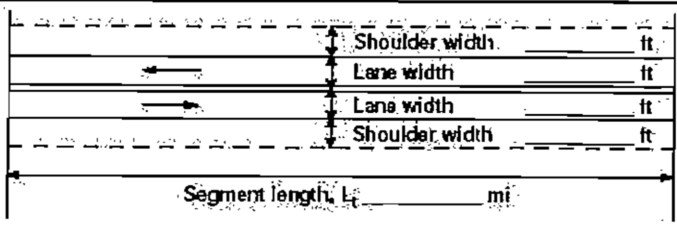
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*DLD*	Highway / Direction of Travel	*SR 154 NORTHBOUND*
Agency or Company	*ATE*	From/To	*N/O BASELINE*
Date Performed	*4/5/2012*	Jurisdiction	*CALTRANS*
Analysis Time Period	*P.M. PEAK*	Analysis Year	*2014 + PROJECT (ALT 1)*

Project Description:

Input Data



Analysis direction vol., V_d	*454veh/h*	☒ Class I highway ☐ Class II highway ☐ Class III highway	
Opposing direction vol., V_o	*369veh/h*	Terrain ☐ Level ☒ Rolling	
Shoulder width ft	*6.0*	Grade Length mi Up/down	
Lane Width ft	*12.0*	Peak-hour factor, PHF	*0.88*
Segment Length mi	*1.0*	No-passing zone	*90%*
		% Trucks and Buses , P_T	*4 %*
		% Recreational vehicles, P_R	*2%*
		Access points mi	*1/mi*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	*1.2*	*1.3*
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.992*	*0.988*
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	*1.00*	*1.00*
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	*520*	*424*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample[3], S_{FM}		Base free-flow speed[4], BFFS	*60.0 mi/h*
Total demand flow rate, both directions, v		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	*0.0 mi/h*
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Adj. for access points[4], f_A (Exhibit 15-8)	*0.3 mi/h*
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	*3.1 mi/h*	Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*59.8 mi/h*
		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	*49.3 mi/h*
		Percent free flow speed, PFFS	*82.5 %*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*	*1.000*
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^* f_{HV,PTSF} * f_{g,PTSF})$	*516*	*419*
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	*50.9*	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	*39.5*	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF} *(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	*72.7*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	*D*
Volume to capacity ratio, v/c	*0.31*
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	*1680*
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	*1700*

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Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	82.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	515.9
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.05
Bicycle level of service (Exhibit 15-4)	C

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	2014 + PROJECT (ALT 1)

Project Description:

Input Data

Shoulder width ______ ft
Lane width ______ ft
Lane width ______ ft
Shoulder width ______ ft
Segment length, L_t ______ mi

Class I highway   Class II highway
Class III highway
Terrain   Level   Rolling
Show North Arrow

Analysis direction vol., V_d	369veh/h
Opposing direction vol., V_o	454veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0
Grade Length mi Up/down	
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses , P_T	4 %
% Recreational vehicles, P_R	2%
Access points *mi*	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.3	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.988	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	424	520

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, *v*		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.5 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	49.9 mi/h
		Percent free flow speed, PFFS	83.6 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF}*f_{g,PTSF})$	419	516
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	45.7	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	39.5	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	63.4	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, *v/c*	0.25
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

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Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*83.6*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*419.3*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*2.94*
Bicycle level of service (Exhibit 15-4)	*C*

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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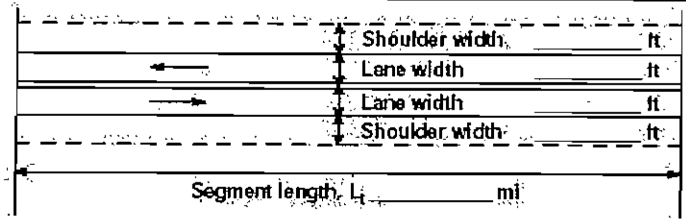
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	2014 + PROJECT (ALT 2)

Project Description:

Input Data



Class I highway Class II highway Class III highway

Terrain: Level Rolling

Analysis direction vol., V_d	458veh/h	Grade Length mi	Up/down
Opposing direction vol., V_o	371veh/h	Peak-hour factor, PHF	0.88
Shoulder width ft	6.0	No-passing zone	90%
Lane Width ft	12.0	% Trucks and Buses , P_T	4 %
Segment Length mi	1.0	% Recreational vehicles, P_R	2%
		Access points mi	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.3
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	0.988
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF*f_{g,ATS}*f_{HV,ATS})$	525	427

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS} (Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	3.1 mi/h	Averaga travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	49.3 mi/h
		Percent free flow speed, PFFS	82.5 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	520	422
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	50.9	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	39.3	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	72.6	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.31
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1680
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	82.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	520.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.05
Bicycle level of service (Exhibit 15-4)	C

Notes

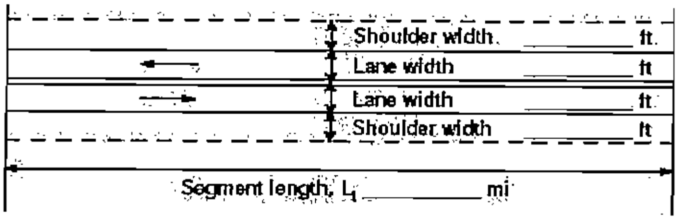
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only end for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	2014 + PROJECT (ALT 2)

Project Description:

Input Data



☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Analysis direction vol., V_d	371veh/h
Opposing direction vol., V_o	458veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0

Grade Length mi Up/down	
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses, P_T	4 %
% Recreational vehicles, P_R	2%
Access points mi	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.3	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.988	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF*f_{g,ATS}*f_{HV,ATS})$	427	525

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample[3], S_{FM}		Base free-flow speed[4], BFFS	60.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width,[4] f_{LS} (Exhibit 15-7)	0.0 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.4 mi/h	Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.8 mi/h
		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	49.9 mi/h
		Percent free flow speed, PFFS	83.5 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	422	520
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	46.9	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	39.3	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	64.5	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, v/c	0.25
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1888
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	83.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	421.6
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	2.95
Bicycle level of service (Exhibit 15-4)	C
Notes	

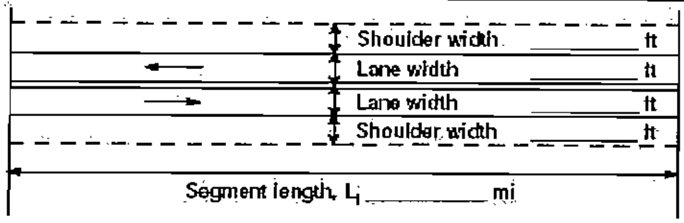
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	EXISTING

Project Description:

Input Data



☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling
Grade Length mi Up/down
Peak-hour factor, PHF 0.88
No-passing zone 90%
% Trucks and Buses, P_T 4 %
% Recreational vehicles, P_R 2%
Access points *mi* 1/mi

Analysis direction vol., V_d 555veh/h
Opposing direction vol., V_o 412veh/h
Shoulder width ft 6.0
Lane Width ft 12.0
Segment Length mi 1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.1	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF*f_{g,ATS}*f_{HV,ATS})$	633	472

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.8 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	48.4 mi/h
		Percent free flow speed, PFFS	81.0 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	631	468
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	58.9	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	34.6	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	78.8	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.38
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	81.0
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	630.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.15
Bicycle level of service (Exhibit 15-4)	C

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information

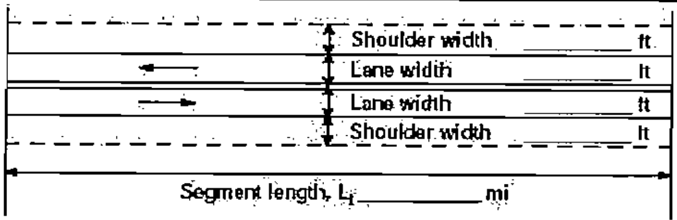
Analyst	DLD
Agency or Company	ATE
Date Performed	4/5/2012
Analysis Time Period	P.M. PEAK

Site Information

Highway / Direction of Travel	SR 154 NORTHBOUND
From/To	N/O BASELINE
Jurisdiction	CALTRANS
Analysis Year	CUMULATIVE

Project Description:

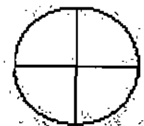
Input Data



Analysis direction vol., V_d	669veh/h
Opposing direction vol., V_o	510veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0

☒ Class I highway ☐ Class II highway
☐ Class III highway

Terrain ☒ Level ☐ Rolling



Show North Arrow

Grade Length mi	Up/down
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses , P_T	4 %
% Recreational vehicles, P_R	2%
Access points *mi*	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	0.996
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF*f_{g,ATS}*f_{HV,ATS})$	763	582

Free-Flow Speed from Field Measurement

Mean speed of sample[3], S_{FM}	
Total demand flow rate, both directions, v	
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.1 mi/h

Estimated Free-Flow Speed

Base free-flow speed[4], BFFS	60.0 mi/h
Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	59.8 mi/h
Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	47.2 mi/h
Percent free flow speed, PFFS	79.1 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	760	580
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	65.4	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	28.7	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	81.7	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	E
Volume to capacity ratio, v/c	0.45
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*79.1*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*760.2*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*3.24*
Bicycle level of service (Exhibit 15-4)	*C*
Notes	

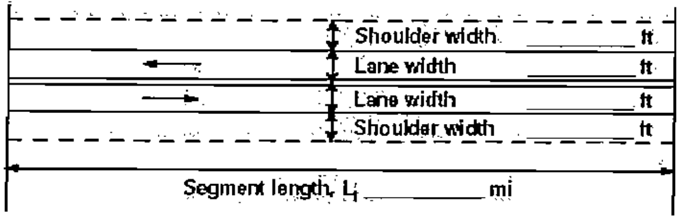
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

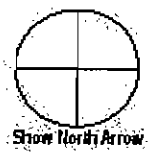
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE+PROJECT (ALT 1)

Project Description:

Input Data





☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Analysis direction vol., V_d	674veh/h
Opposing direction vol., V_o	519veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0

Grade Length mi Up/down	
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses, P_T	4 %
% Recreational vehicles, P_R	2%
Access points mi	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	0.996
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	769	592

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS} (Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.0 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	47.2 mi/h
		Percent free flow speed, PFFS	79.0 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{HV,PTSF} * f_{g,PTSF})$	766	590
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	65.2	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	28.4	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	81.2	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	E
Volume to capacity ratio, v/c	0.45
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

27

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	79.0
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	765.9
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.25
Bicycle level of service (Exhibit 15-4)	C

Notes

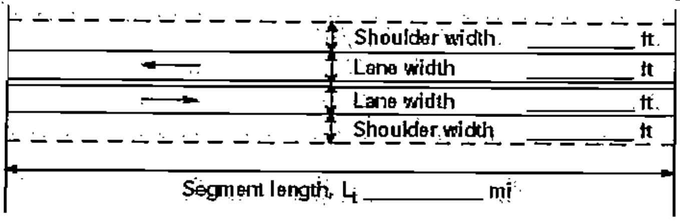
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE+PROJECT (ALT 2)

Project Description:

Input Data



☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Analysis direction vol., V_d	678veh/h
Opposing direction vol., V_o	521veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0
Grade Length mi Up/down	
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses , P_T	4 %
% Recreational vehicles, P_R	2%
Access points mi	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	0.996
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	774	594

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.0 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	47.1 mi/h
		Percent free flow speed, PFFS	78.9 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF}*f_{g,PTSF})$	770	592
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	66.2	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	28.2	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	82.1	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	E
Volume to capacity ratio, v/c	0.46
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	78.9
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	770.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.25
Bicycle level of service (Exhibit 15-4)	C

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE

Project Description:

Input Data

Shoulder width ____ ft
Lane width ____ ft
Lane width ____ ft
Shoulder width ____ ft
Segment length, L_t ____ mi

Show North Arrow

Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Analysis direction vol., V_d	510veh/h
Opposing direction vol., V_o	869veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0
Grade Length mi Up/down	
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses , P_T	4 %
% Recreational vehicles, P_R	2%
Access points mi	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	0.998
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	582	763

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.5 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	47.9 mi/h
		Percent free flow speed, PFFS	80.1 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^* f_{HV,PTSF} * f_{g,PTSF})$	580	760
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	59.4	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	28.7	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	71.8	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.34
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

31

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*80.1*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*579.5*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*3.11*
Bicycle level of service (Exhibit 15-4)	*C*

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE+PROJECT (ALT 1)

Project Description:

Input Data

Shoulder width ______ ft
Lane width ______ ft
Lane width ______ ft
Shoulder width ______ ft
Segment length, L_t ______ mi

Show North Arrow

Class I highway ☒ Class II highway ☐ Class III highway
Terrain ☒ Level ☐ Rolling
Grade Length mi Up/down
Peak-hour factor, PHF 0.88
No-passing zone 90%
% Trucks and Buses , P_T 4 %
% Recreational vehicles, P_R 2%
Access points *mi* 1/mi

Analysis direction vol., V_d 519veh/h
Opposing direction vol., V_o 674veh/h
Shoulder width ft 6.0
Lane Width ft 12.0
Segment Length mi 1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	0.996
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	592	769

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.4 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	47.7 mi/h
		Percent free flow speed, PFFS	79.9 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF}*f_{g,PTSF})$	590	766
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	59.7	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	28.4	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	72.1	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.35
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	79.9
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	589.8
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.12
Bicycle level of service (Exhibit 15-4)	C

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	N/O BASELINE
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE+PROJECT (ALT 2)

Project Description:

Input Data

Shoulder width ________ ft
Lane width ________ ft
Lane width ________ ft
Shoulder width ________ ft
Segment length, L_t ________ mi

Show North Arrow

☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Analysis direction vol., V_d	521veh/h	Grade Length mi Up/down	
Opposing direction vol., V_o	678veh/h	Peak-hour factor, PHF	0.88
Shoulder width ft	6.0	No-passing zone	90%
Lane Width ft	12.0	% Trucks and Buses , P_T	4 %
Segment Length mi	1.0	% Recreational vehicles, P_R	2%
		Access points *mi*	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.1	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	0.996
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	594	774

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, *v*		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.4 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	47.7 mi/h
		Percent free flow speed, PFFS	79.8 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF} * f_{g,PTSF})$	592	770
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	59.8	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	28.2	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF} *(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	72.1	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, *v/c*	0.35
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	79.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	592.0
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.12
Bicycle level of service (Exhibit 15-4)	C

Notes

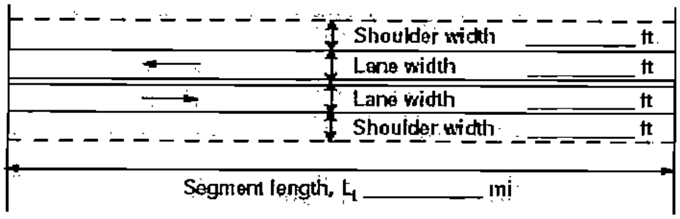
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	EXISTING

Project Description:

Input Data



☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Grade Length mi Up/down
Peak-hour factor, PHF 0.88
No-passing zone 90%
% Trucks and Buses , P_T 4 %
% Recreational vehicles, P_R 2%
Access points *mi* 1/mi

Analysis direction vol., V_d 412veh/h
Opposing direction vol., V_o 555veh/h
Shoulder width ft 6.0
Lane Width ft 12.0
Segment Length mi 1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	0.996
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF*f_{g,ATS}*f_{HV,ATS})$	472	633

Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}	Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, *v*	Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$	Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 1.8 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	49.3 mi/h
	Percent free flow speed, PFFS	82.6 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	468	631
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	50.8	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	34.6	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	65.5	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, *v/c*	0.28
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	82.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	468.2
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.00
Bicycle level of service (Exhibit 15-4)	C

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information | **Site Information**

Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	YEAR 2014

Project Description:

Input Data

Shoulder width ______ ft
Lane width ______ ft
Lane width ______ ft
Shoulder width ______ ft
Segment length, L_t ______ mi

Show North Arrow

☒ Class I highway ☒ Class II highway ☒ Class III highway

Terrain ☒ Level ☒ Rolling

Analysis direction vol., V_d	594veh/h
Opposing direction vol., V_o	460veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0

Grade Length mi	Up/down
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses , P_T	4 %
% Recreational vehicles, P_R	2%
Access points mi	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.1	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	678	527

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample[3], S_{FM}		Base free-flow speed[4], BFFS	60.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.4 mi/h	Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.8 mi/h
		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	48.0 mi/h
		Percent free flow speed, PFFS	80.3 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^* f_{HV,PTSF} * f_{g,PTSF})$	675	523
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	61.6	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	32.4	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF} *(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	79.9	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.40
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	80.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	675.0
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.18
Bicycle level of service (Exhibit 15-4)	C
Notes	

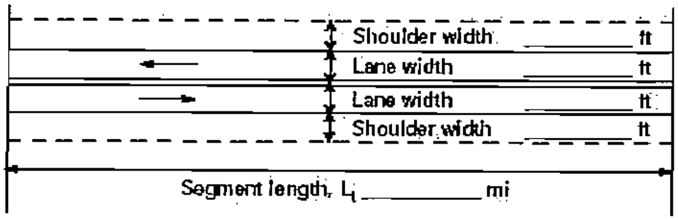
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

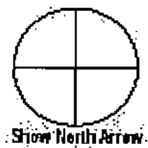
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	YEAR 2014

Project Description:

Input Data





☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses, P_T	4 %
% Recreational vehicles, P_R	2%
Access points *mi*	1/mi

Analysis direction vol., V_d	460veh/h
Opposing direction vol., V_o	594veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	0.996
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	527	676

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.7 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	48.7 mi/h
		Percent free flow speed, PFFS	81.5 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF}^* f_{g,PTSF})$	523	675
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	54.4	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	32.4	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	68.5	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, *v/c*	0.31
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*81.5*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*522.7*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*3.05*
Bicycle level of service (Exhibit 15-4)	*C*
Notes	

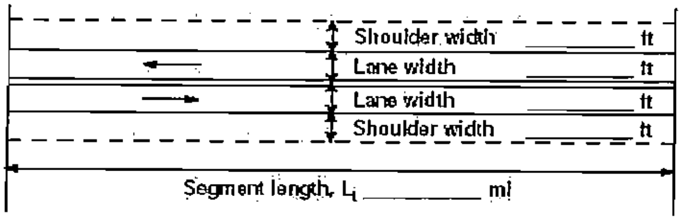
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	YEAR 2014 + PROJECT (ALT 1)

Project Description:

Input Data



Class I highway Class II highway

Class III highway

Terrain Level Rolling

Grade Length	mi	Up/down
Peak-hour factor, PHF		0.88
No-passing zone		90%
% Trucks and Buses, P_T		4 %
% Recreational vehicles, P_R		2%
Access points *mi*		1/mi

Analysis direction vol., V_d	603veh/h
Opposing direction vol., V_o	465veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.1	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF*f_{g,ATS}*f_{HV,ATS})$	688	533

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample[3], S_{FM}		Base free-flow speed[4], BFFS	60.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.4 mi/h	Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.8 mi/h
		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	47.9 mi/h
		Percent free flow speed, PFFS	80.1 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	685	528
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	61.8	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	32.0	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	79.9	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, *v/c*	0.41
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*80.1*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*685.2*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*3.19*
Bicycle level of service (Exhibit 15-4)	*C*
Notes	

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.

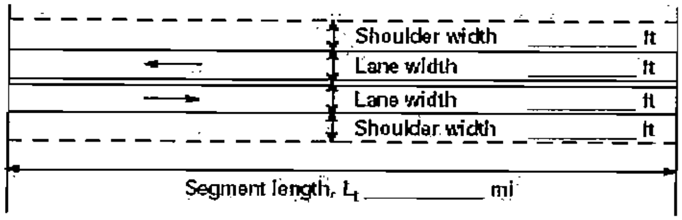
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	YEAR 2014 + PROJECT (ALT 1)

Project Description:

Input Data



☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Analysis direction vol., V_d	465veh/h	Grade Length mi	Up/down
Opposing direction vol., V_o	603veh/h	Peak-hour factor, PHF	0.88
Shoulder width ft	6.0	No-passing zone	90%
Lane Width ft	12.0	% Trucks and Buses , P_T	4 %
Segment Length mi	1.0	% Recreational vehicles, P_R	2%
		Access points *mi*	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	0.996
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	533	688

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.6 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.7 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	48.6 mi/h
		Percent free flow speed, PFFS	81.3 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF}*f_{g,PTSF})$	528	685
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	55.2	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	32.0	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	69.1	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.31
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*81.3*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*528.4*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*3.06*
Bicycle level of service (Exhibit 15-4)	*C*

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information

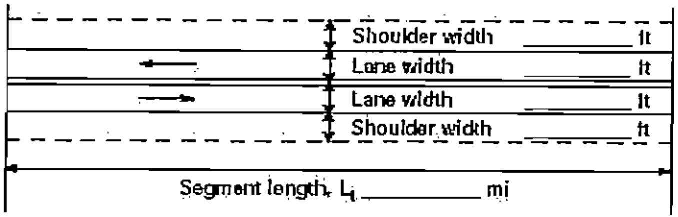
Analyst	DLD
Agency or Company	ATE
Date Performed	4/5/2012
Analysis Time Period	P.M. PEAK

Site Information

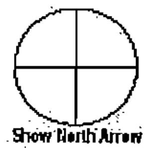
Highway / Direction of Travel	SR 154 NORTHBOUND
From/To	S/O SR 246
Jurisdiction	CALTRANS
Analysis Year	YEAR 2014 + PROJECT (ALT 2)

Project Description:

Input Data



Analysis direction vol., V_d	605veh/h
Opposing direction vol., V_o	469veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0



☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses , P_T	4 %
% Recreational vehicles, P_R	2%
Access points *mi*	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.1	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF * f_{g,ATS} * f_{HV,ATS})$	690	537

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample[3], S_{FM}		Base free-flow speed[4], BFFS	60.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Free-flow speed, FFS=S_{FM}+0.00776(v/ $f_{HV,ATS}$)		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.4 mi/h	Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	59.8 mi/h
		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	47.9 mi/h
		Percent free flow speed, PFFS	80.1 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	688	533
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	61.7	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	31.8	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	79.6	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.41
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

4

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*80.1*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*687.5*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*3.19*
Bicycle level of service (Exhibit 15-4)	*C*
Notes	

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	YEAR 2014 + PROJECT (ALT 2)

Project Description:

Input Data

Shoulder width ____ ft
Lane width ____ ft
Lane width ____ ft
Shoulder width ____ ft
Segment length, L_t ____ mi

Class I highway Class II highway
Class III highway

Show North Arrow

Analysis direction vol., V_d	469veh/h	Terrain	Level / Rolling
Opposing direction vol., V_o	605veh/h	Grade Length mi	Up/down
Shoulder width ft	6.0	Peak-hour factor, PHF	0.88
Lane Width ft	12.0	No-passing zone	90%
Segment Length mi	1.0	% Trucks and Buses, P_T	4 %
		% Recreational vehicles, P_R	2%
		Access points mi	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	0.996
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	537	690

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.7 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	48.6 mi/h
		Percent free flow speed, PFFS	81.3 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF}*f_{g,PTSF})$	533	688
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	55.5	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	31.8	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	69.4	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, v/c	0.32
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	81.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	533.0
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.06
Bicycle level of service (Exhibit 15-4)	C
Notes	

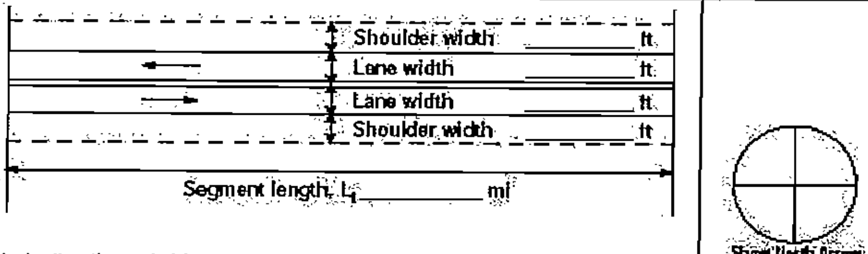
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE

Project Description:

Input Data



☒ Class I highway ☐ Class II highway
☐ Class III highway

Terrain ☒ Level ☐ Rolling
Grade Length mi Up/down
Peak-hour factor, PHF 0.88
No-passing zone 90%
% Trucks and Buses, P_T 4 %
% Recreational vehicles, P_R 2%
Access points *mi* 1/mi

Analysis direction vol., V_d 792veh/h
Opposing direction vol., V_o 439veh/h
Shoulder width ft 6.0
Lane Width ft 12.0
Segment Length mi 1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.0	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	900	503

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, v		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.8 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.6 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	46.3 mi/h
		Percent free flow speed, PFFS	77.4 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF}^* f_{g,PTSF})$	900	499
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	70.1	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	24.7	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF} *(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	86.0	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	E
Volume to capacity ratio, *v/c*	0.53
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	77.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	900.0
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.33
Bicycle level of service (Exhibit 15-4)	C
Notes	

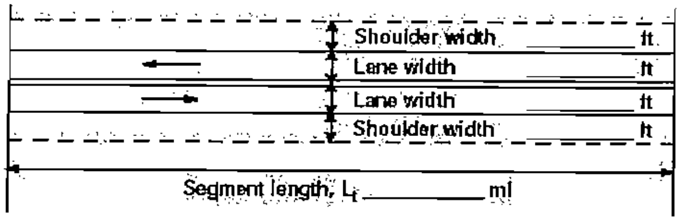
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE + PROJECT (ALT 1)

Project Description:

Input Data



Class I highway   Class II highway
Class III highway

Terrain   Level   Rolling
Grade Length mi   Up/down
Peak-hour factor, PHF 0.88
No-passing zone 90%
% Trucks and Buses, P_T 4 %
% Recreational vehicles, P_R 2%
Access points mi 1/mi

Analysis direction vol., V_d 801veh/h
Opposing direction vol., V_o 444veh/h
Shoulder width ft 6.0
Lane Width ft 12.0
Segment Length mi 1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.0	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF * f_{g,ATS} * f_{HV,ATS})$	910	509

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
		Adj. for lane and shoulder width,[4] f_{LS} (Exhibit 15-7)	0.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Total demand flow rate, both directions, v		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	59.8 mi/h
Free-flow speed, FFS=S_{FM}+0.00776(v/ $f_{HV,ATS}$)		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	46.2 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.5 mi/h	Percent free flow speed, PFFS	77.3 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	910	505
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	71.2	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	24.5	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	87.0	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	E
Volume to capacity ratio, v/c	0.54
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	77.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	910.2
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.34
Bicycle level of service (Exhibit 15-4)	C
Notes	

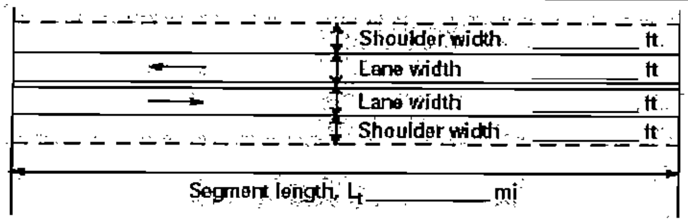
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 NORTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE + PROJECT (ALT 2)

Project Description:

Input Data



Class I highway   Class II highway
Class III highway

Terrain   Level   Rolling

Analysis direction vol., V_d	803veh/h
Opposing direction vol., V_o	448veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0

Grade Length mi Up/down	
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses , P_T	4 %
% Recreational vehicles, P_R	2%
Access points *mi*	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.0	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}$=1/ (1+ P_T (E_T-1)+P_R (E_R-1))	1.000	0.992
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) v_i=V_i / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$)	913	513

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample[3], S_{FM}		Base free-flow speed[4], BFFS	60.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Free-flow speed, FFS=S_{FM}+0.00776(v/ $f_{HV,ATS}$)		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	2.5 mi/h	Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	59.8 mi/h
		Average travel speed, ATS_d=FFS-0.00776($v_{d,ATS}$ + $v_{o,ATS}$) - $f_{np,ATS}$	46.2 mi/h
		Percent free flow speed, PFFS	77.3 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*$f_{HV,PTSF}$* $f_{g,PTSF}$)	913	509
Base percent time-spent-following[4], $BPTSF_d$(%)=100(1-$e^{av_d^b}$)	71.1	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	24.5	
Percent time-spent-following, $PTSF_d$(%)=$BPTSF_d$+$f_{np,PTSF}$ *($v_{d,PTSF}$ / $v_{d,PTSF}$ + $v_{o,PTSF}$)	86.8	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	E
Volume to capacity ratio, v/c	0.54
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	77.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	912.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.34
Bicycle level of service (Exhibit 15-4)	C

Notes

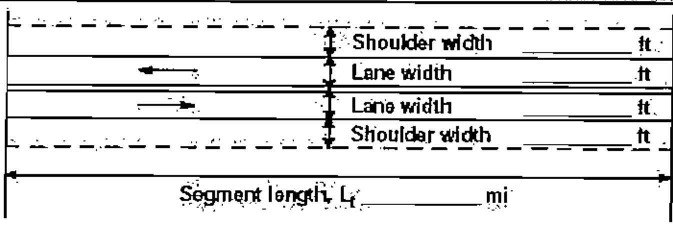
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE

Project Description:

Input Data



Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling

Analysis direction vol., V_d	439veh/h
Opposing direction vol., V_o	792veh/h
Shoulder width ft	6.0
Lane Width ft	12.0
Segment Length mi	1.0
Grade Length mi	Up/down
Peak-hour factor, PHF	0.88
No-passing zone	90%
% Trucks and Buses , P_T	4 %
% Recreational vehicles, P_R	2%
Access points *mi*	1/mi

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	1.000
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF*f_{g,ATS}*f_{HV,ATS})$	503	900

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample[3], S_{FM}		Base free-flow speed[4], BFFS	60.0 mi/h
Total demand flow rate, both directions, *v*		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.2 mi/h	Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.8 mi/h
		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	47.6 mi/h
		Percent free flow speed, PFFS	79.7 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	499	900
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	56.0	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	24.7	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	64.8	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, *v/c*	0.30
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1700
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	79.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	498.9
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.03
Bicycle level of service (Exhibit 15-4)	C

Notes

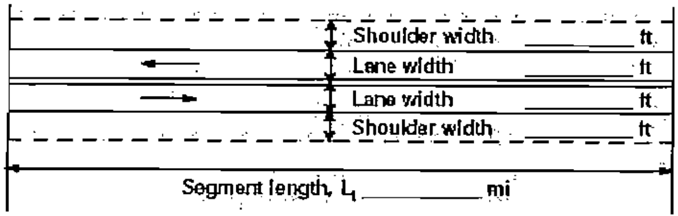
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE+PROJECT (ALT 1)

Project Description:

Input Data



Class I highway ☒ Class II highway ☒
Class III highway ☒

Terrain ☒ Level ☒ Rolling
Grade Length mi Up/down
Peak-hour factor, PHF 0.88
No-passing zone 90%
% Trucks and Buses , P_T 4 %
% Recreational vehicles, P_R 2%
Access points *mi* 1/mi

Analysis direction vol., V_d 444veh/h
Opposing direction vol., V_o 801veh/h
Shoulder width ft 6.0
Lane Width ft 12.0
Segment Length mi 1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	1.000
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF^* f_{g,ATS} * f_{HV,ATS})$	509	910

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Total demand flow rate, both directions, *v*		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	59.6 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.2 mi/h	Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS})-f_{np,ATS}$	47.5 mi/h
		Percent free flow speed, PFFS	79.5 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF^*f_{HV,PTSF}*f_{g,PTSF})$	505	910
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	56.3	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	24.5	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	65.0	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	C
Volume to capacity ratio, *v/c*	0.30
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1700
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*79.5*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*504.5*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*3.04*
Bicycle level of service (Exhibit 15-4)	C
Notes	

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

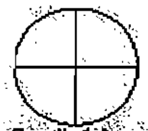
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DLD	Highway / Direction of Travel	SR 154 SOUTHBOUND
Agency or Company	ATE	From/To	S/O SR 246
Date Performed	4/5/2012	Jurisdiction	CALTRANS
Analysis Time Period	P.M. PEAK	Analysis Year	CUMULATIVE+PROJECT (ALT 2)

Project Description:

Input Data

Shoulder width ______ ft
Lane width ______ ft
Lane width ______ ft
Shoulder width ______ ft
Segment length, L_t ______ mi



☒ Class I highway ☒ Class II highway
☒ Class III highway

Terrain ☒ Level ☒ Rolling
Grade Length mi Up/down
Peak-hour factor, PHF 0.88
No-passing zone 90%
% Trucks and Buses, P_T 4 %
% Recreational vehicles, P_R 2%
Access points *mi* 1/mi

Analysis direction vol., V_d 448veh/h
Opposing direction vol., V_o 803veh/h
Shoulder width ft 6.0
Lane Width ft 12.0
Segment Length mi 1.0

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12)	1.2	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	1.000
Grade adjustment factor[1], $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.00
Demand flow rate[2], v_i (pc/h) $v_i=V_i/(PHF*f_{g,ATS}*f_{HV,ATS})$	513	913

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
		Base free-flow speed[4], BFFS	60.0 mi/h
		Adj. for lane and shoulder width,[4] f_{LS}(Exhibit 15-7)	0.0 mi/h
Mean speed of sample[3], S_{FM}		Adj. for access points[4], f_A (Exhibit 15-8)	0.3 mi/h
Total demand flow rate, both directions, *v*		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	59.8 mi/h
Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$		Average travel speed, $ATS_d=FFS-0.00776(v_{d,ATS}+v_{o,ATS}) - f_{np,ATS}$	47.5 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)	1.2 mi/h	Percent free flow speed, PFFS	79.4 %

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor[1], $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	509	913
Base percent time-spent-following[4], $BPTSF_d(\%)=100(1-e^{av_d^b})$	56.6	
Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)	24.5	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{o,PTSF})$	85.4	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 15-3)	D
Volume to capacity ratio, *v/c*	0.30
Capacity, $C_{d,ATS}$ (Equation 15-12) pc/h	1700
Capacity, $C_{d,PTSF}$ (Equation 15-13) pc/h	1700

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Percent Free-Flow Speed $PFFS_d$(Equation 15-11 - Class III only)	*79.4*
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	*509.1*
Effective width, Wv (Eq. 15-29) ft	*24.00*
Effective speed factor, S_t (Eq. 15-30)	*4.79*
Bicycle level of service score, BLOS (Eq. 15-31)	*3.04*
Bicycle level of service (Exhibit 15-4)	*C*

Notes

1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis–the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

Reference 1	SR 154/U.S. 101 SB
Reference 2	SR 154/U.S. 101 NB
Reference 3	SR 154/Grand Avenue
Reference 4	SR 154/Roblar Avenue
Reference 5	SR 154/Edison Street
Reference 6	SR 246/Alisal Road
Reference 7	SR 246/Alamo Pintado Road
Reference 8	SR 246/Refugio Road
Reference 9	SR 246/Edison Street
Reference 10	SR 246/SR 154

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	01_EX_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	EXISTING
Analysis Time Period	A.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	67	0	0
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	408	2	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LT	
PHF			1.00				1.00	
Flow Rate (veh/h)			67				410	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

hd, initial value (s)			3.20				3.20	
x, initial			0.06				0.36	
hd, final value (s)			5.14				4.35	
x, final value			0.10				0.50	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			3.1				2.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			317				660	
Delay (s/veh)			8.68				11.62	
LOS			A				B	
Approach: Delay (s/veh)			8.68				11.62	
LOS			A				B	
Intersection Delay (s/veh)	11.20							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	MMF
Agency/Co.	ATE
Date Performed	3/21/2012
Analysis Time Period	A.M. PEAK HOUR

Site Information

Intersection	01_2014_AM
Jurisdiction	SANTA BARBARA COUNTY
Analysis Year	NEAR-TERM (YEAR 2014)

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154

North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	69	0	0
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	424	2	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LT	
PHF			1.00				1.00	
Flow Rate (veh/h)			69				426	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hd, initial value (s)			3.20				3.20	
x, initial			0.06				0.38	
hd, final value (s)			5.18				4.36	
x, final value			0.10				0.52	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			3.2				2.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			319				676	
Delay (s/veh)			8.75				11.99	
LOS			A				B	
Approach: Delay (s/veh)			8.75				11.99	
LOS			A				B	
Intersection Delay (s/veh)	11.53							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	01_2014+ALT 1_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 1)
Analysis Time Period	A.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	69	0	0
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	427	2	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LT	
PHF			1.00				1.00	
Flow Rate (veh/h)			69				429	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

hd, initial value (s)			3.20				3.20	
x, initial			0.06				0.38	
hd, final value (s)			5.18				4.36	
x, final value			0.10				0.52	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			3.2				2.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			319				679	
Delay (s/veh)			8.75				12.05	
LOS			A				B	
Approach: Delay (s/veh)			8.75				12.05	
LOS			A				B	
Intersection Delay (s/veh)	11.60							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	01_2014+ALT 2_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 2)
Analysis Time Period	A.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	69	0	0
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	431	2	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LT	
PHF			1.00				1.00	
Flow Rate (veh/h)			69				433	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hd, initial value (s)			3.20				3.20	
x, initial			0.06				0.38	
hd, final value (s)			5.19				4.36	
x, final value			0.10				0.52	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			3.2				2.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			319				683	
Delay (s/veh)			8.77				12.15	
LOS			A				B	
Approach: Delay (s/veh)			8.77				12.15	
LOS			A				B	
Intersection Delay (s/veh)	11.68							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	01_CU_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE (YEAR 2030)
Analysis Time Period	A.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	67	2	0
%Thrus Left Lane						
Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	505	2	2
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LTR	
PHF			1.00				1.00	
Flow Rate (veh/h)			67				509	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

hd, initial value (s)			3.20				3.20	
x, initial			0.06				0.45	
hd, final value (s)			5.37				4.36	
x, final value			0.10				0.62	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			3.4				2.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			317				759	
Delay (s/veh)			8.97				14.29	
LOS			A				B	
Approach: Delay (s/veh)			8.97				14.29	
LOS			A				B	
Intersection Delay (s/veh)	13.67							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	MMF
Agency/Co.	ATE
Date Performed	3/21/2012
Analysis Time Period	A.M. PEAK HOUR

Site Information

Intersection	01_CU+PR (ALT. 1)_AM
Jurisdiction	SANTA BARBARA COUNTY
Analysis Year	CUMULATIVE+PR (ALT.1)

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	67	2	0
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	508	2	2
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LTR	
PHF			1.00				1.00	
Flow Rate (veh/h)			67				512	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

hd, initial value (s)			3.20				3.20	
x, initial			0.06				0.46	
hd, final value (s)			5.38				4.36	
x, final value			0.10				0.62	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			3.4				2.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			317				762	
Delay (s/veh)			8.98				14.40	
LOS			A				B	
Approach: Delay (s/veh)			8.98				14.40	
LOS			A				B	
Intersection Delay (s/veh)	13.77							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	01_CU+PR (ALT. 2)_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT. 2)
Analysis Time Period	A.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	67	2	0
%Thrus Left Lane						
Approach	**Northbound**			**Southbound**		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	512	2	2
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LTR	
PHF			1.00				1.00	
Flow Rate (veh/h)			67				516	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

hd, initial value (s)			3.20				3.20	
x, initial			0.06				0.46	
hd, final value (s)			5.39				4.36	
x, final value			0.10				0.62	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			3.4				2.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			317				766	
Delay (s/veh)			8.99				14.55	
LOS			A				B	
Approach: Delay (s/veh)			8.99				14.55	
LOS			A				B	
Intersection Delay (s/veh)	13.91							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	01_EX_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	EXISTING
Analysis Time Period	P.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154	North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	146	0	0
%Thrus Left Lane						
Approach	**Northbound**			**Southbound**		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	304	1	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LT	
PHF			1.00				1.00	
Flow Rate (veh/h)			146				305	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

hd, initial value (s)			3.20				3.20	
x, initial			0.13				0.27	
hd, final value (s)			4.92				4.56	
x, final value			0.20				0.39	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			2.9				2.6	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			396				555	
Delay (s/veh)			9.15				10.42	
LOS			A				B	
Approach: Delay (s/veh)			9.15				10.42	
LOS			A				B	
Intersection Delay (s/veh)	10.01							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	MMF
Agency/Co.	ATE
Date Performed	3/21/2012
Analysis Time Period	P.M. PEAK HOUR

Site Information

Intersection	01_2014_PM
Jurisdiction	SANTA BARBARA COUNTY
Analysis Year	NEAR-TERM (YEAR 2014)

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154

North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	150	0	0
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	329	1	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LT	
PHF			1.00				1.00	
Flow Rate (veh/h)			150				330	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

hd, initial value (s)			3.20				3.20	
x, initial			0.13				0.29	
hd, final value (s)			4.99				4.57	
x, final value			0.21				0.42	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			3.0				2.6	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			400				580	
Delay (s/veh)			9.29				10.86	
LOS			A				B	
Approach: Delay (s/veh)			9.29				10.86	
LOS			A				B	
Intersection Delay (s/veh)	10.37							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	MMF
Agency/Co.	ATE
Date Performed	3/21/2012
Analysis Time Period	P.M. PEAK HOUR

Site Information

Intersection	01_2014+ALT. 1_PM
Jurisdiction	SANTA BARBARA COUNTY
Analysis Year	2014+PROJECT (ALT. 1)

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	150	0	0
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	338	1	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LT	
PHF			1.00				1.00	
Flow Rate (veh/h)			150				339	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hd, initial value (s)			3.20				3.20	
x, initial			0.13				0.30	
hd, final value (s)			5.01				4.57	
x, final value			0.21				0.43	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			3.0				2.6	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			400				589	
Delay (s/veh)			9.33				11.03	
LOS			A				B	
Approach: Delay (s/veh)			9.33				11.03	
LOS			A				B	
Intersection Delay (s/veh)	10.50							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	01_2014+ALT. 2_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 2)
Analysis Time Period	P.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	150	0	0
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	340	1	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L				LT	
PHF			1.00				1.00	
Flow Rate (veh/h)			150				341	
% Heavy Vehicles			4				4	
No. Lanes	0		1		0		1	
Geometry Group			1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns			1.0				1.0	
Prop. Right-Turns			0.0				0.0	
Prop. Heavy Vehicle			0.0				0.0	
hLT-adj			0.2	0.2			0.2	0.2
hRT-adj			-0.6	-0.6			-0.6	-0.6
hHV-adj			1.7	1.7			1.7	1.7
hadj, computed			0.3				0.3	

Departure Headway and Service Time

hd, initial value (s)			3.20				3.20	
x, initial			0.13				0.30	
hd, final value (s)			5.01				4.58	
x, final value			0.21				0.43	
Move-up time, m (s)			2.0				2.0	
Service Time, t_s (s)			3.0				2.6	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			400				591	
Delay (s/veh)			9.34				11.06	
LOS			A				B	
Approach: Delay (s/veh)			9.34				11.06	
LOS			A				B	
Intersection Delay (s/veh)	10.54							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	01_CU_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE (YEAR 2030)
Analysis Time Period	P.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	2	136	0	0
%Thrus Left Lane						
Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	389	2	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		L				LT	
PHF	1.00		1.00				1.00	
Flow Rate (veh/h)	2		136				391	
% Heavy Vehicles	0		4				4	
No. Lanes	1		1		0		1	
Geometry Group	1		1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Prop. Left-Turns	0.0		1.0				1.0	
Prop. Right-Turns	1.0		0.0				0.0	
Prop. Heavy Vehicle	0.0		0.0				0.0	
hLT-adj	0.2	0.2	0.2	0.2			0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6			-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7			1.7	1.7
hadj, computed	-0.6		0.3				0.3	

Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hd, initial value (s)	3.20		3.20				3.20	
x, initial	0.00		0.12				0.35	
hd, final value (s)	4.47		5.14				4.54	
x, final value	0.00		0.19				0.49	
Move-up time, m (s)	2.0		2.0				2.0	
Service Time, t_s (s)	2.5		3.1				2.5	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	252		386				641	
Delay (s/veh)	7.48		9.38				11.95	
LOS	A		A				B	
Approach: Delay (s/veh)	7.48		9.38				11.95	
LOS	A		A				B	
Intersection Delay (s/veh)	11.27							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	MMF
Agency/Co.	ATE
Date Performed	3/21/2012
Analysis Time Period	P.M. PEAK HOUR

Site Information

Intersection	01_CU+PR (ALT. 1)_PM
Jurisdiction	SANTA BARBARA COUNTY
Analysis Year	CUMULATIVE+PR (ALT.1)

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154

North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	2	136	0	0
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	398	2	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		L				LT	
PHF	1.00		1.00				1.00	
Flow Rate (veh/h)	2		136				400	
% Heavy Vehicles	0		4				4	
No. Lanes	1		1		0		1	
Geometry Group	1		1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		1.0				1.0	
Prop. Right-Turns	1.0		0.0				0.0	
Prop. Heavy Vehicle	0.0		0.0				0.0	
hLT-adj	0.2	0.2	0.2	0.2			0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6			-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7			1.7	1.7
hadj, computed	-0.6		0.3				0.3	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20				3.20	
x, initial	0.00		0.12				0.36	
hd, final value (s)	4.49		5.17				4.55	
x, final value	0.00		0.20				0.51	
Move-up time, m (s)	2.0		2.0				2.0	
Service Time, t_s (s)	2.5		3.2				2.5	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	252		386				650	
Delay (s/veh)	7.50		9.42				12.16	
LOS	A		A				B	
Approach: Delay (s/veh)	7.50		9.42				12.16	
LOS	A		A				B	
Intersection Delay (s/veh)	11.45							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	01_CU+PR (ALT. 2)_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT. 2)
Analysis Time Period	P.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 SB RAMPS

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	2	136	0	0
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	0	0	0	400	2	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		L				LT	
PHF	1.00		1.00				1.00	
Flow Rate (veh/h)	2		136				402	
% Heavy Vehicles	0		4				4	
No. Lanes	1		1		0		1	
Geometry Group	1		1				1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Prop. Left-Turns	0.0		1.0				1.0	
Prop. Right-Turns	1.0		0.0				0.0	
Prop. Heavy Vehicle	0.0		0.0				0.0	
hLT-adj	0.2	0.2	0.2	0.2			0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6			-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7			1.7	1.7
hadj, computed	-0.6		0.3				0.3	

Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hd, initial value (s)	3.20		3.20				3.20	
x, initial	0.00		0.12				0.36	
hd, final value (s)	4.50		5.17				4.55	
x, final value	0.00		0.20				0.51	
Move-up time, m (s)	2.0		2.0				2.0	
Service Time, t_s (s)	2.5		3.2				2.5	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	252		386				652	
Delay (s/veh)	7.51		9.42				12.21	
LOS	A		A				B	
Approach: Delay (s/veh)	7.51		9.42				12.21	
LOS	A		A				B	
Intersection Delay (s/veh)	11.49							
Intersection LOS	B							

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*02_EX_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*EXISTING*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 154*	North/South Street: *U.S. 101 NB RAMPS*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	1	405			66	192
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	1	405	0	0	66	192
Percent Heavy Vehicles	4	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0	0	105			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	105	0	0	0
Percent Heavy Vehicles	4	4	4	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (veh/h)	1			105				
C (m) (veh/h)	1295			641				
v/c	0.00			0.16				
95% queue length	0.00			0.59				
Control Delay (s/veh)	7.8			11.7				
LOS	A			B				
Approach Delay (s/veh)	--	--	11.7					
Approach LOS	--	--	B					

 HCS+™ Version 5.6 Generated: 3/27/2012 1:20 PM

AWD = 11.7 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*02_2014_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*NEAR-TERM (YEAR 2014)*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*	
East/West Street: *SR 154*	North/South Street: *U.S. 101 NB RAMPS*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*1*	*421*			*68*	*210*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*1*	*421*	*0*	*0*	*68*	*210*
Percent Heavy Vehicles	*4*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*107*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*107*	*0*	*0*	*0*
Percent Heavy Vehicles	*4*	*4*	*4*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*0*	*0*
Configuration		*LTR*				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*			*LTR*				
v (veh/h)	*1*			*107*				
C (m) (veh/h)	*1273*			*628*				
v/c	*0.00*			*0.17*				
95% queue length	*0.00*			*0.61*				
Control Delay (s/veh)	*7.8*			*11.9*				
LOS	*A*			*B*				
Approach Delay (s/veh)	--	--		*11.9*				
Approach LOS	--	--		*B*				

 HCS+TM Version 5.6 Generated: 4/2/2012 10:13 AM

AWD = 11.9 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*02_2014+ALT. 1_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*2014+PROJECT (ALT. 1)*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 154*	North/South Street: *U.S. 101 NB RAMPS*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*1*	*424*			*68*	*218*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*1*	*424*	*0*	*0*	*68*	*218*
Percent Heavy Vehicles	*4*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*107*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*107*	*0*	*0*	*0*
Percent Heavy Vehicles	*4*	*4*	*4*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*0*	*0*
Configuration		*LTR*				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*			*LTR*				
v (veh/h)	*1*			*107*				
C (m) (veh/h)	*1265*			*626*				
v/c	*0.00*			*0.17*				
95% queue length	*0.00*			*0.62*				
Control Delay (s/veh)	*7.8*			*11.9*				
LOS	*A*			*B*				
Approach Delay (s/veh)	--	--		*11.9*				
Approach LOS	--	--		*B*				

 HCS+™ Version 5.6 Generated: 4/2/2012 2:51 PM

AWD = 11.9 sec./ LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	02_2014+ALT. 2_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 2)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154	North/South Street: U.S. 101 NB RAMPS
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	1	428			68	221
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	1	428	0	0	68	221
Percent Heavy Vehicles	4	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0	0	107			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	107	0	0	0
Percent Heavy Vehicles	4	4	4	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (veh/h)	1			107				
C (m) (veh/h)	1262			623				
v/c	0.00			0.17				
95% queue length	0.00			0.62				
Control Delay (s/veh)	7.9			12.0				
LOS	A			B				
Approach Delay (s/veh)	--	--	12.0					
Approach LOS	--	--	B					

 HCS+™ Version 5.6 Generated: 4/2/2012 3:11 PM

AWD = 12.0 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	02_CU_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE (YEAR 2030)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT	
East/West Street: SR 154	North/South Street: U.S. 101 NB RAMPS
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	0	486			84	248
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	486	0	0	84	248
Percent Heavy Vehicles	4	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0	0	148			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	148	0	0	0
Percent Heavy Vehicles	4	4	4	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (veh/h)	0			148				
C (m) (veh/h)	1216			577				
v/c	0.00			0.26				
95% queue length	0.00			1.03				
Control Delay (s/veh)	8.0			13.4				
LOS	A			B				
Approach Delay (s/veh)	--	--	13.4					
Approach LOS	--	--	B					

 HCS+™ Version 5.6 Generated: 4/2/2012 1:17 PM

AWD = 13.4 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*02_CU+PR (ALT. 1)_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*CUMULATIVE+PR (ALT.1)*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*	
East/West Street: *SR 154*	North/South Street: *U.S. 101 NB RAMPS*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*0*	*489*			*84*	*256*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*489*	*0*	*0*	*84*	*256*
Percent Heavy Vehicles	*4*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*148*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*148*	*0*	*0*	*0*
Percent Heavy Vehicles	*4*	*4*	*4*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*0*	*0*
Configuration		*LTR*				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*			*LTR*				
v (veh/h)	*0*			*148*				
C (m) (veh/h)	*1208*			*575*				
v/c	*0.00*			*0.26*				
95% queue length	*0.00*			*1.03*				
Control Delay (s/veh)	*8.0*			*13.4*				
LOS	*A*			*B*				
Approach Delay (s/veh)	--	--	*13.4*					
Approach LOS	--	--	*B*					

 HCS+™ Version 5.6 Generated: 4/3/2012 2:39 PM

AWD = 13.4 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	02_CU+PR (ALT. 2)_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT. 2)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154	North/South Street: U.S. 101 NB RAMPS
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	0	493			84	259
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	493	0	0	84	259
Percent Heavy Vehicles	4	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0	0	148			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	148	0	0	0
Percent Heavy Vehicles	4	4	4	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (veh/h)	0			148				
C (m) (veh/h)	1205			572				
v/c	0.00			0.26				
95% queue length	0.00			1.04				
Control Delay (s/veh)	8.0			13.5				
LOS	A			B				
Approach Delay (s/veh)	--	--	13.5					
Approach LOS	--	--	B					

 HCS+™ Version 5.6 Generated: 4/3/2012 2:49 PM

AWD= 13.5 sec./ LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	02_EX_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	EXISTING
Analysis Time Period	P.M. PEAK HOUR		

Project Description	#12018 - CHUMASH CAMP 4 PROJECT
East/West Street: SR 154	North/South Street: U.S. 101 NB RAMPS
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	3	293			137	450
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	3	293	0	0	137	450
Percent Heavy Vehicles	4	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	0	70			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	1	0	70	0	0	0
Percent Heavy Vehicles	4	4	4	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (veh/h)	3			71				
C (m) (veh/h)	978			734				
v/c	0.00			0.10				
95% queue length	0.01			0.32				
Control Delay (s/veh)	8.7			10.4				
LOS	A			B				
Approach Delay (s/veh)	--	--		10.4				
Approach LOS	--	--		B				

HCS+™ Version 5.6 Generated: 3/27/2012 1:20 PM

AWD = 10.3 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	02_2014_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	NEAR-TERM (YEAR 2014)
Analysis Time Period	P.M. PEAK HOUR		

Project Description	#12018 - CHUMASH CAMP 4 PROJECT		
East/West Street:	SR 154	North/South Street:	U.S. 101 NB RAMPS
Intersection Orientation:	East-West	Study Period (hrs):	1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	3	318			141	487
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	3	318	0	0	141	487
Percent Heavy Vehicles	4	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	0	73			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	1	0	73	0	0	0
Percent Heavy Vehicles	4	4	4	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (veh/h)	3			74				
C (m) (veh/h)	944			710				
v/c	0.00			0.10				
95% queue length	0.01			0.35				
Control Delay (s/veh)	8.8			10.7				
LOS	A			B				
Approach Delay (s/veh)	--	--		10.7				
Approach LOS	--	--		B				

 HCS+™ Version 5.6 Generated: 4/2/2012 10:14 AM

AWD = 10.6 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	02_2014+ALT. 1_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 1)
Analysis Time Period	P.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT	
East/West Street: SR 154	North/South Street: U.S. 101 NB RAMPS
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	3	327			141	492
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	3	327	0	0	141	492
Percent Heavy Vehicles	4	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	0	73			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	1	0	73	0	0	0
Percent Heavy Vehicles	4	4	4	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (veh/h)	3			74				
C (m) (veh/h)	940			702				
v/c	0.00			0.11				
95% queue length	0.01			0.35				
Control Delay (s/veh)	8.8			10.7				
LOS	A			B				
Approach Delay (s/veh)	--	--		10.7				
Approach LOS	--	--		B				

HCS+TM Version 5.6

Generated: 4/2/2012 2:52 PM

AWD = 10.6 Sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	02_2014+ALT. 2_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 2)
Analysis Time Period	P.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT	
East/West Street: SR 154	North/South Street: U.S. 101 NB RAMPS
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	3	329			141	496
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	3	329	0	0	141	496
Percent Heavy Vehicles	4	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	0	73			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	1	0	73	0	0	0
Percent Heavy Vehicles	4	4	4	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (veh/h)	3			74				
C (m) (veh/h)	937			700				
v/c	0.00			0.11				
95% queue length	0.01			0.35				
Control Delay (s/veh)	8.9			10.8				
LOS	A			B				
Approach Delay (s/veh)	--	--	10.8					
Approach LOS	--	--	B					

 HCS+™ Version 5.6 Generated: 4/2/2012 3:12 PM

AWD = 10.7 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	02_CU_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE (YEAR 2030)
Analysis Time Period	P.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: U.S. 101 NB RAMPS

Intersection Orientation: East-West | Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	4	370			126	608
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	4	370	0	0	126	608
Percent Heavy Vehicles	4	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	3	0	108			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	3	0	108	0	0	0
Percent Heavy Vehicles	4	4	4	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (veh/h)	4			111				
C (m) (veh/h)	862			654				
v/c	0.00			0.17				
95% queue length	0.01			0.61				
Control Delay (s/veh)	9.2			11.6				
LOS	A			B				
Approach Delay (s/veh)	--	--	11.6					
Approach LOS	--	--	B					

 HCS+™ Version 5.6 Generated: 4/2/2012 1:17 PM

AWD = 11.5 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*02_CU+PR (ALT. 1)_PM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*CUMULATIVE+PR (ALT.1)*
Analysis Time Period	*P.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 154* | North/South Street: *U.S. 101 NB RAMPS*

Intersection Orientation: *East-West* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	4	379			126	613
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	4	379	0	0	126	613
Percent Heavy Vehicles	4	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	3	0	108			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	3	0	108	0	0	0
Percent Heavy Vehicles	4	4	4	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (veh/h)	4			111				
C (m) (veh/h)	858			646				
v/c	0.00			0.17				
95% queue length	0.01			0.62				
Control Delay (s/veh)	9.2			11.7				
LOS	A			B				
Approach Delay (s/veh)	--	--		11.7				
Approach LOS	--	--		B				

 HCS+™ Version 5.6 Generated: 4/3/2012 2:40 PM

AWD = 11.6 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*MMF*
Agency/Co.	*ATE*
Date Performed	*3/21/2012*
Analysis Time Period	*P.M. PEAK HOUR*

Site Information

Intersection	*02_CU+PR (ALT. 2)_PM*
Jurisdiction	*SANTA BARBARA COUNTY*
Analysis Year	*CUMULATIVE+PR (ALT. 2)*

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 154* | North/South Street: *U.S. 101 NB RAMPS*

Intersection Orientation: *East-West* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*4*	*381*			*126*	*617*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*4*	*381*	*0*	*0*	*126*	*617*
Percent Heavy Vehicles	*4*	*--*	*--*	*0*	*--*	*--*
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*3*	*0*	*108*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*3*	*0*	*108*	*0*	*0*	*0*
Percent Heavy Vehicles	*4*	*4*	*4*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*0*	*0*
Configuration		*LTR*				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*			*LTR*				
v (veh/h)	*4*			*111*				
C (m) (veh/h)	*855*			*645*				
v/c	*0.00*			*0.17*				
95% queue length	*0.01*			*0.62*				
Control Delay (s/veh)	*9.2*			*11.7*				
LOS	*A*			*B*				
Approach Delay (s/veh)	--	--	*11.7*					
Approach LOS	--	--	*B*					

 HCS+™ Version 5.6 Generated: 4/3/2012 2:54 PM

AWD = 11.6 sec./ LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	03_EX_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	EXISTING
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154	North/South Street: GRAND AVENUE
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	15	358	49	9	209	32
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	15	358	49	9	209	32
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	33	29	29	23	25	4
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	33	29	29	23	25	4
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	15	9		91			52	
C (m) (veh/h)	1314	1141		520			369	
v/c	0.01	0.01		0.17			0.14	
95% queue length	0.03	0.02		0.63			0.49	
Control Delay (s/veh)	7.8	8.2		15.2			16.7	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	15.2			16.7		
Approach LOS	--	--	C			C		

 HCS+™ Version 5.6 Generated: 3/27/2012 1:20 PM

AWD = 14.6 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*03_2014_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*NEAR-TERM (YEAR 2014)*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*	
East/West Street: *SR 154*	North/South Street: *GRAND AVENUE*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*15*	*367*	*58*	*18*	*220*	*32*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*15*	*367*	*58*	*18*	*220*	*32*
Percent Heavy Vehicles	*4*	--	--	*4*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*41*	*29*	*37*	*23*	*25*	*4*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*41*	*29*	*37*	*23*	*25*	*4*
Percent Heavy Vehicles	*4*	*4*	*4*	*4*	*4*	*4*
Percent Grade (%)		*0*			*0*	
Flared Approach		*Y*			*Y*	
Storage		*2*			*2*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*15*	*18*		*107*			*52*	
C (m) (veh/h)	*1302*	*1124*		*501*			*339*	
v/c	*0.01*	*0.02*		*0.21*			*0.15*	
95% queue length	*0.03*	*0.05*		*0.81*			*0.54*	
Control Delay (s/veh)	*7.8*	*8.3*		*16.2*			*17.9*	
LOS	*A*	*A*		*C*			*C*	
Approach Delay (s/veh)	--	--		*16.2*			*17.9*	
Approach LOS	--	--		*C*			*C*	

 HCS+™ Version 5.6 Generated: 4/2/2012 10:16 AM

AWD = 15.3 SEC./ LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	03_2014+ALT. 1_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 1)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154	North/South Street: GRAND AVENUE
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	15	370	58	18	228	32
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	15	370	58	18	228	32
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	41	29	37	23	25	4
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	41	29	37	23	25	4
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	15	18		107			52	
C (m) (veh/h)	1293	1121		492			334	
v/c	0.01	0.02		0.22			0.16	
95% queue length	0.04	0.05		0.83			0.55	
Control Delay (s/veh)	7.8	8.3		16.4			18.1	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	16.4			18.1		
Approach LOS	--	--	C			C		

 HCS+™ Version 5.6 Generated: 4/2/2012 2:53 PM

AWD = 15.4 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*03_2014+ALT. 2_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*2014+PROJECT (ALT. 2)*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description	*#12018 - CHUMASH CAMP 4 PROJECT*
East/West Street: *SR 154*	North/South Street: *GRAND AVENUE*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	15	374	58	18	231	32
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	15	374	58	18	231	32
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	41	29	37	23	25	4
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	41	29	37	23	25	4
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	15	18		107			52	
C (m) (veh/h)	1290	1117		488			330	
v/c	0.01	0.02		0.22			0.16	
95% queue length	0.04	0.05		0.84			0.56	
Control Delay (s/veh)	7.8	8.3		16.5			18.3	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	16.5			18.3		
Approach LOS	--	--	C			C		

 HCS+™ Version 5.6 Generated: 4/2/2012 3:12 PM

AWD = 15.5 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*03_CU_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*CUMULATIVE (YEAR 2030)*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 154* | North/South Street: *GRAND AVENUE*

Intersection Orientation: *East-West* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*19*	*590*	*38*	*4*	*313*	*34*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*19*	*590*	*38*	*4*	*313*	*34*
Percent Heavy Vehicles	*4*	--	--	*4*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*44*	*24*	*25*	*23*	*25*	*4*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*44*	*24*	*25*	*23*	*25*	*4*
Percent Heavy Vehicles	*4*	*4*	*4*	*4*	*4*	*4*
Percent Grade (%)		*0*			*0*	
Flared Approach		*Y*			*Y*	
Storage		*2*			*2*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*19*	*4*		*93*			*52*	
C (m) (veh/h)	*1201*	*944*		*287*			*226*	
v/c	*0.02*	*0.00*		*0.32*			*0.23*	
95% queue length	*0.05*	*0.01*		*1.42*			*0.89*	
Control Delay (s/veh)	*8.0*	*8.8*		*25.6*			*26.0*	
LOS	*A*	*A*		*D*			*D*	
Approach Delay (s/veh)	--	--		*25.6*			*26.0*	
Approach LOS	--	--		*D*			*D*	

 HCS+TM Version 5.6 Generated: 4/2/2012 1:18 PM

AWD = 23.0 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	03_CU+PR (ALT. 1)_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT.1)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154	North/South Street: GRAND AVENUE
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	19	593	38	4	321	34
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	19	593	38	4	321	34
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	44	24	25	23	25	4
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	44	24	25	23	25	4
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	19	4		93			52	
C (m) (veh/h)	1193	942		283			222	
v/c	0.02	0.00		0.33			0.23	
95% queue length	0.05	0.01		1.45			0.91	
Control Delay (s/veh)	8.1	8.8		26.0			26.5	
LOS	A	A		D			D	
Approach Delay (s/veh)	--	--		26.0			26.5	
Approach LOS	--	--		D			D	

 HCS+™ Version 5.6 Generated: 4/3/2012 2:41 PM

AWD = 23.7 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	03_CU+PR (ALT. 2)_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT. 2)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT	
East/West Street: SR 154	North/South Street: GRAND AVENUE
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	19	597	38	4	324	34
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	19	597	38	4	324	34
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	44	24	25	23	25	4
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	44	24	25	23	25	4
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	19	4		93			52	
C (m) (veh/h)	1190	939		279			220	
v/c	0.02	0.00		0.33			0.24	
95% queue length	0.05	0.01		1.48			0.92	
Control Delay (s/veh)	8.1	8.9		26.4			26.8	
LOS	A	A		D			D	
Approach Delay (s/veh)	--	--	26.4			26.8		
Approach LOS	--	--	D			D		

 HCS+™ Version 5.6 Generated: 4/3/2012 2:50 PM

AWD = 24.0 Sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	03_EX_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	EXISTING
Analysis Time Period	P.M. PEAK HOUR		

Project Description	#12018 - CHUMASH CAMP 4 PROJECT
East/West Street: SR 154	North/South Street: GRAND AVENUE
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	9	267	51	18	409	16
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	9	267	51	18	409	16
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	47	20	23	11	28	13
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	47	20	23	11	28	13
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	9	18		90			52	
C (m) (veh/h)	1124	1231		387			404	
v/c	0.01	0.01		0.23			0.13	
95% queue length	0.02	0.04		0.90			0.44	
Control Delay (s/veh)	8.2	8.0		18.4			16.7	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	18.4			16.7		
Approach LOS	--	--	C			C		

 HCS+™ Version 5.6 Generated: 3/27/2012 1:21 PM

AWD = 16.2 sec./LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	03_2014_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	NEAR-TERM (YEAR 2014)
Analysis Time Period	P.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: GRAND AVENUE

Intersection Orientation: East-West | Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	9	283	64	30	428	16
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	9	283	64	30	428	16
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	64	20	40	11	28	13
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	64	20	40	11	28	13
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	9	30		124			52	
C (m) (veh/h)	1106	1201		376			357	
v/c	0.01	0.02		0.33			0.15	
95% queue length	0.02	0.08		1.46			0.51	
Control Delay (s/veh)	8.3	8.1		20.9			18.3	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	20.9			18.3		
Approach LOS	--	--	C			C		

 HCS+™ Version 5.6 Generated: 4/2/2012 10:17 AM

AWD = 18.0 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	03_2014+ALT. 1_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 1)
Analysis Time Period	P.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154	North/South Street: GRAND AVENUE
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	9	292	64	30	433	16
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	9	292	64	30	433	16
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	64	20	40	11	28	13
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	64	20	40	11	28	13
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	9	30		124			52	
C (m) (veh/h)	1101	1192		368			351	
v/c	0.01	0.03		0.34			0.15	
95% queue length	0.02	0.08		1.51			0.52	
Control Delay (s/veh)	8.3	8.1		21.5			18.6	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	21.5			18.6		
Approach LOS	--	--	C			C		

 HCS+™ Version 5.6 Generated: 4/2/2012 2:53 PM

AWD = 18.4 sec./ LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	03_2014+ALT. 2_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 2)
Analysis Time Period	P.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT	
East/West Street: SR 154	North/South Street: GRAND AVENUE
Intersection Orientation: East-West	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	9	294	64	30	437	16
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	9	294	64	30	437	16
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	64	20	40	11	28	13
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	64	20	40	11	28	13
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	9	30		124			52	
C (m) (veh/h)	1097	1190		365			348	
v/c	0.01	0.03		0.34			0.15	
95% queue length	0.02	0.08		1.52			0.53	
Control Delay (s/veh)	8.3	8.1		21.7			18.7	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	21.7			18.7		
Approach LOS	--	--	C			C		

 HCS+™ Version 5.6 Generated: 4/2/2012 3:13 PM

AWD = 18.5 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*03_CU_PM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*CUMULATIVE (YEAR 2030)*
Analysis Time Period	*P.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 154*	North/South Street: *GRAND AVENUE*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*15*	*569*	*39*	*11*	*705*	*25*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*15*	*569*	*39*	*11*	*705*	*25*
Percent Heavy Vehicles	*4*	--	--	*4*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*76*	*44*	*24*	*5*	*51*	*3*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*76*	*44*	*24*	*5*	*51*	*3*
Percent Heavy Vehicles	*4*	*4*	*4*	*4*	*4*	*4*
Percent Grade (%)		*0*			*0*	
Flared Approach		*Y*			*Y*	
Storage		*2*			*2*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*15*	*11*		*144*			*59*	
C (m) (veh/h)	*865*	*961*		*115*			*138*	
v/c	*0.02*	*0.01*		*1.25*			*0.43*	
95% queue length	*0.05*	*0.03*		*23.64*			*2.13*	
Control Delay (s/veh)	*9.2*	*8.8*		*612.6*			*50.6*	
LOS	*A*	*A*		*F*			*F*	
Approach Delay (s/veh)	--	--		*612.6*			*50.6*	
Approach LOS	--	--		*F*			*F*	

 HCS+TM Version 5.6 Generated: 4/2/2012 1:18 PM

AWD = >50 SEC. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*MMF*
Agency/Co.	*ATE*
Date Performed	*3/21/2012*
Analysis Time Period	*P.M. PEAK HOUR*

Site Information

Intersection	*03_CU+PR (ALT. 1)_PM*
Jurisdiction	*SANTA BARBARA COUNTY*
Analysis Year	*CUMULATIVE+PR (ALT.1)*

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 154*	North/South Street: *GRAND AVENUE*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	15	578	39	11	710	25
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	15	578	39	11	710	25
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	76	44	24	5	51	3
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	76	44	24	5	51	3
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	15	11		144			59	
C (m) (veh/h)	861	953		111			136	
v/c	0.02	0.01		1.30			0.43	
95% queue length	0.05	0.04		25.10			2.18	
Control Delay (s/veh)	9.3	8.8		688.8			51.8	
LOS	A	A		F			F	
Approach Delay (s/veh)	--	--	688.8			51.8		
Approach LOS	--	--	F			F		

 HCS+™ Version 5.6 Generated: 4/3/2012 2:44 PM

AWD = >50. sec. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	MMF
Agency/Co.	ATE
Date Performed	3/21/2012
Analysis Time Period	P.M. PEAK HOUR

Site Information

Intersection	03_CU+PR (ALT. 2)_PM
Jurisdiction	SANTA BARBARA COUNTY
Analysis Year	CUMULATIVE+PR (ALT. 2)

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 154 | North/South Street: GRAND AVENUE

Intersection Orientation: East-West | Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	15	580	39	11	714	25
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	15	580	39	11	714	25
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	76	44	24	5	51	3
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	76	44	24	5	51	3
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		2			2	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	15	11		144			59	
C (m) (veh/h)	858	952		110			135	
v/c	0.02	0.01		1.31			0.44	
95% queue length	0.05	0.04		25.48			2.20	
Control Delay (s/veh)	9.3	8.8		709.0			52.5	
LOS	A	A		F			F	
Approach Delay (s/veh)	--	--		709.0			52.5	
Approach LOS	--	--		F			F	

 HCS+TM Version 5.6 Generated: 4/3/2012 2:55 PM

AWD = >50 sec / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*MMF*
Agency/Co.	*ATE*
Date Performed	*3/21/2012*
Analysis Time Period	*A.M. PEAK HOUR*

Site Information

Intersection	*04_EX_AM*
Jurisdiction	*SANTA BARBARA COUNTY*
Analysis Year	*EXISTING*

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *ROBLAR AVENUE* | North/South Street: *SR 154*

Intersection Orientation: *North-South* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	11	210	5	49	280	88
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	11	210	5	49	280	88
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	67	33	23	7	40	48
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	67	33	23	7	40	48
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	11	49		95			123	
C (m) (veh/h)	1180	1343		687			384	
v/c	0.01	0.04		0.14			0.32	
95% queue length	0.03	0.11		0.48			1.40	
Control Delay (s/veh)	8.1	7.8		13.4			19.8	
LOS	A	A		B			C	
Approach Delay (s/veh)	--	--	13.4			19.8		
Approach LOS	--	--	B			C		

 HCS+™ Version 5.6 Generated: 3/27/2012 1:24 PM

AWD = 15.0 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*04_2014_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*NEAR-TERM (YEAR 2014)*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *ROBLAR AVENUE*	North/South Street: *SR 154*
Intersection Orientation: *North-South*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	11	228	7	50	296	88
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	11	228	7	50	296	88
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	67	33	23	12	40	50
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	67	33	23	12	40	50
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	11	50		102			123	
C (m) (veh/h)	1164	1321		624			359	
v/c	0.01	0.04		0.16			0.34	
95% queue length	0.03	0.12		0.58			1.54	
Control Delay (s/veh)	8.1	7.8		14.2			21.2	
LOS	A	A		B			C	
Approach Delay (s/veh)	--	--	14.2			21.2		
Approach LOS	--	--	B			C		

 HCS+™ Version 5.6 Generated: 4/2/2012 10:18 AM

AWD = 15.9 SEC. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	04_2014+ALT. 1_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 1)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT	
East/West Street: ROBLAR AVENUE	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	11	236	7	50	299	88
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	11	236	7	50	299	88
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	67	33	23	12	40	50
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	67	33	23	12	40	50
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	11	50		102			123	
C (m) (veh/h)	1161	1312		614			353	
v/c	0.01	0.04		0.17			0.35	
95% queue length	0.03	0.12		0.60			1.58	
Control Delay (s/veh)	8.1	7.9		14.4			21.6	
LOS	A	A		B			C	
Approach Delay (s/veh)	--	--	14.4			21.6		
Approach LOS	--	--	B			C		

 HCS+™ Version 5.6 Generated: 4/2/2012 2:54 PM

AWD = 16.1 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	04_2014+ALT. 2_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 2)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street:	ROBLAR AVENUE	North/South Street:	SR 154
Intersection Orientation:	North-South	Study Period (hrs):	1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	11	239	7	50	303	88
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	11	239	7	50	303	88
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	67	33	23	12	40	50
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	67	33	23	12	40	50
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	11	50		102			123	
C (m) (veh/h)	1157	1308		608			349	
v/c	0.01	0.04		0.17			0.35	
95% queue length	0.03	0.12		0.60			1.61	
Control Delay (s/veh)	8.1	7.9		14.5			21.9	
LOS	A	A		B			C	
Approach Delay (s/veh)	--	--	14.5			21.9		
Approach LOS	--	--	B			C		

 HCS+™ Version 5.6 Generated: 4/2/2012 3:13 PM

AWD = 16.3 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*04_CU_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*CUMULATIVE (YEAR 2030)*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *ROBLAR AVENUE*	North/South Street: *SR 154*
Intersection Orientation: *North-South*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	8	358	22	41	619	119
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	8	358	22	41	619	119
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	76	34	20	21	44	71
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	76	34	20	21	44	71
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	8	41		136			130	
C (m) (veh/h)	859	1168		331			145	
v/c	0.01	0.04		0.41			0.90	
95% queue length	0.03	0.11		2.05			10.71	
Control Delay (s/veh)	9.2	8.2		26.5			157.5	
LOS	A	A		D			F	
Approach Delay (s/veh)	--	--		26.5			157.5	
Approach LOS	--	--		D			F	

 HCS+™ Version 5.6 Generated: 4/2/2012 t:19 PM

AWD = > 50 SEC. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*04_CU+PR (ALT. 1)_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*CUMULATIVE+PR (ALT.1)*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*	
East/West Street: *ROBLAR AVENUE*	North/South Street: *SR 154*
Intersection Orientation: *North-South*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*8*	*366*	*22*	*41*	*622*	*119*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*8*	*366*	*22*	*41*	*622*	*119*
Percent Heavy Vehicles	*4*	--	--	*4*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*76*	*34*	*20*	*21*	*44*	*71*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*76*	*34*	*20*	*21*	*44*	*71*
Percent Heavy Vehicles	*4*	*4*	*4*	*4*	*4*	*4*
Percent Grade (%)	*0*			*0*		
Flared Approach		*Y*			*Y*	
Storage		*1*			*1*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*8*	*41*		*136*			*130*	
C (m) (veh/h)	*857*	*1160*		*326*			*143*	
v/c	*0.01*	*0.04*		*0.42*			*0.91*	
95% queue length	*0.03*	*0.11*		*2.10*			*11.09*	
Control Delay (s/veh)	*9.2*	*8.2*		*27.0*			*167.2*	
LOS	*A*	*A*		*D*			*F*	
Approach Delay (s/veh)	--	--	*27.0*			*167.2*		
Approach LOS	--	--	*D*			*F*		

 HCS+™ Version 5.6 Generated: 4/3/2012 2:42 PM

AWD = 750 sec./ LOS F

111

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*04_CU+PR (ALT. 2)_AM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*CUMULATIVE+PR (ALT. 2)*
Analysis Time Period	*A.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*	
East/West Street: *ROBLAR AVENUE*	North/South Street: *SR 154*
Intersection Orientation: *North-South*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*8*	*369*	*22*	*41*	*626*	*119*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*8*	*369*	*22*	*41*	*626*	*119*
Percent Heavy Vehicles	*4*	--	--	*4*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*76*	*34*	*20*	*21*	*44*	*71*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*76*	*34*	*20*	*21*	*44*	*71*
Percent Heavy Vehicles	*4*	*4*	*4*	*4*	*4*	*4*
Percent Grade (%)	*0*			*0*		
Flared Approach		*Y*			*Y*	
Storage		*1*			*1*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*8*	*41*		*136*			*130*	
C (m) (veh/h)	*854*	*1157*		*322*			*140*	
v/c	*0.01*	*0.04*		*0.42*			*0.93*	
95% queue length	*0.03*	*0.11*		*2.14*			*11.69*	
Control Delay (s/veh)	*9.3*	*8.2*		*27.4*			*183.5*	
LOS	*A*	*A*		*D*			*F*	
Approach Delay (s/veh)	--	--	*27.4*			*183.5*		
Approach LOS	--	--	*D*			*F*		

 HCS+™ Version 5.6 Generated: 4/3/2012 2:51 PM

WD = >50 sec. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	04_EX_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	EXISTING
Analysis Time Period	P.M. PEAK HOUR		

Project Description	#12018 - CHUMASH CAMP 4 PROJECT
East/West Street: ROBLAR AVENUE	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	16	402	11	32	291	28
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	16	402	11	32	291	28
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	49	37	22	13	38	83
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	49	37	22	13	38	83
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	16	32		134			108	
C (m) (veh/h)	1230	1135		730			298	
v/c	0.01	0.03		0.18			0.36	
95% queue length	0.04	0.09		0.67			1.68	
Control Delay (s/veh)	8.0	8.3		15.0			25.0	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	15.0			25.0		
Approach LOS	--	--	C			C		

 HCS+™ Version 5.6 Generated: 3/27/2012 1:25 PM

AWD = 17.6 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	04_2014_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	NEAR-TERM (YEAR 2014)
Analysis Time Period	P.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: ROBLAR AVENUE | North/South Street: SR 154

Intersection Orientation: North-South | Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	16	430	13	35	321	28
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	16	430	13	35	321	28
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	49	37	22	22	38	86
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	49	37	22	22	38	86
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	16	35		146			108	
C (m) (veh/h)	1199	1107		599			265	
v/c	0.01	0.03		0.24			0.41	
95% queue length	0.04	0.10		0.96			2.01	
Control Delay (s/veh)	8.0	8.4		17.0			28.9	
LOS	A	A		C			D	
Approach Delay (s/veh)	--	--	17.0			28.9		
Approach LOS	--	--	C			D		

 HCS+™ Version 5.6 Generated: 4/2/2012 10:19 AM

AWD = 19.8 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*04_2014+ALT.1_PM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*2014+PROJECT (ALT. 1)*
Analysis Time Period	*P.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *ROBLAR AVENUE*	North/South Street: *SR 154*
Intersection Orientation: *North-South*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*16*	*435*	*13*	*35*	*330*	*28*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*16*	*435*	*13*	*35*	*330*	*28*
Percent Heavy Vehicles	*4*	--	--	*4*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*49*	*37*	*22*	*22*	*38*	*86*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*49*	*37*	*22*	*22*	*38*	*86*
Percent Heavy Vehicles	*4*	*4*	*4*	*4*	*4*	*4*
Percent Grade (%)		*0*			*0*	
Flared Approach		*Y*			*Y*	
Storage		*1*			*1*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*16*	*35*		*146*			*108*	
C (m) (veh/h)	*1190*	*1102*		*584*			*259*	
v/c	*0.01*	*0.03*		*0.25*			*0.42*	
95% queue length	*0.04*	*0.10*		*1.00*			*2.09*	
Control Delay (s/veh)	*8.1*	*8.4*		*17.2*			*29.9*	
LOS	*A*	*A*		*C*			*D*	
Approach Delay (s/veh)	--	--		*17.2*			*29.9*	
Approach LOS	--	--		*C*			*D*	

 HCS+™ Version 5.6 Generated: 4/2/2012 2:55 PM

AWD = 20.2 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	04_2014+ALT.2_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 2)
Analysis Time Period	P.M. PEAK HOUR		

Project Description	#12018 - CHUMASH CAMP 4 PROJECT
East/West Street: ROBLAR AVENUE	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	16	439	13	35	332	28
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	16	439	13	35	332	28
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	49	37	22	22	38	86
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	49	37	22	22	38	86
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	16	35		146			108	
C (m) (veh/h)	1188	1098		579			256	
v/c	0.01	0.03		0.25			0.42	
95% queue length	0.04	0.10		1.01			2.13	
Control Delay (s/veh)	8.1	8.4		17.4			30.3	
LOS	A	A		C			D	
Approach Delay (s/veh)	--	--	17.4			30.3		
Approach LOS	--	--	C			D		

 HCS+™ Version 5.6 Generated: 4/2/2012 3:25 PM

AWD = 20.4 sec. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	04_CU_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE (YEAR 2030)
Analysis Time Period	P.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street:	ROBLAR AVENUE	North/South Street:	SR 154
Intersection Orientation:	North-South	Study Period (hrs):	1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	17	687	21	56	499	56
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	17	687	21	56	499	56
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	52	36	13	23	37	77
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	52	36	13	23	37	77
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	17	56		137			101	
C (m) (veh/h)	1005	882		244			96	
v/c	0.02	0.06		0.56			1.05	
95% queue length	0.05	0.20		3.60			13.62	
Control Delay (s/veh)	8.6	9.4		43.2			360.0	
LOS	A	A		E			F	
Approach Delay (s/veh)	--	--	43.2			360.0		
Approach LOS	--	--	E			F		

 HCS+™ Version 5.6 Generated: 4/2/2012 1:19 PM

AWD = >50 SEC. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*04_CU+PR (ALT. 1)_PM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*CUMULATIVE+PR (ALT.1)*
Analysis Time Period	*P.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *ROBLAR AVENUE*	North/South Street: *SR 154*
Intersection Orientation: *North-South*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	17	692	21	56	508	56
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	17	692	21	56	508	56
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	52	36	13	23	37	77
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	52	36	13	23	37	77
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	17	56		137			101	
C (m) (veh/h)	998	878		240			92	
v/c	0.02	0.06		0.57			1.10	
95% queue length	0.05	0.20		3.72			14.76	
Control Delay (s/veh)	8.7	9.4		44.6			423.9	
LOS	A	A		E			F	
Approach Delay (s/veh)	--	--	44.6			423.9		
Approach LOS	--	--	E			F		

 HCS+™ Version 5.6 Generated: 4/3/2012 2:45 PM

WD = > 50 sec. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	04_CU+PR (ALT. 2)_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT. 2)
Analysis Time Period	P.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: ROBLAR AVENUE	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	17	696	21	56	510	56
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	17	696	21	56	510	56
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	1	1	0
Configuration	L		TR	L		TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	52	36	13	23	37	77
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	52	36	13	23	37	77
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		Y			Y	
Storage		1			1	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	17	56		137			101	
C (m) (veh/h)	996	875		237			90	
v/c	0.02	0.06		0.58			1.12	
95% queue length	0.05	0.21		3.82			15.36	
Control Delay (s/veh)	8.7	9.4		45.4			459.8	
LOS	A	A		E			F	
Approach Delay (s/veh)	--	--		45.4			459.8	
Approach LOS	--	--		E			F	

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WD = >50 sec/LOS F

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	MMF
Agency/Co.	ATE
Date Performed	3/21/2012
Analysis Time Period	A.M. PEAK HOUR

Site Information

Intersection	05_EX_AM
Jurisdiction	SANTA BARBARA COUNTY
Analysis Year	EXISTING

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	107	67	29	13	71	23
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	127	5	15	158	150
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	203		107		10	132	15	308
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.5		0.1		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.1		0.2		0.0	0.0	0.0	0.5
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.1		-0.0		0.6	0.0	0.6	-0.3

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.18		0.10		0.01	0.12	0.01	0.27
hd, final value (s)	5.39		5.44		6.37	5.84	6.16	5.31
x, final value	0.30		0.16		0.02	0.21	0.03	0.45
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	3.4		3.4		4.1	3.5	3.9	3.0

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	453		357		260	382	265	558
Delay (s/veh)	10.74		9.49		9.19	10.13	9.02	12.41
LOS	B		A		A	B	A	B
Approach: Delay (s/veh)	10.74		9.49		10.06		12.25	
LOS	B		A		B		B	
Intersection Delay (s/veh)	11.07							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_2014_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	NEAR-TERM (YEAR 2014)
Analysis Time Period	A.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	111	67	29	14	71	24
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	142	5	15	175	154
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	207		109		10	147	15	329
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.5		0.1		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.1		0.2		0.0	0.0	0.0	0.5
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.1		-0.0		0.6	0.0	0.6	-0.3

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.18		0.10		0.01	0.13	0.01	0.29
hd, final value (s)	5.52		5.58		6.45	5.92	6.22	5.39
x, final value	0.32		0.17		0.02	0.24	0.03	0.49
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	3.5		3.6		4.2	3.6	3.9	3.1

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	457		359		260	397	265	579
Delay (s/veh)	11.07		9.71		9.27	10.51	9.09	13.28
LOS	B		A		A	B	A	B
Approach: Delay (s/veh)	11.07		9.71		10.43		13.10	
LOS	B		A		B		B	
Intersection Delay (s/veh)	11.62							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_2014+ALT. 1_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 1)
Analysis Time Period	A.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	111	67	29	14	71	29
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	145	5	17	176	154
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	207		114		10	150	17	330
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.5		0.1		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.1		0.3		0.0	0.0	0.0	0.5
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.1		-0.1		0.6	0.0	0.6	-0.3

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.18		0.10		0.01	0.13	0.02	0.29
hd, final value (s)	5.55		5.58		6.48	5.95	6.25	5.41
x, final value	0.32		0.18		0.02	0.25	0.03	0.50
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	3.5		3.6		4.2	3.6	3.9	3.1

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	457		364		260	400	267	580
Delay (s/veh)	11.14		9.77		9.30	10.60	9.14	13.41
LOS	B		A		A	B	A	B
Approach: Delay (s/veh)	11.14		9.77		10.52		13.20	
LOS	B		A		B		B	
Intersection Delay (s/veh)	11.70							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	MMF
Agency/Co.	ATE
Date Performed	3/21/2012
Analysis Time Period	A.M. PEAK HOUR

Site Information

Intersection	05_2014+ALT. 2_AM
Jurisdiction	SANTA BARBARA COUNTY
Analysis Year	2014+PROJECT (ALT. 2)

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	111	67	29	14	71	29
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	148	5	17	180	154
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	207		114		10	153	17	334
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.5		0.1		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.1		0.3		0.0	0.0	0.0	0.5
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.1		-0.1		0.6	0.0	0.6	-0.3

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.18		0.10		0.01	0.14	0.02	0.30
hd, final value (s)	5.57		5.60		6.49	5.96	6.26	5.43
x, final value	0.32		0.18		0.02	0.25	0.03	0.50
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	3.6		3.6		4.2	3.7	4.0	3.1

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	457		364		260	403	267	584
Delay (s/veh)	11.19		9.81		9.31	10.68	9.15	13.60
LOS	B		A		A	B	A	B
Approach: Delay (s/veh)	11.19		9.81		10.60		13.38	
LOS	B		A		B		B	
Intersection Delay (s/veh)	11.81							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_CU_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE (YEAR 2030)
Analysis Time Period	A.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	71	76	32	32	65	23
%Thrus Left Lane						
Approach	**Northbound**			**Southbound**		
Movement	L	T	R	L	T	R
Volume (veh/h)	8	264	30	20	430	132
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	179		120		8	294	20	562
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	EB L1	EB L2	WB L1	WB L2	NB L1	NB L2	SB L1	SB L2
Prop. Left-Turns	0.4		0.3		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.2		0.2		0.0	0.1	0.0	0.2
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		0.0		0.6	-0.0	0.6	-0.1

Departure Headway and Service Time

	EB L1	EB L2	WB L1	WB L2	NB L1	NB L2	SB L1	SB L2
hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.16		0.11		0.01	0.26	0.02	0.50
hd, final value (s)	6.79		6.96		7.06	6.48	6.66	5.99
x, final value	0.34		0.23		0.02	0.53	0.04	0.93
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	4.8		5.0		4.8	4.2	4.4	3.7

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	429		370		258	534	270	599
Delay (s/veh)	13.23		12.06		9.87	16.40	9.62	66.16
LOS	B		B		A	C	A	F
Approach: Delay (s/veh)	13.23		12.06		16.22		64.22	
LOS	B		B		C		F	
Intersection Delay (s/veh)	38.96							
Intersection LOS	E							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_CU+PR (ALT. 1)_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT.1)
Analysis Time Period	A.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	71	76	32	32	65	28
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	8	267	30	22	431	132
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	179		125		8	297	22	563
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.4		0.3		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.2		0.2		0.0	0.1	0.0	0.2
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		-0.0		0.6	-0.0	0.6	-0.1

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.16		0.11		0.01	0.26	0.02	0.50
hd, final value (s)	6.83		6.97		7.10	6.52	6.70	6.02
x, final value	0.34		0.24		0.02	0.54	0.04	0.94
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	4.8		5.0		4.8	4.2	4.4	3.7

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	429		375		258	531	272	595
Delay (s/veh)	13.34		12.19		9.92	16.74	9.68	70.16
LOS	B		B		A	C	A	F
Approach: Delay (s/veh)	13.34		12.19		16.56		67.89	
LOS	B		B		C		F	
Intersection Delay (s/veh)	40.77							
Intersection LOS	E							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_CU+PR (ALT. 2)_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT. 2)
Analysis Time Period	A.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET	North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	71	76	32	32	65	28
%Thrus Left Lane						
Approach	**Northbound**			**Southbound**		
Movement	L	T	R	L	T	R
Volume (veh/h)	8	270	30	22	435	132
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	179		125		8	300	22	567
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.4		0.3		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.2		0.2		0.0	0.1	0.0	0.2
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0		-0.0		0.6	-0.0	0.6	-0.1

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.16		0.11		0.01	0.27	0.02	0.50
hd, final value (s)	6.86		7.00		7.12	6.53	6.71	6.04
x, final value	0.34		0.24		0.02	0.54	0.04	0.95
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	4.9		5.0		4.8	4.2	4.4	3.7

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	429		375		258	531	272	594
Delay (s/veh)	13.40		12.24		9.93	16.98	9.70	75.15
LOS	B		B		A	C	A	F
Approach: Delay (s/veh)	13.40		12.24		16.79		72.71	
LOS	B		B		C		F	
Intersection Delay (s/veh)	43.24							
Intersection LOS	E							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_EX_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	EXISTING
Analysis Time Period	P.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	124	84	7	5	76	27
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	25	261	19	11	211	98
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	215		108		25	280	11	309
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.0		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0		0.3		0.0	0.1	0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.2		-0.1		0.6	0.0	0.6	-0.2

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.19		0.10		0.02	0.25	0.01	0.27
hd, final value (s)	6.02		6.05		6.58	6.02	6.57	5.84
x, final value	0.36		0.18		0.05	0.47	0.02	0.50
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	4.0		4.0		4.3	3.7	4.3	3.5

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	465		358		275	530	261	559
Delay (s/veh)	12.39		10.39		9.59	14.00	9.40	14.36
LOS	B		B		A	B	A	B
Approach: Delay (s/veh)	12.39		10.39		13.64		14.19	
LOS	B		B		B		B	
Intersection Delay (s/veh)	13.17							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_2014_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	NEAR-TERM (YEAR 2014)
Analysis Time Period	P.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	132	84	7	6	76	28
%Thrus Left Lane						
Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	27	289	20	12	243	105
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	223		110		27	309	12	348
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.1		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0		0.3		0.0	0.1	0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.2		-0.1		0.6	0.0	0.6	-0.1

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.20		0.10		0.02	0.27	0.01	0.31
hd, final value (s)	6.28		6.36		6.75	6.20	6.73	6.01
x, final value	0.39		0.19		0.05	0.53	0.02	0.58
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	4.3		4.4		4.5	3.9	4.4	3.7

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	473		360		277	557	262	577
Delay (s/veh)	13.28		10.89		9.81	15.89	9.58	16.93
LOS	B		B		A	C	A	C
Approach: Delay (s/veh)	13.28		10.89		15.40		16.69	
LOS	B		B		C		C	
Intersection Delay (s/veh)	14.91							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_2014+ALT. 1_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 1)
Analysis Time Period	P.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	132	84	7	6	76	31
%Thrus Left Lane						
Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	27	291	20	18	246	105
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	223		113		27	311	18	351
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.1		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0		0.3		0.0	0.1	0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.2		-0.1		0.6	0.0	0.6	-0.1

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.20		0.10		0.02	0.28	0.02	0.31
hd, final value (s)	6.33		6.39		6.79	6.23	6.76	6.03
x, final value	0.39		0.20		0.05	0.54	0.03	0.59
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	4.3		4.4		4.5	3.9	4.5	3.7

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	473		363		277	554	268	575
Delay (s/veh)	13.39		10.99		9.85	16.15	9.69	17.26
LOS	B		B		A	C	A	C
Approach: Delay (s/veh)	13.39		10.99		15.65		16.89	
LOS	B		B		C		C	
Intersection Delay (s/veh)	15.10							
Intersection LOS	C							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	MMF
Agency/Co.	ATE
Date Performed	3/21/2012
Analysis Time Period	P.M. PEAK HOUR

Site Information

Intersection	05_2014+ALT. 2_PM
Jurisdiction	SANTA BARBARA COUNTY
Analysis Year	2014+PROJECT (ALT. 2)

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	132	84	7	6	76	31
%Thrus Left Lane						
Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	27	295	20	18	248	105
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	223		113		27	315	18	353
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.1		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0		0.3		0.0	0.1	0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.2		-0.1		0.6	0.0	0.6	-0.1

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.20		0.10		0.02	0.28	0.02	0.31
hd, final value (s)	6.35		6.41		6.80	6.24	6.77	6.05
x, final value	0.39		0.20		0.05	0.55	0.03	0.59
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	4.3		4.4		4.5	3.9	4.5	3.7

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	473		363		277	553	268	574
Delay (s/veh)	13.45		11.03		9.86	16.40	9.70	17.45
LOS	B		B		A	C	A	C
Approach: Delay (s/veh)	13.45		11.03		15.88		17.08	
LOS	B		B		C		C	
Intersection Delay (s/veh)	15.26							
Intersection LOS	C							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_CU_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE (YEAR 2030)
Analysis Time Period	P.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET | North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	126	61	9	21	63	46
%Thrus Left Lane						
Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	17	497	31	22	363	125
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	196		130		17	528	22	488
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.2		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0		0.4		0.0	0.1	0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.2		-0.1		0.6	0.0	0.6	-0.1

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.17		0.12		0.02	0.47	0.02	0.43
hd, final value (s)	7.77		7.84		7.40	6.84	7.48	6.78
x, final value	0.42		0.28		0.03	1.00	0.05	0.92
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	5.8		5.8		5.1	4.5	5.2	4.5

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	446		380		267	528	272	529
Delay (s/veh)	16.44		13.93		10.37	124.25	10.54	65.24
LOS	C		B		B	F	B	F
Approach: Delay (s/veh)	16.44		13.93		120.69		62.88	
LOS	C		B		F		F	
Intersection Delay (s/veh)	74.50							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_CU+PR (ALT. 1)_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT.1)
Analysis Time Period	P.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET	North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	126	61	9	21	63	49
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	17	499	31	28	366	125
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	196		133		17	530	28	491
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.2		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0		0.4		0.0	0.1	0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.2		-0.1		0.6	0.0	0.6	-0.1

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.17		0.12		0.02	0.47	0.02	0.44
hd, final value (s)	7.81		7.85		7.44	6.88	7.50	6.81
x, final value	0.42		0.29		0.04	1.01	0.06	0.93
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	5.8		5.9		5.1	4.6	5.2	4.5

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	446		383		267	530	278	527
Delay (s/veh)	16.54		14.06		10.41	134.50	10.67	69.55
LOS	C		B		B	F	B	F
Approach: Delay (s/veh)	16.54		14.06		130.64		66.37	
LOS	C		B		F		F	
Intersection Delay (s/veh)	79.59							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	MMF	Intersection	05_CU+PR (ALT. 2)_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT. 2)
Analysis Time Period	P.M. PEAK HOUR		

Project ID #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: EDISON STREET	North/South Street: SR 154

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	126	61	9	21	63	49
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	17	503	31	28	368	125
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	TR	L	TR
PHF	1.00		1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)	196		133		17	534	28	493
% Heavy Vehicles	4		4		4	4	4	4
No. Lanes	1		1		2		2	
Geometry Group	2		2		5		5	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.2		1.0	0.0	1.0	0.0
Prop. Right-Turns	0.0		0.4		0.0	0.1	0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	0.0
hLT-adj	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.2		-0.1		0.6	0.0	0.6	-0.1

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20	3.20	3.20	3.20
x, initial	0.17		0.12		0.02	0.47	0.02	0.44
hd, final value (s)	7.81		7.86		7.45	6.89	7.50	6.81
x, final value	0.43		0.29		0.04	1.02	0.06	0.93
Move-up time, m (s)	2.0		2.0		2.3		2.3	
Service Time, t_s (s)	5.8		5.9		5.1	4.6	5.2	4.5

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	446		383		267	534	278	527
Delay (s/veh)	16.56		14.07		10.42	143.92	10.67	71.63
LOS	C		B		B	F	B	F
Approach: Delay (s/veh)	16.56		14.07		139.80		68.35	
LOS	C		B		F		F	
Intersection Delay (s/veh)	84.06							
Intersection LOS	F							

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑	↱	↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1816		1736	1827	1553	1736	1661	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1816		1338	1827	1553	1362	1661	
Volume (vph)	12	592	30	120	453	19	28	18	170	78	15	23
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	592	30	120	453	19	28	18	170	78	15	23
RTOR Reduction (vph)	0	0	18	0	3	0	0	0	157	0	16	0
Lane Group Flow (vph)	12	592	12	120	469	0	28	18	13	78	22	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	0.7	23.2	23.2	4.4	26.9		17.6	17.6	4.4	17.6	17.6	
Effective Green, g (s)	0.7	23.2	23.2	4.4	26.9		17.6	17.6	4.4	17.6	17.6	
Actuated g/C Ratio	0.01	0.41	0.41	0.08	0.47		0.31	0.31	0.08	0.31	0.31	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	21	741	630	134	854		412	562	119	419	511	
v/s Ratio Prot	0.01	c0.32		c0.07	c0.26			0.01	0.01		0.01	
v/s Ratio Perm			0.01				0.02			c0.06		
v/c Ratio	0.57	0.80	0.02	0.90	0.55		0.07	0.03	0.11	0.19	0.04	
Uniform Delay, d1	28.1	14.9	10.2	26.2	10.8		14.0	13.8	24.6	14.5	13.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	32.5	6.0	0.0	47.3	0.7		0.3	0.1	0.4	1.0	0.2	
Delay (s)	60.6	21.0	10.2	73.5	11.6		14.3	14.0	25.0	15.5	14.1	
Level of Service	E	C	B	E	B		B	B	C	B	B	
Approach Delay (s)		21.2			24.1			22.7			15.0	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	57.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑	↱	↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1816		1736	1827	1553	1736	1661	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1816		1338	1827	1553	1362	1661	
Volume (vph)	12	603	30	120	466	19	28	18	170	78	15	23
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	603	30	120	466	19	28	18	170	78	15	23
RTOR Reduction (vph)	0	0	18	0	2	0	0	0	157	0	16	0
Lane Group Flow (vph)	12	603	12	120	483	0	28	18	13	78	22	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	0.7	23.4	23.4	4.4	27.1		17.6	17.6	4.4	17.6	17.6	
Effective Green, g (s)	0.7	23.4	23.4	4.4	27.1		17.6	17.6	4.4	17.6	17.6	
Actuated g/C Ratio	0.01	0.41	0.41	0.08	0.47		0.31	0.31	0.08	0.31	0.31	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	21	745	633	133	857		410	560	119	418	509	
v/s Ratio Prot	0.01	c0.33		0.07	c0.27			0.01	c0.11		0.02	
v/s Ratio Perm			0.02				0.02			c0.06		
v/c Ratio	0.57	0.81	0.02	0.90	0.56		0.07	0.03	0.11	0.19	0.04	
Uniform Delay, d1	28.2	15.0	10.1	26.3	10.9		14.1	13.9	24.7	14.6	14.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	32.5	6.5	0.0	49.4	0.9		0.3	0.1	0.4	1.0	0.2	
Delay (s)	60.7	21.5	10.2	75.7	11.7		14.4	14.0	25.1	15.6	14.1	
Level of Service	E	C	B	E	B		B	B	C	B	B	
Approach Delay (s)		21.7			24.4			22.8			15.1	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	22.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1816		1736	1827	1553	1736	1661	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1816		1338	1827	1553	1362	1661	
Volume (vph)	12	607	30	126	478	19	28	18	172	78	15	23
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	607	30	126	478	19	28	18	172	78	15	23
RTOR Reduction (vph)	0	0	18	0	2	0	0	0	157	0	16	0
Lane Group Flow (vph)	12	607	12	126	495	0	28	18	15	78	22	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	0.7	23.1	23.1	5.2	27.6		17.6	17.6	5.2	17.6	17.6	
Effective Green, g (s)	0.7	23.1	23.1	5.2	27.6		17.6	17.6	5.2	17.6	17.6	
Actuated g/C Ratio	0.01	0.40	0.40	0.09	0.48		0.30	0.30	0.09	0.30	0.30	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	21	729	620	156	866		407	555	139	414	505	
v/s Ratio Prot	0.01	c0.33		0.07	0.27			0.01	c0.11		0.02	
v/s Ratio Perm			0.02				0.02			c0.06		
v/c Ratio	0.57	0.83	0.02	0.81	0.57		0.07	0.03	0.11	0.19	0.04	
Uniform Delay, d1	28.5	15.7	10.5	25.9	10.9		14.3	14.2	24.2	14.9	14.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	32.5	8.1	0.0	25.5	0.9		0.3	0.1	0.4	1.0	0.2	
Delay (s)	60.9	23.7	10.6	51.3	11.8		14.7	14.3	24.6	15.9	14.4	
Level of Service	E	C	B	D	B		B	B	C	B	B	
Approach Delay (s)		23.8			19.8			22.5			15.4	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1817		1736	1827	1553	1736	1661	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1817		1338	1827	1553	1362	1661	
Volume (vph)	12	616	30	129	484	19	28	18	176	78	15	23
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	616	30	129	484	19	28	18	176	78	15	23
RTOR Reduction (vph)	0	0	18	0	2	0	0	0	160	0	16	0
Lane Group Flow (vph)	12	616	12	129	501	0	28	18	16	78	22	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	0.7	23.5	23.5	5.2	28.0		16.6	16.6	5.2	16.6	16.6	
Effective Green, g (s)	0.7	23.5	23.5	5.2	28.0		16.6	16.6	5.2	16.6	16.6	
Actuated g/C Ratio	0.01	0.41	0.41	0.09	0.49		0.29	0.29	0.09	0.29	0.29	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	21	749	637	158	888		388	529	141	395	481	
v/s Ratio Prot	0.01	c0.34		0.07	0.28			0.01	c0.11		0.02	
v/s Ratio Perm			0.02				0.02			c0.06		
v/c Ratio	0.57	0.82	0.02	0.82	0.56		0.07	0.03	0.11	0.20	0.05	
Uniform Delay, d1	28.2	15.0	10.0	25.6	10.3		14.8	14.6	23.9	15.3	14.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	32.5	7.3	0.0	26.7	0.8		0.4	0.1	0.4	1.1	0.2	
Delay (s)	60.6	22.3	10.1	52.2	11.2		15.1	14.7	24.3	16.4	14.8	
Level of Service	E	C	B	D	B		B	B	C	B	B	
Approach Delay (s)		22.4			19.6			22.4			15.9	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1805		1736	1827	1553	1736	1637	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1805		1325	1827	1553	1362	1637	
Volume (vph)	20	796	38	156	623	55	39	18	214	122	15	34
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	796	38	156	623	55	39	18	214	122	15	34
RTOR Reduction (vph)	0	0	20	0	5	0	0	0	194	0	25	0
Lane Group Flow (vph)	20	796	18	156	673	0	39	18	20	122	24	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	0.8	29.2	29.2	6.0	34.4		16.0	16.0	6.0	16.0	16.0	
Effective Green, g (s)	0.8	29.2	29.2	6.0	34.4		16.0	16.0	6.0	16.0	16.0	
Actuated g/C Ratio	0.01	0.46	0.46	0.09	0.54		0.25	0.25	0.09	0.25	0.25	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	22	844	718	165	982		335	463	147	345	414	
v/s Ratio Prot	0.01	c0.44		0.09	0.38			0.01	c0.14		0.03	
v/s Ratio Perm			0.02				0.03			c0.09		
v/c Ratio	0.91	0.94	0.02	0.95	0.69		0.12	0.04	0.14	0.35	0.06	
Uniform Delay, d1	31.2	16.2	9.3	28.4	10.5		18.2	17.8	26.2	19.4	17.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	148.5	18.5	0.0	53.7	2.0		0.7	0.2	0.4	2.8	0.3	
Delay (s)	179.6	34.7	9.3	82.1	12.5		18.9	18.0	26.7	22.2	18.1	
Level of Service	F	C	A	F	B		B	B	C	C	B	
Approach Delay (s)		37.0			25.5			25.0			21.0	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1805		1736	1827	1553	1736	1637	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1805		1325	1827	1553	1362	1637	
Volume (vph)	20	800	38	162	635	55	39	18	216	122	15	34
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	800	38	162	635	55	39	18	216	122	15	34
RTOR Reduction (vph)	0	0	20	0	5	0	0	0	195	0	25	0
Lane Group Flow (vph)	20	800	18	162	685	0	39	18	21	122	24	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	0.8	29.2	29.2	6.0	34.4		16.0	16.0	6.0	16.0	16.0	
Effective Green, g (s)	0.8	29.2	29.2	6.0	34.4		16.0	16.0	6.0	16.0	16.0	
Actuated g/C Ratio	0.01	0.46	0.46	0.09	0.54		0.25	0.25	0.09	0.25	0.25	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	22	844	718	165	982		335	463	147	345	414	
v/s Ratio Prot	0.01	c0.44		0.09	0.38			0.01	c0.14		0.03	
v/s Ratio Perm			0.02				0.03			c0.09		
v/c Ratio	0.91	0.95	0.02	0.98	0.70		0.12	0.04	0.14	0.35	0.06	
Uniform Delay, d1	31.2	16.3	9.3	28.5	10.6		18.2	17.8	26.2	19.4	17.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	148.5	19.3	0.0	64.3	2.2		0.7	0.2	0.4	2.8	0.3	
Delay (s)	179.6	35.5	9.3	92.9	12.8		18.9	18.0	26.7	22.2	18.1	
Level of Service	F	D	A	F	B		B	B	C	C	B	
Approach Delay (s)		37.7			28.0			25.0			21.0	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑	↱	↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1805		1736	1827	1553	1736	1637	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.73	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1805		1325	1827	1553	1362	1637	
Volume (vph)	20	809	38	165	641	55	39	18	220	122	15	34
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	809	38	165	641	55	39	18	220	122	15	34
RTOR Reduction (vph)	0	0	20	0	5	0	0	0	199	0	25	0
Lane Group Flow (vph)	20	809	18	165	691	0	39	18	21	122	24	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	0.8	29.2	29.2	6.0	34.4		16.0	16.0	6.0	16.0	16.0	
Effective Green, g (s)	0.8	29.2	29.2	6.0	34.4		16.0	16.0	6.0	16.0	16.0	
Actuated g/C Ratio	0.01	0.46	0.46	0.09	0.54		0.25	0.25	0.09	0.25	0.25	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	22	844	718	165	982		335	463	147	345	414	
v/s Ratio Prot	0.01	c0.44		0.10	0.39			0.01	c0.14		0.03	
v/s Ratio Perm			0.02				0.03			c0.09		
v/c Ratio	0.91	0.96	0.02	1.00	0.70		0.12	0.04	0.14	0.35	0.06	
Uniform Delay, d1	31.2	16.4	9.3	28.6	10.6		18.2	17.8	26.2	19.4	17.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	148.5	21.2	0.0	70.1	2.3		0.7	0.2	0.4	2.8	0.3	
Delay (s)	179.6	37.6	9.3	98.7	13.0		18.9	18.0	26.7	22.2	18.1	
Level of Service	F	D	A	F	B		B	B	C	C	B	
Approach Delay (s)		39.7			29.4			25.0			21.0	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	32.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑	↱	↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1814		1736	1827	1553	1736	1726	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.71	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1814		1306	1827	1553	1332	1726	
Volume (vph)	36	553	38	177	667	33	69	43	239	99	41	24
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	36	553	38	177	667	33	69	43	239	99	41	24
RTOR Reduction (vph)	0	0	23	0	3	0	0	0	205	0	17	0
Lane Group Flow (vph)	36	553	15	177	697	0	69	43	34	99	48	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.5	22.7	22.7	8.5	29.7		16.1	16.1	8.5	16.1	16.1	
Effective Green, g (s)	1.5	22.7	22.7	8.5	29.7		16.1	16.1	8.5	16.1	16.1	
Actuated g/C Ratio	0.03	0.38	0.38	0.14	0.50		0.27	0.27	0.14	0.27	0.27	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	44	699	594	249	909		355	496	223	362	469	
v/s Ratio Prot	0.02	0.30		c0.10	c0.38			0.02	0.02		0.03	
v/s Ratio Perm			0.01				0.05			c0.07		
v/c Ratio	0.82	0.79	0.02	0.71	0.77		0.19	0.09	0.15	0.27	0.10	
Uniform Delay, d1	28.8	16.2	11.4	24.2	12.0		16.6	16.1	22.2	17.0	16.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	69.3	6.1	0.0	9.2	3.9		1.2	0.3	0.3	1.9	0.4	
Delay (s)	98.1	22.3	11.4	33.4	15.9		17.8	16.5	22.6	18.9	16.6	[illegible]
Level of Service	F	C	B	C	B		B	B	C	B	B	
Approach Delay (s)		26.0			19.4			20.9			18.0	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑	↱	↰	↑↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1814		1736	1827	1553	1736	1726	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.71	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1814		1306	1827	1553	1332	1726	
Volume (vph)	36	573	38	177	686	33	69	43	239	99	41	24
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	36	573	38	177	686	33	69	43	239	99	41	24
RTOR Reduction (vph)	0	0	23	0	2	0	0	0	205	0	18	0
Lane Group Flow (vph)	36	573	15	177	717	0	69	43	34	99	47	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.5	23.1	23.1	8.5	30.1		16.1	16.1	8.5	16.1	16.1	
Effective Green, g (s)	1.5	23.1	23.1	8.5	30.1		16.1	16.1	8.5	16.1	16.1	
Actuated g/C Ratio	0.03	0.39	0.39	0.14	0.50		0.27	0.27	0.14	0.27	0.27	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	44	707	601	247	915		352	493	221	359	465	
v/s Ratio Prot	0.02	0.31		0.10	c0.40			0.02	c0.15		0.04	
v/s Ratio Perm			0.02				0.05			c0.07		
v/c Ratio	0.82	0.81	0.02	0.72	0.78		0.20	0.09	0.15	0.28	0.10	
Uniform Delay, d1	29.0	16.3	11.3	24.4	12.1		16.8	16.3	22.4	17.2	16.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	69.3	7.0	0.0	9.5	4.4		1.2	0.3	0.3	1.9	0.4	
Delay (s)	98.3	23.3	11.3	34.0	16.6		18.1	16.7	22.8	19.1	16.8	
Level of Service	F	C	B	C	B		B	B	C	B	B	
Approach Delay (s)		26.8			20.0			21.1			18.2	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1814		1736	1827	1553	1736	1726	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.71	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1814		1306	1827	1553	1332	1726	
Volume (vph)	36	587	38	181	694	33	69	43	245	99	41	24
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	36	587	38	181	694	33	69	43	245	99	41	24
RTOR Reduction (vph)	0	0	23	0	2	0	0	0	213	0	18	0
Lane Group Flow (vph)	36	587	15	181	725	0	69	43	32	99	47	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.5	23.7	23.7	7.9	30.1		16.1	16.1	7.9	16.1	16.1	
Effective Green, g (s)	1.5	23.7	23.7	7.9	30.1		16.1	16.1	7.9	16.1	16.1	
Actuated g/C Ratio	0.03	0.40	0.40	0.13	0.50		0.27	0.27	0.13	0.27	0.27	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	44	725	617	230	915		352	493	206	359	465	
v/s Ratio Prot	0.02	0.32		0.10	c0.40			0.02	c0.16		0.04	
v/s Ratio Perm			0.02				0.05			c0.07		
v/c Ratio	0.82	0.81	0.02	0.79	0.79		0.20	0.09	0.16	0.28	0.10	
Uniform Delay, d1	29.0	16.0	11.0	25.1	12.2		16.8	16.3	23.0	17.2	16.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	69.3	6.7	0.0	16.1	4.7		1.2	0.3	0.4	1.9	0.4	
Delay (s)	98.3	22.7	11.0	41.2	17.0		18.1	16.7	23.3	19.1	16.8	
Level of Service	F	C	B	D	B		B	B	C	B	B	
Approach Delay (s)		26.1			21.8			21.5			18.2	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1815		1736	1827	1553	1736	1726	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.71	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1815		1306	1827	1553	1332	1726	
Volume (vph)	36	592	38	186	702	33	69	43	247	99	41	24
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	36	592	38	186	702	33	69	43	247	99	41	24
RTOR Reduction (vph)	0	0	23	0	2	0	0	0	214	0	18	0
Lane Group Flow (vph)	36	592	15	186	733	0	69	43	33	99	47	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	1.5	23.8	23.8	8.0	30.3		16.1	16.1	8.0	16.1	16.1	
Effective Green, g (s)	1.5	23.8	23.8	8.0	30.3		16.1	16.1	8.0	16.1	16.1	
Actuated g/C Ratio	0.03	0.40	0.40	0.13	0.51		0.27	0.27	0.13	0.27	0.27	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	43	726	617	232	918		351	491	207	358	464	
v/s Ratio Prot	0.02	0.32		0.11	c0.41			0.02	c0.16		0.04	
v/s Ratio Perm			0.02				0.05			c0.07		
v/c Ratio	0.84	0.82	0.02	0.80	0.80		0.20	0.09	0.16	0.28	0.10	
Uniform Delay, d1	29.1	16.1	11.0	25.2	12.3		16.9	16.4	23.0	17.3	16.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	76.6	7.0	0.0	17.8	4.9		1.3	0.4	0.4	1.9	0.4	
Delay (s)	105.7	23.1	11.0	43.0	17.2		18.2	16.8	23.3	19.2	16.9	
Level of Service	F	C	B	D	B		B	B	C	B	B	
Approach Delay (s)		26.9			22.4			21.6			18.3	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1803		1736	1827	1553	1736	1701	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.71	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1803		1293	1827	1553	1332	1701	
Volume (vph)	44	757	46	226	861	82	80	43	283	143	41	35
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	757	46	226	861	82	80	43	283	143	41	35
RTOR Reduction (vph)	0	0	27	0	5	0	0	0	237	0	26	0
Lane Group Flow (vph)	44	757	19	226	938	0	80	43	46	143	50	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	2.4	25.6	25.6	8.0	31.2		16.0	16.0	8.0	16.0	16.0	
Effective Green, g (s)	2.4	25.6	25.6	8.0	31.2		16.0	16.0	8.0	16.0	16.0	
Actuated g/C Ratio	0.04	0.42	0.42	0.13	0.51		0.26	0.26	0.13	0.26	0.26	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	68	759	645	225	913		336	475	202	346	442	
v/s Ratio Prot	0.03	0.41		0.13	c0.52			0.02	c0.18		0.04	
v/s Ratio Perm			0.03				0.06			c0.11		
v/c Ratio	0.65	1.00	0.03	1.00	1.03		0.24	0.09	0.23	0.41	0.11	
Uniform Delay, d1	29.2	18.0	10.7	26.8	15.2		18.0	17.3	24.0	18.9	17.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.2	31.8	0.0	61.1	36.8		1.7	0.4	0.6	3.6	0.5	
Delay (s)	48.4	49.7	10.7	87.9	52.0		19.7	17.7	24.6	22.5	17.9	
Level of Service	D	D	B	F	D		B	B	C	C	B	
Approach Delay (s)		47.6			59.0			22.9			20.9	
Approach LOS		D			E			C			C	

Intersection Summary

HCM Average Control Delay	46.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1803		1736	1827	1553	1736	1701	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.71	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1803		1293	1827	1553	1332	1701	
Volume (vph)	44	771	46	230	869	82	80	43	289	143	41	35
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	771	46	230	869	82	80	43	289	143	41	35
RTOR Reduction (vph)	0	0	27	0	5	0	0	0	235	0	26	0
Lane Group Flow (vph)	44	771	19	230	946	0	80	43	54	143	50	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	2.4	25.6	25.6	8.0	31.2		16.0	16.0	8.0	16.0	16.0	
Effective Green, g (s)	2.4	25.6	25.6	8.0	31.2		16.0	16.0	8.0	16.0	16.0	
Actuated g/C Ratio	0.04	0.42	0.42	0.13	0.51		0.26	0.26	0.13	0.26	0.26	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	68	759	645	225	913		336	475	202	346	442	
v/s Ratio Prot	0.03	0.42		0.13	c0.53			0.02	c0.19		0.04	
v/s Ratio Perm			0.03				0.06			c0.11		
v/c Ratio	0.65	1.02	0.03	1.02	1.04		0.24	0.09	0.27	0.41	0.11	
Uniform Delay, d1	29.2	18.0	10.7	26.8	15.2		18.0	17.3	24.2	18.9	17.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.2	36.7	0.0	65.9	39.4		1.7	0.4	0.7	3.6	0.5	
Delay (s)	48.4	54.7	10.7	92.7	54.6		19.7	17.7	24.9	22.5	17.9	
Level of Service	D	D	B	F	D		B	B	C	C	B	
Approach Delay (s)		52.0			62.0			23.1			20.9	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM Average Control Delay	49.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1827	1553	1736	1803		1736	1827	1553	1736	1701	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.71	1.00	1.00	0.73	1.00	
Satd. Flow (perm)	1736	1827	1553	1736	1803		1293	1827	1553	1332	1701	
Volume (vph)	44	776	46	235	877	82	80	43	291	143	41	35
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	776	46	235	877	82	80	43	291	143	41	35
RTOR Reduction (vph)	0	0	27	0	5	0	0	0	234	0	26	0
Lane Group Flow (vph)	44	776	19	235	954	0	80	43	57	143	50	0
Turn Type	Prot		Perm	Prot			Perm		Over	Perm		
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	2.4	25.6	25.6	8.0	31.2		16.0	16.0	8.0	16.0	16.0	
Effective Green, g (s)	2.4	25.6	25.6	8.0	31.2		16.0	16.0	8.0	16.0	16.0	
Actuated g/C Ratio	0.04	0.42	0.42	0.13	0.51		0.26	0.26	0.13	0.26	0.26	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	68	759	645	225	913		336	475	202	346	442	
v/s Ratio Prot	0.03	0.42		0.14	c0.53			0.02	c0.19		0.04	
v/s Ratio Perm			0.03				0.06			c0.11		
v/c Ratio	0.65	1.02	0.03	1.04	1.04		0.24	0.09	0.28	0.41	0.11	
Uniform Delay, d1	29.2	18.0	10.7	26.8	15.2		18.0	17.3	24.2	18.9	17.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.2	38.5	0.0	72.1	42.0		1.7	0.4	0.8	3.6	0.5	
Delay (s)	48.4	56.5	10.7	98.9	57.2		19.7	17.7	25.0	22.5	17.9	
Level of Service	D	E	B	F	E		B	B	C	C	B	
Approach Delay (s)		53.6			65.4			23.2			20.9	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM Average Control Delay	51.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1709		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.75	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1376	1709		1367	1827	1553
Volume (vph)	230	591	15	8	459	156	6	8	6	131	7	194
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	230	591	15	8	459	156	6	8	6	131	7	194
RTOR Reduction (vph)	0	0	7	0	0	102	0	4	0	0	0	161
Lane Group Flow (vph)	230	591	8	8	459	54	6	10	0	131	7	33
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	10.3	30.3	30.3	0.8	20.8	20.8	17.1	17.1		17.1	17.1	10.3
Effective Green, g (s)	10.3	30.3	30.3	0.8	20.8	20.8	17.1	17.1		17.1	17.1	10.3
Actuated g/C Ratio	0.17	0.50	0.50	0.01	0.35	0.35	0.28	0.28		0.28	0.28	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	297	920	782	23	631	537	391	485		388	519	266
v/s Ratio Prot	c0.13	0.32		0.00	c0.25			0.01			0.00	0.02
v/s Ratio Perm			0.00			0.03	0.00			c0.10		
v/c Ratio	0.77	0.64	0.01	0.35	0.73	0.10	0.02	0.02		0.34	0.01	0.12
Uniform Delay, d1	23.8	11.0	7.5	29.4	17.2	13.4	15.5	15.5		17.1	15.5	21.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.9	1.5	0.0	8.9	4.2	0.1	0.1	0.1		2.3	0.0	0.2
Delay (s)	35.7	12.5	7.5	38.4	21.4	13.4	15.6	15.6		19.4	15.5	21.3
Level of Service	D	B	A	D	C	B	B	B		B	B	C
Approach Delay (s)		18.8			19.6			15.6			20.5	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1709		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.75	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1376	1709		1367	1827	1553
Volume (vph)	235	597	15	8	467	156	6	8	6	132	7	199
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	235	597	15	8	467	156	6	8	6	132	7	199
RTOR Reduction (vph)	0	0	7	0	0	102	0	4	0	0	0	165
Lane Group Flow (vph)	235	597	8	8	467	54	6	10	0	132	7	34
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	10.3	30.5	30.5	0.8	21.0	21.0	17.1	17.1		17.1	17.1	10.3
Effective Green, g (s)	10.3	30.5	30.5	0.8	21.0	21.0	17.1	17.1		17.1	17.1	10.3
Actuated g/C Ratio	0.17	0.50	0.50	0.01	0.35	0.35	0.28	0.28		0.28	0.28	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	296	923	784	23	635	540	390	484		387	517	265
v/s Ratio Prot	c0.14	0.33		0.00	c0.26			0.01			0.00	0.13
v/s Ratio Perm			0.01			0.10	0.00			c0.10		
v/c Ratio	0.79	0.65	0.01	0.35	0.74	0.10	0.02	0.02		0.34	0.01	0.13
Uniform Delay, d1	24.0	11.0	7.4	29.5	17.3	13.3	15.6	15.6		17.2	15.6	21.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.6	1.6	0.0	8.9	4.4	0.1	0.1	0.1		2.4	0.0	0.2
Delay (s)	37.6	12.6	7.4	38.5	21.7	13.4	15.7	15.7		19.6	15.6	21.5
Level of Service	D	B	A	D	C	B	B	B		B	B	C
Approach Delay (s)		19.4			19.9			15.7			20.6	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1709		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.75	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1376	1709		1367	1827	1553
Volume (vph)	235	603	15	8	485	162	6	8	6	134	7	199
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	235	603	15	8	485	162	6	8	6	134	7	199
RTOR Reduction (vph)	0	0	7	0	0	105	0	4	0	0	0	165
Lane Group Flow (vph)	235	603	8	8	485	57	6	10	0	134	7	34
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	10.3	30.8	30.8	0.8	21.3	21.3	17.1	17.1		17.1	17.1	10.3
Effective Green, g (s)	10.3	30.8	30.8	0.8	21.3	21.3	17.1	17.1		17.1	17.1	10.3
Actuated g/C Ratio	0.17	0.51	0.51	0.01	0.35	0.35	0.28	0.28		0.28	0.28	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	295	927	788	23	641	545	388	481		385	515	264
v/s Ratio Prot	c0.14	0.33		0.00	c0.27			0.01			0.00	0.13
v/s Ratio Perm			0.01			0.10	0.00			c0.10		
v/c Ratio	0.80	0.65	0.01	0.35	0.76	0.10	0.02	0.02		0.35	0.01	0.13
Uniform Delay, d1	24.2	11.0	7.4	29.7	17.4	13.3	15.7	15.7		17.4	15.7	21.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.8	1.6	0.0	8.9	5.1	0.1	0.1	0.1		2.5	0.0	0.2
Delay (s)	38.0	12.6	7.4	38.6	22.5	13.4	15.8	15.8		19.8	15.8	21.6
Level of Service	D	B	A	D	C	B	B	B		B	B	C
Approach Delay (s)		19.5			20.4			15.8			20.8	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1709		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.75	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1376	1709		1367	1827	1553
Volume (vph)	235	616	15	8	494	165	6	8	6	138	7	199
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	235	616	15	8	494	165	6	8	6	138	7	199
RTOR Reduction (vph)	0	0	7	0	0	107	0	4	0	0	0	165
Lane Group Flow (vph)	235	616	8	8	494	58	6	10	0	138	7	34
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	10.3	31.0	31.0	0.8	21.5	21.5	17.1	17.1		17.1	17.1	10.3
Effective Green, g (s)	10.3	31.0	31.0	0.8	21.5	21.5	17.1	17.1		17.1	17.1	10.3
Actuated g/C Ratio	0.17	0.51	0.51	0.01	0.35	0.35	0.28	0.28		0.28	0.28	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	294	930	791	23	645	548	386	480		384	513	263
v/s Ratio Prot	c0.14	0.34		0.00	c0.27			0.01			0.00	0.13
v/s Ratio Perm			0.01			0.11	0.00			c0.10		
v/c Ratio	0.80	0.66	0.01	0.35	0.77	0.11	0.02	0.02		0.36	0.01	0.13
Uniform Delay, d1	24.3	11.1	7.4	29.8	17.5	13.2	15.8	15.8		17.5	15.8	21.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.1	1.8	0.0	8.9	5.4	0.1	0.1	0.1		2.6	0.0	0.2
Delay (s)	38.4	12.9	7.4	38.7	22.9	13.3	15.9	15.9		20.1	15.9	21.7
Level of Service	D	B	A	D	C	B	B	B		C	B	C
Approach Delay (s)		19.7			20.7			15.9			21.0	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1679		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.75	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1378	1679		1368	1827	1553
Volume (vph)	219	1012	10	14	791	196	9	6	7	181	5	217
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	219	1012	10	14	791	196	9	6	7	181	5	217
RTOR Reduction (vph)	0	0	5	0	0	109	0	5	0	0	0	193
Lane Group Flow (vph)	219	1012	5	14	791	87	9	8	0	181	5	24
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	7.0	34.4	34.4	0.8	28.2	28.2	16.0	16.0		16.0	16.0	7.0
Effective Green, g (s)	7.0	34.4	34.4	0.8	28.2	28.2	16.0	16.0		16.0	16.0	7.0
Actuated g/C Ratio	0.11	0.54	0.54	0.01	0.45	0.45	0.25	0.25		0.25	0.25	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	192	994	845	22	815	693	349	425		346	463	172
v/s Ratio Prot	0.13	c0.55		0.01	0.43			0.01			0.00	c0.14
v/s Ratio Perm			0.01			0.13	0.01			c0.13		
v/c Ratio	1.14	1.02	0.01	0.64	0.97	0.13	0.03	0.02		0.52	0.01	0.14
Uniform Delay, d1	28.1	14.4	6.6	31.1	17.1	10.3	17.7	17.7		20.3	17.7	25.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	107.9	33.2	0.0	47.5	24.4	0.1	0.1	0.1		5.6	0.0	0.4
Delay (s)	136.0	47.6	6.6	78.6	41.5	10.4	17.9	17.8		25.9	17.7	25.8
Level of Service	F	D	A	E	D	B	B	B		C	B	C
Approach Delay (s)		62.8			35.9			17.8			25.7	
Approach LOS		E			D			B			C	

Intersection Summary

HCM Average Control Delay	46.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1679		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.75	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1378	1679		1368	1827	1553
Volume (vph)	219	1018	10	14	809	202	9	6	7	183	5	217
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	219	1018	10	14	809	202	9	6	7	183	5	217
RTOR Reduction (vph)	0	0	5	0	0	112	0	5	0	0	0	193
Lane Group Flow (vph)	219	1018	5	14	809	90	9	8	0	183	5	24
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	7.0	34.4	34.4	0.8	28.2	28.2	16.0	16.0		16.0	16.0	7.0
Effective Green, g (s)	7.0	34.4	34.4	0.8	28.2	28.2	16.0	16.0		16.0	16.0	7.0
Actuated g/C Ratio	0.11	0.54	0.54	0.01	0.45	0.45	0.25	0.25		0.25	0.25	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	192	994	845	22	815	693	349	425		346	463	172
v/s Ratio Prot	0.13	c0.56		0.01	0.44			0.01			0.00	c0.14
v/s Ratio Perm			0.01			0.13	0.01			c0.13		
v/c Ratio	1.14	1.02	0.01	0.64	0.99	0.13	0.03	0.02		0.53	0.01	0.14
Uniform Delay, d1	28.1	14.4	6.6	31.1	17.4	10.3	17.7	17.7		20.4	17.7	25.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	107.9	34.8	0.0	47.5	29.5	0.1	0.1	0.1		5.7	0.0	0.4
Delay (s)	136.0	49.2	6.6	78.6	46.9	10.4	17.9	17.8		26.0	17.7	25.8
Level of Service	F	D	A	E	D	B	B	B		C	B	C
Approach Delay (s)		64.1			40.2			17.8			25.8	
Approach LOS		E			D			B			C	

Intersection Summary			
HCM Average Control Delay	48.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1679		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.75	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1378	1679		1368	1827	1553
Volume (vph)	219	1031	10	14	818	205	9	6	7	187	5	217
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	219	1031	10	14	818	205	9	6	7	187	5	217
RTOR Reduction (vph)	0	0	5	0	0	114	0	5	0	0	0	193
Lane Group Flow (vph)	219	1031	5	14	818	91	9	8	0	187	5	24
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	7.0	34.4	34.4	0.8	28.2	28.2	16.0	16.0		16.0	16.0	7.0
Effective Green, g (s)	7.0	34.4	34.4	0.8	28.2	28.2	16.0	16.0		16.0	16.0	7.0
Actuated g/C Ratio	0.11	0.54	0.54	0.01	0.45	0.45	0.25	0.25		0.25	0.25	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	192	994	845	22	815	693	349	425		346	463	172
v/s Ratio Prot	0.13	c0.56		0.01	0.45			0.01			0.00	c0.14
v/s Ratio Perm			0.01			0.13	0.01			c0.14		
v/c Ratio	1.14	1.04	0.01	0.64	1.00	0.13	0.03	0.02		0.54	0.01	0.14
Uniform Delay, d1	28.1	14.4	6.6	31.1	17.5	10.3	17.7	17.7		20.4	17.7	25.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	107.9	38.6	0.0	47.5	32.4	0.1	0.1	0.1		5.9	0.0	0.4
Delay (s)	136.0	53.0	6.6	78.6	49.9	10.4	17.9	17.8		26.4	17.7	25.8
Level of Service	F	D	A	E	D	B	B	B		C	B	C
Approach Delay (s)		67.1			42.5			17.8			25.9	
Approach LOS		E			D			B			C	

Intersection Summary			
HCM Average Control Delay	51.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1716		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.72	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1362	1716		1315	1827	1553
Volume (vph)	264	563	25	8	574	181	37	34	23	188	18	356
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	264	563	25	8	574	181	37	34	23	188	18	356
RTOR Reduction (vph)	0	0	12	0	0	113	0	17	0	0	0	295
Lane Group Flow (vph)	264	563	13	8	574	68	37	40	0	188	18	61
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	10.7	33.4	33.4	0.8	23.5	23.5	16.0	16.0		16.0	16.0	10.7
Effective Green, g (s)	10.7	33.4	33.4	0.8	23.5	23.5	16.0	16.0		16.0	16.0	10.7
Actuated g/C Ratio	0.17	0.54	0.54	0.01	0.38	0.38	0.26	0.26		0.26	0.26	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	299	981	834	22	690	587	350	441		338	470	267
v/s Ratio Prot	c0.15	0.31		0.00	c0.31			0.02			0.01	0.04
v/s Ratio Perm			0.01			0.04	0.03			c0.14		
v/c Ratio	0.88	0.57	0.02	0.36	0.83	0.12	0.11	0.09		0.56	0.04	0.23
Uniform Delay, d1	25.1	9.6	6.7	30.4	17.6	12.6	17.6	17.6		20.0	17.3	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	24.9	0.8	0.0	9.9	8.5	0.1	0.6	0.4		6.5	0.2	0.4
Delay (s)	50.0	10.5	6.7	40.4	26.0	12.7	18.2	18.0		26.5	17.5	22.6
Level of Service	D	B	A	D	C	B	B	B		C	B	C
Approach Delay (s)		22.6			23.0			18.1			23.8	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1716		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.72	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1362	1716		1315	1827	1553
Volume (vph)	271	576	25	8	584	183	37	34	23	188	18	365
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	271	576	25	8	584	183	37	34	23	188	18	365
RTOR Reduction (vph)	0	0	12	0	0	114	0	17	0	0	0	307
Lane Group Flow (vph)	271	576	13	8	584	69	37	40	0	188	18	58
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	10.0	32.9	32.9	0.8	23.7	23.7	17.0	17.0		17.0	17.0	10.0
Effective Green, g (s)	10.0	32.9	32.9	0.8	23.7	23.7	17.0	17.0		17.0	17.0	10.0
Actuated g/C Ratio	0.16	0.52	0.52	0.01	0.38	0.38	0.27	0.27		0.27	0.27	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	277	959	815	22	691	587	369	465		357	495	248
v/s Ratio Prot	0.16	0.32		0.00	c0.32			0.03			0.01	c0.24
v/s Ratio Perm			0.02			0.12	0.03			c0.14		
v/c Ratio	0.98	0.60	0.02	0.36	0.85	0.12	0.10	0.09		0.53	0.04	0.23
Uniform Delay, d1	26.2	10.3	7.1	30.7	17.8	12.7	17.1	17.1		19.4	16.8	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	47.5	1.1	0.0	9.9	9.3	0.1	0.5	0.4		5.5	0.1	0.5
Delay (s)	73.8	11.4	7.1	40.6	27.2	12.8	17.7	17.4		24.9	17.0	23.5
Level of Service	E	B	A	D	C	B	B	B		C	B	C
Approach Delay (s)		30.7			23.9			17.5			23.8	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	62.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1716		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.72	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1362	1716		1315	1827	1553
Volume (vph)	271	596	25	8	596	187	37	34	23	194	18	365
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	271	596	25	8	596	187	37	34	23	194	18	365
RTOR Reduction (vph)	0	0	12	0	0	116	0	17	0	0	0	307
Lane Group Flow (vph)	271	596	13	8	596	71	37	40	0	194	18	58
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	10.0	33.1	33.1	0.8	23.9	23.9	17.0	17.0		17.0	17.0	10.0
Effective Green, g (s)	10.0	33.1	33.1	0.8	23.9	23.9	17.0	17.0		17.0	17.0	10.0
Actuated g/C Ratio	0.16	0.53	0.53	0.01	0.38	0.38	0.27	0.27		0.27	0.27	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	276	961	817	22	694	590	368	464		355	494	247
v/s Ratio Prot	0.16	0.33		0.00	c0.33			0.03			0.01	c0.24
v/s Ratio Perm			0.02			0.12	0.03			c0.15		
v/c Ratio	0.98	0.62	0.02	0.36	0.86	0.12	0.10	0.09		0.55	0.04	0.23
Uniform Delay, d1	26.4	10.5	7.1	30.8	17.9	12.7	17.2	17.1		19.6	16.9	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	48.9	1.3	0.0	9.9	10.3	0.1	0.5	0.4		5.9	0.1	0.5
Delay (s)	75.3	11.7	7.1	40.7	28.3	12.8	17.8	17.5		25.6	17.1	23.6
Level of Service	E	B	A	D	C	B	B	B		C	B	C
Approach Delay (s)		30.9			24.7			17.6			24.1	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1716		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00		0.72	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1362	1716		1315	1827	1553
Volume (vph)	271	603	25	8	609	192	37	34	23	196	18	365
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	271	603	25	8	609	192	37	34	23	196	18	365
RTOR Reduction (vph)	0	0	12	0	0	118	0	17	0	0	0	307
Lane Group Flow (vph)	271	603	13	8	609	74	37	40	0	196	18	58
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	10.0	33.4	33.4	0.8	24.2	24.2	17.0	17.0		17.0	17.0	10.0
Effective Green, g (s)	10.0	33.4	33.4	0.8	24.2	24.2	17.0	17.0		17.0	17.0	10.0
Actuated g/C Ratio	0.16	0.53	0.53	0.01	0.38	0.38	0.27	0.27		0.27	0.27	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	275	966	821	22	700	595	366	462		354	491	246
v/s Ratio Prot	0.16	0.33		0.00	c0.33			0.03			0.01	c0.24
v/s Ratio Perm			0.02			0.12	0.03			c0.15		
v/c Ratio	0.99	0.62	0.02	0.36	0.87	0.12	0.10	0.09		0.55	0.04	0.23
Uniform Delay, d1	26.5	10.5	7.1	30.9	18.0	12.6	17.4	17.3		19.8	17.1	23.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	49.8	1.3	0.0	9.9	11.4	0.1	0.6	0.4		6.1	0.1	0.5
Delay (s)	76.4	11.8	7.1	40.9	29.5	12.7	17.9	17.7		26.0	17.2	23.7
Level of Service	E	B	A	D	C	B	B	B		C	B	C
Approach Delay (s)		31.1			25.6			17.8			24.3	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1781		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00		0.73	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1360	1781		1326	1827	1553
Volume (vph)	263	882	21	16	951	157	48	40	8	245	20	323
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	263	882	21	16	951	157	48	40	8	245	20	323
RTOR Reduction (vph)	0	0	10	0	0	89	0	6	0	0	0	287
Lane Group Flow (vph)	263	882	11	16	951	68	48	42	0	245	20	36
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	7.0	33.4	33.4	0.8	27.2	27.2	17.0	17.0		17.0	17.0	7.0
Effective Green, g (s)	7.0	33.4	33.4	0.8	27.2	27.2	17.0	17.0		17.0	17.0	7.0
Actuated g/C Ratio	0.11	0.53	0.53	0.01	0.43	0.43	0.27	0.27		0.27	0.27	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	192	966	821	22	786	668	366	479		357	491	172
v/s Ratio Prot	0.15	0.48		0.01	c0.52			0.03			0.01	c0.21
v/s Ratio Perm			0.01			0.10	0.04			c0.18		
v/c Ratio	1.37	0.91	0.01	0.73	1.21	0.10	0.13	0.09		0.69	0.04	0.21
Uniform Delay, d1	28.1	13.6	7.1	31.1	18.0	10.7	17.5	17.3		20.7	17.1	25.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	195.9	12.7	0.0	76.4	106.2	0.1	0.7	0.4		10.3	0.2	0.6
Delay (s)	224.0	26.2	7.1	107.5	124.2	10.8	18.2	17.7		31.0	17.2	26.2
Level of Service	F	C	A	F	F	B	B	B		C	B	C
Approach Delay (s)		70.5			108.1			18.0			27.9	
Approach LOS		E			F			B			C	

Intersection Summary			
HCM Average Control Delay	74.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1781		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00		0.73	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1360	1781		1326	1827	1553
Volume (vph)	263	902	21	16	963	161	48	40	8	251	20	323
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	263	902	21	16	963	161	48	40	8	251	20	323
RTOR Reduction (vph)	0	0	10	0	0	92	0	6	0	0	0	287
Lane Group Flow (vph)	263	902	11	16	963	69	48	42	0	251	20	36
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	7.0	33.4	33.4	0.8	27.2	27.2	17.0	17.0		17.0	17.0	7.0
Effective Green, g (s)	7.0	33.4	33.4	0.8	27.2	27.2	17.0	17.0		17.0	17.0	7.0
Actuated g/C Ratio	0.11	0.53	0.53	0.01	0.43	0.43	0.27	0.27		0.27	0.27	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	192	966	821	22	786	668	366	479		357	491	172
v/s Ratio Prot	0.15	0.49		0.01	c0.53			0.03			0.01	c0.21
v/s Ratio Perm			0.01			0.10	0.04			c0.19		
v/c Ratio	1.37	0.93	0.01	0.73	1.23	0.10	0.13	0.09		0.70	0.04	0.21
Uniform Delay, d1	28.1	13.9	7.1	31.1	18.0	10.7	17.5	17.3		20.8	17.1	25.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	195.9	15.4	0.0	76.4	112.6	0.1	0.7	0.4		11.0	0.2	0.6
Delay (s)	224.0	29.3	7.1	107.5	130.6	10.8	18.2	17.7		31.9	17.2	26.2
Level of Service	F	C	A	F	F	B	B	B		C	B	C
Approach Delay (s)		72.0			113.3			18.0			28.3	
Approach LOS		E			F			B			C	

Intersection Summary			
HCM Average Control Delay	77.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1827	1553	1736	1827	1553	1736	1781		1736	1827	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.74	1.00		0.73	1.00	1.00
Satd. Flow (perm)	1736	1827	1553	1736	1827	1553	1360	1781		1326	1827	1553
Volume (vph)	263	909	21	16	976	166	48	40	8	253	20	323
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	263	909	21	16	976	166	48	40	8	253	20	323
RTOR Reduction (vph)	0	0	10	0	0	95	0	6	0	0	0	287
Lane Group Flow (vph)	263	909	11	16	976	71	48	42	0	253	20	36
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Over
Protected Phases	7	4		3	8			2			6	7
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	7.0	33.4	33.4	0.8	27.2	27.2	17.0	17.0		17.0	17.0	7.0
Effective Green, g (s)	7.0	33.4	33.4	0.8	27.2	27.2	17.0	17.0		17.0	17.0	7.0
Actuated g/C Ratio	0.11	0.53	0.53	0.01	0.43	0.43	0.27	0.27		0.27	0.27	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	192	966	821	22	786	668	366	479		357	491	172
v/s Ratio Prot	0.15	0.50		0.01	c0.53			0.03			0.01	c0.21
v/s Ratio Perm			0.01			0.11	0.04			c0.19		
v/c Ratio	1.37	0.94	0.01	0.73	1.24	0.11	0.13	0.09		0.71	0.04	0.21
Uniform Delay, d1	28.1	14.0	7.1	31.1	18.0	10.7	17.5	17.3		20.9	17.1	25.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	195.9	16.5	0.0	76.4	119.5	0.1	0.7	0.4		11.3	0.2	0.6
Delay (s)	224.0	30.5	7.1	107.5	137.5	10.8	18.2	17.7		32.2	17.2	26.2
Level of Service	F	C	A	F	F	B	B	B		C	B	C
Approach Delay (s)		72.8			118.9			18.0			28.4	
Approach LOS		E			F			B			C	

Intersection Summary			
HCM Average Control Delay	79.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.91		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1800		1736	1788		1736	1671		1736	1597	
Flt Permitted	0.95	1.00		0.95	1.00		0.58	1.00		0.71	1.00	
Satd. Flow (perm)	1736	1800		1736	1788		1055	1671		1306	1597	
Volume (vph)	140	423	47	28	318	52	49	28	37	109	37	191
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	140	423	47	28	318	52	49	28	37	109	37	191
RTOR Reduction (vph)	0	7	0	0	10	0	0	24	0	0	125	0
Lane Group Flow (vph)	140	463	0	28	360	0	49	41	0	109	103	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	6.9	22.3		1.4	16.8		18.7	18.7		18.7	18.7	
Effective Green, g (s)	6.9	22.3		1.4	16.8		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.13	0.41		0.03	0.31		0.34	0.34		0.34	0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	220	738		45	552		363	574		449	549	
v/s Ratio Prot	c0.08	c0.26		0.02	0.20			0.02			0.06	
v/s Ratio Perm							0.05			c0.08		
v/c Ratio	0.64	0.63		0.62	0.65		0.13	0.07		0.24	0.19	
Uniform Delay, d1	22.6	12.7		26.2	16.3		12.3	12.0		12.8	12.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.9	1.7		23.8	2.8		0.8	0.2		1.3	0.8	
Delay (s)	28.5	14.4		50.0	19.0		13.1	12.2		14.1	13.3	
Level of Service	C	B		D	B		B	B		B	B	
Approach Delay (s)		17.6			21.2			12.6			13.5	
Approach LOS		B			C			B			B	

Intersection Summary

HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.91		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1800		1736	1789		1736	1671		1736	1597	
Flt Permitted	0.95	1.00		0.95	1.00		0.57	1.00		0.71	1.00	
Satd. Flow (perm)	1736	1800		1736	1789		1050	1671		1306	1597	
Volume (vph)	140	431	47	28	326	52	49	28	37	109	37	191
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	140	431	47	28	326	52	49	28	37	109	37	191
RTOR Reduction (vph)	0	7	0	0	10	0	0	25	0	0	128	0
Lane Group Flow (vph)	140	471	0	28	368	0	49	40	0	109	100	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	6.9	22.4		1.4	16.9		17.7	17.7		17.7	17.7	
Effective Green, g (s)	6.9	22.4		1.4	16.9		17.7	17.7		17.7	17.7	
Actuated g/C Ratio	0.13	0.42		0.03	0.32		0.33	0.33		0.33	0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	224	754		45	565		347	553		432	528	
v/s Ratio Prot	c0.08	c0.27		0.02	0.21			0.04			c0.14	
v/s Ratio Perm							0.05			0.08		
v/c Ratio	0.62	0.62		0.62	0.65		0.14	0.07		0.25	0.19	
Uniform Delay, d1	22.1	12.2		25.8	15.8		12.6	12.3		13.1	12.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.3	1.6		23.8	2.7		0.9	0.3		1.4	0.8	
Delay (s)	27.4	13.9		49.6	18.4		13.4	12.5		14.5	13.6	
Level of Service	C	B		D	B		B	B		B	B	
Approach Delay (s)		16.9			20.6			12.9			13.9	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.91		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1800		1736	1788		1736	1671		1736	1597	
Flt Permitted	0.95	1.00		0.95	1.00		0.57	1.00		0.71	1.00	
Satd. Flow (perm)	1736	1800		1736	1788		1040	1671		1306	1597	
Volume (vph)	140	439	47	28	350	58	49	28	37	111	37	191
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	140	439	47	28	350	58	49	28	37	111	37	191
RTOR Reduction (vph)	0	7	0	0	11	0	0	25	0	0	131	0
Lane Group Flow (vph)	140	479	0	28	397	0	49	40	0	111	97	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	6.9	23.0		1.4	17.5		16.8	16.8		16.8	16.8	
Effective Green, g (s)	6.9	23.0		1.4	17.5		16.8	16.8		16.8	16.8	
Actuated g/C Ratio	0.13	0.43		0.03	0.33		0.32	0.32		0.32	0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	778		46	588		328	528		412	504	
v/s Ratio Prot	c0.08	c0.27		0.02	0.23			0.04			c0.14	
v/s Ratio Perm							0.05			0.09		
v/c Ratio	0.62	0.62		0.61	0.68		0.15	0.08		0.27	0.19	
Uniform Delay, d1	21.9	11.7		25.6	15.4		13.1	12.8		13.6	13.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.3	1.5		20.7	3.1		1.0	0.3		1.6	0.9	
Delay (s)	27.2	13.1		46.3	18.5		14.0	13.0		15.2	14.1	
Level of Service	C	B		D	B		B	B		B	B	
Approach Delay (s)		16.3			20.3			13.5			14.5	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.91		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1801		1736	1787		1736	1671		1736	1597	
Flt Permitted	0.95	1.00		0.95	1.00		0.57	1.00		0.71	1.00	
Satd. Flow (perm)	1736	1801		1736	1787		1044	1671		1306	1597	
Volume (vph)	140	456	47	28	362	61	49	28	37	115	37	191
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	140	456	47	28	362	61	49	28	37	115	37	191
RTOR Reduction (vph)	0	6	0	0	11	0	0	25	0	0	129	0
Lane Group Flow (vph)	140	497	0	28	412	0	49	40	0	115	99	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	6.4	23.1		1.4	18.1		17.7	17.7		17.7	17.7	
Effective Green, g (s)	6.4	23.1		1.4	18.1		17.7	17.7		17.7	17.7	
Actuated g/C Ratio	0.12	0.43		0.03	0.33		0.33	0.33		0.33	0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	205	768		45	597		341	546		426	522	
v/s Ratio Prot	c0.08	c0.28		0.02	0.24			0.04			c0.14	
v/s Ratio Perm							0.05			0.09		
v/c Ratio	0.68	0.65		0.62	0.69		0.14	0.07		0.27	0.19	
Uniform Delay, d1	22.9	12.3		26.1	15.6		12.9	12.6		13.5	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.0	1.9		23.8	3.4		0.9	0.3		1.6	0.8	
Delay (s)	32.0	14.2		49.9	19.1		13.8	12.9		15.0	13.9	
Level of Service	C	B		D	B		B	B		B	B	
Approach Delay (s)		18.1			21.0			13.3			14.3	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.91		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1792		1736	1781		1736	1658		1736	1615	
Flt Permitted	0.95	1.00		0.95	1.00		0.46	1.00		0.71	1.00	
Satd. Flow (perm)	1736	1792		1736	1781		846	1658		1296	1615	
Volume (vph)	256	688	100	40	541	108	81	28	45	167	60	204
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	256	688	100	40	541	108	81	28	45	167	60	204
RTOR Reduction (vph)	0	8	0	0	12	0	0	33	0	0	148	0
Lane Group Flow (vph)	256	780	0	40	637	0	81	40	0	167	116	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	9.0	31.8		1.6	24.4		17.0	17.0		17.0	17.0	
Effective Green, g (s)	9.0	31.8		1.6	24.4		17.0	17.0		17.0	17.0	
Actuated g/C Ratio	0.14	0.51		0.03	0.39		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	250	913		45	696		230	452		353	440	
v/s Ratio Prot	c0.15	c0.44		0.02	0.36			0.04			c0.16	
v/s Ratio Perm							0.10			0.13		
v/c Ratio	1.02	0.85		0.89	0.92		0.35	0.09		0.47	0.26	
Uniform Delay, d1	26.7	13.3		30.3	18.0		18.3	16.9		19.0	17.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	63.3	7.9		91.4	16.7		4.2	0.4		4.5	1.5	
Delay (s)	90.0	21.1		121.7	34.7		22.5	17.3		23.5	19.2	
Level of Service	F	C		F	C		C	B		C	B	
Approach Delay (s)		38.0			39.8			20.0			20.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	34.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.91		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1792		1736	1781		1736	1658		1736	1615	
Flt Permitted	0.95	1.00		0.95	1.00		0.45	1.00		0.71	1.00	
Satd. Flow (perm)	1736	1792		1736	1781		819	1658		1296	1615	
Volume (vph)	256	696	100	40	565	114	81	28	45	169	60	204
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	256	696	100	40	565	114	81	28	45	169	60	204
RTOR Reduction (vph)	0	8	0	0	12	0	0	33	0	0	152	0
Lane Group Flow (vph)	256	788	0	40	667	0	81	40	0	169	112	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	9.0	32.8		1.6	25.4		16.0	16.0		16.0	16.0	
Effective Green, g (s)	9.0	32.8		1.6	25.4		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.14	0.53		0.03	0.41		0.26	0.26		0.26	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	250	942		45	725		210	425		332	414	
v/s Ratio Prot	c0.15	0.44		0.02	c0.38			0.04			c0.16	
v/s Ratio Perm							0.10			0.13		
v/c Ratio	1.02	0.84		0.89	0.92		0.39	0.09		0.51	0.27	
Uniform Delay, d1	26.7	12.5		30.3	17.5		19.1	17.7		19.8	18.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	63.3	6.6		91.4	17.0		5.3	0.4		5.5	1.6	
Delay (s)	90.0	19.1		121.7	34.5		24.4	18.1		25.3	20.2	
Level of Service	F	B		F	C		C	B		C	C	
Approach Delay (s)		36.3			39.3			21.4			22.2	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	33.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	0.91		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1793		1736	1781		1736	1658		1736	1615	
Flt Permitted	0.95	1.00		0.95	1.00		0.45	1.00		0.71	1.00	
Satd. Flow (perm)	1736	1793		1736	1781		819	1658		1296	1615	
Volume (vph)	256	713	100	40	577	117	81	28	45	173	60	204
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	256	713	100	40	577	117	81	28	45	173	60	204
RTOR Reduction (vph)	0	8	0	0	12	0	0	33	0	0	152	0
Lane Group Flow (vph)	256	805	0	40	682	0	81	40	0	173	112	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	9.0	32.8		1.6	25.4		16.0	16.0		16.0	16.0	
Effective Green, g (s)	9.0	32.8		1.6	25.4		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.14	0.53		0.03	0.41		0.26	0.26		0.26	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	250	942		45	725		210	425		332	414	
v/s Ratio Prot	c0.15	0.45		0.02	c0.39			0.04			c0.16	
v/s Ratio Perm							0.10			0.13		
v/c Ratio	1.02	0.86		0.89	0.94		0.39	0.09		0.52	0.27	
Uniform Delay, d1	26.7	12.8		30.3	17.8		19.1	17.7		19.9	18.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	63.3	7.7		91.4	20.3		5.3	0.4		5.7	1.6	
Delay (s)	90.0	20.4		121.7	38.1		24.4	18.1		25.7	20.2	
Level of Service	F	C		F	D		C	B		C	C	
Approach Delay (s)		37.1			42.6			21.4			22.3	
Approach LOS		D			D			C			C	

Intersection Summary

HCM Average Control Delay	35.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1814		1736	1791		1736	1675		1736	1574	
Flt Permitted	0.95	1.00		0.95	1.00		0.62	1.00		0.73	1.00	
Satd. Flow (perm)	1736	1814		1736	1791		1128	1675		1340	1574	
Volume (vph)	173	546	28	23	584	89	32	16	20	52	13	159
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	546	28	23	584	89	32	16	20	52	13	159
RTOR Reduction (vph)	0	3	0	0	9	0	0	15	0	0	116	0
Lane Group Flow (vph)	173	571	0	23	664	0	32	21	0	52	56	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.0	32.8		0.8	26.6		17.0	17.0		17.0	17.0	
Effective Green, g (s)	7.0	32.8		0.8	26.6		17.0	17.0		17.0	17.0	
Actuated g/C Ratio	0.11	0.52		0.01	0.42		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	950		22	761		306	455		364	427	
v/s Ratio Prot	c0.10	0.31		0.01	c0.37			0.01			0.04	
v/s Ratio Perm							0.03			c0.04		
v/c Ratio	0.89	0.60		1.05	0.87		0.10	0.05		0.14	0.13	
Uniform Delay, d1	27.4	10.4		30.9	16.5		17.1	16.8		17.3	17.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	36.2	1.1		206.7	10.8		0.7	0.2		0.8	0.6	
Delay (s)	63.6	11.4		237.6	27.3		17.8	17.0		18.1	17.9	
Level of Service	E	B		F	C		B	B		B	B	
Approach Delay (s)		23.5			34.2			17.4			17.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1814		1736	1791		1736	1675		1736	1574	
Flt Permitted	0.95	1.00		0.95	1.00		0.62	1.00		0.73	1.00	
Satd. Flow (perm)	1736	1814		1736	1791		1126	1675		1340	1574	
Volume (vph)	173	559	28	23	596	89	32	16	20	52	13	159
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	559	28	23	596	89	32	16	20	52	13	159
RTOR Reduction (vph)	0	2	0	0	9	0	0	15	0	0	116	0
Lane Group Flow (vph)	173	585	0	23	676	0	32	21	0	52	56	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.0	33.0		0.8	26.8		17.0	17.0		17.0	17.0	
Effective Green, g (s)	7.0	33.0		0.8	26.8		17.0	17.0		17.0	17.0	
Actuated g/C Ratio	0.11	0.53		0.01	0.43		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	953		22	764		305	453		363	426	
v/s Ratio Prot	c0.10	0.32		0.01	c0.38			0.02			c0.11	
v/s Ratio Perm							0.03			0.04		
v/c Ratio	0.89	0.61		1.05	0.89		0.10	0.05		0.14	0.13	
Uniform Delay, d1	27.5	10.4		31.0	16.6		17.2	16.9		17.4	17.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	36.2	1.2		206.7	11.9		0.7	0.2		0.8	0.6	
Delay (s)	63.7	11.6		237.7	28.5		17.9	17.1		18.2	18.0	
Level of Service	E	B		F	C		B	B		B	B	
Approach Delay (s)		23.5			35.3			17.5			18.0	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	62.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1814		1736	1792		1736	1675		1736	1574	
Flt Permitted	0.95	1.00		0.95	1.00		0.61	1.00		0.73	1.00	
Satd. Flow (perm)	1736	1814		1736	1792		1123	1675		1340	1574	
Volume (vph)	173	586	28	23	612	90	32	16	20	58	13	159
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	586	28	23	612	90	32	16	20	58	13	159
RTOR Reduction (vph)	0	2	0	0	9	0	0	15	0	0	116	0
Lane Group Flow (vph)	173	612	0	23	693	0	32	21	0	58	56	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.0	33.4		0.8	27.2		17.0	17.0		17.0	17.0	
Effective Green, g (s)	7.0	33.4		0.8	27.2		17.0	17.0		17.0	17.0	
Actuated g/C Ratio	0.11	0.53		0.01	0.43		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	192	959		22	771		302	451		360	423	
v/s Ratio Prot	c0.10	0.34		0.01	c0.39			0.02			c0.11	
v/s Ratio Perm							0.03			0.04		
v/c Ratio	0.90	0.64		1.05	0.90		0.11	0.05		0.16	0.13	
Uniform Delay, d1	27.8	10.6		31.2	16.7		17.4	17.1		17.7	17.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.5	1.4		206.7	13.3		0.7	0.2		1.0	0.6	
Delay (s)	66.2	12.0		237.9	30.0		18.1	17.3		18.6	18.2	
Level of Service	E	B		F	C		B	B		B	B	
Approach Delay (s)		23.9			36.6			17.7			18.3	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	28.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1815		1736	1791		1736	1675		1736	1574	
Flt Permitted	0.95	1.00		0.95	1.00		0.61	1.00		0.73	1.00	
Satd. Flow (perm)	1736	1815		1736	1791		1112	1675		1340	1574	
Volume (vph)	173	595	28	23	630	95	32	16	20	60	13	159
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	595	28	23	630	95	32	16	20	60	13	159
RTOR Reduction (vph)	0	2	0	0	9	0	0	15	0	0	119	0
Lane Group Flow (vph)	173	621	0	23	716	0	32	21	0	60	53	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.0	34.3		0.8	28.1		16.0	16.0		16.0	16.0	
Effective Green, g (s)	7.0	34.3		0.8	28.1		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.11	0.54		0.01	0.45		0.25	0.25		0.25	0.25	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	193	987		22	798		282	425		340	399	
v/s Ratio Prot	c0.10	0.34		0.01	c0.40			0.02			c0.11	
v/s Ratio Perm							0.03			0.04		
v/c Ratio	0.90	0.63		1.05	0.90		0.11	0.05		0.18	0.13	
Uniform Delay, d1	27.7	10.0		31.2	16.2		18.1	17.8		18.4	18.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	37.0	1.3		206.7	12.7		0.8	0.2		1.1	0.7	
Delay (s)	64.7	11.3		237.8	28.9		18.9	18.0		19.5	18.9	
Level of Service	E	B		F	C		B	B		B	B	
Approach Delay (s)		22.9			35.3			18.4			19.1	
Approach LOS		C			D			B			B	

Intersection Summary

HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	63.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1815		1736	1789		1736	1677		1736	1576	
Flt Permitted	0.95	1.00		0.95	1.00		0.50	1.00		0.72	1.00	
Satd. Flow (perm)	1736	1815		1736	1789		911	1677		1309	1576	
Volume (vph)	176	971	45	29	802	128	69	28	34	90	20	215
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	176	971	45	29	802	128	69	28	34	90	20	215
RTOR Reduction (vph)	0	2	0	0	9	0	0	25	0	0	160	0
Lane Group Flow (vph)	176	1014	0	29	921	0	69	37	0	90	75	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	5.0	32.8		1.6	29.4		16.0	16.0		16.0	16.0	
Effective Green, g (s)	5.0	32.8		1.6	29.4		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.08	0.53		0.03	0.47		0.26	0.26		0.26	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	954		45	843		234	430		336	404	
v/s Ratio Prot	c0.10	c0.56		0.02	0.52			0.04			c0.15	
v/s Ratio Perm							0.08			0.07		
v/c Ratio	1.27	1.06		0.64	1.09		0.29	0.09		0.27	0.19	
Uniform Delay, d1	28.7	14.8		30.1	16.5		18.7	17.6		18.5	18.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	164.6	47.2		27.5	59.3		3.2	0.4		1.9	1.0	
Delay (s)	193.3	62.0		57.6	75.8		21.8	18.0		20.5	19.1	
Level of Service	F	E		E	E		C	B		C	B	
Approach Delay (s)		81.4			75.3			20.0			19.5	
Approach LOS		F			E			C			B	

Intersection Summary			
HCM Average Control Delay	68.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1813		1736	1789		1736	1677		1736	1576	
Flt Permitted	0.95	1.00		0.95	1.00		0.51	1.00		0.72	1.00	
Satd. Flow (perm)	1736	1813		1736	1789		933	1677		1309	1576	
Volume (vph)	176	818	45	29	818	132	69	28	34	96	20	215
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	176	818	45	29	818	132	69	28	34	96	20	215
RTOR Reduction (vph)	0	3	0	0	9	0	0	25	0	0	156	0
Lane Group Flow (vph)	176	860	0	29	941	0	69	37	0	96	79	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	5.0	31.8		1.6	28.4		17.0	17.0		17.0	17.0	
Effective Green, g (s)	5.0	31.8		1.6	28.4		17.0	17.0		17.0	17.0	
Actuated g/C Ratio	0.08	0.51		0.03	0.46		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	924		45	814		254	457		357	429	
v/s Ratio Prot	c0.10	c0.48		0.02	c0.53			0.04			c0.15	
v/s Ratio Perm							0.07			0.07		
v/c Ratio	1.27	0.93		0.64	1.16		0.27	0.08		0.27	0.18	
Uniform Delay, d1	28.7	14.3		30.1	17.0		17.8	16.9		17.8	17.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	164.6	15.5		27.5	83.8		2.6	0.3		1.8	0.9	
Delay (s)	193.3	29.8		57.6	100.8		20.5	17.2		19.7	18.3	
Level of Service	F	C		E	F		C	B		B	B	
Approach Delay (s)		57.5			99.5			18.9			18.7	
Approach LOS		E			F			B			B	

Intersection Summary			
HCM Average Control Delay	66.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.92		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1813		1736	1788		1736	1677		1736	1576	
Flt Permitted	0.95	1.00		0.95	1.00		0.51	1.00		0.72	1.00	
Satd. Flow (perm)	1736	1813		1736	1788		933	1677		1309	1576	
Volume (vph)	176	827	45	29	836	137	69	28	34	98	20	215
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	176	827	45	29	836	137	69	28	34	98	20	215
RTOR Reduction (vph)	0	3	0	0	9	0	0	25	0	0	156	0
Lane Group Flow (vph)	176	869	0	29	964	0	69	37	0	98	79	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	5.0	31.8		1.6	28.4		17.0	17.0		17.0	17.0	
Effective Green, g (s)	5.0	31.8		1.6	28.4		17.0	17.0		17.0	17.0	
Actuated g/C Ratio	0.08	0.51		0.03	0.46		0.27	0.27		0.27	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	924		45	814		254	457		357	429	
v/s Ratio Prot	c0.10	c0.48		0.02	c0.54			0.04			c0.15	
v/s Ratio Perm							0.07			0.07		
v/c Ratio	1.27	0.94		0.64	1.18		0.27	0.08		0.27	0.18	
Uniform Delay, d1	28.7	14.4		30.1	17.0		17.8	16.9		17.9	17.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	164.6	17.0		27.5	95.2		2.6	0.3		1.9	0.9	
Delay (s)	193.3	31.4		57.6	112.2		20.5	17.2		19.7	18.3	
Level of Service	F	C		E	F		C	B		B	B	
Approach Delay (s)		58.6			110.6			18.9			18.7	
Approach LOS		E			F			B			B	

Intersection Summary			
HCM Average Control Delay	72.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.96			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1736	1810		1736	1794			1737			1678	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.92	
Satd. Flow (perm)	1736	1810		1736	1794			1680			1568	
Volume (vph)	121	213	14	52	137	19	8	26	15	62	51	120
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	121	213	14	52	137	19	8	26	15	62	51	120
RTOR Reduction (vph)	0	4	0	0	10	0	0	8	0	0	50	0
Lane Group Flow (vph)	121	223	0	52	146	0	0	41	0	0	183	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.8	14.7		3.3	10.2			23.8			23.8	
Effective Green, g (s)	7.8	14.7		3.3	10.2			23.8			23.8	
Actuated g/C Ratio	0.14	0.27		0.06	0.19			0.44			0.44	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	252	495		106	340			743			694	
v/s Ratio Prot	c0.07	c0.12		0.03	0.08							
v/s Ratio Perm								0.02			c0.12	
v/c Ratio	0.48	0.45		0.49	0.43			0.05			0.26	
Uniform Delay, d1	21.1	16.2		24.4	19.2			8.6			9.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.4	0.7		3.5	0.9			0.1			0.9	
Delay (s)	22.6	16.9		28.0	20.1			8.7			10.4	
Level of Service	C	B		C	C			A			B	
Approach Delay (s)		18.8			22.1			8.7			10.4	
Approach LOS		B			C			A			B	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	53.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.96			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1736	1810		1736	1769			1737			1680	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.90	
Satd. Flow (perm)	1736	1810		1736	1769			1676			1538	
Volume (vph)	127	215	14	52	139	37	8	26	15	82	51	126
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	215	14	52	139	37	8	26	15	82	51	126
RTOR Reduction (vph)	0	4	0	0	19	0	0	8	0	0	44	0
Lane Group Flow (vph)	127	225	0	52	157	0	0	41	0	0	215	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.8	15.0		3.2	10.4			23.5			23.5	
Effective Green, g (s)	7.8	15.0		3.2	10.4			23.5			23.5	
Actuated g/C Ratio	0.15	0.28		0.06	0.19			0.44			0.44	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	252	506		103	343			733			673	
v/s Ratio Prot	c0.07	c0.13		0.03	0.10							
v/s Ratio Perm								0.03			c0.17	
v/c Ratio	0.50	0.44		0.50	0.46			0.06			0.32	
Uniform Delay, d1	21.2	15.9		24.5	19.2			8.7			9.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.6	0.6		3.9	1.0			0.1			1.2	
Delay (s)	22.8	16.5		28.3	20.1			8.8			11.1	
Level of Service	C	B		C	C			A			B	
Approach Delay (s)		18.8			22.0			8.8			11.1	
Approach LOS		B			C			A			B	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	53.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.95			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1736	1811		1736	1773			1725			1681	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.90	
Satd. Flow (perm)	1736	1811		1736	1773			1668			1534	
Volume (vph)	127	229	14	60	175	43	8	26	19	84	51	126
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	229	14	60	175	43	8	26	19	84	51	126
RTOR Reduction (vph)	0	4	0	0	17	0	0	11	0	0	45	0
Lane Group Flow (vph)	127	239	0	60	201	0	0	42	0	0	216	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.4	13.3		4.3	10.2			23.1			23.1	
Effective Green, g (s)	7.4	13.3		4.3	10.2			23.1			23.1	
Actuated g/C Ratio	0.14	0.25		0.08	0.19			0.44			0.44	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	244	457		142	343			731			672	
v/s Ratio Prot	c0.07	c0.13		0.03	0.12							
v/s Ratio Perm								0.03			c0.17	
v/c Ratio	0.52	0.52		0.42	0.59			0.06			0.32	
Uniform Delay, d1	21.0	17.0		23.0	19.3			8.5			9.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.0	1.1		2.0	2.6			0.2			1.3	
Delay (s)	23.0	18.0		25.0	21.9			8.7			10.9	
Level of Service	C	B		C	C			A			B	
Approach Delay (s)		19.7			22.6			8.7			10.9	
Approach LOS		B			C			A			B	

Intersection Summary

HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	52.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.94			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1736	1813		1736	1774			1707			1682	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.89	
Satd. Flow (perm)	1736	1813		1736	1774			1657			1524	
Volume (vph)	127	260	14	70	193	46	8	26	27	88	51	126
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	260	14	70	193	46	8	26	27	88	51	126
RTOR Reduction (vph)	0	4	0	0	16	0	0	15	0	0	45	0
Lane Group Flow (vph)	127	270	0	70	223	0	0	46	0	0	220	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.2	13.9		3.8	10.5			24.3			24.3	
Effective Green, g (s)	7.2	13.9		3.8	10.5			24.3			24.3	
Actuated g/C Ratio	0.13	0.26		0.07	0.19			0.45			0.45	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	231	467		122	345			746			686	
v/s Ratio Prot	c0.07	c0.15		0.04	0.13							
v/s Ratio Perm								0.04			c0.17	
v/c Ratio	0.55	0.58		0.57	0.65			0.06			0.32	
Uniform Delay, d1	21.9	17.5		24.3	20.0			8.4			9.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.7	1.7		6.4	4.1			0.2			1.2	
Delay (s)	24.6	19.2		30.7	24.2			8.6			10.8	
Level of Service	C	B		C	C			A			B	
Approach Delay (s)		20.9			25.6			8.6			10.8	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.91			0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1736	1818		1736	1798			1654			1635	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.94	
Satd. Flow (perm)	1736	1818		1736	1798			1594			1554	
Volume (vph)	153	329	11	23	220	26	7	10	32	54	26	201
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	153	329	11	23	220	26	7	10	32	54	26	201
RTOR Reduction (vph)	0	2	0	0	7	0	0	21	0	0	130	0
Lane Group Flow (vph)	153	338	0	23	239	0	0	28	0	0	151	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.8	21.1		1.0	14.3			18.6			18.6	
Effective Green, g (s)	7.8	21.1		1.0	14.3			18.6			18.6	
Actuated g/C Ratio	0.15	0.40		0.02	0.27			0.35			0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	257	728		33	488			563			548	
v/s Ratio Prot	c0.09	c0.19		0.01	0.14							
v/s Ratio Perm								0.03			c0.18	
v/c Ratio	0.60	0.46		0.70	0.49			0.05			0.28	
Uniform Delay, d1	21.0	11.6		25.7	16.1			11.2			12.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.7	0.5		48.5	0.8			0.2			1.2	
Delay (s)	24.7	12.1		74.2	16.9			11.4			13.5	
Level of Service	C	B		E	B			B			B	
Approach Delay (s)		16.0			21.8			11.4			13.5	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	52.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.91			0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1736	1818		1736	1796			1649			1636	
Flt Permitted	0.95	1.00		0.95	1.00			0.96			0.94	
Satd. Flow (perm)	1736	1818		1736	1796			1593			1550	
Volume (vph)	153	343	11	31	256	32	7	10	36	56	26	201
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	153	343	11	31	256	32	7	10	36	56	26	201
RTOR Reduction (vph)	0	2	0	0	8	0	0	23	0	0	129	0
Lane Group Flow (vph)	153	352	0	31	280	0	0	30	0	0	154	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.7	20.1		2.1	14.5			19.1			19.1	
Effective Green, g (s)	7.7	20.1		2.1	14.5			19.1			19.1	
Actuated g/C Ratio	0.14	0.38		0.04	0.27			0.36			0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	251	686		68	489			571			555	
v/s Ratio Prot	c0.09	c0.19		0.02	0.16							
v/s Ratio Perm								0.03			c0.18	
v/c Ratio	0.61	0.51		0.46	0.57			0.05			0.28	
Uniform Delay, d1	21.4	12.8		25.0	16.7			11.2			12.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.2	0.7		4.8	1.6			0.2			1.2	
Delay (s)	25.5	13.5		29.8	18.4			11.4			13.4	
Level of Service	C	B		C	B			B			B	
Approach Delay (s)		17.1			19.5			11.4			13.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.90			0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1736	1819		1736	1796			1640			1637	
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.93	
Satd. Flow (perm)	1736	1819		1736	1796			1591			1543	
Volume (vph)	153	374	11	41	274	35	7	10	44	60	26	201
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	153	374	11	41	274	35	7	10	44	60	26	201
RTOR Reduction (vph)	0	2	0	0	8	0	0	28	0	0	128	0
Lane Group Flow (vph)	153	383	0	41	301	0	0	33	0	0	159	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.4	20.8		1.7	15.1			19.8			19.8	
Effective Green, g (s)	7.4	20.8		1.7	15.1			19.8			19.8	
Actuated g/C Ratio	0.14	0.38		0.03	0.28			0.36			0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	237	697		54	499			580			563	
v/s Ratio Prot	c0.09	c0.21		0.02	0.17							
v/s Ratio Perm								0.04			c0.19	
v/c Ratio	0.65	0.55		0.76	0.60			0.06			0.28	
Uniform Delay, d1	22.2	13.1		26.1	17.0			11.2			12.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.9	0.9		45.2	2.1			0.2			1.3	
Delay (s)	28.1	14.0		71.3	19.1			11.4			13.5	
Level of Service	C	B		E	B			B			B	
Approach Delay (s)		18.0			25.2			11.4			13.5	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	54.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.94			0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1736	1801		1736	1775			1700			1653	
Flt Permitted	0.95	1.00		0.95	1.00			0.89			0.94	
Satd. Flow (perm)	1736	1801		1736	1775			1536			1569	
Volume (vph)	194	179	19	71	308	72	37	56	72	42	58	190
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	194	179	19	71	308	72	37	56	72	42	58	190
RTOR Reduction (vph)	0	7	0	0	15	0	0	43	0	0	106	0
Lane Group Flow (vph)	194	191	0	71	365	0	0	122	0	0	184	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.8	20.2		3.2	15.6			19.2			19.2	
Effective Green, g (s)	7.8	20.2		3.2	15.6			19.2			19.2	
Actuated g/C Ratio	0.14	0.37		0.06	0.29			0.35			0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	248	666		102	507			540			552	
v/s Ratio Prot	c0.11	0.11		0.04	c0.21							
v/s Ratio Perm								0.08			c0.12	
v/c Ratio	0.78	0.29		0.70	0.72			0.23			0.33	
Uniform Delay, d1	22.6	12.1		25.2	17.5			12.5			13.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	14.8	0.2		18.6	4.9			1.0			1.6	
Delay (s)	37.4	12.4		43.9	22.4			13.4			14.6	
Level of Service	D	B		D	C			B			B	
Approach Delay (s)		24.7			25.8			13.4			14.6	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	54.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.96			0.94			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1736	1801		1736	1761			1700			1661	
Flt Permitted	0.95	1.00		0.95	1.00			0.89			0.90	
Satd. Flow (perm)	1736	1801		1736	1761			1524			1509	
Volume (vph)	194	179	19	71	314	100	37	56	72	74	58	196
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	194	179	19	71	314	100	37	56	72	74	58	196
RTOR Reduction (vph)	0	6	0	0	20	0	0	44	0	0	84	0
Lane Group Flow (vph)	194	192	0	71	394	0	0	121	0	0	244	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.4	20.6		3.3	16.5			19.9			19.9	
Effective Green, g (s)	7.4	20.6		3.3	16.5			19.9			19.9	
Actuated g/C Ratio	0.13	0.37		0.06	0.30			0.36			0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	230	665		103	521			544			538	
v/s Ratio Prot	c0.11	0.11		0.04	c0.24							
v/s Ratio Perm								0.11			c0.22	
v/c Ratio	0.84	0.29		0.69	0.76			0.22			0.45	
Uniform Delay, d1	23.6	12.4		25.7	17.8			12.5			13.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	23.5	0.2		17.5	6.2			0.9			2.8	
Delay (s)	47.2	12.7		43.3	24.0			13.5			16.5	
Level of Service	D	B		D	C			B			B	
Approach Delay (s)		29.7			26.8			13.5			16.5	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.96			0.94			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1736	1806		1736	1762			1692			1662	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.89	
Satd. Flow (perm)	1736	1806		1736	1762			1543			1490	
Volume (vph)	194	227	19	83	337	104	37	56	84	80	58	196
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	194	227	19	83	337	104	37	56	84	80	58	196
RTOR Reduction (vph)	0	5	0	0	19	0	0	51	0	0	81	0
Lane Group Flow (vph)	194	241	0	83	422	0	0	126	0	0	253	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	7.3	20.7		3.8	17.2			18.8			18.8	
Effective Green, g (s)	7.3	20.7		3.8	17.2			18.8			18.8	
Actuated g/C Ratio	0.13	0.37		0.07	0.31			0.34			0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	229	676		119	548			525			507	
v/s Ratio Prot	c0.11	c0.14		0.05	c0.25							
v/s Ratio Perm								0.11			c0.22	
v/c Ratio	0.85	0.36		0.70	0.77			0.24			0.50	
Uniform Delay, d1	23.5	12.5		25.2	17.3			13.1			14.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	24.0	0.3		16.3	6.4			1.1			3.5	
Delay (s)	47.5	12.8		41.5	23.7			14.2			18.0	
Level of Service	D	B		D	C			B			B	
Approach Delay (s)		28.1			26.5			14.2			18.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	55.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.93			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1736	1807		1736	1763			1690			1663	
Flt Permitted	0.95	1.00		0.95	1.00			0.91			0.89	
Satd. Flow (perm)	1736	1807		1736	1763			1548			1505	
Volume (vph)	194	244	19	91	363	110	37	56	88	82	58	196
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	194	244	19	91	363	110	37	56	88	82	58	196
RTOR Reduction (vph)	0	4	0	0	19	0	0	56	0	0	82	0
Lane Group Flow (vph)	194	259	0	91	454	0	0	125	0	0	254	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	8.7	21.5		6.0	18.8			18.1			18.1	
Effective Green, g (s)	8.7	21.5		6.0	18.8			18.1			18.1	
Actuated g/C Ratio	0.15	0.37		0.10	0.33			0.31			0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	262	674		181	575			486			473	
v/s Ratio Prot	c0.11	c0.15		0.05	c0.27							
v/s Ratio Perm								0.12			c0.22	
v/c Ratio	0.74	0.38		0.50	0.79			0.26			0.54	
Uniform Delay, d1	23.4	13.2		24.4	17.6			14.7			16.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	10.7	0.4		2.2	7.1			1.3			4.3	
Delay (s)	34.1	13.6		26.6	24.7			16.0			20.6	
Level of Service	C	B		C	C			B			C	
Approach Delay (s)		22.3			25.0			16.0			20.6	
Approach LOS		C			C			B			C	

Intersection Summary

HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	57.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.93			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)	1736	1809		1736	1787			1678			1617	
Flt Permitted	0.95	1.00		0.95	1.00			0.82			0.97	
Satd. Flow (perm)	1736	1809		1736	1787			1405			1573	
Volume (vph)	202	254	18	70	432	73	47	30	77	28	32	278
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	202	254	18	70	432	73	47	30	77	28	32	278
RTOR Reduction (vph)	0	4	0	0	10	0	0	55	0	0	197	0
Lane Group Flow (vph)	202	268	0	70	495	0	0	99	0	0	141	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	9.4	26.3		3.4	20.3			17.1			17.1	
Effective Green, g (s)	9.4	26.3		3.4	20.3			17.1			17.1	
Actuated g/C Ratio	0.16	0.45		0.06	0.35			0.29			0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	278	809		100	617			409			457	
v/s Ratio Prot	c0.12	0.15		0.04	c0.28							
v/s Ratio Perm								0.11			c0.21	
v/c Ratio	0.73	0.33		0.70	0.80			0.24			0.31	
Uniform Delay, d1	23.5	10.5		27.2	17.4			15.9			16.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	9.1	0.2		19.8	7.4			1.4			1.7	
Delay (s)	32.6	10.8		47.0	24.8			17.3			18.0	
Level of Service	C	B		D	C			B			B	
Approach Delay (s)		20.1			27.5			17.3			18.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	58.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.93			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1736	1810		1736	1787			1671			1620	
Flt Permitted	0.95	1.00		0.95	1.00			0.81			0.96	
Satd. Flow (perm)	1736	1810		1736	1787			1374			1560	
Volume (vph)	202	272	18	82	455	77	47	30	89	34	32	278
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	202	272	18	82	455	77	47	30	89	34	32	278
RTOR Reduction (vph)	0	4	0	0	10	0	0	65	0	0	202	0
Lane Group Flow (vph)	202	286	0	82	522	0	0	101	0	0	142	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	9.4	26.6		4.0	21.2			16.1			16.1	
Effective Green, g (s)	9.4	26.6		4.0	21.2			16.1			16.1	
Actuated g/C Ratio	0.16	0.45		0.07	0.36			0.27			0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	278	820		118	645			377			428	
v/s Ratio Prot	c0.12	0.16		0.05	c0.30							
v/s Ratio Perm								0.12			c0.22	
v/c Ratio	0.73	0.35		0.69	0.81			0.27			0.33	
Uniform Delay, d1	23.4	10.4		26.8	16.9			16.7			17.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	9.1	0.3		16.3	7.4			1.7			2.1	
Delay (s)	32.5	10.7		43.0	24.3			18.4			19.1	
Level of Service	C	B		D	C			B			B	
Approach Delay (s)		19.7			26.8			18.4			19.1	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.93			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1736	1812		1736	1787			1669			1620	
Flt Permitted	0.95	1.00		0.95	1.00			0.83			0.96	
Satd. Flow (perm)	1736	1812		1736	1787			1405			1557	
Volume (vph)	202	319	18	90	481	83	47	30	93	36	32	278
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	202	319	18	90	481	83	47	30	93	36	32	278
RTOR Reduction (vph)	0	3	0	0	10	0	0	66	0	0	198	0
Lane Group Flow (vph)	202	334	0	90	554	0	0	104	0	0	148	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	8.8	24.0		6.1	21.3			17.1			17.1	
Effective Green, g (s)	8.8	24.0		6.1	21.3			17.1			17.1	
Actuated g/C Ratio	0.15	0.41		0.10	0.36			0.29			0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	258	735		179	643			406			450	
v/s Ratio Prot	c0.12	c0.19		0.05	c0.32							
v/s Ratio Perm								0.12			c0.22	
v/c Ratio	0.78	0.45		0.50	0.86			0.26			0.33	
Uniform Delay, d1	24.3	12.8		25.1	17.6			16.2			16.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	14.3	0.4		2.2	11.4			1.5			2.0	
Delay (s)	38.6	13.3		27.3	29.0			17.7			18.5	
Level of Service	D	B		C	C			B			B	
Approach Delay (s)		22.8			28.8			17.7			18.5	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	10_EX_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	EXISTING
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT	
East/West Street: SR 246-ARMOUR RANCH RD.	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	136	102	2	2	193	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	136	102	2	2	193	20
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	8	25	276	0	24	2
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	8	25	276	0	24	2
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	136	2		26		33		276
C (m) (veh/h)	1368	1475		416		380		843
v/c	0.10	0.00		0.06		0.09		0.33
95% queue length	0.33	0.00		0.20		0.28		1.45
Control Delay (s/veh)	7.9	7.4		14.5		15.4		11.3
LOS	A	A		B		C		B
Approach Delay (s/veh)	--	--	14.5			11.8		
Approach LOS	--	--	B			B		

AWD = 10.8 SEC - LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	10_2014_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	NEAR-TERM (YEAR 2014)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT	
East/West Street: SR 246-ARMOUR RANCH RD.	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	150	113	2	2	207	26
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	150	113	2	2	207	26
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	12	25	294	0	24	2
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	12	25	294	0	24	2
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	150	2		26		37		294
C (m) (veh/h)	1352	1462		384		347		828
v/c	0.11	0.00		0.07		0.11		0.36
95% queue length	0.37	0.00		0.22		0.36		1.64
Control Delay (s/veh)	8.0	7.5		15.4		16.6		11.7
LOS	A	A		C		C		B
Approach Delay (s/veh)	--	--	15.4			12.3		
Approach LOS	--	--	C			B		

 HCS+™ Version 5.6 Generated: 4/2/2012 10:22 AM

AWD = 11.1 sec./LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	10_2014+ALT. 1_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 1)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 246-ARMOUR RANCH RD.	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	150	113	5	3	207	26
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	150	113	5	3	207	26
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	12	46	294	8	88	5
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	12	46	294	8	88	5
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	150	3		101		58		294
C (m) (veh/h)	1352	1458		347		329		828
v/c	0.11	0.00		0.29		0.18		0.36
95% queue length	0.37	0.01		1.22		0.64		1.64
Control Delay (s/veh)	8.0	7.5		19.8		18.3		11.7
LOS	A	A		C		C		B
Approach Delay (s/veh)	--	--	19.8			12.8		
Approach LOS	--	--	C			B		

 HCS+™ Version 5.6 Generated: 4/2/2012 2:58 PM

AWD = 12.7 sec. / LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	10_2014+ALT. 2_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 2)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT	
East/West Street: SR 246-ARMOUR RANCH RD.	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	150	113	9	7	207	26
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	150	113	9	7	207	26
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	12	97	294	11	105	8
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	12	97	294	11	105	8
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	150	7		124		109		294
C (m) (veh/h)	1352	1453		334		330		828
v/c	0.11	0.00		0.37		0.33		0.36
95% queue length	0.37	0.01		1.74		1.46		1.64
Control Delay (s/veh)	8.0	7.5		22.4		21.3		11.7
LOS	A	A		C		C		B
Approach Delay (s/veh)	--	--		22.4			14.3	
Approach LOS	--	--		C			B	

 HCS+™ Version 5.6 Generated: 4/2/2012 3:15 PM

AWD = 14.3 sec./LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	10_CU_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE (YEAR 2030)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street:	SR 246-ARMOUR RANCH RD.	North/South Street:	SR 154
Intersection Orientation:	North-South	Study Period (hrs):	1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	217	235	5	5	194	124
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	217	235	5	5	194	124
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	138	30	223	5	30	5
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	138	30	223	5	30	5
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	217	5		40		168		223
C (m) (veh/h)	1367	1315		247		210		842
v/c	0.16	0.00		0.16		0.80		0.26
95% queue length	0.57	0.01		0.58		8.53		1.08
Control Delay (s/veh)	8.1	7.7		23.0		81.1		10.8
LOS	A	A		C		F		B
Approach Delay (s/veh)	--	--	23.0			41.0		
Approach LOS	--	--	C			E		

 HCS+™ Version 5.6 Generated: 4/6/2012 1:13 PM

AWD = 28.7 sec. / LOS D

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	10_CU+PR (ALT. 1)_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT.1)
Analysis Time Period	A.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 246-ARMOUR RANCH RD.	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	217	235	8	6	194	124
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	217	235	8	6	194	124
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	138	51	223	13	94	8
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	138	51	223	13	94	8
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	217	6		115		189		223
C (m) (veh/h)	1367	1312		230		166		842
v/c	0.16	0.00		0.50		1.14		0.26
95% queue length	0.57	0.01		2.86		23.54		1.08
Control Delay (s/veh)	8.1	7.8		36.3		396.3		10.8
LOS	A	A		E		F		B
Approach Delay (s/veh)	--	--	36.3			187.7		
Approach LOS	--	--	E			F		

 HCS+™ Version 5.6 Generated: 4/6/2012 1:15 PM

IWD = >50 sec. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	10_CU+PR (ALT. 2)_AM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	CUMULATIVE+PR (ALT. 2)
Analysis Time Period	A.M. PEAK HOUR		

Project Description: #12018 - CHUMASH CAMP 4 PROJECT	
East/West Street: SR 246-ARMOUR RANCH RD.	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	217	235	12	10	194	124
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	217	235	12	10	194	124
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	138	102	223	16	111	11
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	138	102	223	16	111	11
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	217	10		138		240		223
C (m) (veh/h)	1367	1307		213		160		842
v/c	0.16	0.01		0.65		1.50		0.26
95% queue length	0.57	0.02		4.88		47.57		1.08
Control Delay (s/veh)	8.1	7.8		51.7		990.6		10.8
LOS	A	A		F		F		B
Approach Delay (s/veh)	--	--	51.7			518.7		
Approach LOS	--	--	F			F		

 HCS+™ Version 5.6 Generated: 4/6/2012 1:16 PM

AWD = > 50 sec. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*10_EX_PM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*EXISTING*
Analysis Time Period	*P.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 246-ARMOUR RANCH RD.*	North/South Street: *SR 154*
Intersection Orientation: *North-South*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	348	207	0	7	186	39
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	348	207	0	7	186	39
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	29	18	226	0	53	7
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	29	18	226	0	53	7
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	348	7		60		47		226
C (m) (veh/h)	1377	1352		177		121		851
v/c	0.25	0.01		0.34		0.39		0.27
95% queue length	1.01	0.02		1.50		1.82		1.08
Control Delay (s/veh)	8.5	7.7		36.3		53.3		10.8
LOS	A	A		E		F		B
Approach Delay (s/veh)	--	--	36.3			18.1		
Approach LOS	--	--	E			C		

 HCS+™ Version 5.8 Generated: 3/28/2012 2:27 PM

AWD = 14.7 = LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	10_2014_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	NEAR-TERM (YEAR 2014)
Analysis Time Period	P.M. PEAK HOUR		

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 246-ARMOUR RANCH RD.	North/South Street: SR 154
Intersection Orientation: North-South	Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	370	224	0	7	209	49
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	370	224	0	7	209	49
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	40	18	251	0	53	7
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	40	18	251	0	53	7
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	370	7		60		58		251
C (m) (veh/h)	1350	1333		153		97		826
v/c	0.27	0.01		0.39		0.60		0.30
95% queue length	1.13	0.02		1.86		3.74		1.30
Control Delay (s/veh)	8.7	7.7		44.1		93.6		11.3
LOS	A	A		E		F		B
Approach Delay (s/veh)	--	--		44.1			26.7	
Approach LOS	--	--		E			D	

 HCS+™ Version 5.6 Generated: 4/2/2012 10:23 AM

AWD = 19.0 SEC. / LOS C

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*10_2014+ALT. 1_PM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*2014+PROJECT (ALT. 1)*
Analysis Time Period	*P.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 246-ARMOUR RANCH RD.*	North/South Street: *SR 154*
Intersection Orientation: *North-South*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*370*	*224*	*9*	*10*	*209*	*49*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*370*	*224*	*9*	*10*	*209*	*49*
Percent Heavy Vehicles	*4*	--	--	*4*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*1*
Lanes	*1*	*1*	*0*	*1*	*1*	*1*
Configuration	*L*		*TR*	*L*	*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*40*	*98*	*251*	*5*	*95*	*9*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*40*	*98*	*251*	*5*	*95*	*9*
Percent Heavy Vehicles	*4*	*4*	*4*	*4*	*4*	*4*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*Y*	
Storage		*0*			*2*	
RT Channelized			*1*			*0*
Lanes	*0*	*1*	*1*	*0*	*1*	*0*
Configuration	*LT*		*R*		*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*		*LT*		*R*
v (veh/h)	*370*	*10*		*109*		*138*		*251*
C (m) (veh/h)	*1350*	*1323*		*125*		*89*		*826*
v/c	*0.27*	*0.01*		*0.87*		*1.55*		*0.30*
95% queue length	*1.13*	*0.02*		*9.40*		*31.15*		*1.30*
Control Delay (s/veh)	*8.7*	*7.7*		*160.4*		*1140*		*11.3*
LOS	*A*	*A*		*F*		*F*		*B*
Approach Delay (s/veh)	--	--	*160.4*			*411.6*		
Approach LOS	--	--	*F*			*F*		

 HCS+™ Version 5.6 Generated: 4/2/2012 2:59 PM

AWD = >50 sec. / Los F

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	MMF	Intersection	10_2014+ALT. 2_PM
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	3/21/2012	Analysis Year	2014+PROJECT (ALT. 2)
Analysis Time Period	P.M. PEAK HOUR		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 246-ARMOUR RANCH RD.* | North/South Street: *SR 154*

Intersection Orientation: *North-South* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	370	224	11	12	209	49
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	370	224	11	12	209	49
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	40	126	251	9	143	13
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	40	126	251	9	143	13
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)	0			0		
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	370	12		165		166		251
C (m) (veh/h)	1350	1321		79		0		826
v/c	0.27	0.01		2.09				0.30
95% queue length	1.13	0.03		48.14				1.30
Control Delay (s/veh)	8.7	7.8		2094				11.3
LOS	A	A		F		F		B
Approach Delay (s/veh)	--	--	2094					
Approach LOS	--	--	F					

 HCS+™ Version 5.6 Generated: 4/2/2012 3:16 PM

AWD = >50. sec. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*10_CU_PM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*CUMULATIVE (YEAR 2030)*
Analysis Time Period	*P.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 246-ARMOUR RANCH RD.*	North/South Street: *SR 154*
Intersection Orientation: *North-South*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*380*	*407*	*5*	*10*	*212*	*147*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*380*	*407*	*5*	*10*	*212*	*147*
Percent Heavy Vehicles	*4*	--	--	*4*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*1*
Lanes	*1*	*1*	*0*	*1*	*1*	*1*
Configuration	*L*		*TR*	*L*	*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*119*	*20*	*222*	*5*	*55*	*10*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*119*	*20*	*222*	*5*	*55*	*10*
Percent Heavy Vehicles	*4*	*4*	*4*	*4*	*4*	*4*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*Y*	
Storage		*0*			*2*	
RT Channelized			*1*			*0*
Lanes	*0*	*1*	*1*	*0*	*1*	*0*
Configuration	*LT*		*R*		*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*		*LT*		*R*
v (veh/h)	*380*	*10*		*70*		*139*		*222*
C (m) (veh/h)	*1347*	*1136*		*106*		*52*		*823*
v/c	*0.28*	*0.01*		*0.66*		*2.67*		*0.27*
95% queue length	*1.18*	*0.03*		*4.64*		*47.86*		*1.10*
Control Delay (s/veh)	*8.7*	*8.2*		*98.3*		*3193*		*11.0*
LOS	*A*	*A*		*F*		*F*		*B*
Approach Delay (s/veh)	--	--	*98.3*			*1236*		
Approach LOS	--	--	*F*			*F*		

 HCS+™ Version 5.6 Generated: 4/6/2012 1:14 PM

AWD = > 50 sec. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*MMF*	Intersection	*10_CU+PR (ALT. 1)_PM*
Agency/Co.	*ATE*	Jurisdiction	*SANTA BARBARA COUNTY*
Date Performed	*3/21/2012*	Analysis Year	*CUMULATIVE+PR (ALT.1)*
Analysis Time Period	*P.M. PEAK HOUR*		

Project Description *#12018 - CHUMASH CAMP 4 PROJECT*

East/West Street: *SR 246-ARMOUR RANCH RD.* | North/South Street: *SR 154*

Intersection Orientation: *North-South* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	380	407	14	13	212	147
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	380	407	14	13	212	147
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	119	100	222	10	97	12
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	119	100	222	10	97	12
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	380	13		119		219		222
C (m) (veh/h)	1347	1127				0		823
v/c	0.28	0.01						0.27
95% queue length	1.18	0.04						1.10
Control Delay (s/veh)	8.7	8.2						11.0
LOS	A	A				F		B
Approach Delay (s/veh)	--	--						
Approach LOS	--	--						

 HCS+™ Version 5.6 Generated: 4/6/2012 1:15 PM

AWD = >50 sec. / LOS F

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	MMF
Agency/Co.	ATE
Date Performed	3/21/2012
Analysis Time Period	P.M. PEAK HOUR

Site Information

Intersection	10_CU+PR (ALT. 2)_PM
Jurisdiction	SANTA BARBARA COUNTY
Analysis Year	CUMULATIVE+PR (ALT. 2)

Project Description #12018 - CHUMASH CAMP 4 PROJECT

East/West Street: SR 246-ARMOUR RANCH RD. | North/South Street: SR 154

Intersection Orientation: North-South | Study Period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	380	407	16	15	212	147
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	380	407	16	15	212	147
Percent Heavy Vehicles	4	--	--	4	--	--
Median Type	Undivided					
RT Channelized			0			1
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	119	128	222	14	145	16
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	119	128	222	14	145	16
Percent Heavy Vehicles	4	4	4	4	4	4
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			2	
RT Channelized			1			0
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR		LT		R
v (veh/h)	380	15		175		247		222
C (m) (veh/h)	1347	1126				0		823
v/c	0.28	0.01						0.27
95% queue length	1.18	0.04						1.10
Control Delay (s/veh)	8.7	8.2						11.0
LOS	A	A				F		B
Approach Delay (s/veh)	--	--						
Approach LOS	--	--						

 HCS+™ Version 5.6 Generated: 4/6/2012 1:16 PM

WB = >50 sec. / LOS F

TRAFFIC COUNT DATA

Prepared by NDS/ATD

VOLUME

Armour Ranch Rd E/o SR-154

Day: Tuesday
Date: 3/13/2012

City: Santa Ynez
Project #: CA12_8021_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	358	333	691

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			0		0		0		12:00			6		9		15	
00:15			0		0		0		12:15			10		7		17	
00:30			0		0		0		12:30			3		5		8	
00:45			0		0		0		12:45			4	23	5	26	9	49
01:00			0		0		0		13:00			6		4		10	
01:15			0		0		0		13:15			2		5		7	
01:30			0		0		0		13:30			7		5		12	
01:45			0		0		0		13:45			8	23	11	25	19	48
02:00			0		0		0		14:00			8		8		16	
02:15			0		0		0		14:15			10		4		14	
02:30			0		0		0		14:30			6		6		12	
02:45			0		0		0		14:45			6	30	9	27	15	57
03:00			0		0		0		15:00			4		4		8	
03:15			0		0		0		15:15			4		4		8	
03:30			0		0		0		15:30			6		7		13	
03:45			0		0		0		15:45			6	20	7	22	13	42
04:00			0		0		0		16:00			2		10		12	
04:15			0		0		0		16:15			8		18		26	
04:30			0		0		0		16:30			5		20		25	
04:45			0		0		0		16:45			9	24	12	60	21	84
05:00			1		0		1		17:00			4		3		7	
05:15			1		0		1		17:15			2		4		6	
05:30			2		0		2		17:30			7		6		13	
05:45			3	7	0		3	7	17:45			6	19	7	20	13	39
06:00			2		0		2		18:00			3		5		8	
06:15			3		0		3		18:15			1		10		11	
06:30			15		3		18		18:30			3		4		7	
06:45			14	34	2	5	16	39	18:45			1	8	1	20	2	28
07:00			6		3		9		19:00			1		3		4	
07:15			13		4		17		19:15			8		2		10	
07:30			5		3		8		19:30			5		3		8	
07:45			10	34	13	23	23	57	19:45			4	18	1	9	5	27
08:00			5		5		10		20:00			0		3		3	
08:15			10		6		16		20:15			3		4		7	
08:30			7		4		11		20:30			7		3		10	
08:45			3	25	6	21	9	46	20:45			3	13	0	10	3	23
09:00			5		1		6		21:00			1		1		2	
09:15			9		5		14		21:15			1		0		1	
09:30			2		3		5		21:30			2		2		4	
09:45			3	19	2	11	5	30	21:45			0	4	0	3	0	7
10:00			13		6		19		22:00			2		0		2	
10:15			6		9		15		22:15			0		0		0	
10:30			3		5		8		22:30			1		0		1	
10:45			2	24	3	23	5	47	22:45			2	5	0		2	5
11:00			5		11		16		23:00			1		0		1	
11:15			6		4		10		23:15			0		0		0	
11:30			8		7		15		23:30			1		0		1	
11:45			7	26	6	28	13	54	23:45			0	2	0		0	2
TOTALS				169		111		280	TOTALS				189		222		411
SPLIT %				60.4%		39.6%		40.5%	SPLIT %				46.0%		54.0%		59.5%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	358	333	691

AM Peak Hour	06:30	11:30	06:30	PM Peak Hour	13:30	16:00	16:00
AM Pk Volume	48	29	60	PM Pk Volume	33	60	84
Pk Hr Factor	0.800	0.806	0.833	Pk Hr Factor	0.825	0.750	0.808
7 - 9 Volume	59	44	103	4 - 6 Volume	43	80	123
7 - 9 Peak Hour	07:00	07:45	07:45	4 - 6 Peak Hour	16:15	16:00	16:00
7 - 9 Pk Volume	34	28	60	4 - 6 Pk Volume	26	60	84
Pk Hr Factor	0.654	0.538	0.652	Pk Hr Factor	0.722	0.750	0.808

Prepared by NDS/ATD

VOLUME

Baseline Ave E/o SR-154

Day: Tuesday
Date: 3/13/2012

City: Santa Ynez
Project #: CA12_8021_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	755	802	1,557

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			0		0		0		12:00			13		19		32	
00:15			0		0		0		12:15			13		10		23	
00:30			2		0		2		12:30			16		14		30	
00:45			0	2	0		0	2	12:45			17	59	12	55	29	114
01:00			0		0		0		13:00			17		14		31	
01:15			0		0		0		13:15			18		15		33	
01:30			0		0		0		13:30			8		8		16	
01:45			0		0		0		13:45			8	51	20	57	28	108
02:00			0		0		0		14:00			10		10		20	
02:15			0		0		0		14:15			8		17		25	
02:30			0		0		0		14:30			9		16		25	
02:45			0		0		0		14:45			8	35	17	60	25	95
03:00			0		0		0		15:00			11		21		32	
03:15			0		0		0		15:15			18		18		36	
03:30			0		0		0		15:30			12		16		28	
03:45			0		0		0		15:45			30	71	22	77	52	148
04:00			0		0		0		16:00			30		20		50	
04:15			0		0		0		16:15			15		24		39	
04:30			0		0		0		16:30			22		20		42	
04:45			0		1	1	1	1	16:45			9	76	14	78	23	154
05:00			2		1		3		17:00			15		23		38	
05:15			1		0		1		17:15			18		32		50	
05:30			3		2		5		17:30			13		5		18	
05:45			7	13	1	4	8	17	17:45			9	55	21	81	30	136
06:00			1		5		6		18:00			12		5		17	
06:15			10		3		13		18:15			3		5		8	
06:30			9		4		13		18:30			12		9		21	
06:45			16	36	8	20	24	56	18:45			4	31	7	26	11	57
07:00			11		7		18		19:00			5		16		21	
07:15			7		13		20		19:15			7		2		9	
07:30			7		10		17		19:30			5		4		9	
07:45			12	37	28	58	40	95	19:45			5	22	4	26	9	48
08:00			15		19		34		20:00			3		4		7	
08:15			8		13		21		20:15			6		1		7	
08:30			7		11		18		20:30			1		6		7	
08:45			9	39	11	54	20	93	20:45			4	14	1	12	5	26
09:00			21		10		31		21:00			2		0		2	
09:15			30		13		43		21:15			4		1		5	
09:30			12		13		25		21:30			3		0		3	
09:45			16	79	17	53	33	132	21:45			4	13	4	5	8	18
10:00			14		13		27		22:00			3		3		6	
10:15			15		25		40		22:15			1		0		1	
10:30			17		11		28		22:30			1		1		2	
10:45			17	63	18	67	35	130	22:45			2	7	1	5	3	12
11:00			10		15		25		23:00			1		1		2	
11:15			10		19		29		23:15			0		0		0	
11:30			15		7		22		23:30			1		0		1	
11:45			15	50	21	62	36	112	23:45			0	2	0	1	0	3
TOTALS				319		319		638	TOTALS				436		483		919
SPLIT %				50.0%		50.0%		41.0%	SPLIT %				47.4%		52.6%		59.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	755	802	1,557

AM Peak Hour			09:00	07:45	09:00	PM Peak Hour			15:45	16:30	15:45
AM Pk Volume			79	71	132	PM Pk Volume			97	89	183
Pk Hr Factor			0.658	0.634	0.767	Pk Hr Factor			0.808	0.695	0.880
7 - 9 Volume			76	112	188	4 - 6 Volume			131	159	290
7 - 9 Peak Hour			07:30	07:45	07:45	4 - 6 Peak Hour			16:00	16:30	16:00
7 - 9 Pk Volume			42	71	113	4 - 6 Pk Volume			76	89	154
Pk Hr Factor			0.700	0.634	0.706	Pk Hr Factor			0.633	0.695	0.770

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

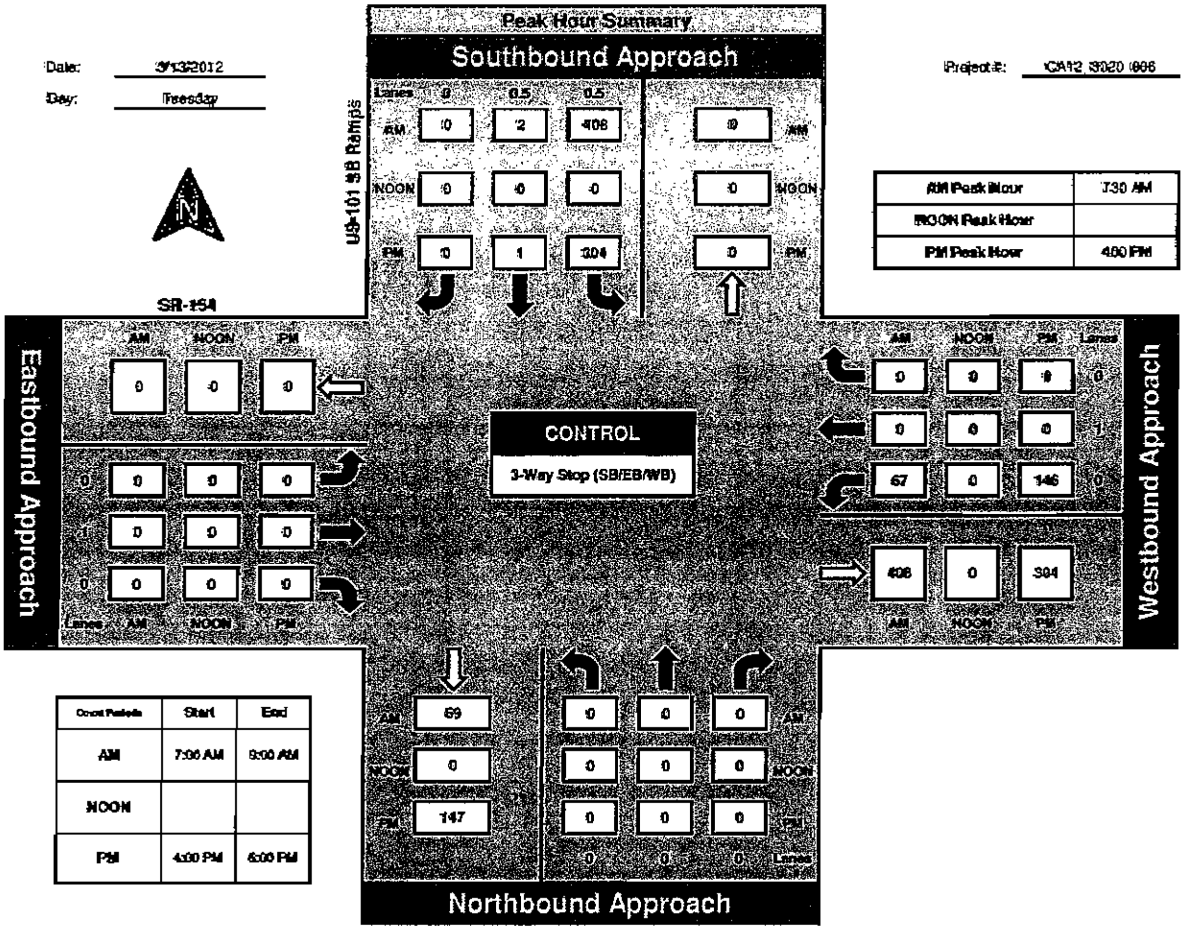
US-101 SB Ramps and SR-154 , City of Los Olivos

Date: 3/13/2012

Day: Tuesday

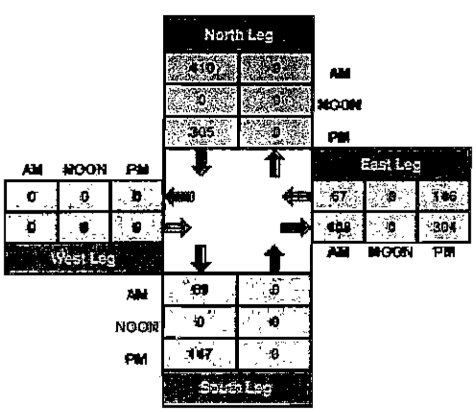
Project #: CA12_3020_006

AM Peak Hour	7:30 AM
NOON Peak Hour	
PM Peak Hour	4:00 PM

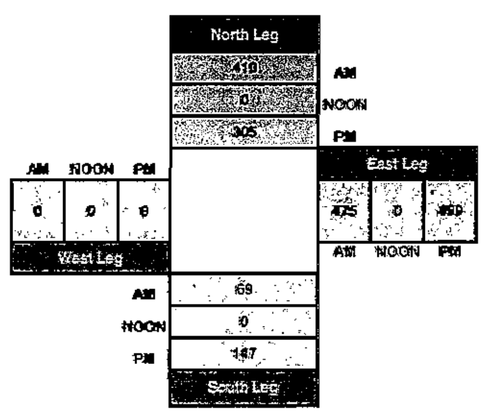


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



207

ITM Peak Hour Summary

Prepared By:

NDS

National Data & Surveying Services

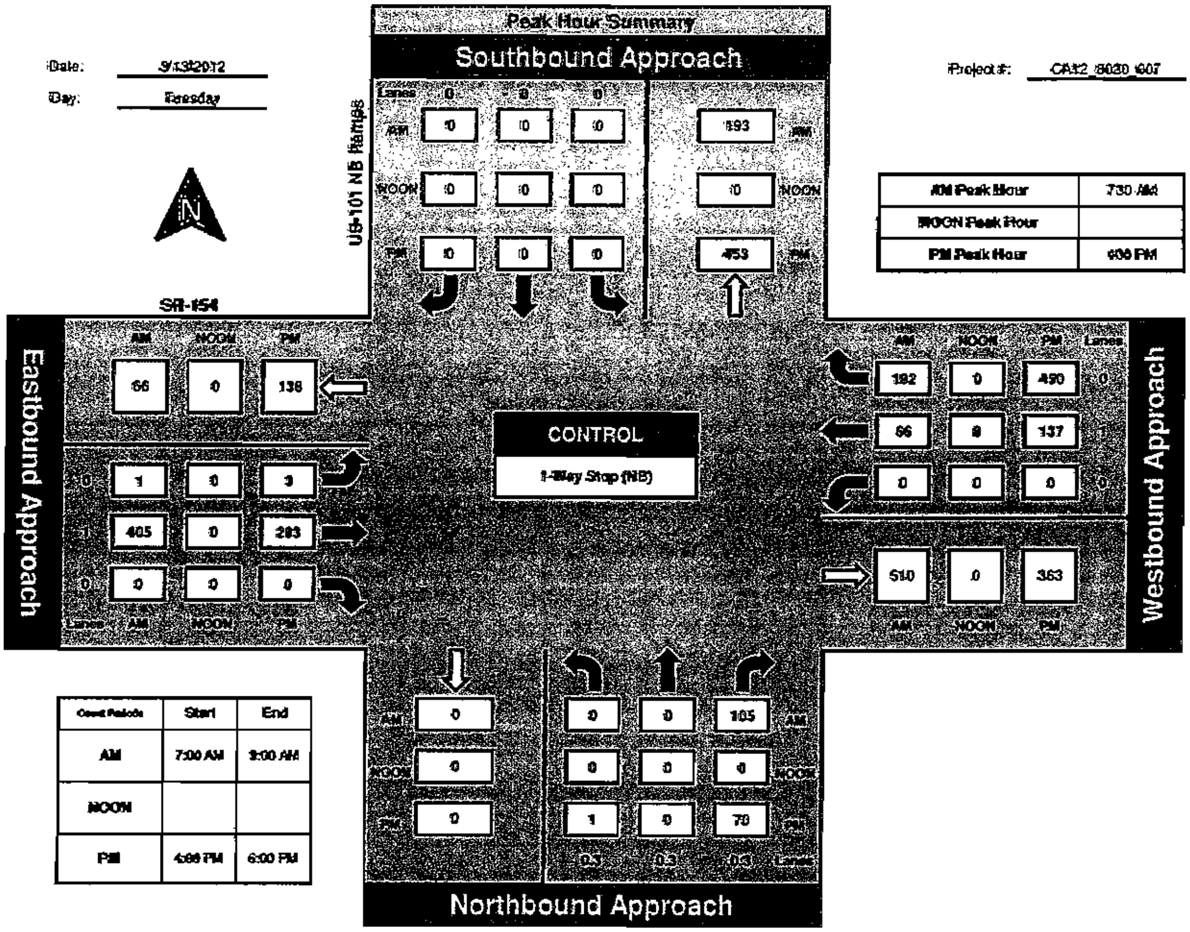
US-101 NB Ramps and SR-154 , City of Los Olivos

Date: 9/13/2012

Day: Tuesday

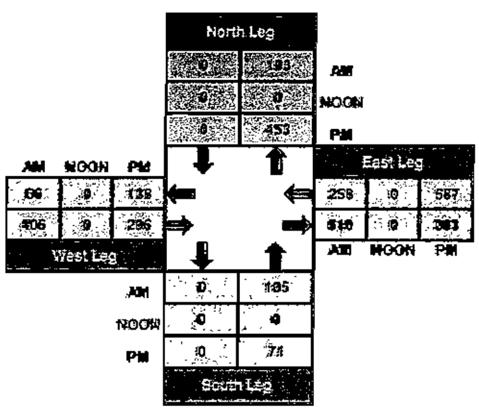
Project #: CA12_8030_007

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	400 PM

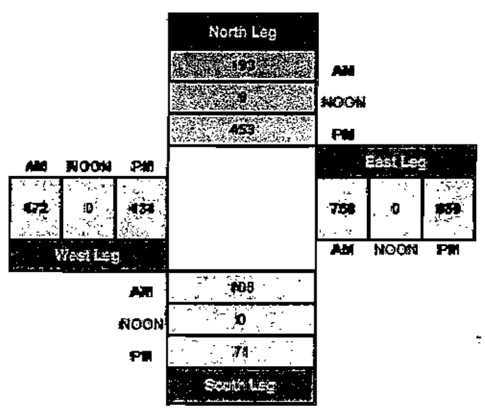


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg

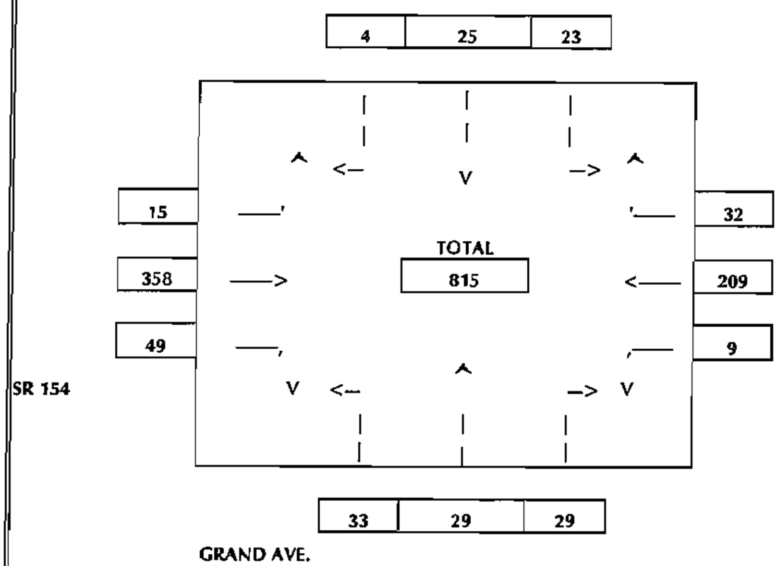


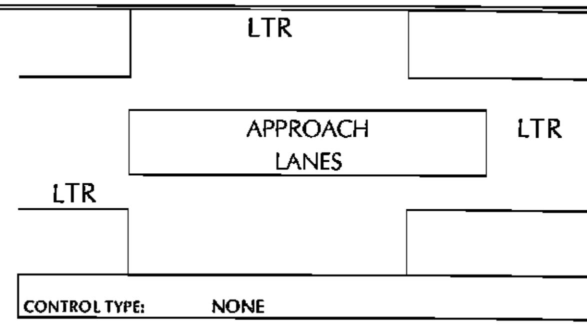
ASSOCIATED TRANSPORTATION ENGINEERS

INTERSECTION TURNING MOVEMENT SUMMARY

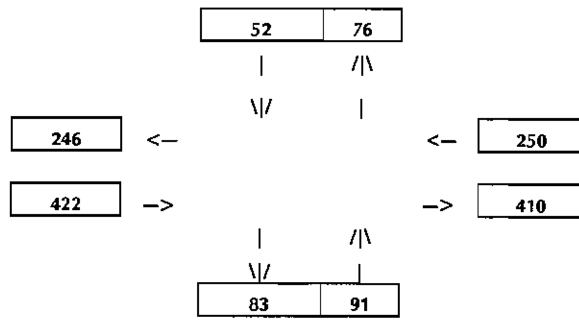
PROJECT: MATTEI'S TAVERN	PROJECT #: 07084	COUNT DATE: 03-15-11	FILE NAME: 02AM
N-S Approach: GRAND AVE.		COUNT TIME: 04:00 P.M. TO 6:00	
E-W Approach: SR 154		CITY: LOS OLIVOS	WEATHER: CLEAR

PEAK HOUR: 08:00 AM TO 09:00 AM





ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	—	To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL VOLUMES
COUNT DATA															
07:00 AM	—	07:15 AM	1	3	1	3	0	2	1	52	7	0	27	1	98
07:15 AM	—	07:30 AM	10	5	2	4	1	2	4	116	15	1	67	2	229
07:30 AM	—	07:45 AM	17	7	6	6	5	5	7	207	24	4	118	4	410
07:45 AM	—	08:00 AM	24	7	7	10	10	5	10	328	36	7	154	6	604
08:00 AM	—	08:15 AM	32	12	12	15	16	6	15	421	46	11	212	11	809
08:15 AM	—	08:30 AM	37	22	22	21	17	8	18	509	54	12	246	26	992
08:30 AM	—	08:45 AM	47	28	28	28	24	8	22	596	66	13	290	30	1180
08:45 AM	—	09:00 AM	57	36	36	33	35	9	25	686	85	16	363	38	1419
TOTAL BY PERIOD															
07:00 AM	—	07:15 AM	1	3	1	3	0	2	1	52	7	0	27	1	98
07:15 AM	—	07:30 AM	9	2	1	1	1	0	3	64	8	1	40	1	131
07:30 AM	—	07:45 AM	7	2	4	2	4	3	3	91	9	3	51	2	181
07:45 AM	—	08:00 AM	7	0	1	4	5	0	3	121	12	3	36	2	194
08:00 AM	—	08:15 AM	8	5	5	5	6	1	5	93	10	4	58	5	205
08:15 AM	—	08:30 AM	5	10	10	6	1	2	3	88	8	1	34	15	183
08:30 AM	—	08:45 AM	10	6	6	7	7	0	4	87	12	1	44	4	188
08:45 AM	—	09:00 AM	10	8	8	5	11	1	3	90	19	3	73	8	239
HOURLY TOTALS															
07:00 AM	—	08:00 AM	24	7	7	10	10	5	10	328	36	7	154	6	604
07:15 AM	—	08:15 AM	31	9	11	12	16	4	14	369	39	11	185	10	711
07:30 AM	—	08:30 AM	27	17	20	17	16	6	14	393	39	11	179	24	763
07:45 AM	—	08:45 AM	30	21	22	22	19	3	15	389	42	9	172	26	770
08:00 AM	—	09:00 AM	33	29	29	23	25	4	15	358	49	9	209	32	815

ASSOCIATED TRANSPORTATION ENGINEERS

INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT: MATTEI'S TAVERN		PROJECT #: 07084	COUNT DATE: 03-10-11	FILE NAME:	02PM
N-S Approach:	GRAND AVE.		COUNT TIME: 04:00 P.M. TO 6:00		
E-W Approach:	SR 154		CITY: LOS OLIVOS	WEATHER:	SUNNY

PEAK HOUR: 04:15 PM TO 05:15 PM

NORTH

Southbound (GRAND AVE., north leg): 13 | 28 | 11

Eastbound (SR 154, west leg): 9 / 267 / 51

TOTAL 912

Westbound (east leg): 16 / 409 / 18

Northbound (GRAND AVE., south leg): 47 | 20 | 23

SR 154

GRAND AVE.

LTR

APPROACH LANES

LTR

LTR

CONTROL TYPE: NONE

ARRIVAL / DEPARTURE VOLUMES

North: 52 | 45

West: 469 <– ; 327 –>

East: <– 443 ; –> 301

South: 97 | 90

TIME PERIOD From	—	To	NORTHBOUND Left	NORTHBOUND Thru	NORTHBOUND Right	SOUTHBOUND Left	SOUTHBOUND Thru	SOUTHBOUND Right	EASTBOUND Left	EASTBOUND Thru	EASTBOUND Right	WESTBOUND Left	WESTBOUND Thru	WESTBOUND Right	TOTAL VOLUMES
COUNT DATA															
04:00 PM	—	04:15 PM	9	3	5	4	4	0	2	72	11	2	108	5	225
04:15 PM	—	04:30 PM	23	7	8	5	9	3	2	130	27	8	221	10	453
04:30 PM	—	04:45 PM	35	15	23	9	16	5	7	194	40	12	327	12	695
04:45 PM	—	05:00 PM	43	21	24	11	20	7	9	274	50	15	410	16	900
05:00 PM	—	05:15 PM	56	23	28	15	32	13	11	339	62	20	517	21	1137
05:15 PM	—	05:30 PM	72	25	30	15	36	17	12	409	69	24	597	30	1336
05:30 PM	—	05:45 PM	87	30	38	17	38	17	15	492	78	30	694	33	1569
05:45 PM	—	06:00 PM	96	38	44	17	38	19	15	549	86	33	772	39	1746
TOTAL BY PERIOD															
04:00 PM	—	04:15 PM	9	3	5	4	4	0	2	72	11	2	108	5	225
04:15 PM	—	04:30 PM	14	4	3	1	5	3	0	58	16	6	113	5	228
04:30 PM	—	04:45 PM	12	8	15	4	7	2	5	64	13	4	106	2	242
04:45 PM	—	05:00 PM	8	6	1	2	4	2	2	80	10	3	83	4	205
05:00 PM	—	05:15 PM	13	2	4	4	12	6	2	65	12	5	107	5	237
05:15 PM	—	05:30 PM	16	2	2	0	4	4	1	70	7	4	80	9	199
05:30 PM	—	05:45 PM	15	5	8	2	2	0	3	83	9	6	97	3	233
05:45 PM	—	06:00 PM	9	8	6	0	0	2	0	57	8	3	78	6	177
HOURLY TOTALS															
04:00 PM	—	05:00 PM	43	21	24	11	20	7	9	274	50	15	410	16	900
04:15 PM	—	05:15 PM	47	20	23	11	28	13	9	267	51	18	409	16	912
04:30 PM	—	05:30 PM	49	18	22	10	27	14	10	279	42	16	376	20	883
04:45 PM	—	05:45 PM	52	15	15	8	22	12	8	298	38	18	367	21	874
05:00 PM	—	06:00 PM	53	17	20	6	18	12	6	275	36	18	362	23	846

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

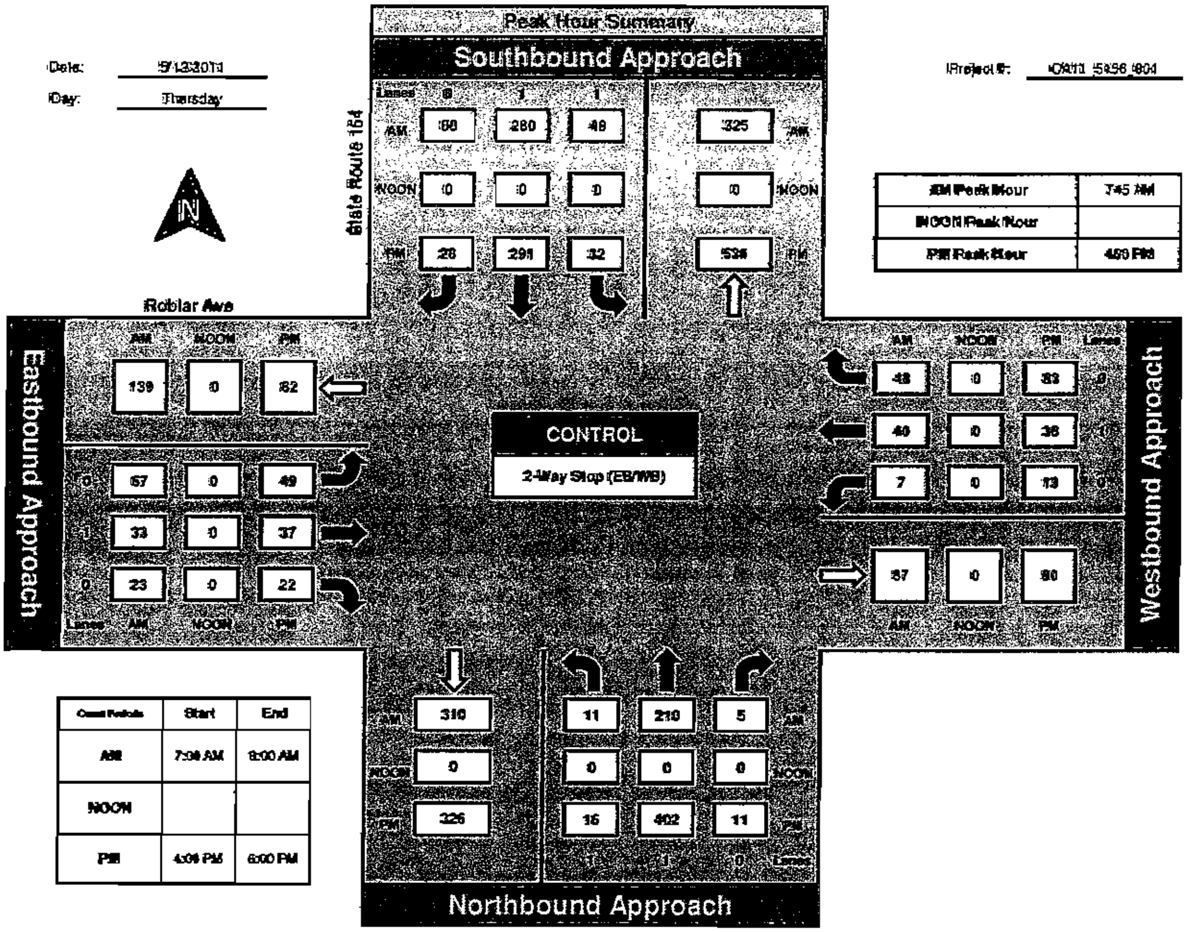
State Route 154 and Roblar Ave., City of Santa Ynez

Date: 5/12/2011

Day: Thursday

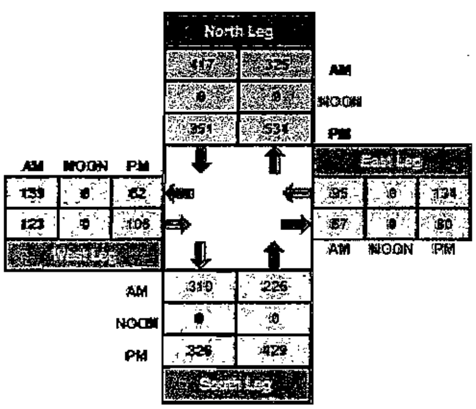
Project #: CA11_5456_004

AM Peak Hour	7:45 AM
NOON Peak Hour	
PM Peak Hour	4:00 PM

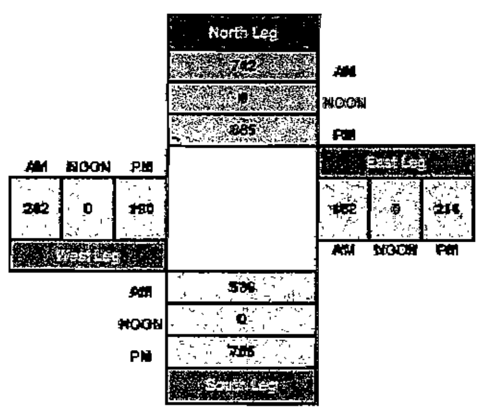


Count Periods	Start	End
AM	7:00 AM	8:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Edison St and SR-154 (San Marcos Pass Rd)

Date: 7/28/2011

Day: Thursday

Project #: CA11_5284_001

AM Peak Hour	
NOON Peak Hour	
PM Peak Hour	4:45 PM

Peak Hour Summary

CONTROL: 4-Way Stop

Southbound Approach (Edison St)

	Right	Thru	Left	Exit
Lanes	0	1	0	
AM	0	0	0	0
NOON	0	0	0	0
PM	27	76	5	114

Eastbound Approach (SR-154 (San Marcos Pass Rd))

	Lanes	AM	NOON	PM
Exit		0	0	412
Left	1	0	0	11
Thru	2	0	0	211
Right	0	0	0	98

Westbound Approach

	AM	NOON	PM	Lanes
Right	0	0	19	0
Thru	0	0	261	2
Left	0	0	25	1
Exit	0	0	223	

Northbound Approach

	Exit	Left	Thru	Right
AM	0	0	0	0
NOON	0	0	0	0
PM	199	124	84	7
Lanes		0	1	0

Count Periods	Start	End
AM		
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Direction	AM	NOON	PM
North Leg	In	0	0	108
North Leg	Out	0	0	114
West Leg	Out	0	0	412
West Leg	In	0	0	320
East Leg	In	0	0	305
East Leg	Out	0	0	223
South Leg	Out	0	0	199
South Leg	In	0	0	215

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	0	0	222
West Leg	0	0	732
East Leg	0	0	528
South Leg	0	0	414

212

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

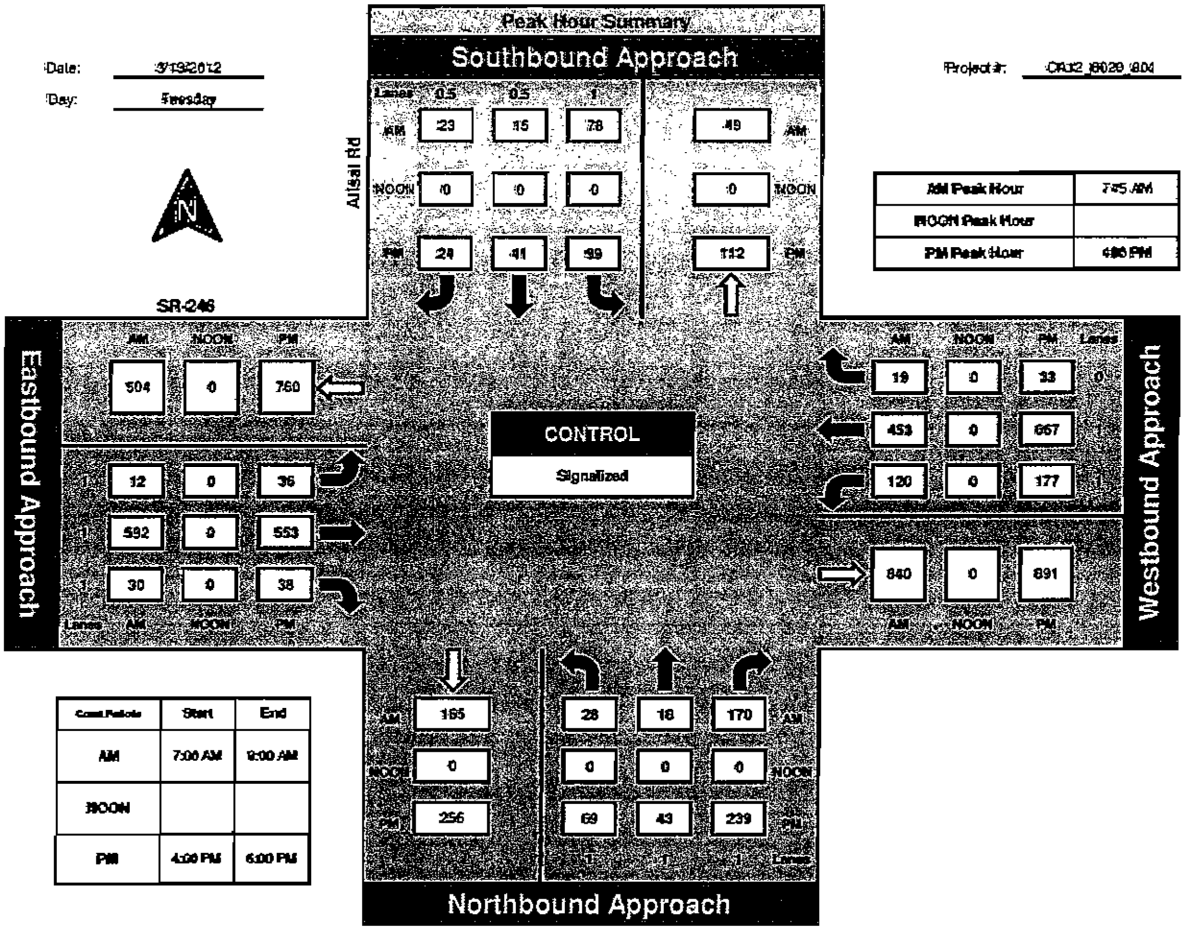
Allsal Rd and SR-246 , City of Solvang

Date: 3/19/2012

Day: Tuesday

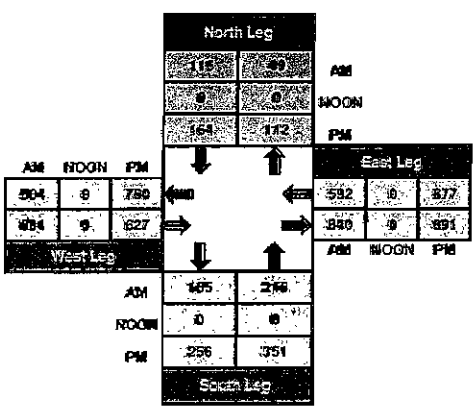
Project #: CA12_8029_804

AM Peak Hour	7:45 AM
NOON Peak Hour	
PM Peak Hour	4:00 PM

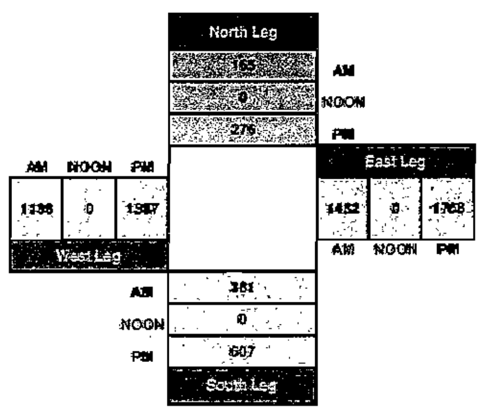


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

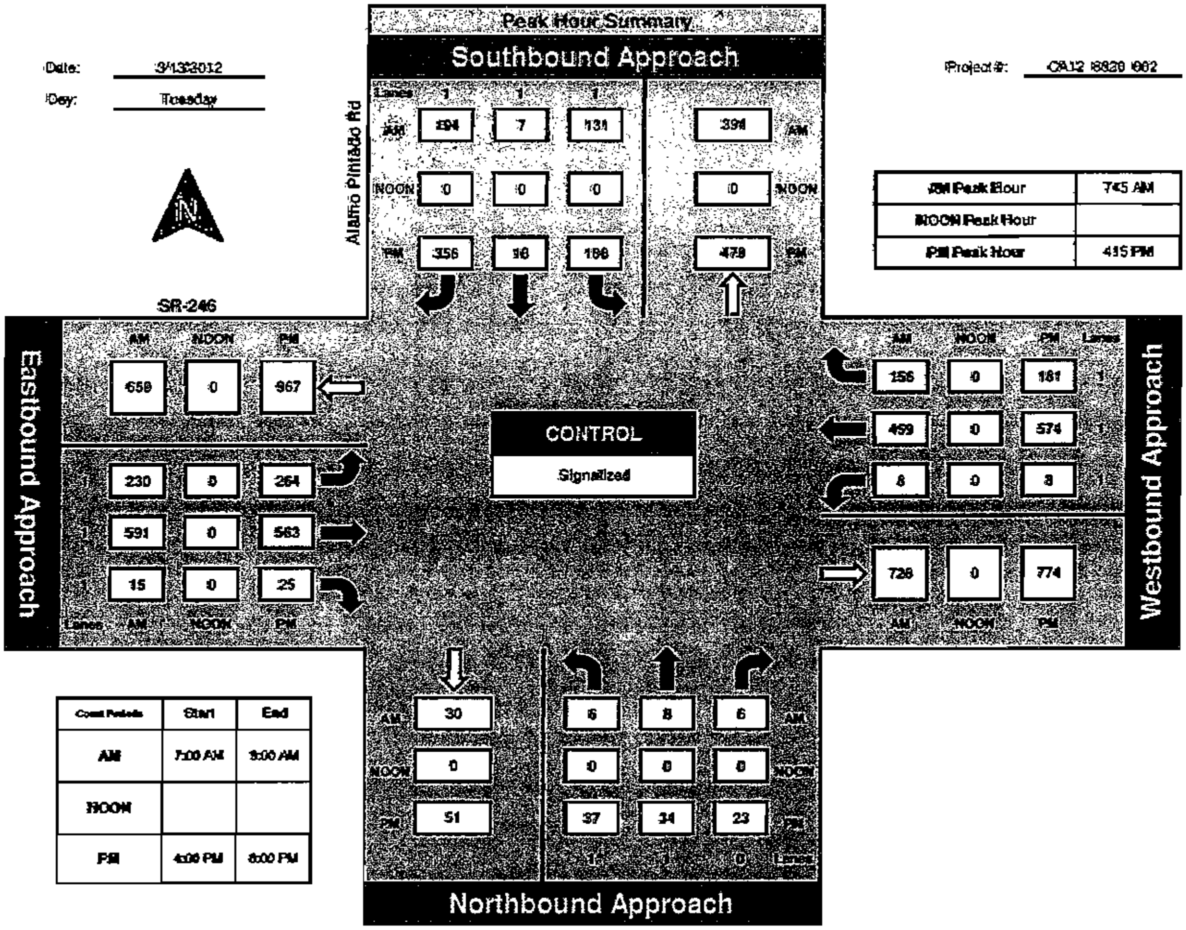
Alamo Pintado Rd and SR-246 , City of Solvang

Date: 3/13/2012

Day: Tuesday

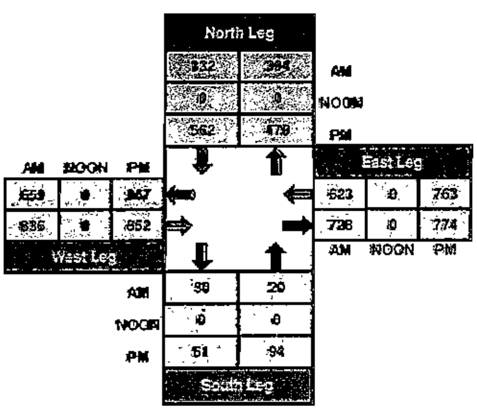
Project #: CA12 8820 002

AM Peak Hour	745 AM
NOON Peak Hour	
PM Peak Hour	415 PM

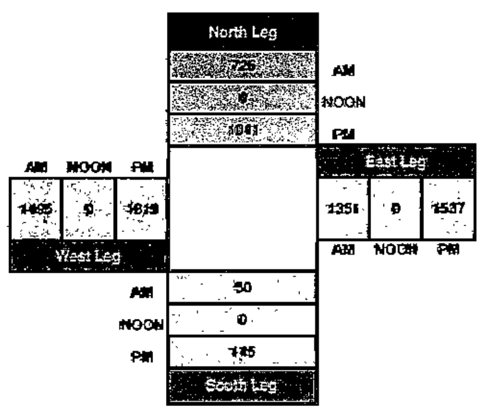


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Refugio Rd and SR-246 , City of Solvang

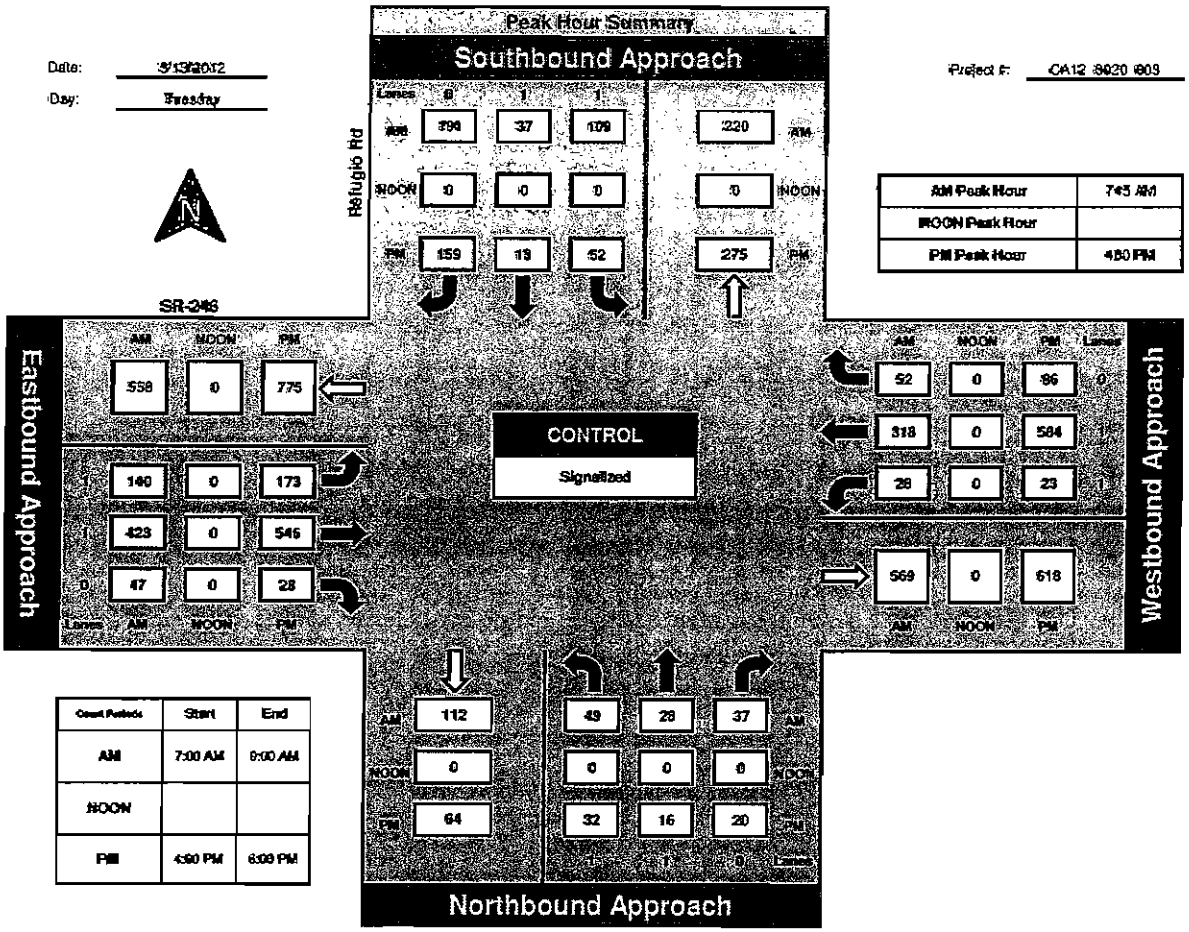
Date: 3/13/2012

Day: Tuesday

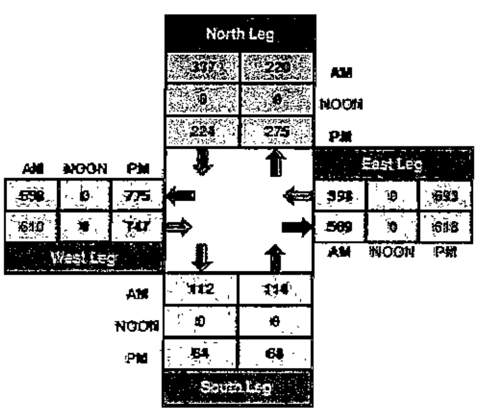
Project #: CA12 8020 809

AM Peak Hour	7:45 AM
NOON Peak Hour	
PM Peak Hour	4:30 PM

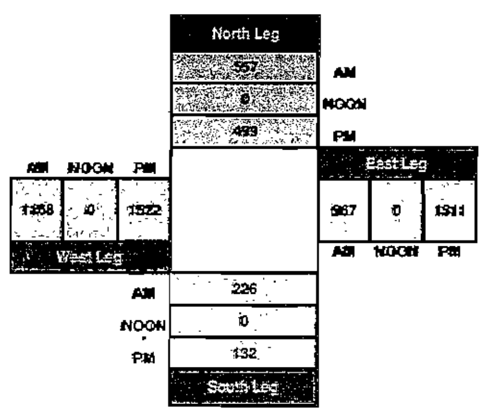
Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM



Total Ins & Outs



Total Volume Per Leg



215

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

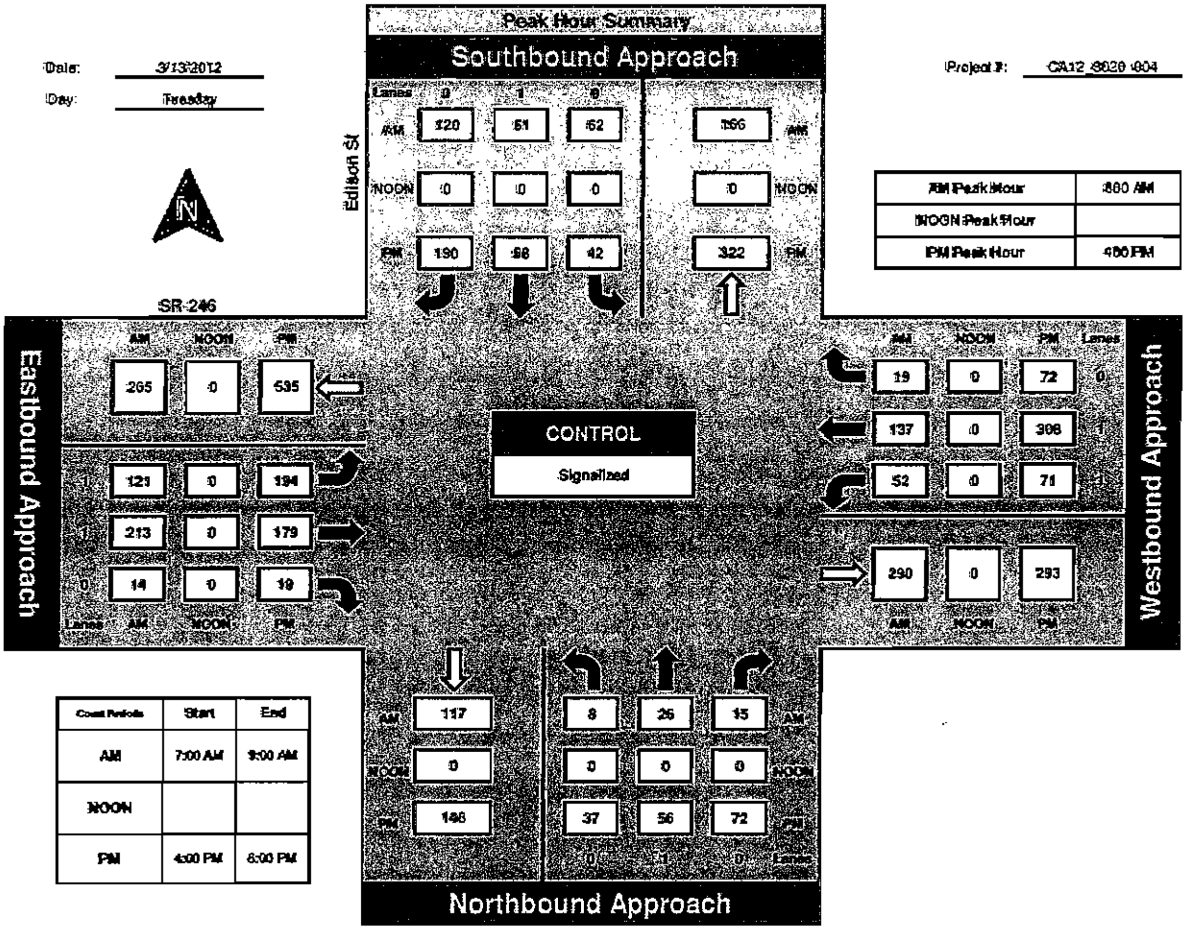
Edison St and SR-246, City of Santa Ynez

Date: 3/13/2012

Day: Tuesday

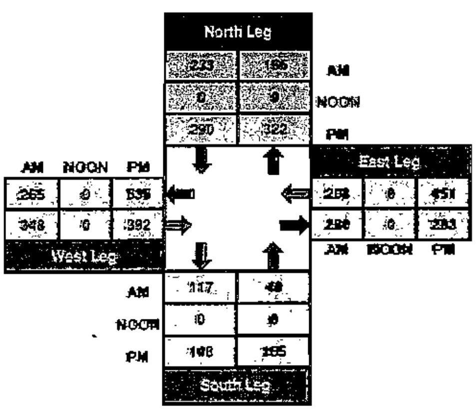
Project #: CA12_5020_004

AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	400 PM

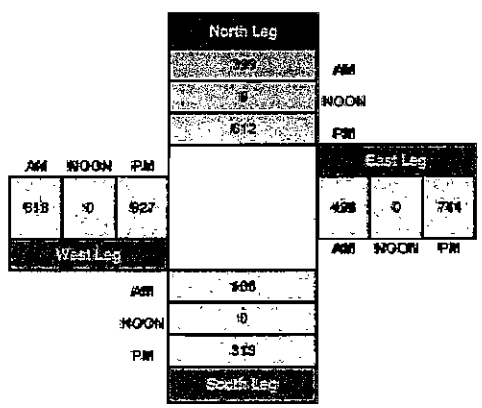


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



216

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

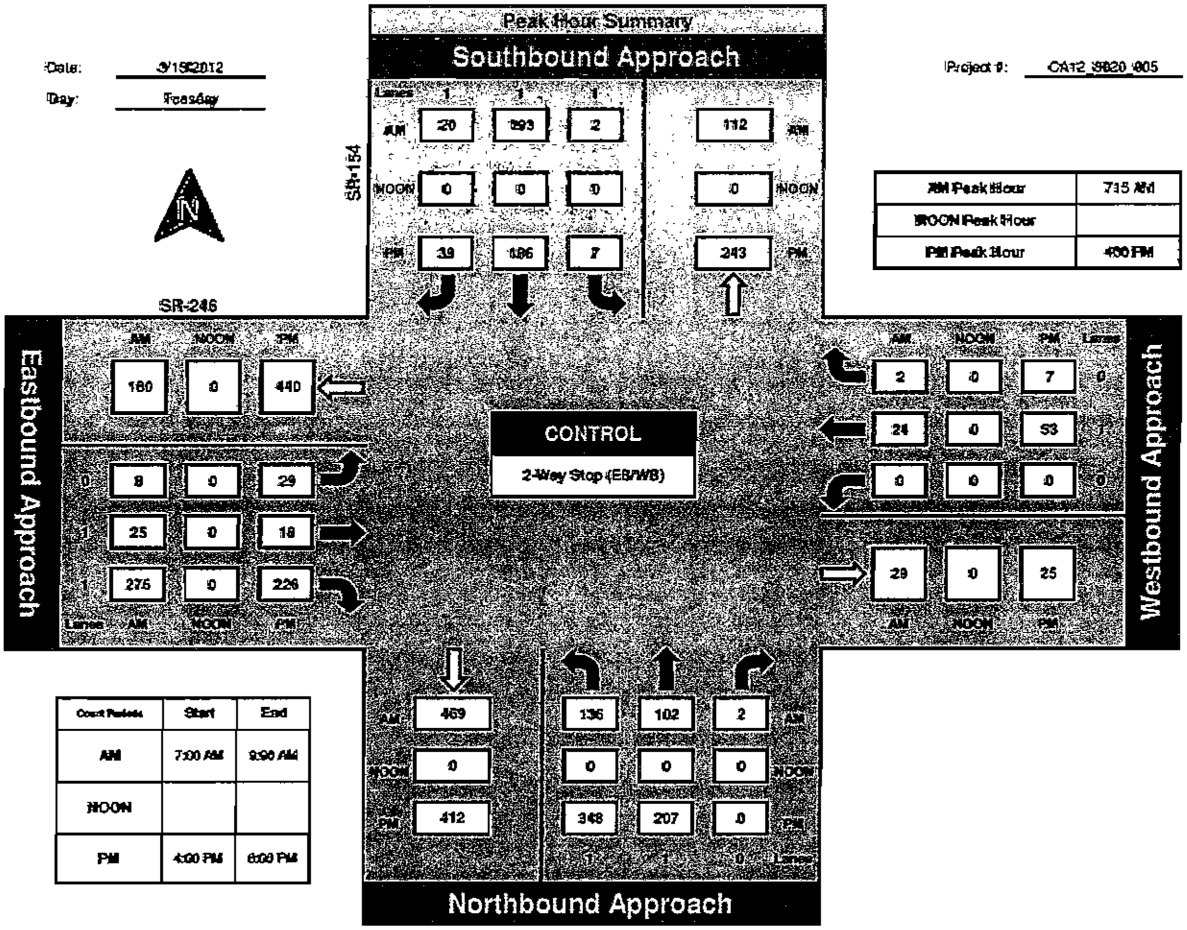
SR-154 and SR-246 , City of Santa Ynez

Date: 3/15/2012

Day: Thursday

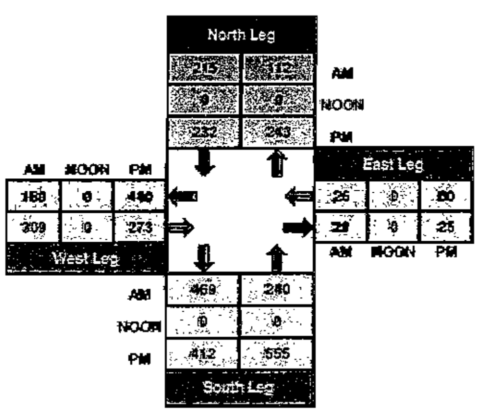
Project #: CA12_5820_005

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	400 PM

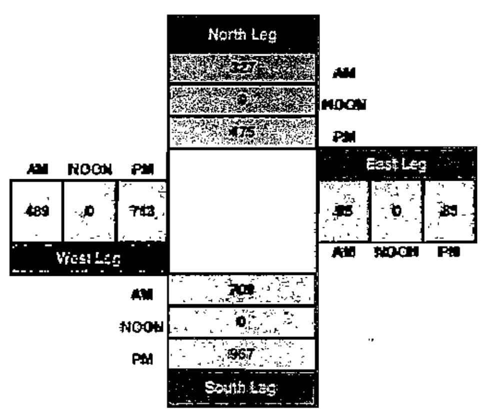


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



APPENDIX J

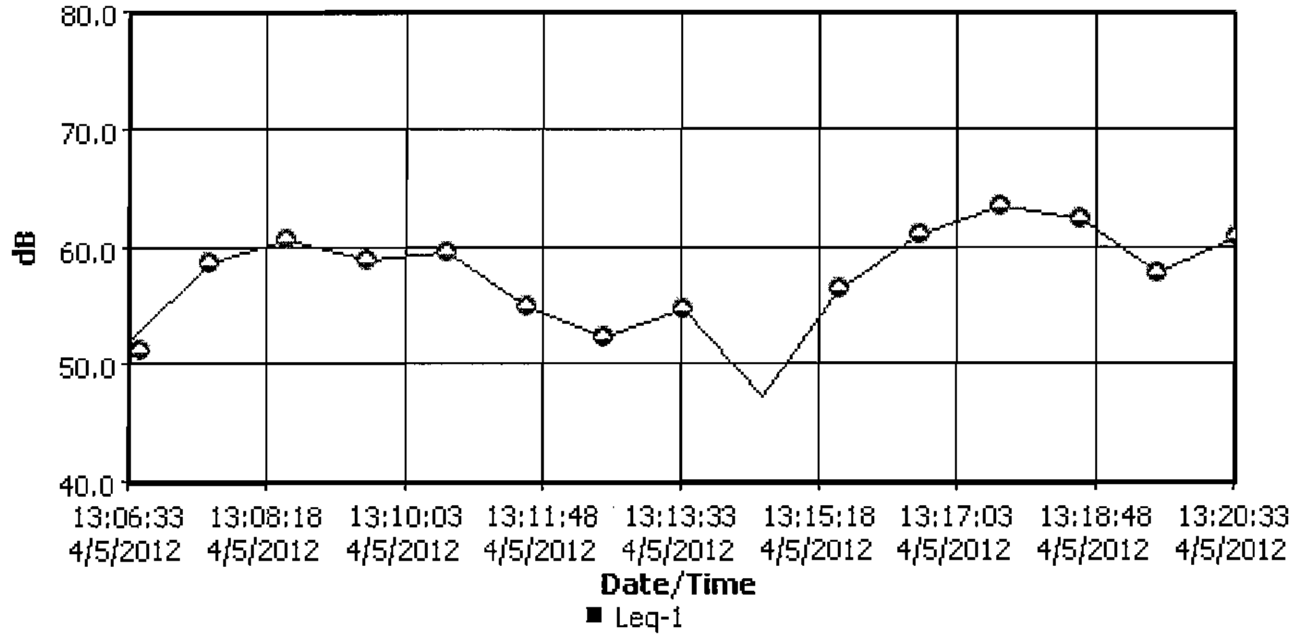
NOISE MONITORING OUTPUT FILES

Site A - Chumash 4/5/2012

Data Panel Site A

Description	Meter/Sensor	Value	Description	Meter/Sensor	Value
Weighting	1	A	Response	1	SLOW
Criterion Time	1	8 hrs.	Projection Time	1	480 mins.
Lmax	1	71.1 dB	Lmin	1	43.5 dB
Leq	1	59 dB	CNEL	1	-214748364.
8 dB					
LDN	1	-214748364.8 dB			

Data Chart Site A

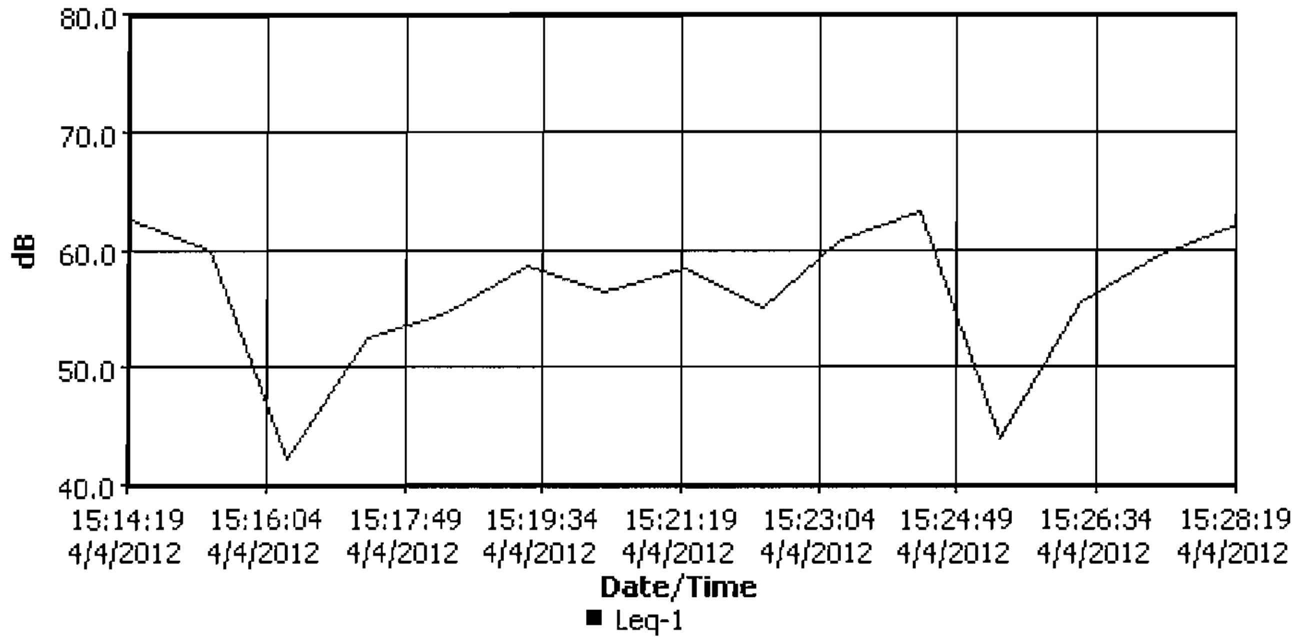


Site B - Chumash 4/4/2012

Data Panel Site B

Description	Meter/Sensor	Value	Description	Meter/Sensor	Value
Weighting	1	A	Response	1	SLOW
Criterion Time	1	8 hrs.	Projection Time	1	480 mins.
Lmax	1	85.6 dB	Lmin	1	26.7 dB
Leq	1	56.8 dB	CNEL	1	61.3 dB
LDN	1	59.8 dB			

Data Chart Site B

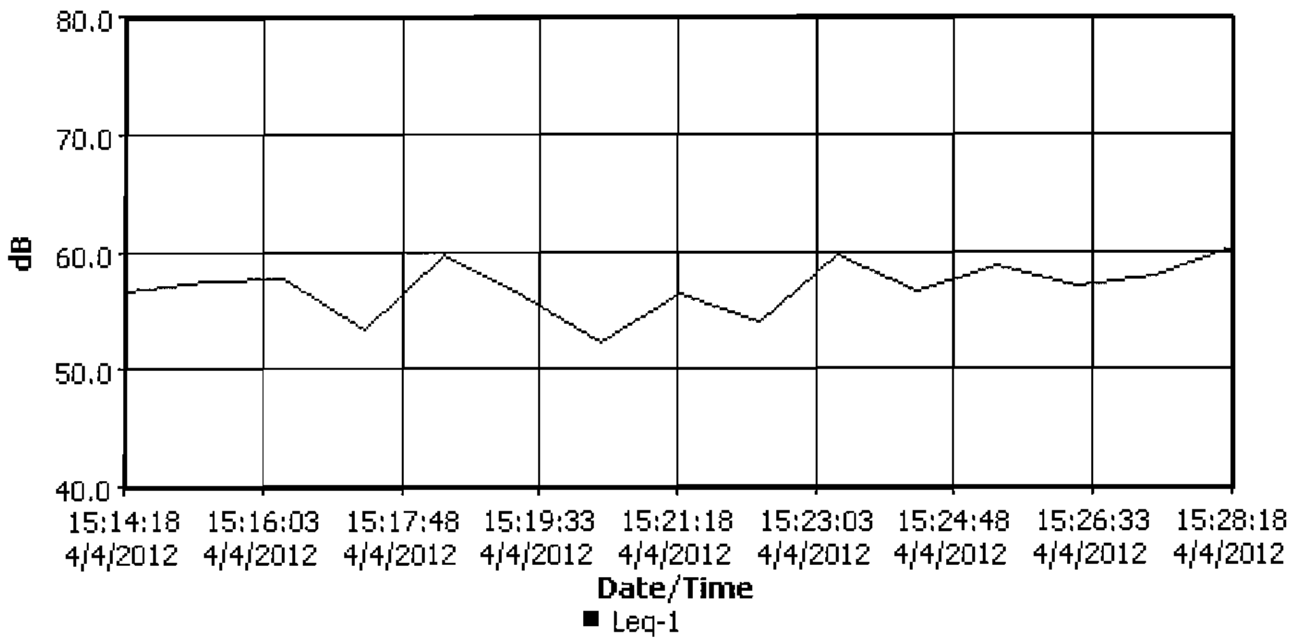


Site C - Chumash 4/4/2012

Data Panel Site C

Description	Meter/Sensor	Value	Description	Meter/Sensor	Value
Weighting	1	A	Response	1	SLOW
Criterion Time	1	8 hrs.	Projection Time	1	480 mins.
Lmax	1	86.8 dB	Lmin	1	24.5 dB
Leq	1	55.4 dB	CNEL	1	58.9 dB
LDN	1	58.6 dB			

Data Chart Site C

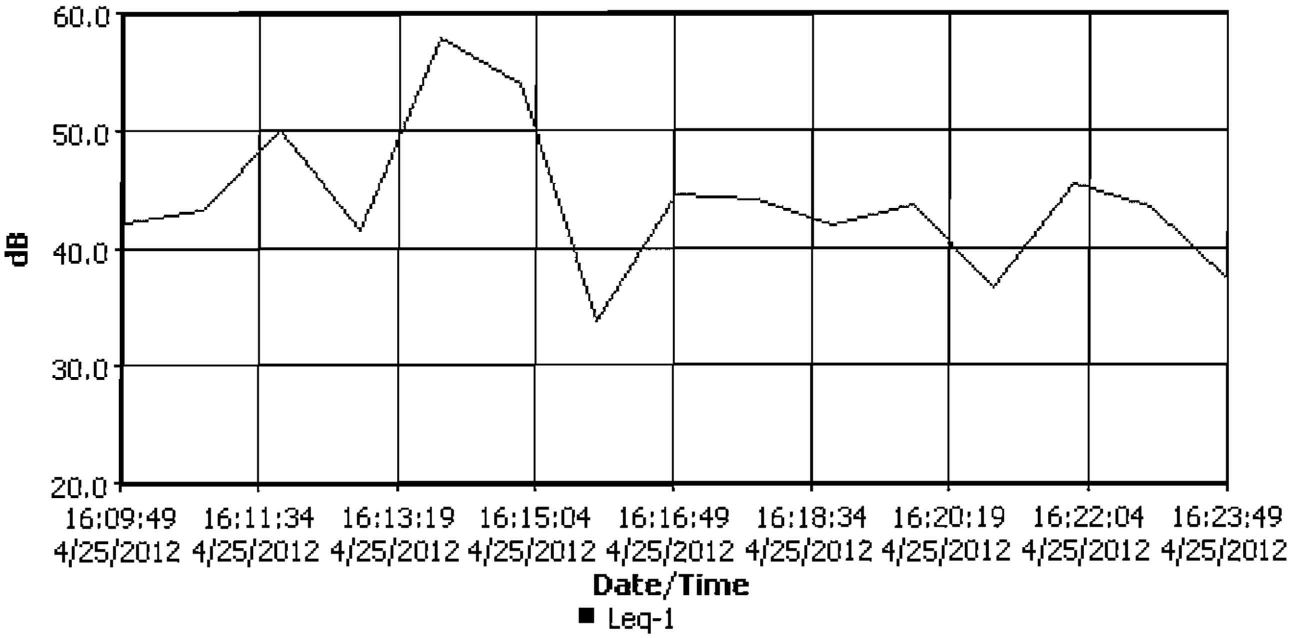


Chumash 4/25/2012 Site D

Data Panel Site D

Description	Meter/Sensor	Value	Description	Meter/Sensor	Value
Weighting	1	A	Response	1	SLOW
Criterion Time	1	8 hrs.	Projection Time	1	480 mins.
Lmax	1	74.3 dB	Lmin	1	25.6 dB
Leq	1	48.9 dB	CNEL	1	48.9 dB
LDN	1	48.9 dB			

Data Chart Site D

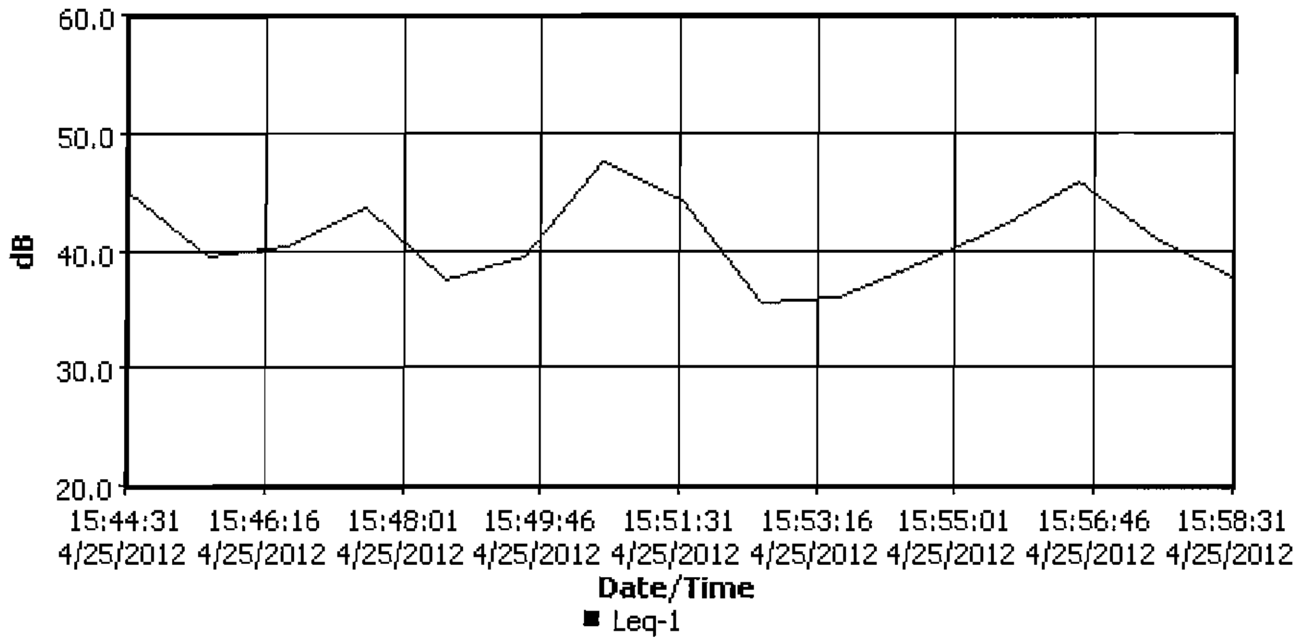


Chumash 4/25/2012 Site E

Data Panel Site E

Description	Meter/Sensor	Value	Description	Meter/Sensor	Value
Weighting	1	A	Response	1	SLOW
Criterion Time	1	8 hrs.	Projection Time	1	480 mins.
Lmax	1	63.5 dB	Lmin	1	31 dB
Leq	1	42.4 dB	CNEL	1	42.4 dB
LDN	1	42.4 dB			

Data Chart Site E

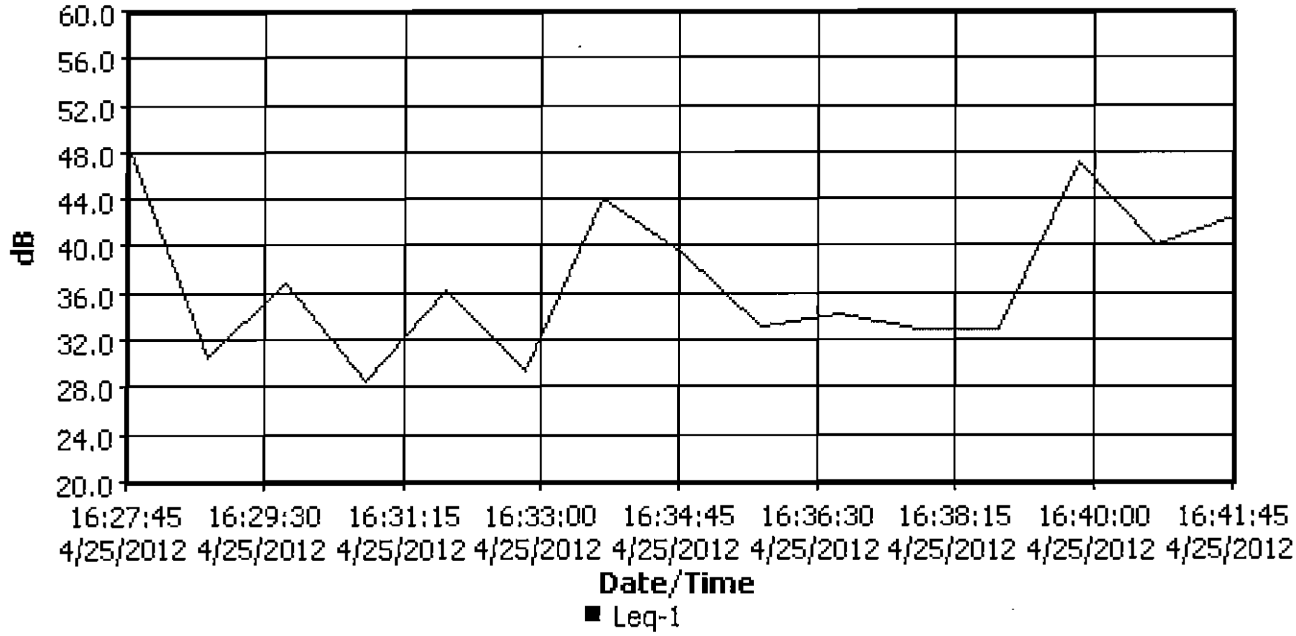


Chumash 4/25/2012 Site F

Data Panel Site F

Description	Meter/Sensor	Value	Description	Meter/Sensor	Value
Weighting	1	A	Response	1	SLOW
Criterion Time	1	8 hrs.	Projection Time	1	480 mins.
Lmax	1	62.8 dB	Lmin	1	23.3 dB
Leq	1	41.3 dB	CNEL	1	41.3 dB
LDN	1	41.3 dB			

Data Chart Site F



APPENDIX K

ECONOMIC IMPACT ANALYSIS

An Economic Impact Analysis of The Camp 4 Housing Project in the Santa Ynez Valley

For

The Santa Ynez Band of Chumash Indians

Prepared by

California Economic Forecast

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March 7, 2012

Final Report

Table of Contents

Background

The Chumash Tribe purchased about 1,400 acres of land located approximately 2 miles east of the existing Reservation from Fess Parker in 2009. The Fess Parker family originally named this land "Camp 4." The Tribe has promised the 143 enrolled Tribal members land assignments on the Camp 4 site.

The Chumash would like to build 143 homes on the Camp 4 site. They have requested an economic impact study for constructing the units and the infrastructure.

The lack of new home and non-residential development in Santa Barbara County since 2007 has resulted in a material reduction of the county's workforce in construction. Between February 2007 and December 2011, total jobs in construction contracted by nearly 3,500, or 35 percent.

Over 1,300 construction jobs were lost in the Santa Maria Valley alone over the last 4 1/2 years. The Lompoc economy has shed more than 350 construction jobs since the Spring of 2007. Total employment in the county has declined by more than 13,000 workers over the last 4 years.

Purpose of the Report

The California Economic Forecast has conducted an economic impact analysis for the Camp 4 housing project. The economic impact spans a 5 to 6 year period from 2012 to 2017 and is limited to Santa Barbara County. There is already a "base case" forecast of the Santa Barbara County that is routinely conducted and published. The analysis in this report shows how that base case forecast changes if the Camp 4 housing project is developed over the next 5 years.

Using a proprietary model of Santa Barbara County, estimates of the total employment, income, population, and consumer spending impacts on Santa Barbara County are determined as a result of the Camp 4 housing project including the infrastructure requirements.

Because the Santa Barbara County model is routinely updated and maintained to forecast economic activity for Santa Barbara County twice a year (since 1982), the impact analysis method presented here produces a clear picture of the economic impacts the project would produce.

The Model

Rather than using an input-output based modeling sysytem to estimate the total impacts of the project on the county's economy, the model used for this analysis is a proprietary econometric model of the Santa Barbara County economy.

Econometric methods rely on statistical procedures to estimate relationships for models specified on the basis of economic and demographic theory, prior studies, and local knowledge about the particular regional economy. Given good prior knowledge about regional economic relationships and the existence of available data, econometric methods provide an ideal way to incorporate expert judgment and quantitative information that will form the basis for a reliable forecast or impact analysis.

The modeling system is normally used to produce a forecast of the regional economy. It can also produce an alternative forecast of the regional economy that includes a policy change or a hypothetical change to the economic landscape. In this application, the Camp 4 housing project would represent that change.

A more detailed discussion on the econometric model used to estimate impacts in this report on can be found in the appendix.

Project Description and Assumptions

Introduction

The Santa Ynez Band of Chumash Indians is planning to construct a new housing development near its reservation. The project would include 143 housing units and an administration building. The structures would be located on the "Camp 4" land parcel. The project is scheduled to begin in July 2012, and is expected to be completed by the end of 2016. This report details the economic impacts that would be created by a project of this nature.

Economic impact studies measure the total effects of an event or project, including the direct, indirect, and induced effects. The direct effects consist of the "up-front" changes that occur – the new revenue that is generated by a construction firm, for example, as a result of the project.

The indirect and induced effects, on the other hand, are a measure of the "back-end" changes that take place. The indirect effects, in general, are separated from the direct effects by one step. This includes, for example, the wages that are paid to workers who are hired for the project, and the materials that are purchased as inputs for the project.

The induced effects are everything that occurs beyond the indirect effects. When new jobs are created, the workers who hold these jobs receive an income, part of which is spent in local stores, restaurants, and other establishments. This generates new income for the owners and employees of these establishments, and these individuals then generate more economic activity of their own. The induced effects, therefore, are the results of this economy-wide ripple or "multiplier" effect.

Methodology

In order to determine the direct, indirect, and induced effects—the sum of which is known as the total effect—the California Economic Forecast used its proprietary econometric model of Santa Barbara County. This model has been developed over a 20-year period, and measures virtually every principal category of economic activity that occurs in the region.

To isolate the effects of the project from the economic activity that would otherwise have taken place, the model was first run under a base case scenario. This consisted of a forecast without the inputs from the Camp 4 project. Then, two additional forecasts were made under both low- and high-cost value estimates for the housing units. By comparing each of these to the baseline forecast, the total economic impact on Santa Barbara County is derived.

The Direct Impacts

The California Economic Forecast used housing project cost estimates from the Chumash tribe, and introduced these costs into the Santa Barbara County econometric model. The direct effects of the project are therefore the entitlement, planning, mitigation, and construction costs.

It was necessary at the outset to determine the amount of expenditures that would remain in Santa Barbara County from those that would be spent elsewhere. In order for a project to have an economic impact in a local area, some or all of the funds for that project must be spent on firms that operate in the region, or jobs must be created for workers who reside there.[1]

Budget

In preparation for the Camp 4 project, the Chumash Tribe developed a budget that includes all anticipated expenses. Certain portions of this budget will be spent outside of Santa Barbara County. The following table provides details of the budget, under the low- and high-cost scenarios, and identifies the amounts that were omitted from the analysis because they will be directly spent outside of the region.

Camp 4 Project Budget
Low-Cost Scenario (Thousands of Dollars)

Category	Cost	Amount Omitted from Analysis	Amount Included in Analysis
Land and Site Improvements	38,865	0	38,865
Construction of Homes	78,650	0	78,650
Construction of Admin Building	5,000	0	5,000
Engineering, Architecture, Design, and Management Fees	8,964	8,964	0
Entitlement and Utility fees	4,290	185	4,105
Mitigation Fees	5,000	0	5,000
Total	140,769	9,149	131,620

[1] See Appendix

Camp 4 Project Budget High-Cost Scenario (Thousands of Dollars)			
Category	Cost	Amount Omitted from Analysis	Amount Included in Analysis
Land and Site Improvements	44,340	0	44,340
Construction of Homes	117,975	0	117,975
Construction of Administrative Building	7,500	0	7,500
Engineering, Architecture, Design, and Management Fees	8,964	8,964	0
Entitlement and Utility fees	4,290	185	4,105
Mitigation Fees	5,000	0	5,000
Total	188,069	9,149	178,920

Timeline

Because the Camp 4 housing project is expected to span a five-year period, it was necessary to structure the analysis around the timeline of the project. In general, the project is expected to proceed as follows:

Project Component	Timeframe
Entitlement	2012 Q2 – 2014 Q4
Mitigation fees	2012 Q2 – 2016 Q4
Site improvement	2013 Q2 – 2015 Q4
Construction of homes	2015 Q1 – 2016 Q4
Construction of administration building	2015 Q3 – 2016 Q4

To accommodate this schedule, we allocated the components of the project budget as follows:

	Camp 4 Project Budget Timeline Low-Cost Scenario (Thousands of Dollars)				
	Category				
Year	Entitlement	Land and Site Improvements	Construction of Homes	Construction of Administrative Building	Mitigation Fees
2012	1,368				833
2013	2,737	12,955			2,083
2014		25,910			833
2015			39,325	1,000	625
2016			39,325	4,000	625

	Camp 4 Project Budget Timeline High-Cost Scenario (Thousands of Dollars)				
	Category				
Year	Entitlement	Land and Site Improvements	Construction of Homes	Construction of Administrative Building	Mitigation Fees
2012	1,368				833
2013	2,737	14,780			2,083
2014		29,560			833
2015			58,988	1,500	625
2016			58,988	6,000	625

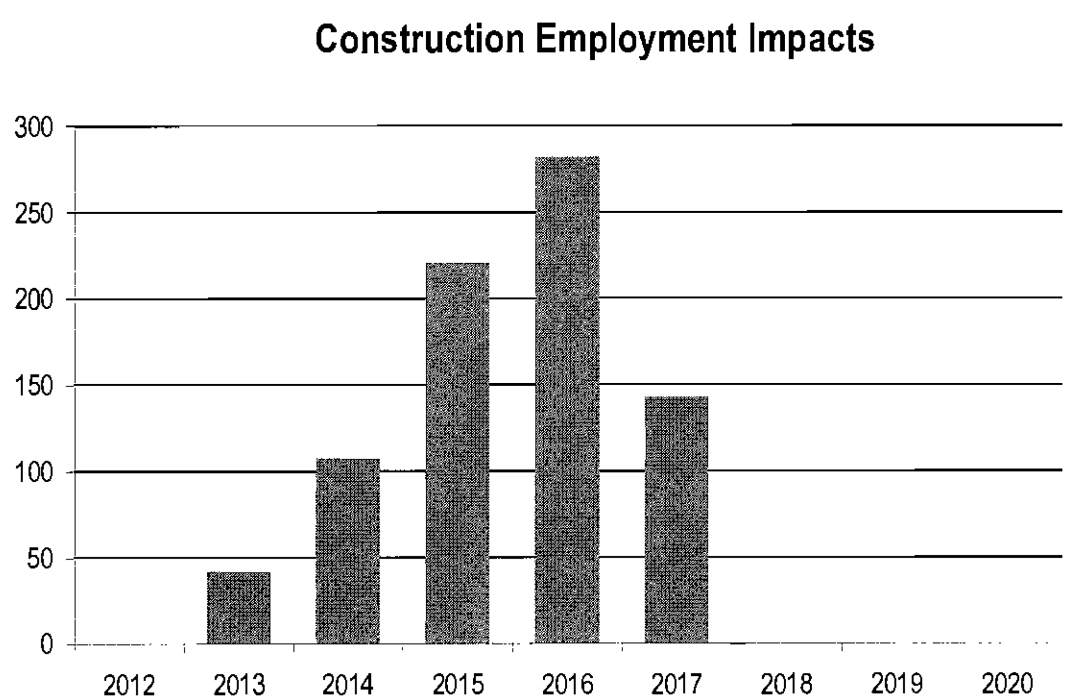
Impacts of Camp 4 Housing on Santa Barbara County

Case 1: Low Cost Scenario

The $132 million in new residential and non-residential building investment over the 2012 to 2016 time period produces economic impacts on the County economy which can be quantified. They include:

Wage and salary employment
Self employed employment
Population and net migration
Total housing units
Total building investment
Income
Total retail sales
Total consumer spending
Existing home sales

The total annual average employment impacts of grading and new construction are principally new construction jobs. In view of the level of planned residential investment that will be needed to construct the Camp 4 housing project, the following construction jobs per year will be needed:

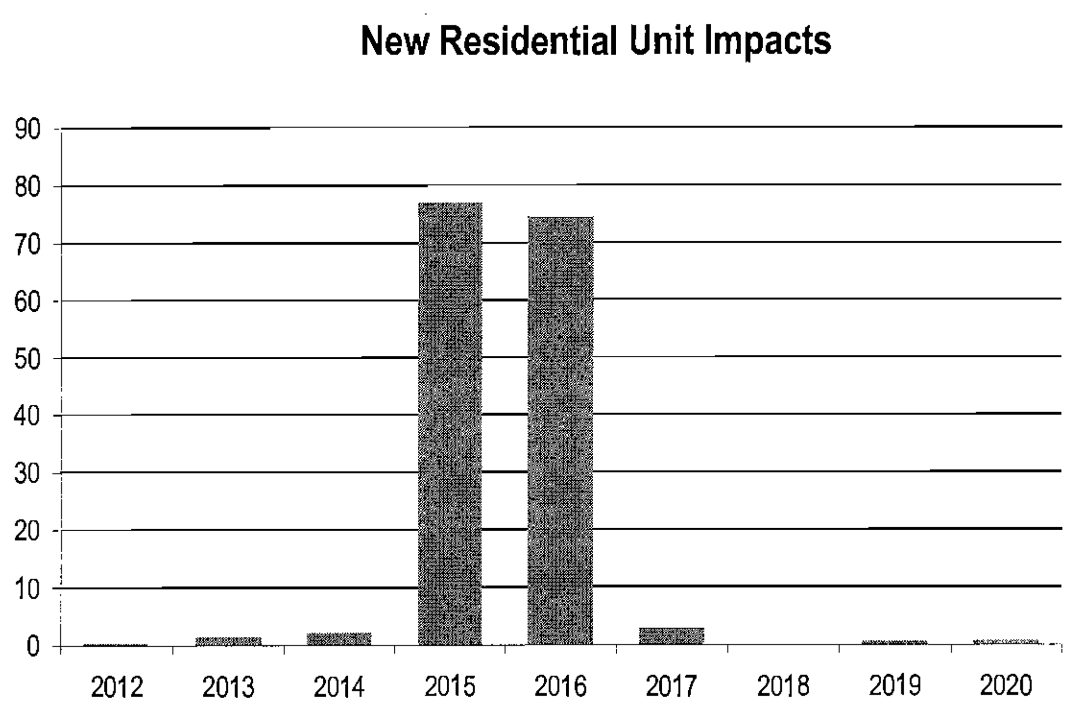


New construction jobs are created above and beyond what would normally be created in the 2013 to 2017 period due entirely to the Camp 4 housing project and the level of residential investment associated with the project.

The peak years of the project are 2015 and 2016 when all of the housing units are started, and the public administration building also breaks ground.

In view of the current economic climate, it would be difficult to overstate the importance of construction jobs. As a result of the housing bubble and subsequent bust, the construction industry has been devastated. Santa Barbara County lost over 3,000 construction jobs from 2006 to 2011, a decline of more than 30 percent. The Camp 4 project is expected to create several hundred new construction jobs, and in its peak year, will account for almost 10 percent of the jobs lost over the last few years.

The direct effects of the project on residential and non-residential structures—143 housing units and one principal administration building—produce indirect building effects of 6 additional single family homes and 10 multi-family home starts. The total construction impact of the project is 159 housing units.



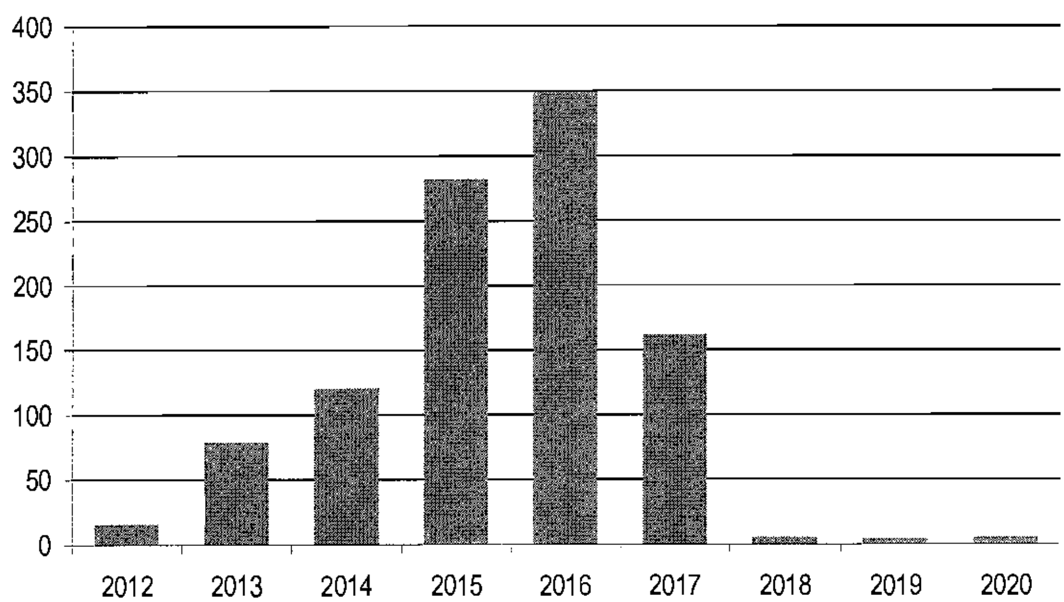
More than 250 construction jobs will be created in the peak year. The homes are completed in 2017 and no further construction worker project impacts are realized. However, the project will have an impact on employment across other industries through 2020.

Total annual avergae employment rises by a total impact of 348 workers in the peak year of the project, estimated to be 2016. Total job creation per year can be categorized as follows:

	Total Employment	Construc-tion	Public Utilities	Retail	Professional Services	Leisure & Hospitality	Finanial Activities	County Government
2012	15.0	0.1	0.0	0.0	0.5	0.9	0.2	13.7
2013	78.5	41.4	1.0	0.0	3.4	5.0	1.3	29.2
2014	119.8	106.9	1.9	0.0	5.1	4.4	1.5	4.3
2015	281.7	220.2	1.8	0.0	12.2	14.0	40.0	3.6
2016	348.3	281.7	3.3	10.8	12.1	5.6	40.1	3.6
2017	161.5	142.2	4.8	12.5	0.0	0.0	0.0	0.0
2018	5.0	0.0	4.2	0.6	0.0	0.0	0.0	0.1
2019	3.9	0.0	3.7	0.0	0.0	0.0	0.0	0.1
2020	4.3	0.0	3.2	0.0	0.0	0.0	0.7	0.3

Additional jobs in other sectors of the Santa Barbara County economy are created due to the indirect and induced effects of the project. The respending of income that occurs by firms providing goods and services to the Camp 4 housing project during the development and operations phase, and by new construction workers creates additional jobs in professional services, leisure, retail, and financial services. Much of the gain in financial services employment is directly related to the sale or rental of homes vacated by tribal members moving to Camp 4 housing.

Total Wage and Salary Employment Impacts

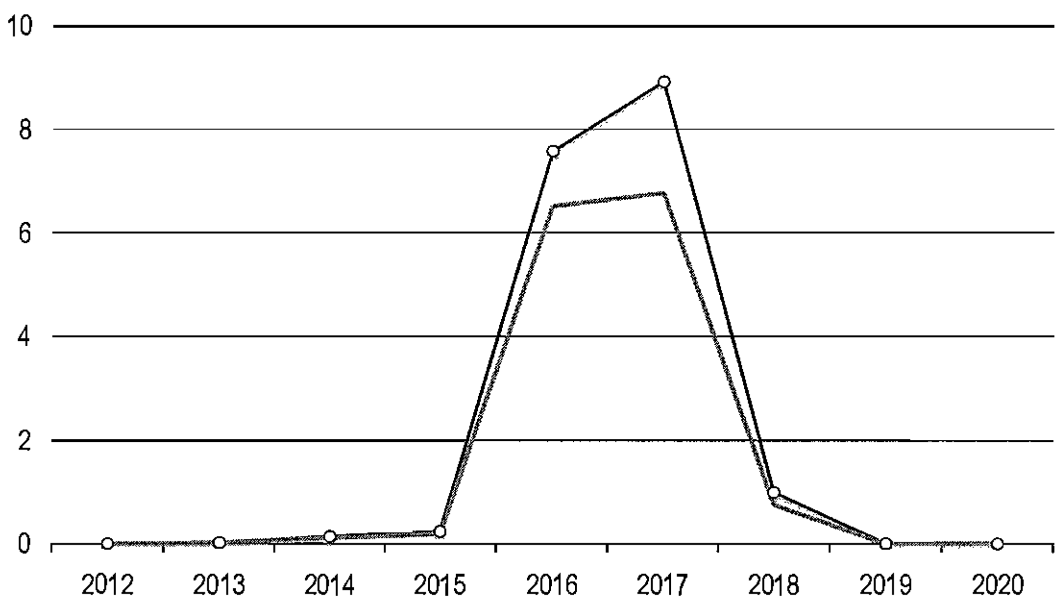


The consumer spending impacts occur principally in 2016 and 2017 when the homes are being completed and occupants must purchase furnishings, fixtures, and equipment for the homes. The total effects are presented here:

Consumer Spending Impacts

	Retail Sales	Total Sales
	-- millions of dollars --	
2012	$0.00	$0.00
2013	$0.02	$0.02
2014	$0.12	$0.14
2015	$0.19	$0.24
2016	$6.51	$7.58
2017	$6.77	$8.93
2018	$0.75	$0.99
2019	$0.00	$0.00
2020	$0.00	$0.00
Total	$14.36	$17.90

Consumer Spending Impacts

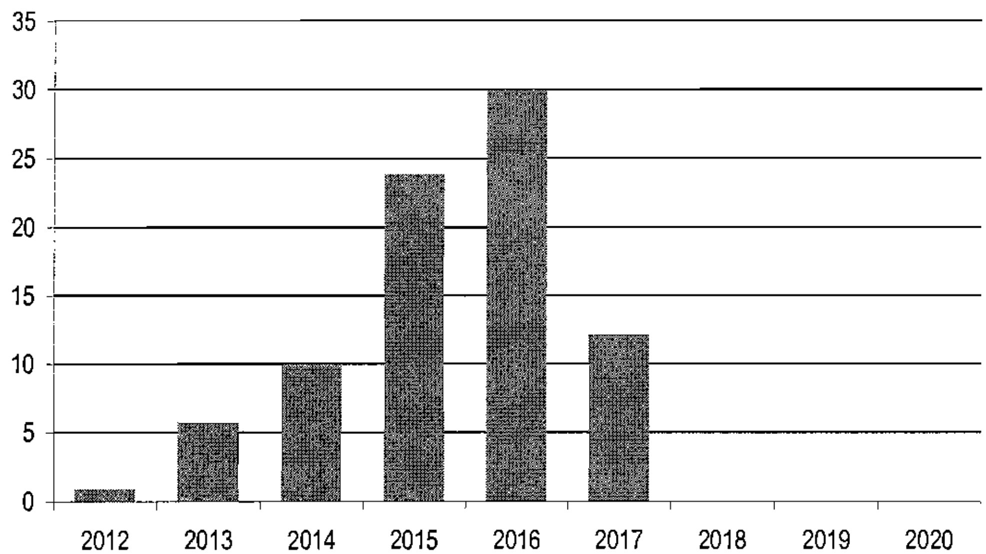


The project generates an estimated $18 million in total sales in the county. The peak year is 2017 when the homes are completed. The sales impacts result in just under 13 jobs in the retail sector on an annual average basis.

There is also the generation of income due to the project. Income impacts are principally the additional wages and salaries paid to construction workers and other workers who become employed due to the indirect and induced effects of the project.

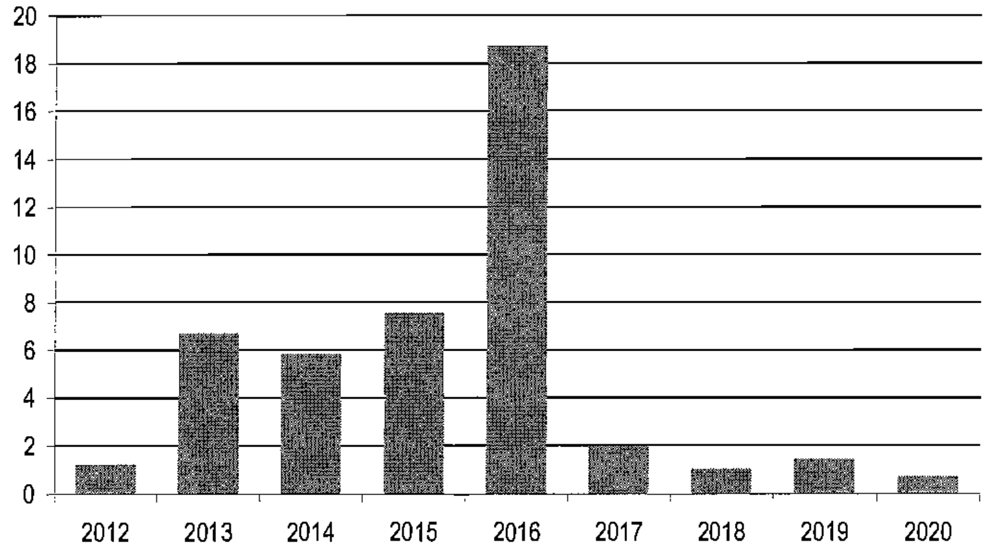
Total personal income (or income from all sources) rises by $82.4 million from 2012 to 2020. The peak year is 2016 when nearly $30 million is generated in the Santa Barbara County economy, much of it from new construction employment, retail expenditures, retail employment, and income generated by contractors that provide direct services to the project or whose income is the induced result of all other economic activity generated from the project.

Total Income Impacts



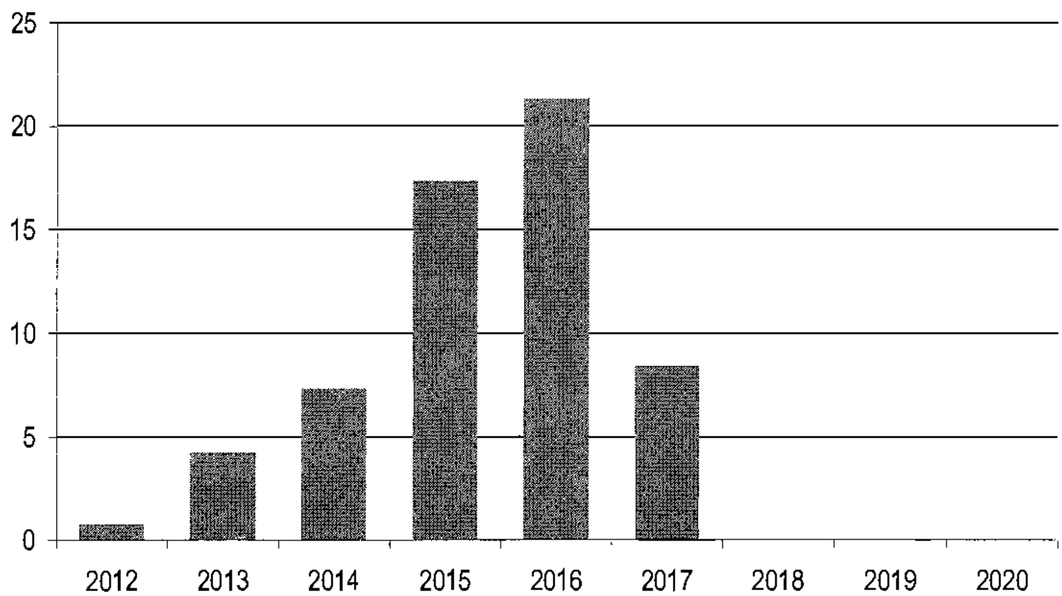
The project also produces impacts in the existing home market. The additional jobs and income created together with the additional housing for relocating tribal members results in additional purchases of homes in the county—a total of 45 over the 9 year period of analysis. Most of the existing homes purchased occur in 2016 when many of the new homes are built and are moved into.

Existing Home Sale Impacts



The estimated population impacts are minimal as a result of the project. Population is estimated to increase by 21 persons in the peak year of the project, either from relocating construction workers, other workers who were able to obtain employment as a result of the project, or from new migrants purchasing homes in the area vacated by relocating tribal members to Camp 4 housing.

Population Impacts



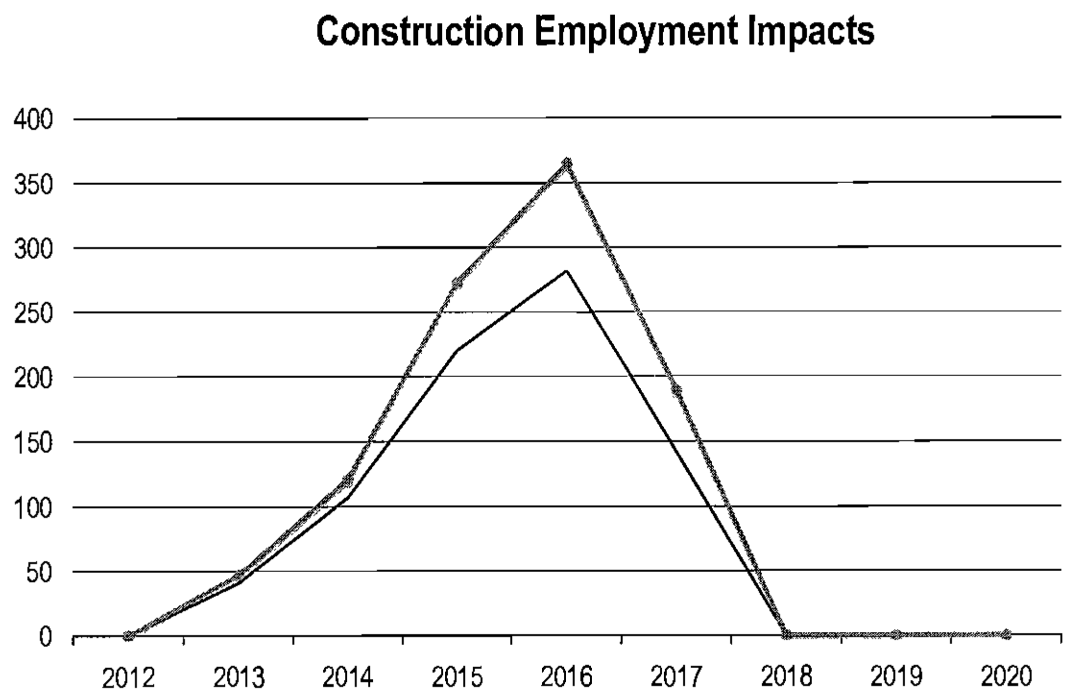
Case 2: High Cost Scenario

The $179 million in new residential and non-residential building investment over the 2012 to 2016 time period produces greater economic impacts on the County economy which can also be quantified.

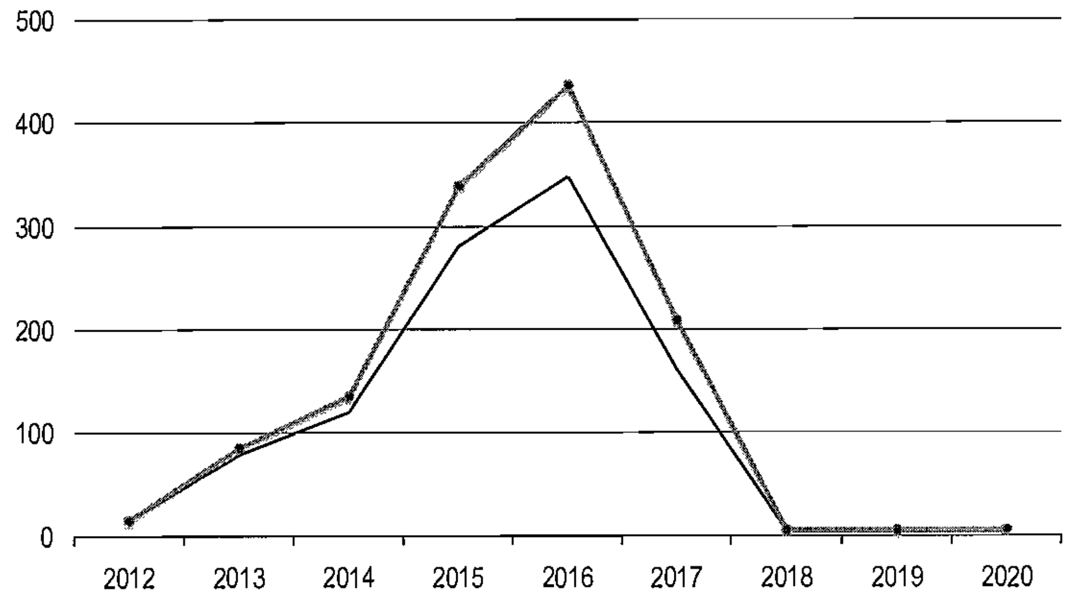
Under the high cost scenario, the impacts to the county are greater because the volume of project investment is higher.

For the low cost scenario, the average gross project expenditure per home constructed was $984,000. For the high cost scenario, the average cost rises to $1.32 million per home.

Under the high cost scenario, more construction and total jobs are created. In the peak year, 365 construction jobs and 436 total jobs are created in the county. Under this scenario, the Camp 4 project will account for more than 10 percent of the construction jobs that have been lost since 2006.



Total Wage & Salary Employment Impacts



The total annual average employment impacts under the High Cost scenario are shown in the table below. The impacts are similar to the low cost scenario presented earlier except that more jobs are created from a higher level of project expenditures.

	Total Employment	Construc-tion	Public Utilities	Retail	Professional Services	Leisure & Hospitality	Finanial Activities	County Government
2012	15.0	0.1	0.0	0.0	0.5	0.9	0.2	13.7
2013	84.9	47.0	1.0	0.0	3.8	5.5	1.4	29.2
2014	135.3	121.2	1.9	0.0	5.8	5.1	1.7	4.3
2015	339.4	272.9	1.8	0.0	14.9	17.6	40.9	3.6
2016	435.8	365.1	3.4	10.8	15.6	8.2	41.0	3.5
2017	209.8	189.7	4.8	13.0	0.0	0.0	0.0	0.0
2018	5.3	0.0	4.3	0.8	0.0	0.0	0.0	0.1
2019	5.7	0.0	3.7	0.0	0.0	1.8	0.0	0.2
2020	5.9	0.0	3.2	0.0	0.0	1.4	0.9	0.3

Consumer Spending Impacts

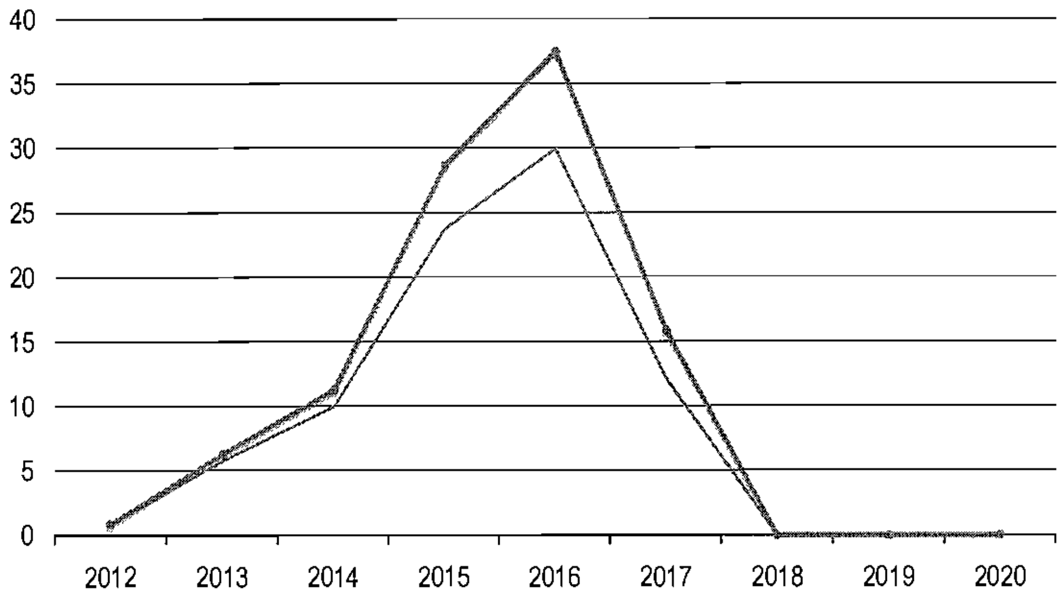
	Retail Sales	Total Sales
	-- *millions of dollars* --	
2012	$0.00	$0.00
2013	$0.02	$0.02
2014	$0.13	$0.15
2015	$0.22	$0.27
2016	$6.60	$7.69
2017	$6.90	$9.09
2018	$0.75	$1.00
2019	$0.00	$0.00
2020	$0.00	$0.00
Total	$14.62	$18.22

The consumer spending impacts occur principally in 2016 and 2017 when the homes are being completed and occupants must purchase furnishings, fixtures, and equipment for the homes. Under the high cost scenario, expenditures are slightly higher in the County. During the peak year (2017), total sales under Scenario 2 are estimated at $9.1 million.

The number of new retail jobs that are induced by the additional expenditures on retail goods in the peak year is 13, slightly higher than under the low cost scenario.

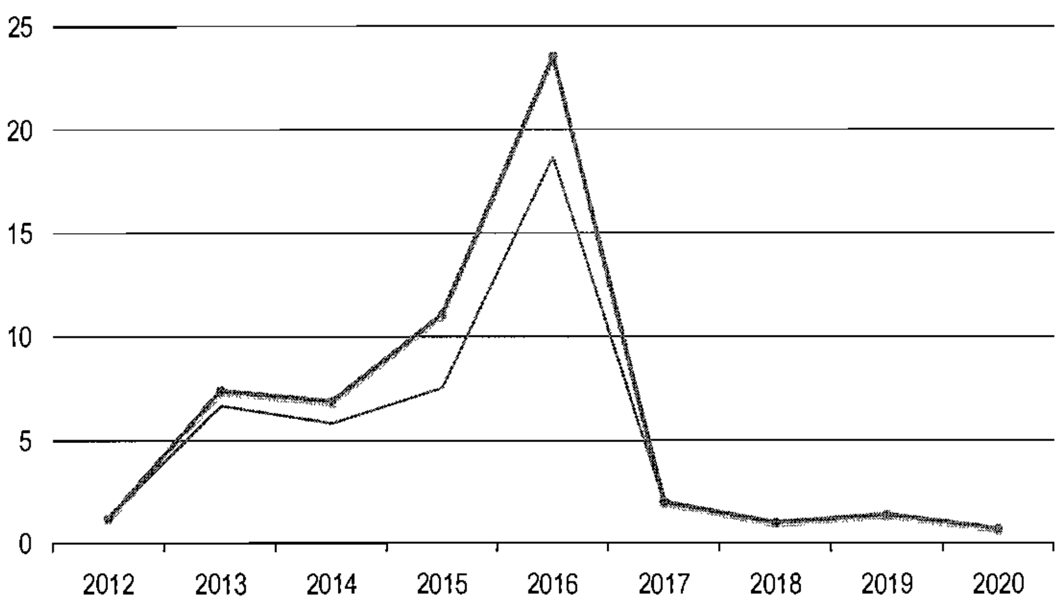
Additional income generated in the county economy is also higher under the high cost scenario. Total personal income (or income from all sources) rises by $100.4 million from 2012 to 2020. The peak year is 2016 when over $37 million is generated. The source of this income is from new construction employment, retail expenditures, retail employment, and income generated by contractors that provide direct services to the project or whose income is the indirect result of all other economic activity generated from the project.

Total Income Impacts

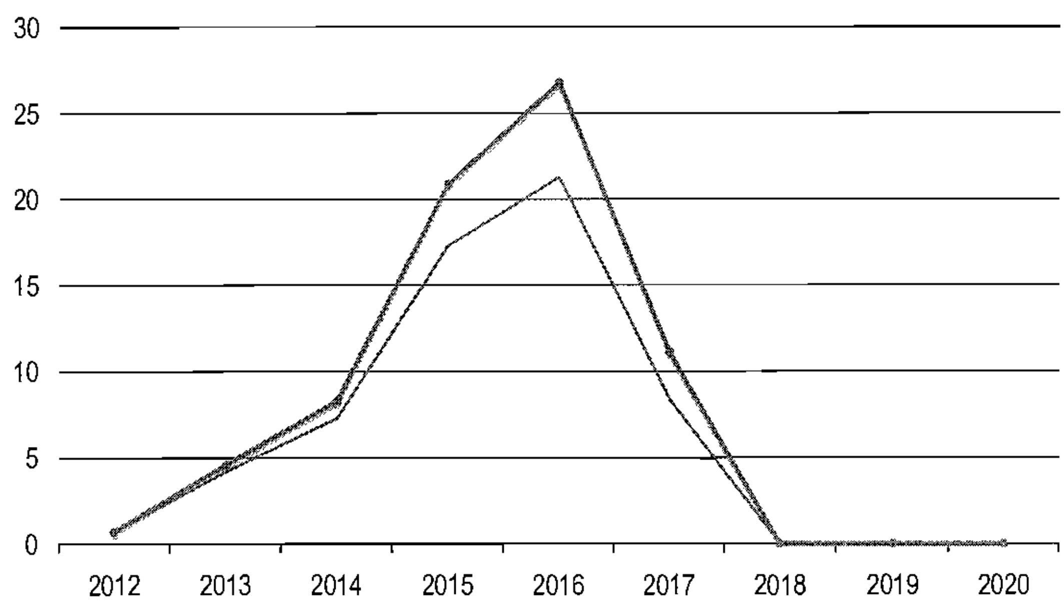


The 143 new housing units for relocating tribal members results in additional purchases of their existing homes in the county and some new sales from the creation of jobs—a total of 55 home sales over the 9 year period of analysis.

Existing Home Sales Impacts



Population Impacts



The estimated population impacts are minimal as a result of the project. Population is estimated to increase by 26 persons in the peak year of the project, either from relocating construction workers, other workers who were able to obtain employment as a result of the project, or from new migrants purchasing homes in the area vacated by relocating tribal members to Camp 4 housing.

Summary of Impacts

The project will create a significant employment impact to a Santa Barbara County construction industry that has downsized substantially in recent years. There will be spin off effects that produce more job opportunities in the retail, professional services, and financial activities sectors.

Between 100 and 360 construction jobs will be created per year during the peak years of the project inside the County. Between 350 and 425 total wage and salary jobs will be created during the peak years of the project.

Total income in the county rises by between \$80 and \$100 million during the project's life. Additional income in the county enables more expenditures on goods and services. Total retail sales rise by \$18 million, while the retail sector of the economy is estimated to receive approximately \$14 million in new sales. Some of these sales will produce taxable receipts which will go directly to the general fund of Santa Barbara County, or to the cities of Santa Barbara, Solvang, Buellton, Goleta, Lompoc, or Santa Maria.

Population impacts are negligible.

There are a few more home sales in the county as a result of the improvement in job creation and economic activity in general. There is more fee revenue received by Santa Barbara County as a result of the entitlement process. More fee revenue would enable the County to relieve debt or expand the workforce.

In general, while the project is relatively small in size, it will produce measurable impacts to the county's economy during the 2013 to 2016 period. This analysis assumes there is no delay in the entitlement process and that ground breaking begins later this year and continues through 2014 or 2015.

Appendix

Model Inputs

For this particular project, CEF was able to determine that Santa Barbara residents would be employed in virtually all of the construction jobs created or supported. Some of the construction firms, however, would be located in other regions. This means that while the labor income generated by the project would stay local, much of the business profit would not. This situation is common in Santa Barbara County, and as a result, the econometric model was able to measure the impacts accordingly. Because of this, CEF input the entire construction budget into the model, dividing it between the Residential Building Construction and Nonresidential Building Construction industries (detail on the funds excluded from the analysis can be found in the body of the report).

In addition to construction costs, the project plan also allocates a certain amount of funding to architecture, engineering, design, and management services. However, the Chumash tribe has indicated that these services will be provided by firms outside of Santa Barbara County, and that these firms generally employ workers who live outside of the county. As a result, this portion of the budget will not generate economic activity in Santa Barbara, and as a result, CEF did not include it in the analysis.

The Camp 4 project plan also allocates funds for permit, mitigation, and utility fees. The vast majority of these fees will go to public organizations, but some will go to private firms. Based on information form the Chumash tribe, CEF allocated $250,000 of these funds to the utilities industry, exempted $185,000 that are expected to go to organizations outside of the region, and allocated the rest to local government agencies in Santa Barbara County.

The final model input was the number of housing units that the Camp 4 project will generate. The construction of new residential units increases the supply of housing, and allows the population to grow. A larger population generally increases the size of the economy, contributing to the total impacts that are generated.

Given the budget categories, CEF was required to allocate the funds to the categories of its econometric model. The following table provides a crosswalk between the categories of the Chumash budget and the categories of the CEF model:

Crosswalk for Camp 4 Project Funds	
Chumash Budget Category	**CEF Model Category**
Residential Construction	Land and Site Improvements Construction of Homes

Nonresidential Construction	Construction of Administrative Building
Utilities	Entitlement Fees (portion of)
State/Local Government	Entitlement Fees (portion of) Mitigation Fees

These allocations (discussed in the body of the report) were converted into the following model inputs:

	Model Inputs Low-Cost Scenario				
	Industry (Thousands of Dollars)				Building Category
Year	**Residential Building Construction**	**Nonresidential Building Construction**	**Utilities**	**Local Government**	**Residential Housing Units**
2012				2,202	
2013	12,955		125	4,695	
2014	25,910		125	708	
2015	39,325	1,000		625	72
2016	39,325	4,000		625	71

	Model Inputs High-Cost Scenario				
	Industry (Thousands of Dollars)				Building Category
Year	**Residential Building Construction**	**Nonresidential Building Construction**	**Utilities**	**Local Government**	**Residential Housing Units**
2,012				2,202	
2,013	14,780		125	4,695	
2,014	29,560		125	708	
2,015	58,988	1,500		625	72
2,016	58,988	6,000		625	71

The Econometric Model: A Brief Description

A regional econometric model is a set of behavioural equations, as well as institutional and definitional relationships representing the main behaviours of regional economic agents (that is, consumers, firms, and governments) and the operations of an economy. The equations, or behavioural relations, can be empirically validated to capture the structure of a macroeconomy, and can then be used to simulate the effects of policy changes or changes to the economic environment.

Econometric models are interdependent sets of equations. Each equation determines the numerical value of one of the region's economic indicators. The right-hand side of the equation may include exogenous variables such as the national wage rate, job creation for the state of California, and birth and death rates within the region. The right hand side may also include other endogenous variables (i.e, variables that are determined within the model).

Econometric models attempt to measure economic linkages that exist within the region and between the region and the outside world. These links are estimated by econometric methods and represented as equations for the purpose of predictions

Econometric models are mostly used for forecasting economic activity. However, they can also be used to estimate the effect of changes in the local economy, brought about by a change in policies or a change to the economic environment, such as a new development project or a mililary base closure.

The Santa Barbara Counmty econometric model is comprised of 6 blocks of equations: 47 stochastic behavioral relationships and 17 accounting identities. The model is characterized by simultaneous interaction and determination of local employment, income, population, wages, and housing demand.

The stochastic equations are estimated as regression equations and the entire system is solved using the Gauss-Seidel algorithm.

The model is a "satellite model," requiring forecasts of various California and U.S. economic variables which are treated as exogenous to the local county areas. These forecasts of the California and U.S. economies are obtained from the UCLA Anderson Forecast, updated 4 times a year.

The county-level model is moderately detailed. The 64 equation system is estimated using updated information at least twice a year. All of the stochastic equations are evaluated each time new data is introduced into the models or re-specification of the model is undertaken.

Outputs

The initial economic and demographic indicators that are forecast for the county are shown in Table 1. Forecast values are prepared over a 10 year period beginning with the year in which actual data are not yet available.

Base forecasts of the Santa Barbara County economy are assembled for semi-annual reports, in the Winter and the early Autumn.

Table 1

The principal economic indicators initially forecasted by the Santa Barbara County econometric model

- Non-farm employment by principal two digit NAICS sector
- Farm employment
- Total wage and salary employment
- Personal Income
- Per capita personal income
- Number of housing units permitted
- Taxable retail store sales
- Population
- Number of households
- Number of vehicle registrations
- Existing Home Sales
- Median Housing Values

APPENDIX L

NOTICE FOR WILLIAMSON ACT CONTRACT NON RENEWAL

Santa Ynez Band of Chumash Indians
P.O. Box 517 • Santa Ynez, CA 93460
805-688-7997 • Fax 805-686-9578
www.santaynezchumash.org

August 5, 2013

Kim Probert, Planner
County of Santa Barbara
Planning and Development
624 Foster Road
Santa Maria, CA 93455
kprober@county.santa-barbara.ca.us

RE: Notice of Non-Renewal: Williamson Land Conservation Contract
Designation: 71-AP-37; 71-RZ-67—J.V. Crawford, et al. Preserve
Original Recording Date: Feb. 3, 1972
Instrument No. 3889, Book 2385, Page 431

Dear Ms. Probert:

The Santa Ynez Band of Chumash Indians ("Tribe") as the successor in interest to J.V. Crawford, et al., to the above Conservation Contract hereby gives the County of Santa Barbara notice of non-renewal of such contract for the following approximately 1,400 acres of real property (the "Property") as listed herein and as described in more detail in Exhibit A LEGAL: DESCRIPTION attached hereto:

Parcel 1: (APN: 141-121-51 and portion of APN: 141-140-10)
Parcel 2: (Portion of APN: 141-140-10)
Parcel 3: (Portions of APNs 141-230-23 and 141-140-10)
Parcel 4: (APN: 141-240-02 and portion of APN 141-140-10)
Parcel 5: (Portion of APN: 141-230-23)

Currently approximately 300 acres of the Property is being used to grow grapes with the remainder as grazing land.

Notice of non-renewal is being given as part of that application to transfer the Property to the United State of America, to be held in trust for the Tribe (so-called "fee to trust" transfer) pursuant to 25 CFR 151.10 and 151.11, the Indian Reorganization Act and any other applicable federal law and/or regulations.

Sincerely,

Vincent P. Armenta
Tribal Chairman

RECEIVED
AUG 06 2013
S.B. COUNTY (NORTH)
PLANNING & DEVELOPMENT

APPENDIX M

TRIBAL CONSOLIDATION AND ACQUISITION PLAN

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825

IN REPLY REFER TO:
Real Estate Services

RECEIVED
JUN 21 2013
By SC

JUN 19 2013

Honorable Vincent Armenta
Chairman, Santa Ynez Band of Chumash Indians
P. O. Box 517
Santa Ynez, CA 93460

Dear Chairman Armenta:

In response to your March 27, 2013 letter, the Tribe's Proposed Land Consolidation & Acquisition Plan has been approved. The Plan was submitted and approved pursuant to 25 CFR §151.2(h) and §151.3(a)(1). Enclosed is an original of the approval along with a copy of the Plan. A copy of the Plan will be retained at this office, and a copy is being provided to the Superintendent, Southern California Agency.

Sincerely,

Acting Regional Director

Enclosures

cc: Superintendent, SCA, w/enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
PACIFIC REGION

APPROVAL OF PROPOSED LAND CONSOLIDATION & ACQUISITION PLAN SANTA YNEZ BAND OF CHUMASH INDIANS

The within Proposed Land Consolidation & Acquisition Plan, consisting of pages 1 - 9 with Exhibits A and B and Tribal Resolution #926 dated March 27, 2013, is hereby approved pursuant to 25 CFR §151.2(h) and §151.3(a)(1). All acquisition applications submitted pursuant to said plan shall be considered within the Secretary's discretion and under all applicable laws and regulations, including the National Environmental Policy Act of 1969.

Date: 6/17/13

Amy L Dutschke
Regional Director, Pacific Region
Bureau of Indian Affairs
Sacramento, California

Pursuant to the authority delegated by 209 DM 8, 230 DM 1 and 3 IAM 4

Santa Ynez Band of Chumash Indians

PROPOSED LAND CONSOLIDTION AND ACQUISITION PLAN

March 2013

Purpose and Scope

Pursuant to 25 C.F.R § 151.2(h)[1], the Santa Ynez Band of Chumash Indians ("Santa Ynez" or "Tribe") submits this Proposed Tribal Consolidation and Acquisition Plan ("Plan") for the approval of the authorized representative of the Secretary of the Interior.[2] The Federal Government's land acquisition policy at 25 C.F.R. 151.3(a)(1) specifically contemplates tribal consolidation areas to be akin to both on-reservation and adjacent lands with respect to acquisition for trust purposes. This means that tribal consolidation areas, like on-reservation or adjacent lands, do not require the high level of scrutiny that off-reservation acquisitions do, and further affords such acquisitions a greater level of credibility as part of a plan which has already been reviewed and approved by the BIA.

The purpose of this Plan is to assist the Tribe in acquiring additional lands in order to increase the tribal land base and provide sufficient land for housing, economic development and governmental purposes. The Tribe believes that planning for land acquisitions within the area historically held for the Tribe by the Roman Catholic Church will help the Tribe achieve its goals of providing ample housing and governmental services to its members. In addition, the Tribe has been offered restricted public domain allotments held by individual tribal members or descendents of the original Indian allottees within the Los Padres National Forest. Such lands could be used for mitigation or exchange purposes.

The Tribe's plan includes the geographical area which was the subject of the 1897 Quiet Title Action brought by the Roman Catholic Church (Bishop of Monterey), encompassing approximately 11,500 acres of the College

---

[1] The intent of this Tribal Consolidation and Acquisition Plan is to meet the provisions of 25 C.F.R. §§ 151.2(h) and 151.3(a)(1). See attached Exhibit A, an IBIA case that addresses this provision. The IBIA found that the Regional Director was not acting reasonably when he used the ILCA-derived criteria to assess the appellant's "Land Consolidation and Acquisition Plan." *Abesentee Shawnee Tribe. Anadarko Area Director* (1990) 18 IBIA 156, 163.

[2] 25 C.F.R. 151.2 (Definitions) includes, in part: (h) *Tribal consolidation area* means a specific area of land with respect to which the tribe has prepared, and the Secretary has approved, a plan for the acquisition of land in trust status for the tribe. Further, 151.3(a)(1) (Land acquisition policy) states: (1) When the property is located within the exterior boundaries of the tribe's reservation or adjacent thereto, or within a tribal consolidation area; or

Rancho ("Tribal Consolidation Area").[3] As described more fully below, this area was part of the Tribe's ancestral territory and comprised most of its historic territory. The Tribal Consolidation Area was once part of the lands of Mission Santa Ines and was part of the subsequent Rancho Canada de los Pinos recognized by the U.S. government as well as being close to an individual land grant made to a Santa Ynez Chumash Indian by Mexican Gov. Micheltorena. All these lands were considered to have been the property of the Santa Ynez Mission Indians by the Spanish and Mexican governments and the Catholic Church. Even after California statehood, the Catholic Church carried forward this theory of land tenure by the Santa Ynez Chumash.

The Santa Ynez Band of Chumash Mission Indians has clear connections to the Tribal Consolidation Area based on law and cultural use. The tribal government has the opportunity to return the lost land - which it has had to purchase back - to its jurisdiction and stewardship once more through federal trust status. The intent of this Plan is to assist the Tribe with that goal.

History of the Santa Ynez Reservation

The Chumash people have been associated with the property included within this Plan and surrounding territory since time immemorial. In fact, a rich record exists of the Santa Ynez Chumash's historical connections to these lands. Archaeological evidence supports the area's use by the Chumash people before contact with the Spanish. This use continued during and after the Mission Period.

The Santa Ynez Chumash, ultimately, ended up with just a sliver of land under its jurisdiction. In 1906, the federal govemment placed 99 acres into federal trust around Zanja de Cota Creek. Today the Santa Ynez Indian Reservation comprises about 137 acres. This area includes unusable lands such as a streambed and an easement for a state highway that cuts through the reservation.

The acquisition of additional property within the Plan area represents an opportunity for the Chumash people to return a small portion of their historical territory to their stewardship. The goal is to create a tribal community on the land by building homes for tribal families. This also will

[3] See attached Exhibit B, map of the proposed consolidation and acquisition area.

help relieve overcrowded conditions on the present reservation, where much of the housing stock was built through HUD low-income grant programs.

The Chumash have long-standing cultural and spiritual ties to the property encompassed within the Plan and the surrounding territory. The legal record - involving actions by the U.S. government, Mexican government, and the Spanish through their Mission outposts - also demonstrates the land tenure history of Santa Ynez Chumash in this territory.

Except for a brief experience with tribes in the lower Colorado River basin along the present-day Arizona border, the Chumash were the first California tribal group that Europeans encountered in what is now California. Explorer Cabrillo sailed to the islands and coastal areas inhabited by the Chumash in 1542.

The Mission Era

The Spanish built five Catholic missions among the Chumash people. Mission Santa Ines was established in 1804 as a halfway point between the Santa Barbara and La Purisma (Lompoc) missions. Each mission was granted about seven square leagues of land surrounding it for the use and support of the local Indian communities. That would have given Mission Santa Ines more than 441 square miles of land.

In practice, the missionaries and soldiers were brutal men who enslaved the local Chumash people and nearly decimated them through disease, starvation and harsh treatment. Despite this, the sentiment of the Spanish and Mexican governments and the Catholic Church was that the lands of the missions essentially were what we know of today as reservations, for the use and upkeep of the Indians. The tribal members forced to live and work near the missions were considered to be neophytes or Christianized Indians.

The Church viewed the land to be held in trust for the Indians, who had a "natural" right of occupancy. The Church and Spain considered title to the land to be with the Indians as decreed from the "laws of nature and imminent occupation." The priests were just the administrators of the land on behalf of their Indian "wards." That is, the mission activity was not accompanied by a conveyance of land to the missions themselves. Under the

Spanish theory of colonization, the mission establishments weren't intended to be permanent.

The slave-like conditions at the mission led to the Chumash Revolt of 1824. It started when soldiers flogged an Indian from La Purisma mission who was at Santa Ines. The revolt spread to the Santa Barbara and La Purisma missions and led to the burning of the Santa Ines mission. Many Chumash feared the soldiers would kill them and fled to the San Joaquin Valley. The priests and military knew they couldn't keep the missions going without the Indian slave labor so soldiers rounded up the Chumash and brought them back to the mission.

A decade after the revolt, the Mexican government secularized the missions and intended to disperse the lands to the Indians and settlers. The goal never was fully accomplished. Many Chumash did flee the mission after the secularization efforts and ended up in the area around Zanja de Cota Creek in the Canada de la Cota. The area still was considered to be within the lands of the Catholic Church.

California statehood

Statehood for California in 1850 ushered in new attempts to deal with the Chumash land. The United States and California began addressing land claims and Mexican land grants that arose from the Treaty of Guadalupe Hidalgo.

The Bishop of Monterey petitioned the Board of Commissioners in charge of land claims in California on behalf of the Catholic Church and "Christianized Indians" associated with the 20 missions across California. Among his requests: That the government confirm at least one square league area to each mission, and confirm the grants to individual Indians and communities.

The basis of the petition was two-fold. First, the Church stated it held the land in trust for the Indians. Second, the Church had valid grants based upon the laws of the Spanish and Mexican governments and the Catholic Church. The Church's view was this: The land and any revenues from it belonged to the Indians. The role of the missionaries was to make sure that the land and revenues were cared and accounted for.

The Land Claims Commission denied the claims of the individual Santa Ynez Indians. But it did grant the Bishop of Monterey the right to the Canada de los Pinos, the area that is included within the Plan. The federal government in 1861 issued a patent for those lands to the Bishop. The Chumash villages around Mission Santa Ines lands remained within the land grant.

Mission Indian Relief Act

In 1891, Congress passed the Mission Indian Relief Act designed to help those Indians who had been associated with and enslaved by the missions. Many of these communities were destitute because their land had been taken away from them. In fact, much of the land these Indians had lived and worked on was lost through the land claims settlement process and the government later gave it to settlers.

Based on the Act, the federal government created the Smiley Commission which found that the Santa Ynez Indians were primarily living in a village around the Zanja de Cota Creek area on lands they had moved to around 1835 after the secularization of the missions. The commission determined that abundant evidence existed to validate the Chumash's long period of occupancy of the mission land, but the commission could not support creating a federal reservation through the legal theory of adverse possession because the Bishop's earlier petition stated that the Church had long considered the mission lands to be "owned" by the Chumash. The Chumash could not be considered to have been in adverse possession of the land - even though the previous Land Claims Commission denied their land claims.

Church lawsuit

The Smiley Commission developed a different approach. The federal government began negotiating with the Catholic Church to obtain federal trust lands for the Santa Ynez Chumash. Part of this scheme involved the Bishop of Monterey filing a lawsuit against individual Santa Ynez tribal members in a quiet title action. With U.S. government support through the approval of the local Indian agent, the Bishop commenced a quiet title claim. The action concerned about 11,500 acres of the Rancho Canada de los Pinos, or the College Rancho.

The action was necessary because, at least according to the position held by the Bishop in his petition to the Land Claims Commission, the Church actually held the lands around the mission in trust for the Chumash. The negotiations and quiet title action resulted in an agreement in which the Bishop would convey some land to the federal government for a reservation for the Santa Ynez Band of Chumash Mission Indians.

At various times, parcels of land ranging from 5 acres to 200 acres were proposed as the property to be deeded to the United States for the Santa Ynez Chumash. Each of these proposals represented areas that were significantly less than the original mission lands (held for the local Chumash), the Rancho Canada de los Pinos (the mission lands as reconfigured by the United States), and even the combined total of the Santa Ynez individual land grants.

Ultimately, what was transferred to the United States to be held in trust for the tribe was just 99 acres, a tiny fraction of the 11,500 acres of the Rancho Canada de los Pinos that had been that had been given up without Chumash consent.

Previous Land Consolidation/Acquisition Efforts of the Tribe

As noted, the Tribe was originally conveyed a mere 99 acres for use as a Reservation. In the 1970s, the Tribe acquired an additional 27 acres which was used for HUD housing. Since that time, the Tribe has purchased additional lands for inclusion in the Reservation. In 2003, approximately 12 acres were added to the Reservation when the Tribe's fee-to-trust acquisition was granted. The Tribe has a further fee-to-trust acquisition for 6.9 acres of land contiguous to the Reservation which was approved by the Department of Interior currently pending before the IBIA. The Tribe has additionally submitted an application for 6.6 acres of land contiguous to the Reservation.

In 2010, the Tribe was able to purchase the 1390 acre Camp 4 property from Fess Parker. The Camp Four property was once part of the lands of Mission Santa Ines and part of the area included within the Quiet Title Action. Thus, the Tribe has consistently purchased land within their historic territory and within the Tribal Consolidation Area.

Provisions of the Land Consolidation and Acquisition Plan

1. *Goals.* Consistent with its prior efforts, the Tribe is pursuing two overall land-related goals. First, to the extent feasible (both financially and otherwise), the Tribe wishes to provide a sufficient land base for the Tribe to house its members, economic development and tribal government activities. Second, the Tribe wishes to promote the highest and best use of any existing and future trust land base by assuring that Tribal goals such as cultural preservation are met while at the same time still providing land for housing, economic development and other governmental functions.

2. *Need to Set Priorities.* Due to the high cost of land acquisition in the Consolidation and Acquisition area, the Tribe must prioritize its land acquisitions.
   a. *Priorities.* With the financial and other constraints in mind, as well as the Tribe's goals and prior acquisitions, the Tribe's priority schedule for acquisition of land within the Tribal Consolidation Area will be:

      CATEGORY 1 - Highest Priority: Acquisition of parcels which can be used for tribal housing, economic development and tribal governmental facilities.

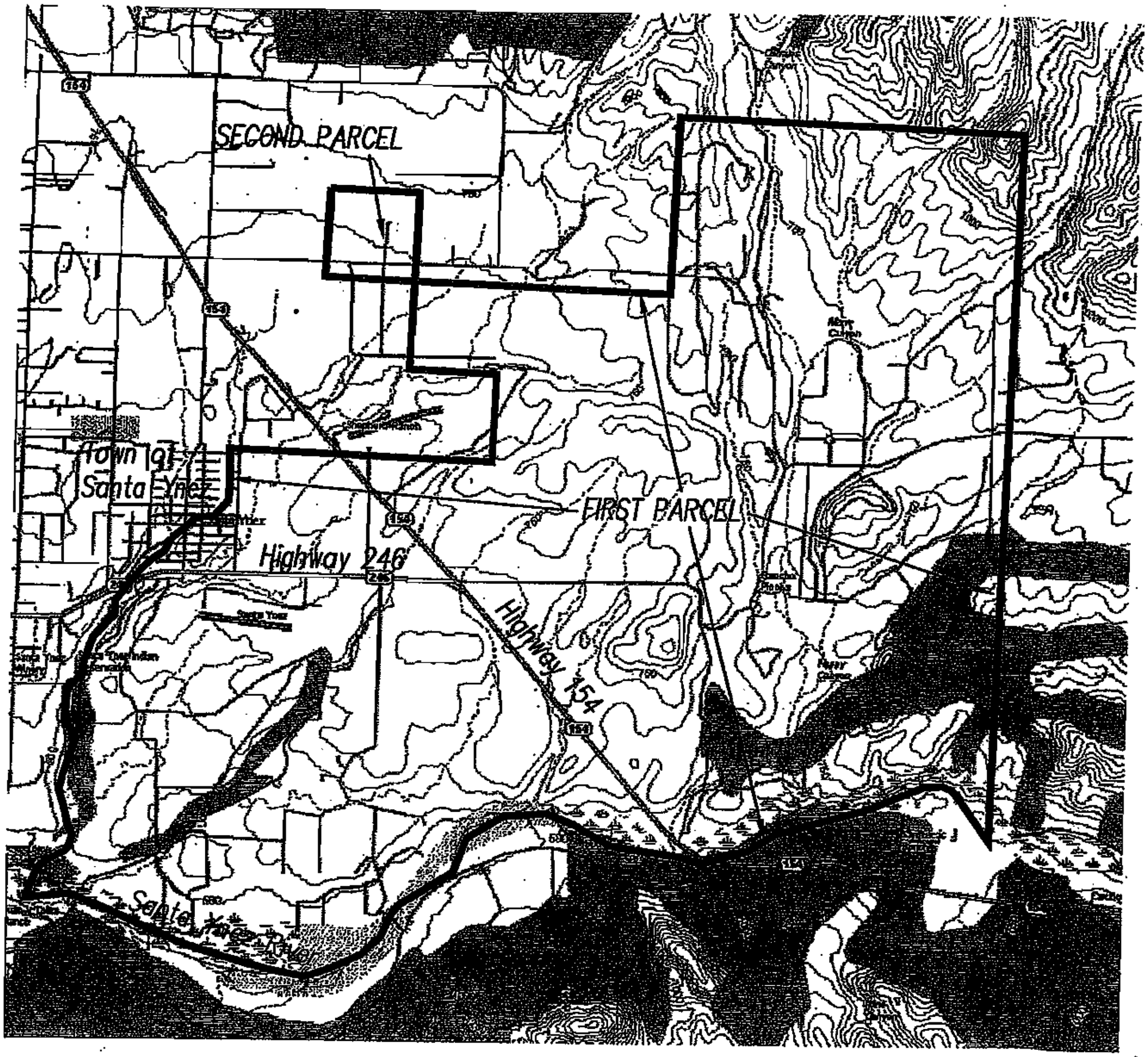
      CATEGORY 2 – High Priority: Acquisition of parcels contiguous to existing parcels of tribal trust land that have the potential of being used for projects of importance designated by the Tribe.

      CATEGORY 3 – Medium Priority: Acquisition of parcels not contiguous to tribal trust lands, but having development potential.

      CATEGORY 4 – Low Priority: Acquisition of parcels not contiguous to tribal trust lands for the purpose of increasing the tribal trust land base or of public domain allotments for purposes of increasing the tribal trust land base, exchange or mitigation.

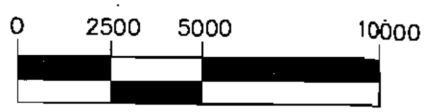
3. *Procedure.* The Business Committee will review each potential land acquisition and determine into which category it falls. Depending on the categorization, and subject to the availability of funds, the Tribe will then determine whether to acquire the parcel or not.

Exhibit A



LICENSED LAND SURVEYOR
GEORGE Y. MARCHENKO
L.S. 6984
EXPIRES 9-30-09
STATE OF CALIFORNIA

10/23/07



- Boundary shown is compiled from record data and is about ± 2500 feet

1 inch=5000 feet

WALLACE GROUP
624 Clarion Court
SAN LUIS OBISPO, CA 93401
T 805 544-4011
F 805 544-4294
www.wallacegroup.us

Sketch of Legal Description of two parcels In Notice of Pendency of Action, The Roman Catholic Bishop of Monterey, Plaintiff, against Salomon Cota et all. Filed 2/23/1897; Superior Court of the County of Santa Barbara, CA. and per B/Miscellaneous Maps/447

JOB No. : 375.40	
DRAWING : 1898basedwg	
DRAWN BY: GM	
DATE : 10/22/07	
Sheet 1 of 1	

EXHIBIT B

INTERIOR BOARD OF INDIAN APPEALS

Absentee Shawnee Tribe v. Anadarko Area Director, Bureau of Indian Affairs

18 IBIA 156 (02/20/1990)

United States Department of the Interior

OFFICE OF HEARINGS AND APPEALS
INTERIOR BOARD OF INDIAN APPEALS
4015 WILSON BOULEVARD
ARLINGTON, VA 22203

ABSENTEE SHAWNEE TRIBE OF INDIANS OF OKLAHOMA
v.
ANADARKO AREA DIRECTOR, BUREAU OF INDIAN AFFAIRS

IBIA 89-48-A Decided February 20, 1990

Appeal from a decision disapproving a tribal Land Consolidation and Acquisition Plan.

Reversed and remanded.

1. Indians: Lands: Trust Acquisitions

In the absence of any statutory or regulatory criteria for the approval of a "plan for the acquisition of land in trust status for [an Indian] tribe" under 25 CFR 151.2(h), a Bureau of Indian Affairs official may devise and employ reasonable criteria to review such a plan.

2. Indians: Lands: Trust Acquisitions

It was not reasonable for the Bureau of Indian Affairs to disapprove a tribal plan for the acquisition of land in trust status under 25 CFR 151.2(h) on the basis of criteria derived from a provision in the Indian Land Consolidation Act, 25 U.S.C. § 2203 (1983 and 1984 Supps.), concerning sale or exchange of tribal lands.

APPEARANCES: F. Browning Pipestem, Esq., Norman, Oklahoma, for appellant.

OPINION BY ADMINISTRATIVE JUDGE VOGT

Appellant Absentee Shawnee Tribe of Indians of Oklahoma seeks review of a January 18, 1989, decision of the Anadarko Area Director, Bureau of Indian Affairs (BIA; appellee), disapproving its Land Consolidation and Acquisition Plan. For the reasons discussed below, the Board reverses that decision and remands this case to appellee for further consideration.

Background

In early 1987, appellant submitted a proposed Land Consolidation and Acquisition Plan to the Shawnee Agency (Agency), BIA, for review and technical assistance. This plan was developed after analysis of appellant's existing land base and anticipated future needs. Appellant's original reservation, which was concurrent with that of the Citizen Band Potawatomi Tribe of Oklahoma, was generally bounded to the north by the North Canadian River, to the south by the South Canadian River, to the east by the eastern edge of what is presently Potawattomie County, and to the west by the Indian Meridian. Of the original reservation, only 289.25 acres are presently owned by appellant.

Concerned with such factors as a high tribal unemployment rate, low educational level, substandard housing, low standard of living and high disease rate, and its own inability to generate additional income from existing tribal lands to assist its people's economic development, appellant developed a goal of planned acquisition of additional lands in order to increase the tribal land base and gain access to new economic markets within Oklahoma. Through this plan of acquisition, appellant hoped to acquire lands suitable for economic development, develop economic enterprises, increase tribal income through an increased tax base, and create new jobs. As stated at page 18 of its proposed plan, "[t]he overall purpose of this plan is to access the Absentee Shawnee Tribe of Oklahoma to a greater geographic area which meets the aforementioned criteria [for being suitable for economic development] by extending our existing land acquisition area, some thirteen and one-half (13½) miles to the west of our existing reservational boundary." 1/

By letter dated July 16, 1987, the Agency Superintendent (Superintendent) informed appellant that the Anadarko Area Office (Area Office) had reviewed the draft plan and had requested (1) a map showing the intended area of acquisition in relation to the original reservation boundaries and (2) photographs of the "String of Pearls" tract, which would be the first acquisition under the plan, depicting its relation to downtown Oklahoma City.

The requested items were provided and the final plan was submitted in July 1987. The Agency sent the plan to the Area Office on September 3, 1987. The Agency indicated it found no deficiencies in the plan, but was

1/ Appellant indicated in its proposed plan that two opportunities had already been presented that were consistent with the plan. The first opportunity concerned a proposal from the Oklahoma City Riverfront Redevelopment Authority for appellant to acquire a tract of land consisting of approximately 60 acres along the North Canadian River within the city limits of Oklahoma City at the intersection of Interstate Routes 35 and 40. The tract, which had been part of a proposed "String of Pearls" development of 7 tracts along the river, had not been developed. The second opportunity consisted of the acquisition of an existing shopping center in Norman, Oklahoma. Both possible acquisitions apparently involved donations of land to appellant. Appellant stated at page 16 of its plan that "[b]oth of these existing situations illustrate the opportunities that the Absentee Shawnee Tribe presently cannot take advantage of as a result of the inability to acquire real property outside its historic reservation area."

concerned about the size of the proposed expansion area and staffing problems that might occur within the Agency if the plan were to be fully implemented. Despite its concerns, the Agency recommended that consideration be given to approval of the plan.

The Area Office concurred with the Agency in its statement that the proposed area of the plan might be excessive, but noted that the area could easily be scaled down. Under instructions then in effect, on September 21, 1987, the Area Office sent the plan to the Washington, D.C., BIA office for approval. The Area Office noted no problem with the plan other than the geographical size.

Subsequently, the Assistant Secretary - Indian Affairs authorized BIA Area Directors to approve off-reservation land acquisitions. Accordingly, on July 5, 1988, appellant was informed that the plan was being returned to appellee for consideration. By letter dated January 18 and received by appellant on January 24, 1989, appellee disapproved the plan, indicating that it did not meet the necessary criteria for approval and stating at page 1:

> Congress has enacted a number of laws which authorize the acquisition of land in a trust status for individual Indians and Indian Tribes. None of these laws speak to authorization, recognition or creation of Land Acquisition Plans. The Indian Financing Act of 1974 (88 Stat. 77; 25 U.S.C. 1466 [(1982) 2/]) provided for loans and loan guaranty and insurance which could be used to acquire land in a trust status for Indians and Indian Tribes within an Indian Reservation or an approved "Tribal Consolidation Area," and the Indian Land Consolidation Act of January 12, 1983 (Title II of P.L. 97-459; 96 Stat. 2515), as amended by Act of October 30, 1984 (P.L. 98-608; 98 Stat. 3171) (25 U.S.C. §§ 2201-2211 (ILCA)] provides that any tribe is authorized with the approval of the Secretary to adopt a "Land Consolidation Plan." The premise of both laws was for the purpose of

2/ 25 U.S.C. § 1466 provides:

"Title to any land purchased by a tribe or by an individual Indian with loans made from the revolving loan fund may be taken in trust unless the land is located outside the boundaries of a reservation or a tribal consolidation area approved by the Secretary. Title to any land purchased by a tribe or by an individual Indian which is outside the boundaries of the reservation or approved consolidation area may be taken in trust if the purchaser was the owner of trust or restricted interests in the land before the purchase, otherwise title shall be taken in the name of the purchasers without any restriction on alienation, control, or use. Title to personal property purchased with a loan from the revolving loan fund shall be taken in the name of the purchaser."

All further citations to the United States Code are to the 1982 edition.

> eliminating fractional interests in Indian trust or restricted lands or consolidating land holdings. A consolidation area should reflect some rational plan to consolidate land. In this instance the expansion area does not meet that criteria, it gives the appearance that the tribe is seeking carte blanche authority to acquire random tracts all over the area, rather than to further any actual land consolidation plan.

On January 25, 1989, appellant asked appellee to provide it with the specific evaluation criteria that were used in disapproving the plan. When the requested information was not received, by letter dated February 21, 1989, appellant filed a notice of appeal with appellee.

By letter dated February 23, 1989, appellee provided information concerning his evaluation criteria. Appellee stated that BIA did not have specific criteria for evaluating the type of plan appellant had submitted. Therefore, he indicated that the Area Office had developed its own criteria to justify and support the decision. He stated that the phrase "tribal consolidation area" was first used in the Indian Financing Act of 1974 and that the only reference to the phrase in the act's legislative history indicated "that one of the purposes of the proposed legislation was to give tribes a method of consolidating their land base and buying up fractionated interests" (Feb. 23, 1989, letter at 1).

Appellee then looked to ILCA as a source for criteria to evaluate a "land consolidation plan." Appellee quoted 25 U.S.C. § 2203(a), which provides:

> Notwithstanding any other provision of law, any tribe, acting through its governing body, is authorized, with the approval of the Secretary to adopt a land consolidation plan providing for the sale or exchange of any tribal lands or interest in lands for the purpose of eliminating undivided fractional interests in Indian trust or restricted lands or consolidating its tribal landholdings: Provided, That --
>
> (1) the sale price or exchange value received by the tribe for land or interests in land covered by this section shall be no less than within 10 per centum of the fair market value as determined by the Secretary;
>
> (2) if the tribal land involved in an exchange is of greater or lesser value than the land for which it is being exchanged, the tribe may accept or give cash in such exchange in order to equalize the values of the property exchanged;
>
> (3) any proceeds from the sale of land or interests in land or proceeds received by the tribe to equalize an exchange made pursuant to this section shall be used exclusively for the purchase of other land or interests in land;

(4) the Secretary shall maintain a separate trust account for each tribe selling or exchanging land pursuant to this section consisting of the proceeds of the land sales and exchanges and shall release such funds only for the purpose of buying lands under this section; and

(5) any tribe may retain the mineral rights to such sold or exchanged lands and the Secretary shall assist such tribe in determining the value of such mineral rights and shall take such value into consideration in determining the fair market value of such lands. [3/]

Based on the requirements of ILCA, appellee determined that appellant needed to add three sections to its plan in order for it to be approvable:

1. Clearly demonstrate how the Plan will accomplish the purposes of eliminating fractional ownership or consolidating tribal lands,

2. Provide at least a general plan for the reinvestment of proceeds received from the sale of tribal land, and

3. Ensure that all sales of tribal land are for no less than fair market value.

Appellee forwarded appellant's notice of appeal to the Washington, D.C., BIA office, where it was still pending when new appeal regulations for BIA and the Board took effect on March 13, 1989. See 54 FR 6478 and

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3/ Appellee's letter also included a definition of "land consolidation plan" from a draft revision of 25 CFR Part 152. Appellee recognized that the revision was not in effect, but stated that he believed the definition was consistent with the Department's position concerning land consolidation plans. The draft definition provides:

"Land consolidation plan means a detailed plan devised by a tribe and approved by the Secretary which contemplates the sale or exchange of any tribal lands or interests in land for the purpose of eliminating undivided lands or consolidating its tribal land holdings. If the reservation does not encompass an area sufficient to permit a meaningful consolidation plan, the plan may contemplate the consolidation of land in a specified area adjacent to the tribe's reservation boundaries. The plan will, at a minimum, include an explanation of how the tribe will accomplish the purposes of eliminating undivided interests or consolidating the tribal land base; a map, depicting in general, what lands or interests are covered by the plan; guidelines for the purchase of new lands with the proceeds of any lands sold or exchanged under the plan; and, designate under what authority the plan was approved or authorized by the tribe. The plan and supporting documents will be submitted to the Superintendent for approval by the Secretary."

6483 (Feb. 10, 1989). The appeal was transferred to the Board for consideration under those new procedures on May 16, 1989. Because the materials in the administrative record indicated that appellant was willing to work with BIA, by order dated May 23, 1989, the Board stayed proceedings before it pending good faith settlement negotiations between the parties.

In June 1989, discussions were held between representatives of appellant, the Area Office, and the Agency, during which the matter of the geographic area covered by appellant's plan was again addressed. However, by letter dated July 5, 1989, appellee reaffirmed his disapproval of appellant's plan, stating:

> At this point, the question of area is not paramount. The issue before us is to determine if your recent transmittal complies with the provisions of [ILCA] regarding the adoption of Land Consolidation Plans. At your request, and by letter dated February 23, 1989 we provided the specific criteria utilized in evaluating your plan and also included a proposed definition which we feel is consistent with the department's current position on Land Consolidation Plans.

After receiving this letter, appellant determined that further settlement attempts would be fruitless and requested the Board to lift its stay. By order dated July 17, 1989, the Board lifted the stay and established a briefing schedule. Only appellant filed a brief.

Discussion and Conclusions

Regulations governing the acquisition of land in trust status for Indians and Indian tribes are found in 25 CFR Part 151. 25 CFR 151.3(a) provides:

> Subject to the provisions contained in the acts of Congress which authorize land acquisitions, land may be acquired for a tribe in trust status (1) when the property is located within the exterior boundaries of the tribe's reservation or adjacent thereto, or within a tribal consolidation area; or, (2) when the tribe already owns an interest in the land or, (3) when the Secretary determines that the acquisition of land is necessary to facilitate tribal self-determination, economic development, or Indian housing.

Section 151.2(f) provides that "in the State of Oklahoma * * * 'Indian reservation' means that area constituting the former reservation of the tribe as defined by the Secretary." Section 151.2(h) defines "tribal consolidation area" as "a specific area of land with respect to which the tribe has prepared, and the Secretary has approved, a plan for the acquisition of land in trust status for the tribe."

Appellant's "Land Consolidation and Acquisition Plan" clearly appears to have been intended as a plan for the acquisition of land in trust status under Part 151. Appellee's initial review of the plan also appears to have been conducted under this assumption. At some point before January 1989, however, appellee began to consider the plan under criteria derived from ILCA, pursuant to which he ultimately disapproved it. The issue in this appeal is whether appellee properly employed these criteria in evaluating appellant's plan, which was ostensibly submitted for approval under 25 CFR Part 151.

[1] The Department's primary statutory authority for the acquisition of land in trust status for Indians is 25 U.S.C. § 465, which vests broad discretion in the Secretary. 4/ See State of Florida v. U.S. Department of the Interior, 768 F.2d 1248 (11th Cir. 1985), cert. denied, 475 U.S. 1011 (1986). To the extent the Secretary has promulgated regulations specifying how this authority is to be exercised, he has limited his discretion. Cf. id. at 1257 n.11. However, to the extent he has not so limited it, the discretion vested in the Secretary by section 465 remains.

The authority to approve a tribal "plan for the acquisition of land in trust status" under 25 CFR 151.2(h) is an aspect of the Secretary's discretionary authority to acquire lands in trust status. No criteria for approval of such plans are contained in Part 151. The Board is unaware of any other statutory or regulatory criteria concerning this type of plan.

The Board finds that, in the absence of statutory or regulatory criteria, appellee had the discretionary authority to analyze appellant's plan under reasonable criteria of his own devising. 5/ Appellee's initial analysis, which took into account such factors as the geographic extent of the proposed consolidation area vis-a-vis the tribe's need for additional land, and BIA's ability to provide services to the land, appears to be reasonably related to the ultimate development of a realistic and manageable plan for the trust acquisition of additional land for the tribe.

4/ 25 U.S.C. § 465 provides:

"The Secretary of the Interior is hereby authorized, in his discretion, to acquire, through purchase, relinquishment, gift, exchange, or assignment, any interest in lands, water rights, or surface rights to lands, within or without existing reservations, including trust or otherwise restricted allotments, whether the allottee be living or deceased, for the purpose of providing land for Indians."

Presumably, any trust acquisitions for appellant would be made under authority of this provision. See 25 CFR 151.5.

5/ Cf. City of Eagle Butte v. Aberdeen Area Director, 17 IBIA 192, 197, 96 I.D. 328, 331 (1989), in which the Board held that, while approval of a trust acquisition request is discretionary, in order to avoid any allegation of abuse of discretion, BIA's final decision should be reasonable in light of its overall analysis of the factors in section 151.10.

[2] The question remains whether appellee's later analysis, in which he employed "land consolidation plan" criteria derived from ILCA to evaluate a plan prepared for trust acquisition purposes, was reasonable. 25 U.S.C. § 2203, the ILCA provision concerning land consolidation plans, is directed primarily toward authorizing the sale or exchange of existing tribal lands, under certain conditions, rather than toward trust acquisition of new tribal lands. 6/ The statutory requirement that such sales or exchanges be for the purpose of "eliminating fractional interests in Indian trust or restricted lands or consolidating tribal landholdings" is clearly intended as a limitation upon alienation, rather than acquisition, of tribal lands. 7/

Appellant's plan does not contemplate the sale or exchange of any lands it presently owns, but only the acquisition of new lands. In this context, the requirements established in appellee's February 23, 1989, letter, i.e., that appellant's plan "demonstrate how [it] will accomplish the purposes of eliminating fractional ownership or consolidating tribal lands, provide at least a general plan for the reinvestment of proceeds received from the sale of tribal land, and ensure that all sales of tribal land are for no less than fair market value," are largely irrelevant.

The Board finds that it was not reasonable for appellee to employ ILCA-derived criteria, related primarily to the sale or exchange of tribal lands, to appellant's "Land Consolidation and Acquisition Plan," which was intended as a plan for the acquisition of land in trust status.

Therefore, pursuant to the authority delegated to the Board of Indian Appeals by the Secretary of the Interior, 43 CFR 4.1, the January 18, 1989, decision of the Anadarko Area Director is reversed and this case is remanded to him for further consideration. In evaluating appellant's plan, the Area Director should employ criteria bearing a reasonable relation to the

6/ Trust acquisitions are the subject of the immediately preceding section of ILCA, 25 U.S.C. § 2202, which provides:

"The provisions of section 465 of this title shall apply to all tribes notwithstanding the provisions of section 478 of this title: Provided, That nothing in this section is intended to supersede any other provision of Federal law which authorizes, prohibits, or restricts the acquisition of land for Indians which respect to any specific tribe, reservation, or state(s)."

7/ The draft definition of "land consolidation plan" quoted by appellee in his Feb. 23, 1989, letter is also directed toward transactions involving sales or exchanges of tribal land. See note 3, supra. Appellee stated that this definition was intended for inclusion in a revision of 25 CFR Part 152, where provisions concerning sale or exchange of tribal lands (e.g., 25 CFR 152.21, 152.22(b)) are presently located. He did not indicate the intended relation of this definition to Part 151.

purpose of appellant's plan as a "plan for the acquisition of land in trust status" under 25 CFR 151.2(h). 8/

//original signed
Anita Vogt
Administrative Judge

I concur:

//original signed
Kathryn A. Lynn
Chief Administrative Judge

8/ The Board notes that appellant has apparently concluded, incorrectly, that land may be taken into trust for it only if the land is located within its historic reservation or within a tribal consolidation area. See note 1, supra, and accompanying text. In fact, land may also be taken into trust under 25 CFR 151.3(a)(3) "when the Secretary determines that the acquisition of the land is necessary to facilitate tribal self-determination, economic development, or Indian housing." It is possible that the trust acquisitions sought by appellant might qualify under this criterion, regardless of the ultimate decision on its acquisition plan.

APPENDIX N

PUBLIC MEETING PRESENTATION OF PROPOSED CONCEPT PLANS

SANTA YNEZ BAND OF CHUMASH INDIANS

The Santa Ynez Band of Chumash Indians

Camp 4 Update

Chumash Camp 4 Public Meeting

January 21, 2013

SANTA YNEZ BAND OF CHUMASH INDIANS

The Vision

Proposed Housing Element & Support Services

- 143 homes + added homes = Total lots/ Homes TBD
- Should govt. buildings be considered for new location?
- Community attributes and amenities
- Density
- Dwelling types & aesthetics
- Sustainability/USGBC LEED
- Design standards and controls

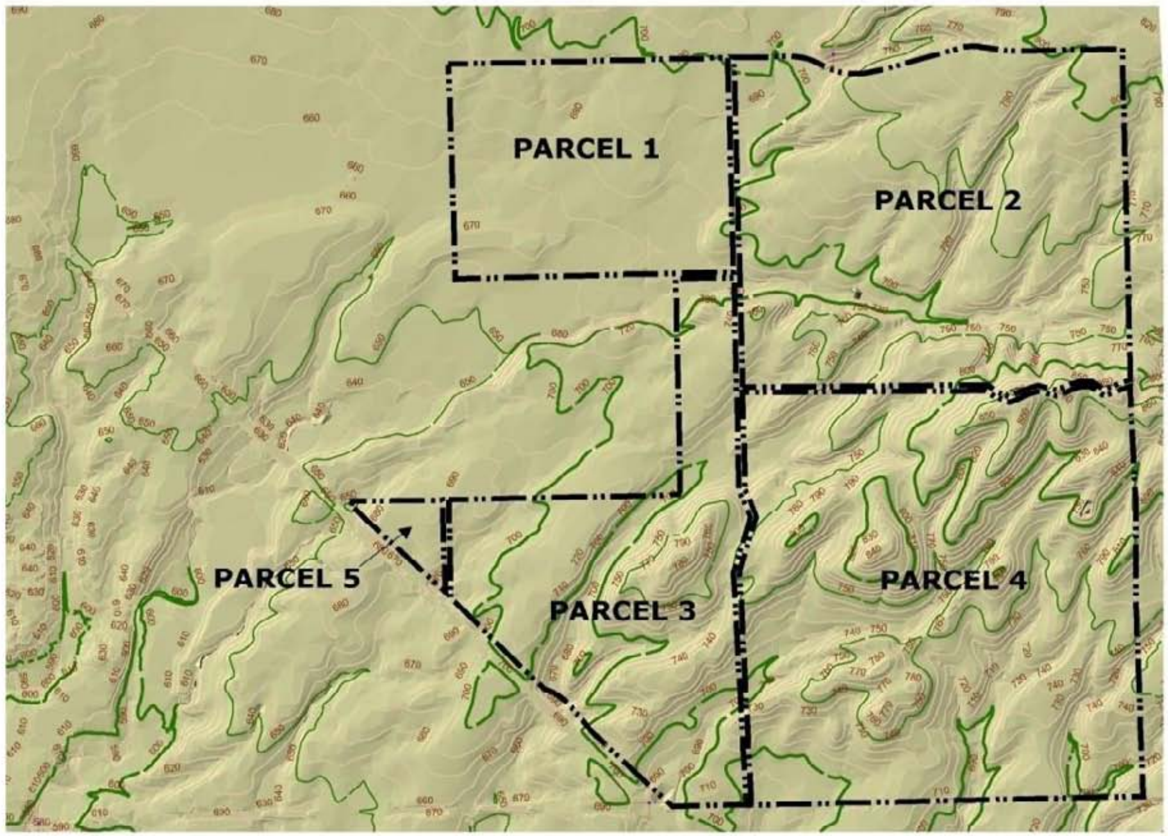
Topography & Current Use

- Topography
- Wetlands
- Current Agricultural Use
- Surrounding Uses

SANTA YNEZ BAND OF CHUMASH INDIANS

Santa Ynez Band of Chumash Indians

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING ANALYSIS



LEGEND

- PARCEL LIMIT
- 100 FEET COUNTOUR INTERVALS
- 50 FEET COUNTOUR INTERVALS
- 10 FEET COUNTOUR INTERVALS

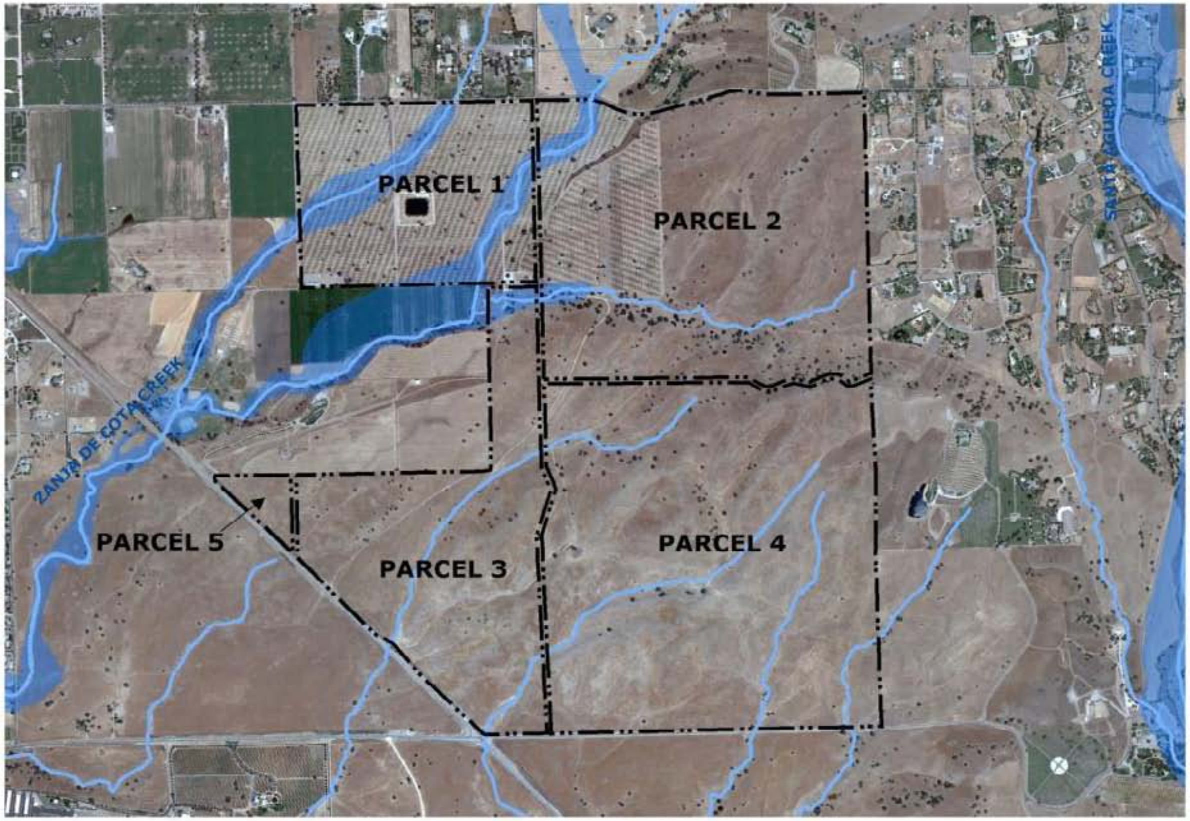
TOPOGRAPHY MAP
1" = 1,600'

0 500 1,000 2,000 3,000 Feet NORTH

summit project management
8757 Washington Blvd.
Culver City CA. 90232
310.287.9989

Santa Ynez Band of Chumash Indians

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING ANALYSIS



LEGEND

PARCEL LIMIT

DRAINAGES

FLOODPLAINS

FLOOD HAZARD AND HYDROLOGY MAP
1"= 2,000'

0 500 1,000 2,000 3,000 Feet

NORTH

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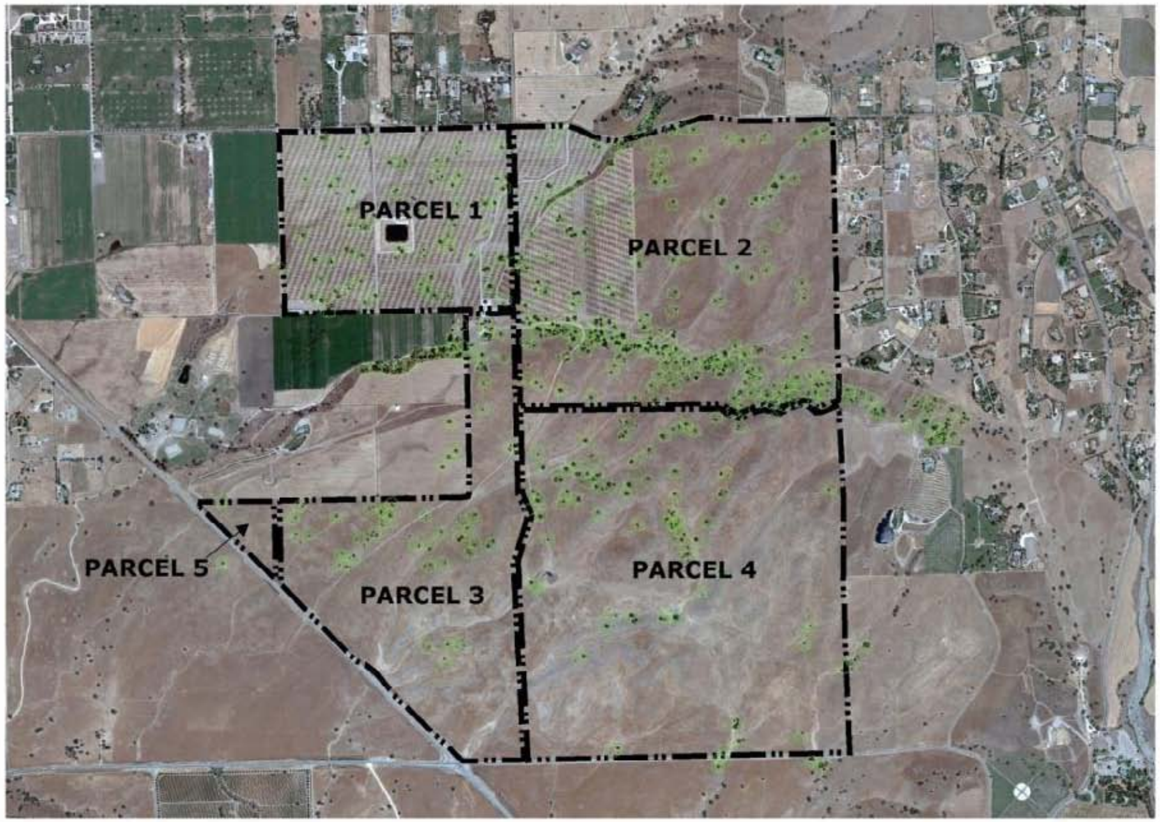
SANTA YNEZ BAND OF CHUMASH INDIANS

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING ANALYSIS



LEGEND

PARCEL LIMIT

OAK TREES

VEGETATION MAP
1"= 2,000'

0 500 1,000 2,000 3,000 Feet

NORTH

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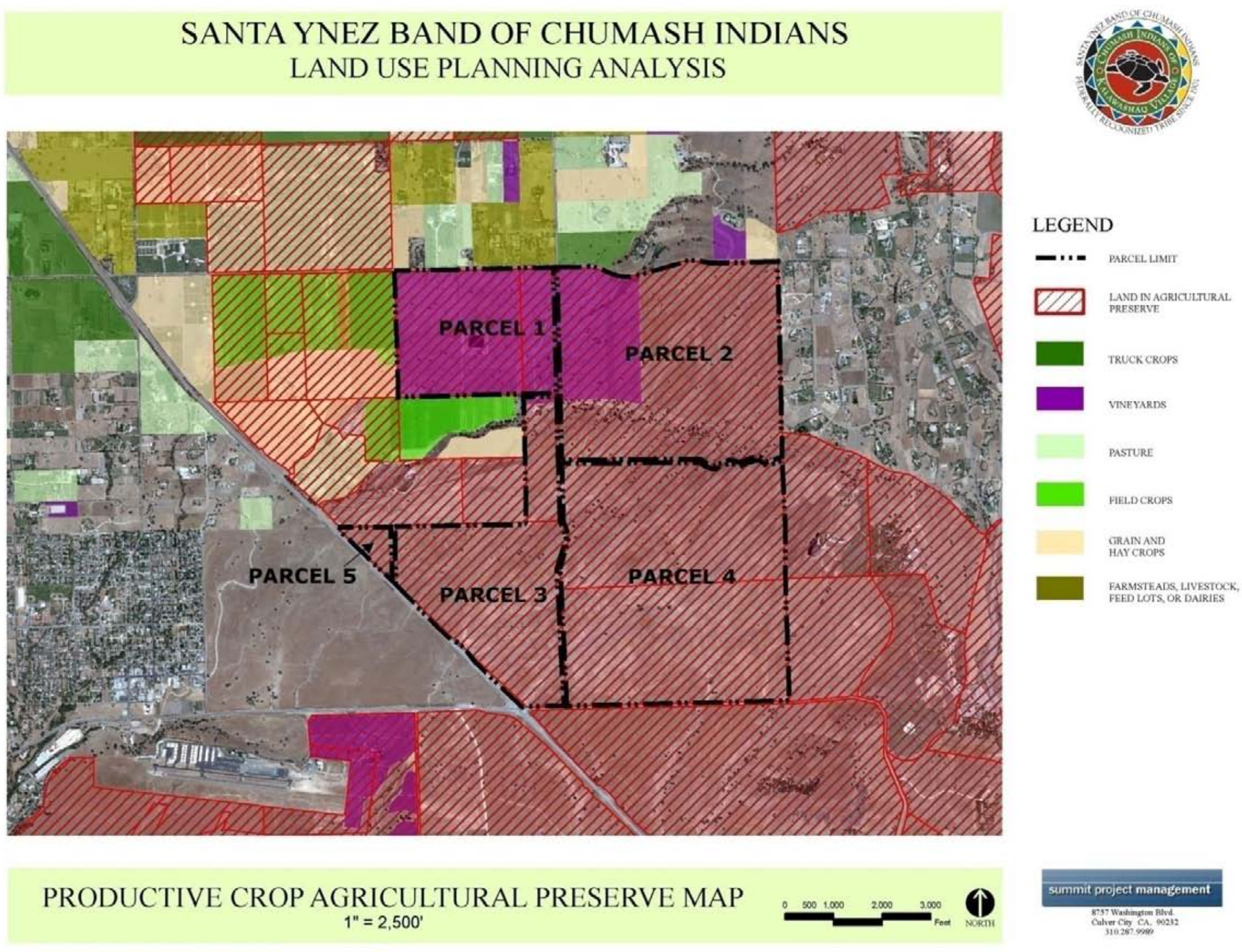
Santa Ynez Band of Chumash Indians



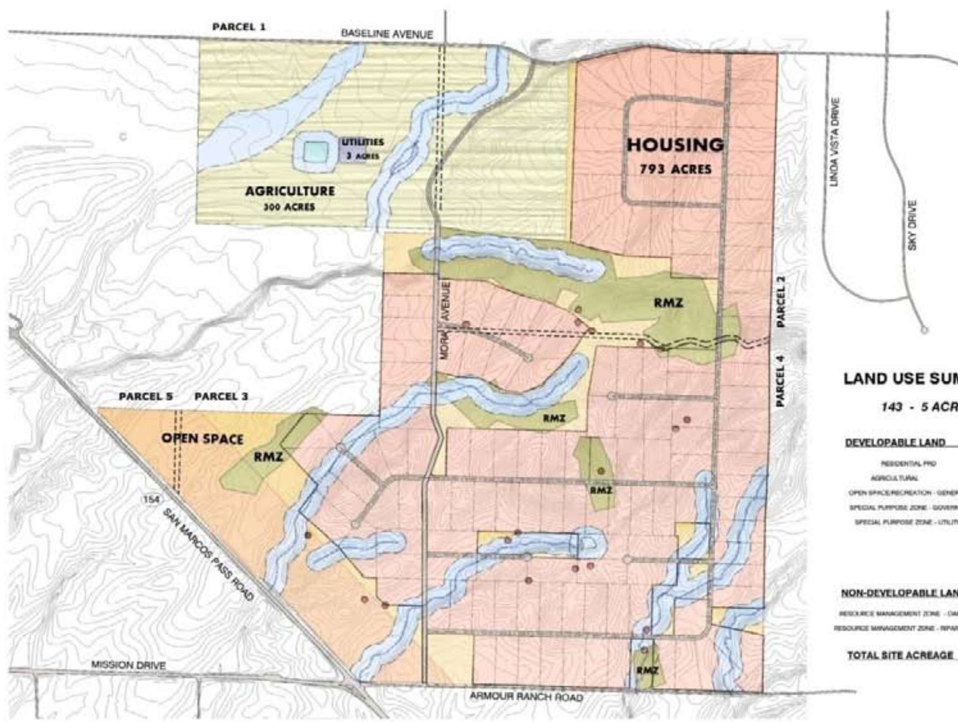
SANTA YNEZ BAND OF CHUMASH INDIANS

Alternatives for 143 lots

- **Five (5) Acre Lots**
- **One (1) Acre Lots in N.E. Corner**
- **One (1) Acre Lots in N.E. Corner saving grapes**
- **One (1) Acre Lots in Three (3) Clusters**
- **One (1) Acre Lots in Three (3) Clusters with Armour Road Setback**

Santa Ynez Band of Chumash Indians

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING



LAND USE SUMMARY - Q

143 - 5 ACRE LOTS

DEVELOPABLE LAND 1,302 ACRES

NON-DEVELOPABLE LAND 131 ACRES

TOTAL SITE ACREAGE 1,433 ACRES

LEGEND

- **RESIDENTIAL ZONE** LOW DENSITY PLANNED RESIDENTIAL DEVELOPMENT
- **AGRICULTURAL ZONE** AGRICULTURAL 1
- **OPEN SPACE / RECREATION ZONE** PASSIVE TRAILS, EQUESTRIAN TRAILS
- **RESOURCE MANAGEMENT ZONE (RMZ)** OLD WOODLAND
- **RESOURCE MANAGEMENT ZONE (RMZ)** RIPARIAN CORRIDORS
- **SPECIAL PURPOSE ZONE** GOVERNMENT CENTER
- **SPECIAL PURPOSE ZONE** PUBLIC UTILITIES - WWTP
- **ROADS**
- **VIEW CORRIDOR**
- **CULTURAL RESOURCES**

CONCEPT PLAN - OPTION Q

1" = 500'

NORTH

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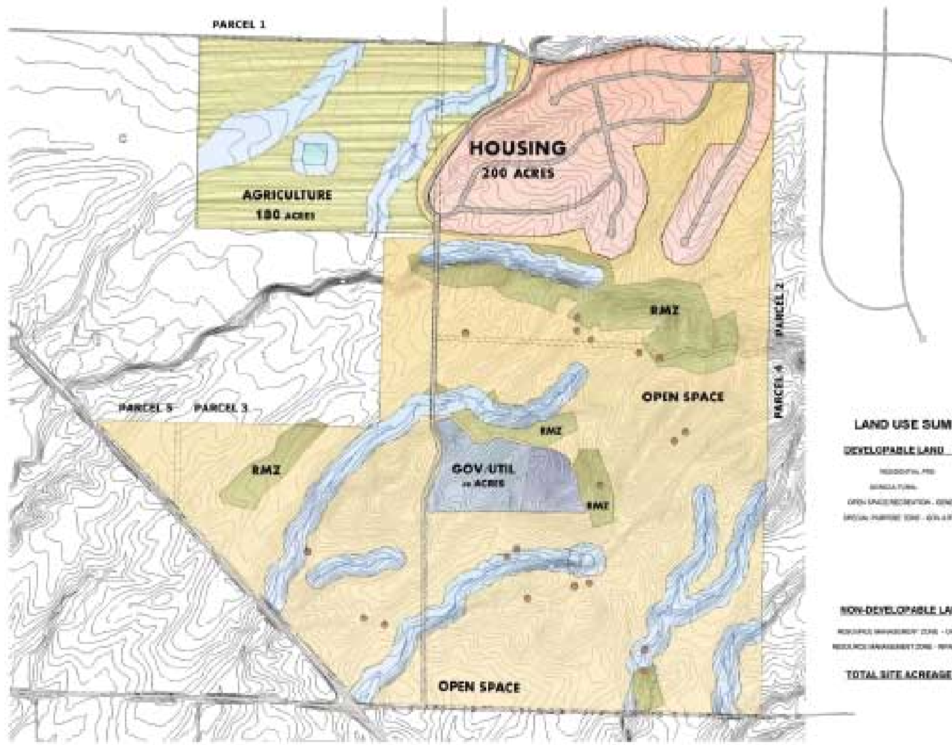
SANTA YNEZ BAND OF CHUMASH INDIANS

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING



LAND USE SUMMARY - J.0.1

DEVELOPABLE LAND 1,150 ACRES

NON-DEVELOPABLE LAND 283 ACRES

TOTAL SITE ACREAGE 1,433 ACRES

LEGEND

- RESIDENTIAL ZONE – LOW DENSITY PLANNED RESIDENTIAL DEVELOPMENT
- AGRICULTURAL ZONE – AGRICULTURAL 1
- OPEN SPACE / RECREATION ZONE – PASSIVE TRAILS, EQUESTRIAN TRAILS
- RESOURCE MANAGEMENT ZONE (RMZ) – OLD WOODLAND
- RESOURCE MANAGEMENT ZONE (RMZ) – RIPARIAN CORRIDORS
- SPECIAL PURPOSE ZONE – GOVERNMENT CENTER
- SPECIAL PURPOSE ZONE – PUBLIC UTILITIES - WWTP
- ROADS
- CULTURAL RESOURCES

CONCEPT PLAN - OPTION J.0.1
1" = 500'

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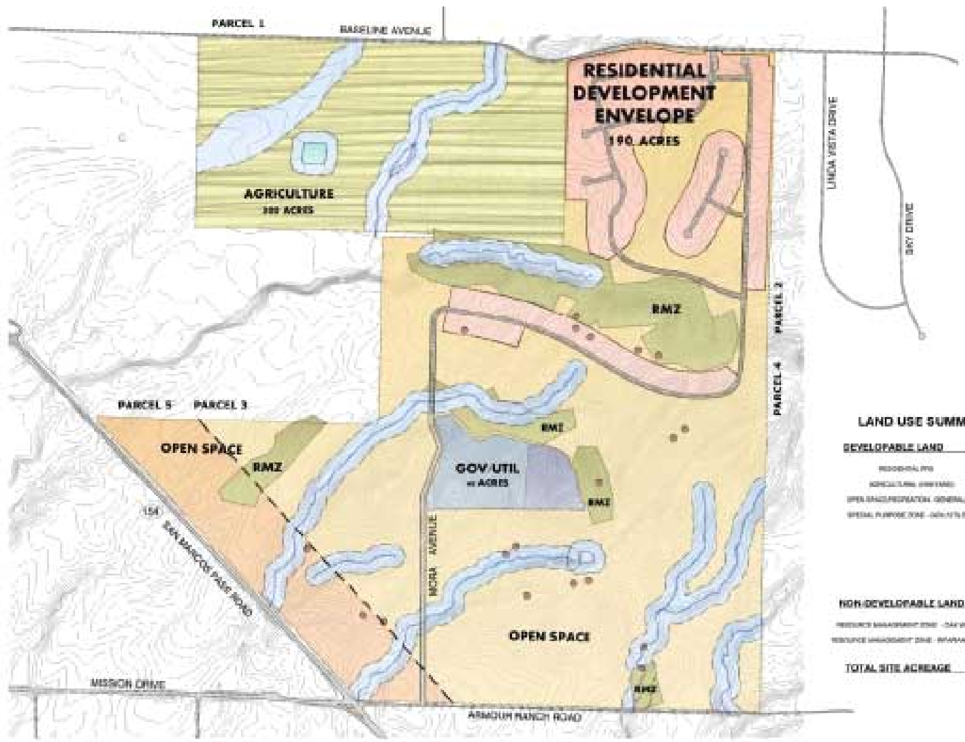
Santa Ynez Band of Chumash Indians

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING



LEGEND

- RESIDENTIAL ZONE — LOW DENSITY PLANNED RESIDENTIAL DEVELOPMENT
- AGRICULTURAL ZONE — AGRICULTURAL 1
- OPEN SPACE / RECREATION ZONE — PASSIVE TRAILS, EQUESTRIAN TRAILS
- RESOURCE MANAGEMENT ZONE (RMZ) — OLD WOODLAND
- RESOURCE MANAGEMENT ZONE (RMZ) — RIPARIAN CORRIDORS
- SPECIAL PURPOSE ZONE — GOVERNMENT CENTER
- SPECIAL PURPOSE ZONE — PUBLIC UTILITIES - WWTP
- ROADS
- VIEW CORRIDOR
- CULTURAL RESOURCES

CONCEPT PLAN - OPTION J.1

1" = 500'

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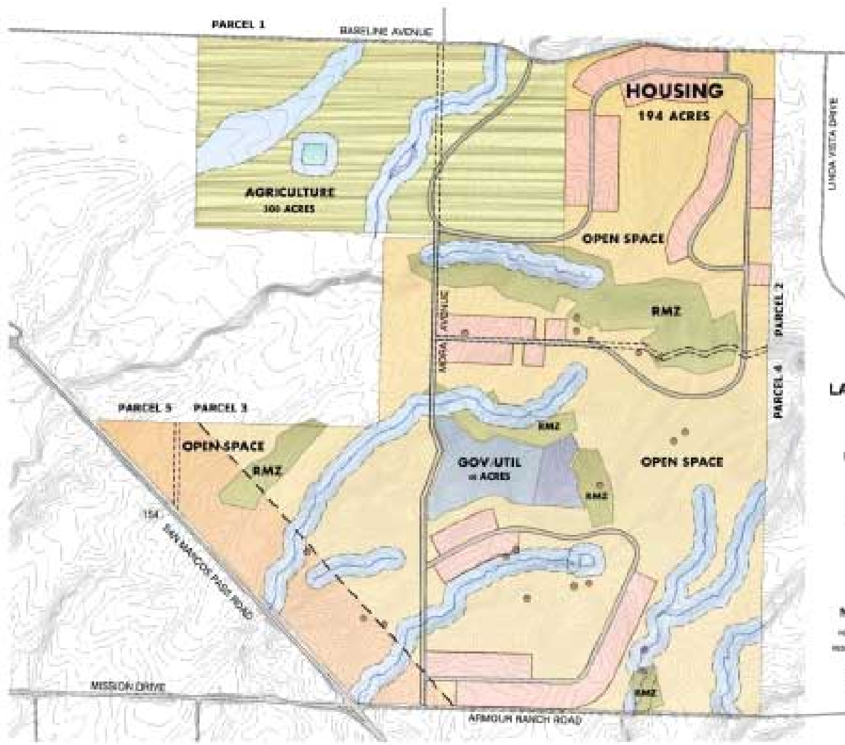
Santa Ynez Band of Chumash Indians

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING



LAND USE SUMMARY - M.0.1

143 - 1 ACRE LOTS

DEVELOPABLE LAND 1,302 ACRES

NON-DEVELOPABLE LAND 131 ACRES

TOTAL SITE ACREAGE 1,433 ACRES

LEGEND

- RESIDENTIAL ZONE — LOW DENSITY PLANNED RESIDENTIAL DEVELOPMENT
- AGRICULTURAL ZONE — AGRICULTURAL 1
- OPEN SPACE / RECREATION ZONE — PASSIVE TRAILS, EQUESTRIAN TRAILS
- RESOURCE MANAGEMENT ZONE (RMZ) — OLD WOODLAND
- RESOURCE MANAGEMENT ZONE (RMZ) — RIPARIAN CORRIDORS
- SPECIAL PURPOSE ZONE — GOVERNMENT CENTER
- SPECIAL PURPOSE ZONE — PUBLIC UTILITIES - WWTP
- ROADS
- VIEW CORRIDOR
- CULTURAL RESOURCES

CONCEPT PLAN - OPTION M.0.1
1" = 500'

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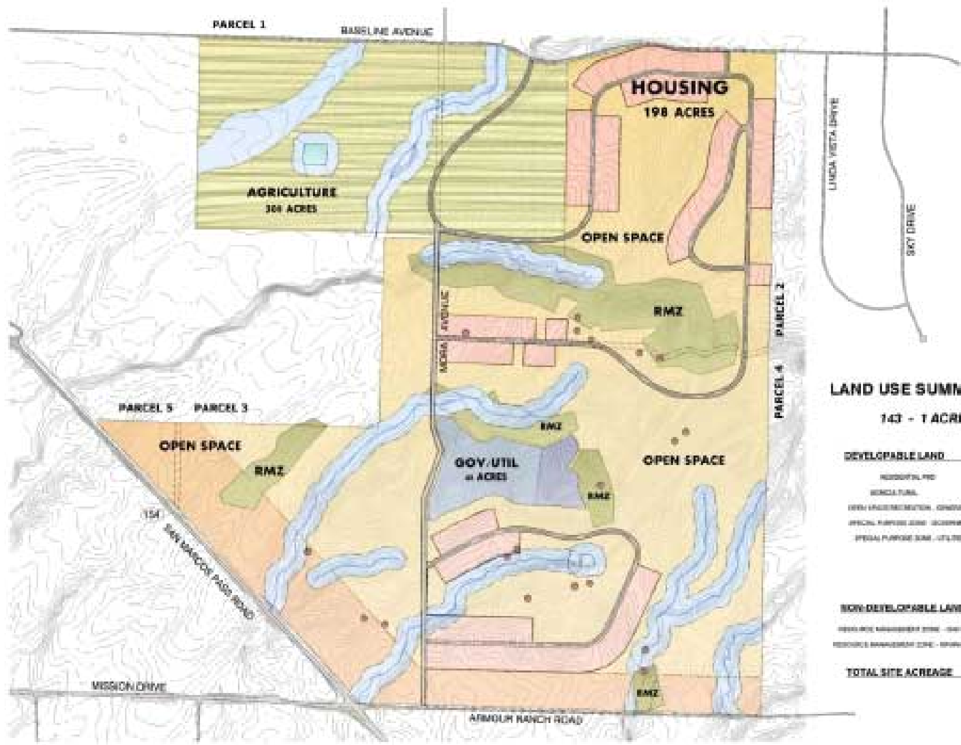
SANTA YNEZ BAND OF CHUMASH INDIANS

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING



LAND USE SUMMARY - M.2.1

143 - 1 ACRE LOTS

DEVELOPABLE LAND ____ 1,302 ACRES

NON-DEVELOPABLE LAND ____ 131 ACRES

TOTAL SITE ACREAGE ____ 1,433 ACRES

LEGEND

- RESIDENTIAL ZONE
  LOW DENSITY PLANNED RESIDENTIAL DEVELOPMENT
- AGRICULTURAL ZONE
  AGRICULTURAL 1
- OPEN SPACE / RECREATION ZONE
  PASSIVE TRAILS, EQUESTRIAN TRAILS
- RESOURCE MANAGEMENT ZONE (RMZ)
  OLD WOODLAND
- RESOURCE MANAGEMENT ZONE (RMZ)
  RIPARIAN CORRIDORS
- SPECIAL PURPOSE ZONE
  GOVERNMENT CENTER
- SPECIAL PURPOSE ZONE
  PUBLIC UTILITIES - WWTP
- ROADS
- VIEW CORRIDOR
- CULTURAL RESOURCES

CONCEPT PLAN - OPTION M.2.1

1" = 500'

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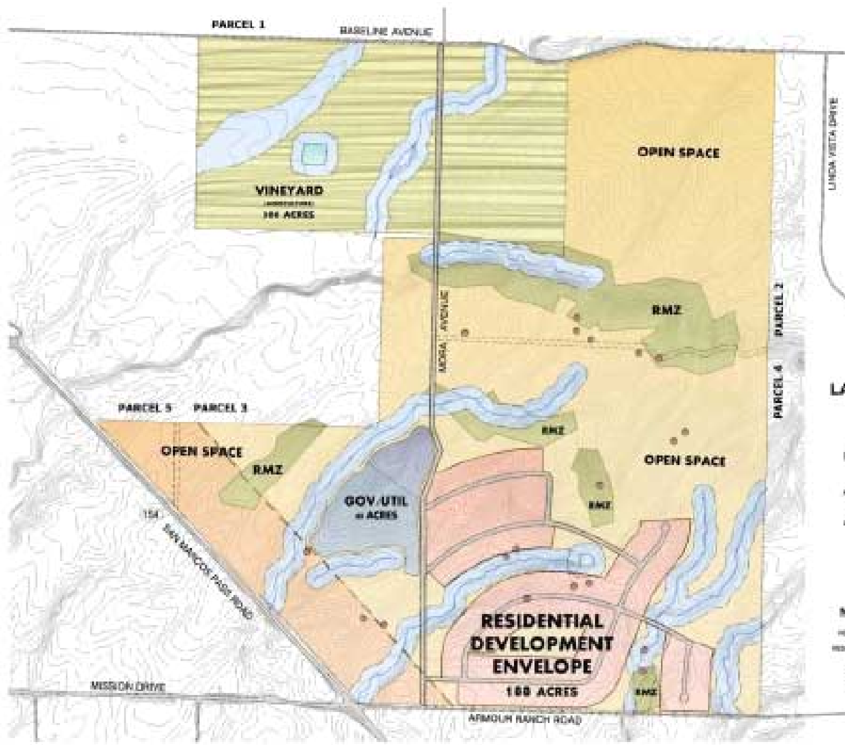
More Alternatives (143 lots)

- One (1) Acre Lots in S.E. Corner
- One (1) Acre Lots in N.W. Corner; Vineyard in N.E.
- One (1) Acre Lots in N.W. Corner; Vineyard on West
- One (1) Acre Lots in Center

Santa Ynez Band of Chumash Indians

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING



LAND USE SUMMARY - R.0.1

143 - 1 ACRE LOTS

DEVELOPABLE LAND 1,302 ACRES

NON-DEVELOPABLE LAND 131 ACRES

TOTAL SITE ACREAGE 1,433 ACRES

LEGEND

- RESIDENTIAL ZONE — LOW DENSITY PLANNED RESIDENTIAL DEVELOPMENT
- AGRICULTURAL ZONE — AGRICULTURAL 1
- OPEN SPACE / RECREATION ZONE — PASSIVE TRAILS, EQUESTRIAN TRAILS
- RESOURCE MANAGEMENT ZONE (RMZ) — OLD WOODLAND
- RESOURCE MANAGEMENT ZONE (RMZ) — RIPARIAN CORRIDORS
- SPECIAL PURPOSE ZONE — GOVERNMENT CENTER
- SPECIAL PURPOSE ZONE — PUBLIC UTILITIES - WWTP
- ROADS
- VIEW CORRIDOR
- CULTURAL RESOURCES

CONCEPT PLAN - OPTION R.0.1

1" = 500'

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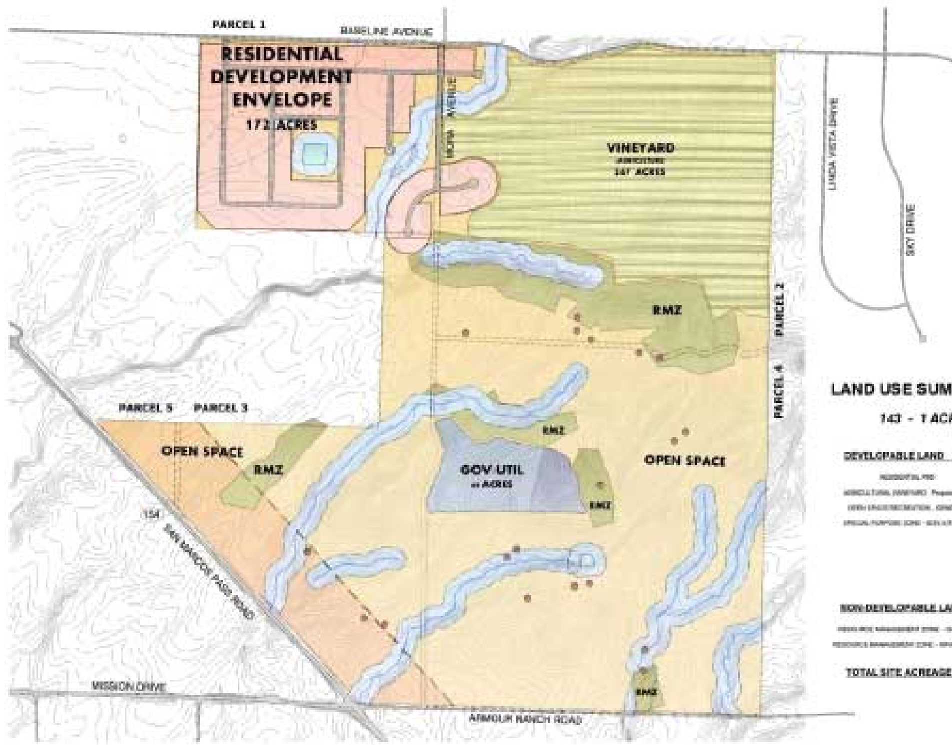
Santa Ynez Band of Chumash Indians

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING



LAND USE SUMMARY - S.0.1

143 - 1 ACRE LOTS

DEVELOPABLE LAND ____ 1,302 ACRES

NON-DEVELOPABLE LAND ____ 131 ACRES

TOTAL SITE ACREAGE ____ 1,433 ACRES

LEGEND

- RESIDENTIAL ZONE — LOW DENSITY PLANNED RESIDENTIAL DEVELOPMENT
- AGRICULTURAL ZONE — AGRICULTURAL 1
- OPEN SPACE / RECREATION ZONE — PASSIVE TRAILS, EQUESTRIAN TRAILS
- RESOURCE MANAGEMENT ZONE (RMZ) — OLD WOODLAND
- RESOURCE MANAGEMENT ZONE (RMZ) — RIPARIAN CORRIDORS
- SPECIAL PURPOSE ZONE — GOVERNMENT CENTER
- SPECIAL PURPOSE ZONE — PUBLIC UTILITIES - WWTP
- ROADS
- VIEW CORRIDOR
- CULTURAL RESOURCES

CONCEPT PLAN - OPTION S.0.1

1" = 500'

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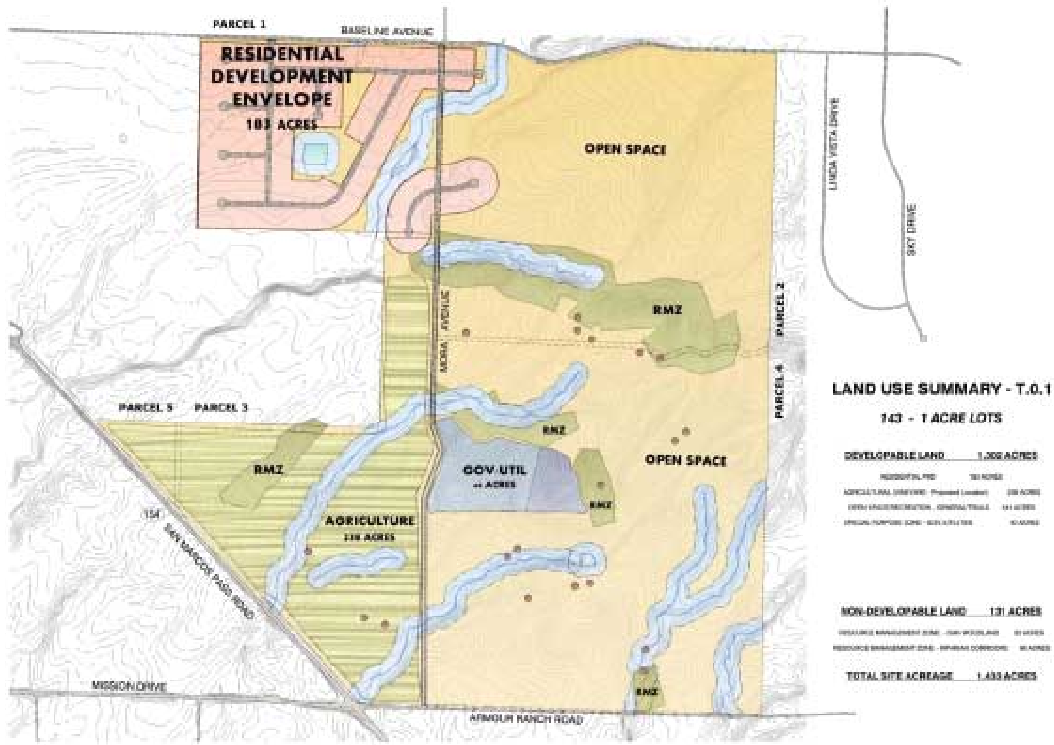
Santa Ynez Band of Chumash Indians

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING



LEGEND

- RESIDENTIAL ZONE — LOW DENSITY PLANNED RESIDENTIAL DEVELOPMENT
- AGRICULTURAL ZONE — AGRICULTURAL 1
- OPEN SPACE / RECREATION ZONE — PASSIVE TRAILS, EQUESTRIAN TRAILS
- RESOURCE MANAGEMENT ZONE (RMZ) — OLD WOODLAND
- RESOURCE MANAGEMENT ZONE (RMZ) — RIPARIAN CORRIDORS
- SPECIAL PURPOSE ZONE — GOVERNMENT CENTER
- SPECIAL PURPOSE ZONE — PUBLIC UTILITIES - WWTP
- ROADS
- VIEW CORRIDOR
- CULTURAL RESOURCES

CONCEPT PLAN - OPTION T.0.1

1" = 500'

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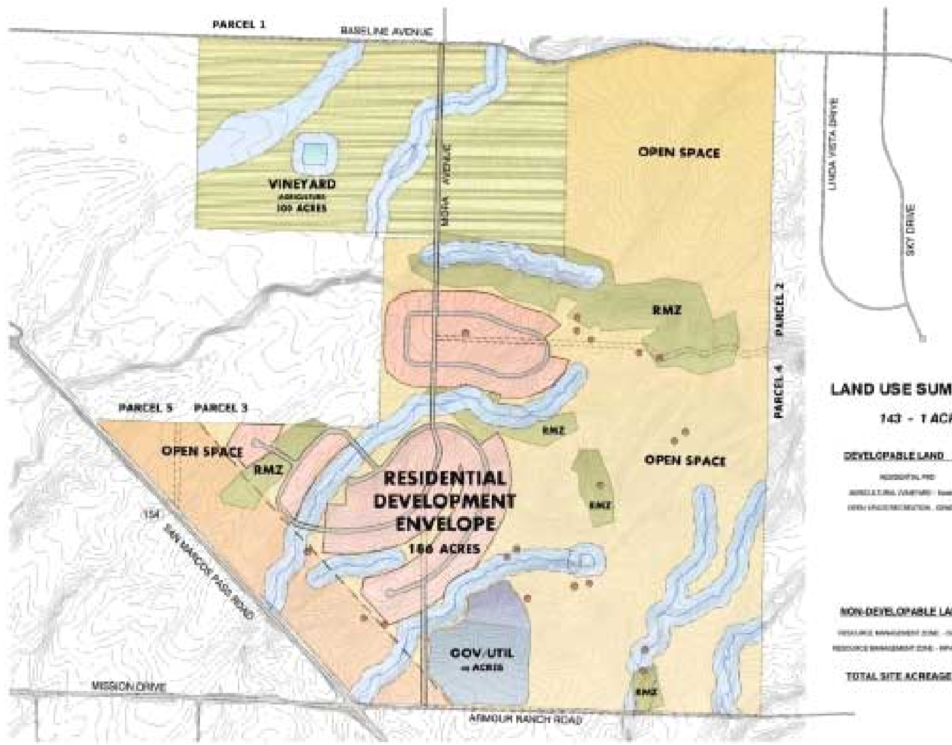
SANTA YNEZ BAND OF CHUMASH INDIANS

SANTA YNEZ BAND OF CHUMASH INDIANS
LAND USE PLANNING



LAND USE SUMMARY - U.0.1

143 - 1 ACRE LOTS

DEVELOPABLE LAND 1,302 ACRES

NON-DEVELOPABLE LAND 131 ACRES

TOTAL SITE ACREAGE 1,433 ACRES

LEGEND

- RESIDENTIAL ZONE — LOW DENSITY PLANNED RESIDENTIAL DEVELOPMENT
- AGRICULTURAL ZONE — AGRICULTURAL 1
- OPEN SPACE / RECREATION ZONE — PASSIVE TRAILS, EQUESTRIAN TRAILS
- RESOURCE MANAGEMENT ZONE (RMZ) — OLD WOODLAND
- RESOURCE MANAGEMENT ZONE (RMZ) — RIPARIAN CORRIDORS
- SPECIAL PURPOSE ZONE — GOVERNMENT CENTER
- SPECIAL PURPOSE ZONE — PUBLIC UTILITIES - WWTP
- ROADS
- VIEW CORRIDOR
- CULTURAL RESOURCES

CONCEPT PLAN - OPTION U.0.1

1" = 500'

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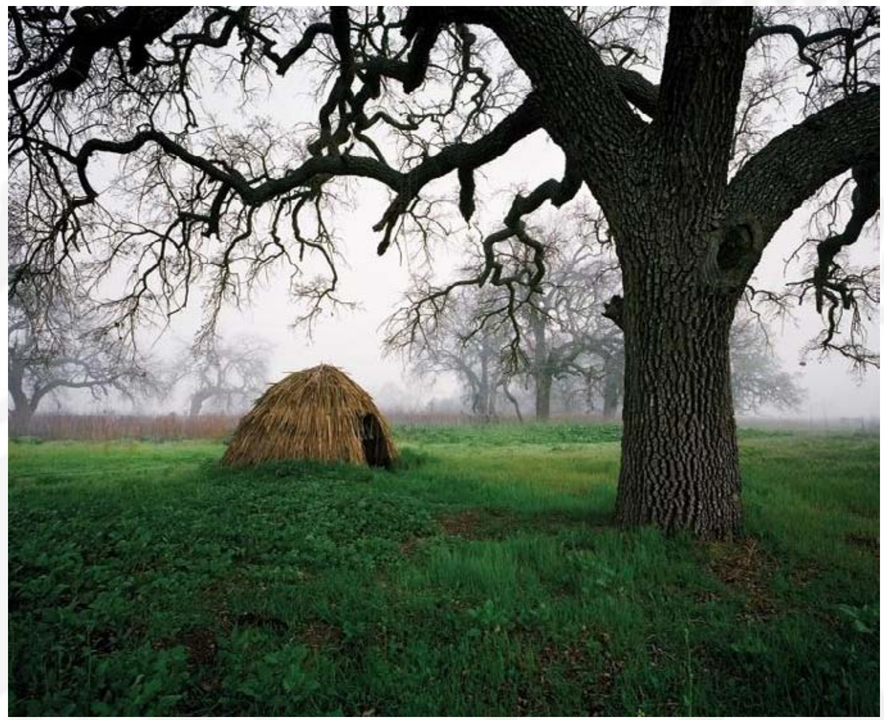
Santa Ynez Band of Chumash Indians

Thank You

Any Questions?



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