DRAFT ENVIRONMENTAL IMPACT REPORT

CITY OF OXNARD CALIFORNIA

Maulhardt-Stiles Sub-Neighborhood Plan Project

TECHNICAL APPENDICES
VOLUME II: H – U

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MAY 2026

APPENDIX H

Phase I Archaeological Report

Phase I Archaeological Study of the 56.4 Acre Maulhardt/Stiles Ranch Property Oxnard, Ventura County, California

(APNs 214-002-061 and 214-002-062)

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NOVEMBER 2024

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This report identifies the locations of cultural resources, which are confidential. As nonrenewable resources, archaeological sites can be significantly impacted by disturbances that can affect their cultural, scientific, and artistic values. Disclosure of this information to the public may be in violation of state laws. To discourage the damage of vandalism and artifact looting, cultural resources locations should be kept confidential and report distribution restricted to those who need to know. Applicable California laws include, but may not be limited to, Government Code Sections 6250 *et seq.* and 6254 *et seq.* Furthermore, disclosure of site location information to individuals other than those meeting the California State Personnel Board criteria for Associate State Archaeologist or State Historian II violates the California Office of Historic Preservation's records access policy.

National Archaeological Data Base Information

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Report Title:	Phase I Archaeological Study of the 56.4 Acre Maulhardt/Stiles Ranch Property in Oxnard, Ventura County, California
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Acreage:	Approximately 56.4 acres
Key words:	Ventura County, Oxnard, APN 214-002-059, Maulhardt Ranch, Chumash

MANAGEMENT SUMMARY

At the request of Meridian Consultants, LLC, Provenience Group, Inc. (PGI) performed a Phase I archaeological pedestrian survey of the Maulhardt/Stiles Ranch property, which includes two separate parcels. The first is a residential property at 1853 E. Camino Del Sol, and the second is a vacant field north of Jacinto Drive and east of Rose Avenue in Oxnard, Ventura County, California. The objective of the survey was to record any prehistoric and/or historic cultural resources within the 56.4-acre area, defined as the project area. This report summarizes the results of the study.

On August 27, 2024, PGI staff archaeologist Carole Denardo, M.A completed a record search at the South Central Coastal Information Center (SCCIC). In addition to the historic Maulhardt Ranch, another previously identified historic resource, the Rose Ranch/McGrath Ranch, is recorded within 0.50-mile (mi) of the project area. The records search also identified one prehistoric archaeological site in the current location of Del Sol High School (Denardo and Hargett 2019). No other prehistoric or historic cultural resources have been recorded in the 0.50-mi search radius. On September 17, 2024, PGI archaeologist Carole Denardo completed a portion of the Phase I archaeological resources pedestrian survey to detect prehistoric and historic cultural resources. At that time, ground surface visibility in the field north of Jacinto Drive was less than 10 percent, due to high and thickly matted brush. The remainder of the pedestrian survey was delayed until after goats, retained by the property owner, were able to consume much of the dry vegetation. On October 29, 2024, archaeologists Jenna Levine, MSc. and Farah Mosbah, B.A. finished the cultural resources survey.

The results of the survey indicate the presence of a small, sparse scatter of historic glass, ceramic, and marine shell fragments in the northern portion of the residential area of the Maulhardt Ranch property. The artifacts were observed near a slight depression, which suggests possible past use of this area for disposal of refuse. However, there is uncertainty whether the artifacts represent discarded items from early occupation of the ranch, or from more recent times. PGI staff dd not observe any prehistoric or historic cultural materials in the field north of Jacinto Drive.

PGI recommends limited Extended Phase I testing by a qualified archaeologist in the area where the artifacts and marine shell were discovered to determine if important historic materials are present within the project area. Depending on the results of the Extended Phase I study, additional mitigation may be required if avoidance is not feasible. In addition, archaeological monitoring is recommended during initial grading for the project.

There is also a possibility of encountering human remains either in association with prehistoric occupation sites or as separate finds. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial, and Section 5097.99 of the Public Resources Code defines the obtaining or possession of Native American remains or grave goods to be a felony. If human remains are encountered during construction activities, any work in the vicinity should stop and the County Coroner contacted immediately and a qualified archaeologist should be contacted to evaluate the find. If the human remains are Native American, then the Coroner must notify the Native American Heritage Commission within 24 hours of the identification.

A copy of this report and attachments will be submitted to the Central Coast Information Center (CCIC) at the Santa Barbara Museum of Natural History. Field notes and other project materials are on file at PGI's office in Solvang, California.

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1.0 INTRODUCTION

At the request of Meridian Consultant, LLC., Provenience Group, Inc. (PGI) completed a records search and a Phase I archaeological resources pedestrian survey in support of the proposed 56.4-acre Maulhardt/Stiles Ranch project in Oxnard, Ventura County, California. The project area encompasses Township 2 North, Range 22 West, as shown on the U.S. Geological Survey (USGS) Oxnard, California 7.5-minute series topographic quadrangle map (Figure 1). This report summarizes the results of the study.

PGI completed the Phase I cultural resources study pursuant to the California Environmental Quality Act (CEQA) and Ventura County guidelines. CEQA requires lead agencies to evaluate proposed projects for their potential to impact archaeological resources (Public Resources Code Section 21082, 21083.2, and 21084.1, and California Code of Regulations 15064.5).

According to the CEQA Guidelines, "historical resources" include buildings, structures, objects, districts, or sites that may possess prehistoric or historical archaeological, architectural, cultural, or scientific importance. CEQA states that if a project will have a significant effect on important cultural resources, then alternative plans or mitigation measures need to be developed. However, only important cultural resources need to be considered in the mitigation plans.

On September 17, 2024, PGI archaeologist Carole Denardo completed a portion of the Phase I archaeological resources pedestrian survey. At that time, ground surface visibility in the field north of Jacinto Drive was less than 10 percent due to high and thickly matted brush. The remainder of the pedestrian survey was delayed until after goats retained by the property owner, were able to consume much of the dry vegetation in the field. On October 29, 2024, archaeologists Jenna Levine, MSc. and Farah Mosbah, B.A. finished the cultural resources survey.

Carole Denardo, M.A., RPA, who exceeds the U.S. Secretary of the Interior's Historic Preservation Professional Qualification Standards as outlined in 36 CFR 61, served as PGI's principal investigator. Senior Archaeologist Jenna Levine, MSc assisted with Native American consultation, the archaeological survey, and preparation of this report.

PGI initiated consultation with the California Native American Heritage Commission (NAHC) on September 13, 2024 to inquire if known sacred sites are present in the project area; the result was negative. The NAHC provided a list of eight (8) Native American groups and individuals on September 24, 2024. Letters and/or emails were provided to each of the contacts on November 8, 2024. Follow-up phone calls were made on November 12 and 14, 2024. Two tribal contacts recommended Native American monitoring during ground disturbances for this project.

The remainder of this section provides the project description and location; Section 2.0 discusses the regulatory framework; Section 3.0 summarizes environmental, ethnographic, and archaeological overviews for the region; Section 4.0 describes the records search results; Section 5.0 presents the field methodology; Section 6.0 discusses the survey results; Section 7.0 provides a summary and recommendation; and references are listed in Section 8.0.

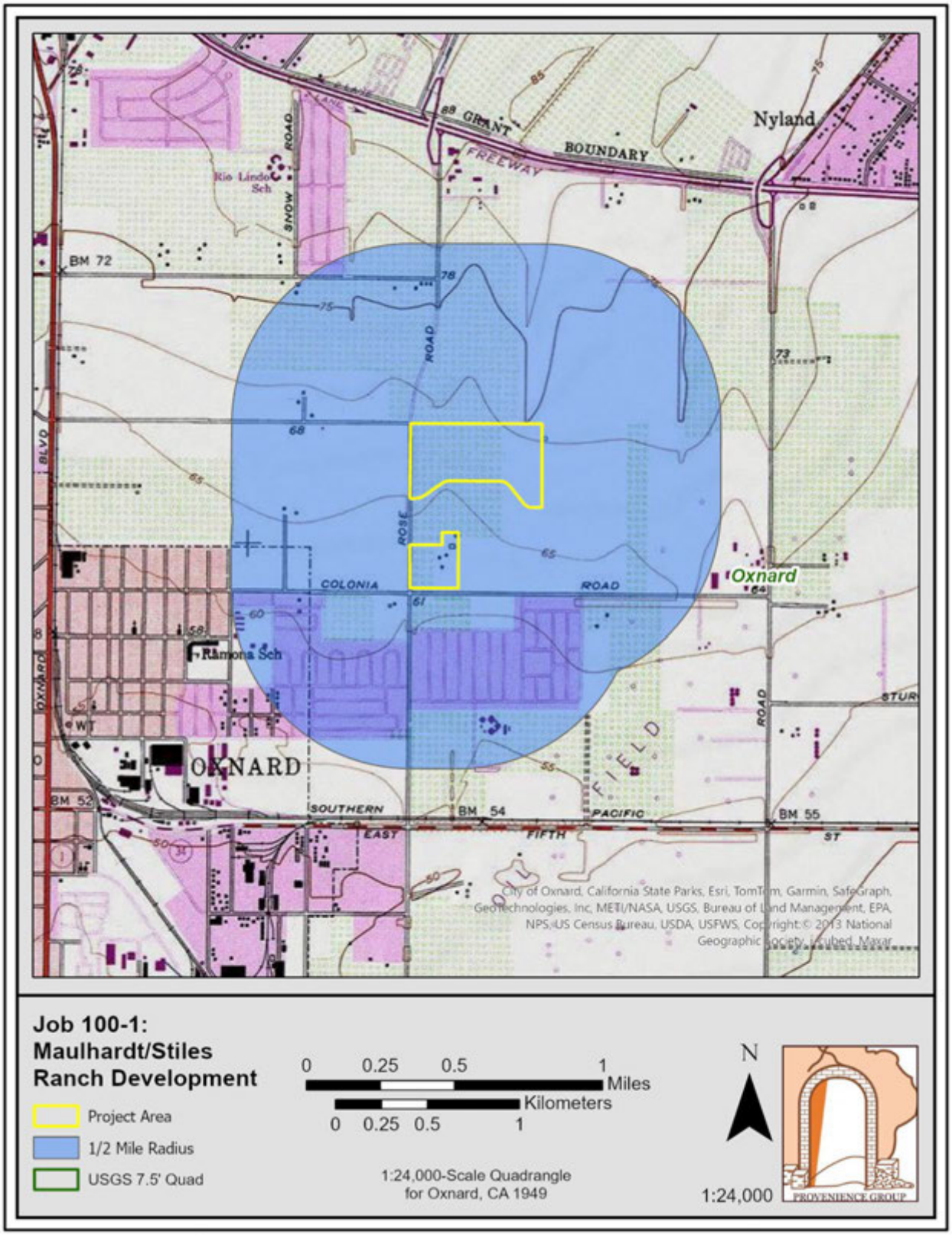

Figure 1. Project Location Map.

1.1 Project Description and Location

The Phase I archaeological pedestrian survey for the 56.4-acre Maulhardt/Stiles Ranch project in Oxnard, Ventura County, California includes two separate parcels (Figure 2). According to files at the Ventura County Assessor's Office, the residential property at 1853 E. Camino Del Sol (Assessor's Parcel Number (APN) 214-002-062) comprises 11.31-acre, and the vacant field north of Jacinto Drive and east of Rose Avenue (APN 214-002-061) is 44.21-acres. The purpose of the Phase I survey was to identify prehistoric and historic archaeological resources that have the potential to be adversely affected by development in the project area.

The project area is within the southern expanse of the Santa Clara River flood plain. The parcel is surrounded by residential properties on the north, south, and west sides, and the recently constructed Del Sol High School is present to the east. The topography of the two parcels is mostly flat (Figure 3). The elevation ranges between approximately 61 and 70 feet above mean average sea level (amsl) (Google Earth 2024).

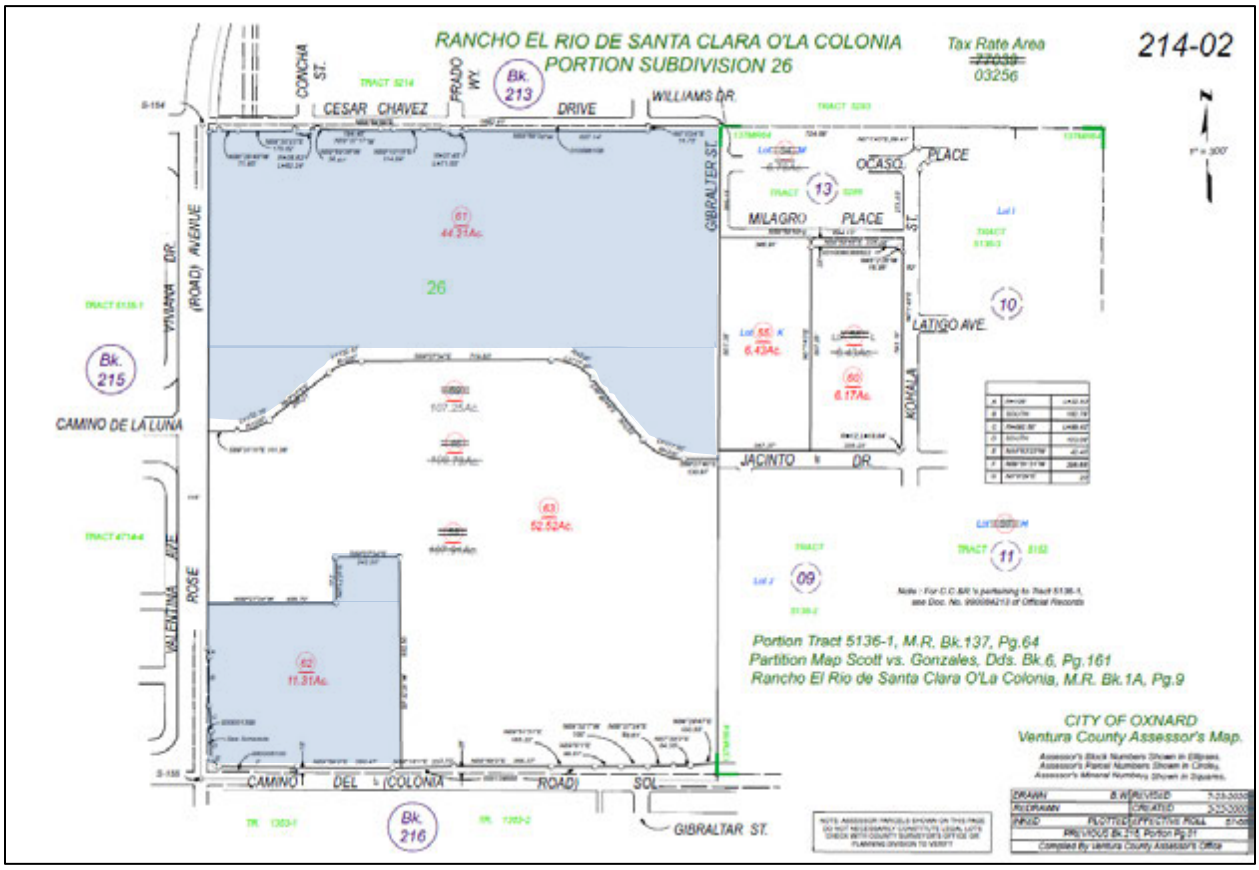

Figure 2. Assessor Parcel Map of Project Area (APN 214-002-061 and 214-002-062), shaded blue.

Figure 3. Aerial photograph indicating the surveyed Project Area.

2.0 REGULATORY FRAMEWORK

The following regulatory framework describes the applicable state and local statutes, ordinances, and policies pertaining to the protection of cultural resources. These laws must be considered during the planning process for projects that have the potential to affect cultural resources in Ventura County.

2.1 State Regulations

2.1.1 California Environment Quality Act (CEQA)

The California Environmental Quality Act (CEQA) statute and guidelines include procedures for identifying, analyzing, and disclosing potential adverse impacts to historical resources, which include all resources listed in or formally determined eligible for the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), or local registers. CEQA further defines a "historical resource" as a resource that meets any of the following criteria:

- A resource listed in, or determined to be eligible for listing in, the NRHP or CRHR;

- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant;

- A resource identified as significant (i.e., rated 1-5) in a historical resource survey meeting the requirements of Public Resource Code Section 5024.1(g) (Department of Parks and Recreation Form 523), unless the preponderance of evidence demonstrates that it is not historically or culturally significant; or

- Any object, building, structure, site, area, place, record or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the CRHR (CEQA Guidelines Section 15064.5).

2.1.2 California Register of Historical Resources

CRHR Criteria of Evaluation

All resources listed in or formally determined eligible for the NRHP are eligible for the CRHR. The CRHR is a listing of California resources that are significant within the context of California's history. The CRHR is a state-wide program of similar scope to the NRHP. In addition, properties designated under municipal or county ordinances are eligible for listing in the CRHR. A historic resource must be significant at the local, state, or national level under one or more of the following criteria that are defined in the California Code of Regulations Title 14, Chapter 11.5, Section 4850:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or

2. It is associated with the lives of persons important to local, California, or national history; or

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or

4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

The CRHR criteria are similar to NRHP criteria, and are tied to CEQA, as any resource that meets the above criteria is considered a historical resource under CEQA.

2.2 Local Ordinances and Guidelines

2.2.1 Ventura County Guidelines

Ventura County's 2040 General Plan defers to CEQA for cultural, historical, paleontological, and archaeological resource mitigation and preservation. Because the county is considered archaeologically rich, there is an increased likelihood for discovery of prehistoric and historic-era archaeological resources.

In accordance with the General Plan, impact analyses should "consider the nature and location of the known archaeological, historical, tribal cultural, and paleontological resources, as well as the types of locations and conditions with the potential for previously undocumented resources, including human remains. Potential physical effects (e.g., disturbance, material alteration, demolition) to known and previously undocumented resources are evaluated by comparing their known and potential locations to the buildout of land uses that would be allowed under the land use diagram of the 2040 General Plan. The analysis evaluates the ability of the policies and implementation programs of the 2040 General Plan to avoid or substantially lessen adverse impacts to archaeological, historical, tribal cultural, and paleontological resources" (Ventura County 2020).

Conservation and Open Space Element

- *Policy COS-4.1: Cultural, Historical, Paleontological, and Archaeological Resources Inventory*. The County shall maintain an inventory of cultural, historical, paleontological, and archaeological resources in Ventura County based on project studies and secondary resources. (MPSP) [Source: Existing GPP Goal 1.1.1.1, modified]

- *Policy COS-4.2: Cooperation for Cultural, Historical, Paleontological, and Archaeological Resource Preservation.* The County shall cooperate with cities, special districts, other appropriate organizations, and private landowners to identify and preserve the county's cultural, historical, paleontological, and archaeological resources. (IGC) [Source: Existing GPP Goal 1.8.1.2, modified]

- Policy COS-4.3: Historical Landmarks Preservation. The County shall require all structures and sites that are designated, or being considered for designation, as County Historical Landmarks to be preserved as a condition of discretionary development, in accordance with the Secretary of the Interior Standards, unless a structure is unsafe or deteriorated beyond repair. The property owner shall place an appropriate marker on the site to describe the historical significance of the structure, site or event. (RDR) [Source: Existing Oak Park Area Plan

- Policy 1.5.2.2, Ojai Valley Area Plan Policy 1.7.2.2, and Thousand Oaks Area Plan Policy 1.5.2.2, modified]

- Policy COS-4.4: Discretionary Development and Cultural, Historical, Paleontological, and Archaeological Resource Preservation. The County shall require discretionary development be assessed for potential cultural, historical, paleontological, and archaeological resources by a qualified professional and be designed to avoid impacts to these resources whenever to the maximum extent feasible. Unavoidable impacts, whenever possible shall be reduced to a less than significant level and/or shall be mitigated by extracting maximum recoverable data. (RDR) [Source: Existing GPP Policy 1.8.2.1, GPP Policy 1.8.2.2, Ojai Valley Area Plan Goal 1.7.1.2 and Policy 1.7.2.1, Thousand Oaks Area Plan Goal 1.5.1.4 and Policy 1.5.2.1, Oak Park Area Plan Policy 1.5.2.1, and Piru Area Plan Policy 1.4.2.2, modified]

- Policy COS-4.5: Adaptive Reuse of Historic Structures. The County shall encourage discretionary development to adaptively reuse architecturally or historically significant buildings if the original use of the structure is no longer feasible and the new use is allowed by the underlying land use designation and zoning district. (RDR) [Source: New Policy]

- Policy COS-4.6: Architectural Design to Reflect Historic and Cultural Traditions. The County shall encourage discretionary development to incorporate architectural designs and features that reflect the historical and cultural traditions characteristic to the area or community. (RDR) [Source: Existing Piru Area Plan Policy 1.4.2.3, modified]

- Policy COS-4.7: Cultural Heritage Board Review. Prior to environmental review of discretionary development, the County shall determine whether a site has potential archaeological, architectural or historical significance and provide this information to the County Cultural Heritage Board for evaluation and recommendation to the appropriate decision-making body. (RDR) [Source: Existing GPP Policy 1.8.2.5]

Ventura County Cultural Heritage Ordinance

- To recognize that cultural and historic resources are an important component of a quality environment and worthy of preservation for present and future generations;
- To help foster an awareness and appreciation of Ventura County's rich history and variety of cultural resources among both residents and visitors; and,
- To acknowledge that historic resources could not be protected without the dedicated efforts of individuals, advocates, property owners, community organizations, and volunteers who are responsible for their preservation, rehabilitation, restoration, and reconstruction. (VCRMA 2024).

2.2.2 Ventura County Cultural Heritage Board

The purpose of the Ventura County Cultural Heritage Board is to "research and record County history and to make historic landmark designations" (County Ordinance No. 4604). According to The Cultural Heritage Board is responsible for reviewing plans that entail alterations or demolition to any site designated as an official County Landmark, Site of Merit, Point of Interest, or District. They have the authority to assess and make determinations of eligibility for landmarking using the following Criteria for Landmark, Site of Merit, Point of Interest, and District.

Criteria for Landmark, Site of Merit, Point of Interest, and District Status Codes:

1. Character, interest or value, regardless of age, is significant to the heritage of the community.
2. A significant historical event occurred at the site.
3. It is reminiscent of an early state of development.
4. It is identified with a person who significantly contributed to the culture or development of the County, State or the Nation.
5. It exemplifies a particular architectural style or way of life.
6. It is the design or work of a person whose efforts have significantly influenced the heritage of the County.
7. It demonstrates outstanding architectural design, detail, materials, or craftsmanship.
8. Its preservation is essential to the integrity of another landmark.
9. Its location or physical characteristics represent an established visual feature of a neighborhood.
10. It has potential of yielding significant information of archaeological interest.
11. It is a natural environment that strongly contributes to the well-being of the community (Ventura County 2022).

2.2.3 City of Oxnard

The City of Oxnard largely defers to CEQA for guidance with cultural resources projects. Among the City of Oxnard's 2030 General Plan Goals and Policies Related to Cultural and Tribal Cultural Resources, are the following:

Chapter 3 Community Development - Goal CD-11: Protected historic and authentic qualities of Oxnard's traditional neighborhoods and historic districts;

Historic Preservation Goals 2022 update

CD-11 Protected historic and authentic qualities of Oxnard's traditional neighborhoods and historic districts.

- CD-11.1 Promote Existing Historic Areas Promote an increased awareness of the Cultural Heritage Area, Heritage Square, Central Business District (CBD), and Henry T. Oxnard Historic District, and their historic landmarks through signage and appropriate pedestrian-oriented street furniture.

- CD-11.2 Historical District Expansion Seek to preserve historical structures and neighborhoods by evaluating the potential to expand and create new historic neighborhoods.

- CD-11.3 Protect and Enhance Cultural Resources Ensure that new public and private investment protects and enhances Oxnard's existing cultural resources, traditional neighborhoods, and historic districts, to the extent feasible.

- CD-11.4 Incorporate Historic Features Require new developments within historic areas to incorporate historic and natural features and adaptive reuse into site development planning.

Chapter 5 Environmental Resources - Goal

ER-1. Protection of Natural and Cultural Resources Goal Protection of natural and cultural resources, agriculture, and open spaces is well integrated with the built environment and human activities and achieves a symbiotic, mutually-beneficial, sustainable relationship.

- ER 1.1 Protect Oxnard's Natural and Cultural Resources Protect the City's natural resource areas, fish and wildlife habitat, scenic areas, open space areas, parks, and cultural and historic resources from unnecessary encroachment or harm and if encroachment or harm is necessary, fully mitigate the impacts to the maximum extent feasible.

2.3 Regulations Concerning Discovery of Human Remains

California Public Resources Code §5097.98 (Notification of Native American human remains, descendants; disposition of human remains and associated grave goods) mandates that the lead agency adhere to the following regulations when a project results in the identification or disturbance of Native American human remains:

(a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 48 hours of their notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

(b) Whenever the commission is unable to identify a descendant, or the descendant identified fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendant, and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.

(c) Notwithstanding the provisions of Section 5097.9, the provisions of this section (including those actions taken by the landowner or his or her authorized representative to implement this section), and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act (Division 13, commencing with Section 21000).

(d) Notwithstanding the provisions of Section 30244, the provisions of this section (including those actions taken by the landowner or his or her authorized representative to implement this section), and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20, commencing with Section 30000).

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3.0 NATURAL AND CULTURAL OVERVIEW

3.1 Environmental Setting

The 56.4-acre project area is in the western portion of the Transverse Ranges Geomorphic Province. It is within the Oxnard Plain, a large alluvial basin bounded on the north by the Santa Clara River and on the south by Calleguas Creek and the Santa Monica Mountains. Alluvial sediments, including poorly consolidated silt, sand, and gravel deposits along modern drainages and alluvial fans and floodplains appear in lower elevations (Conkling 2012). Elevations in the project area range from 60 to 65 ft above mean sea level (amsl), and soils consist of Holocene wash deposits composed of unconsolidated sand, silt, and gravel (Clahan 2003).

3.1.1 Paleoenvironment

An understanding of the late Pleistocene and Holocene environments is crucial to the understanding of prehistoric California (West et al. 2007). The archaeological/geologic time scale of California can be divided into four broad periods: Terminal Pleistocene (before 10,000 years BP), early Holocene (10,000 - 7,000 years BP), middle Holocene (7,000 - 3,350 years BP), and late Holocene (3,350 - 200 years BP) (Erlandson and Colten 1991). The period between 11,000 and 8,000 years ago is marked by the Pleistocene/Holocene transition. This was a time of dramatic change in vegetation and a warming period following the Late Glacial Maximum.

Initial development of Holocene plant communities (oak woodland, chaparral and coastal sage scrub) began during the Pleistocene-Holocene transition (11,000 to 8,000 years ago). The rapid increase in oaks, herbs and chaparral taxa corresponded with a decrease in conifers. During the Holocene, there were brief shifts in the pine to oak transition occurring at approximate one thousand-year intervals between 11,000 and 3,000 years ago (West et al. 2007). This indicates vegetation changes came in pulses, with a brief change event followed by a stabilization period with slower, more gradual changes, until the next change event or pulse. Vegetation changes were associated with similar climatic changes as conditions shifted from cool and wet to warm and dry (Brandoff-Kerr 2010).

Climatic data from the middle Holocene show a distinct drying period with decreases in the woodland environments. The late Holocene was marked by a moist and cool climate up until about 1,000 years ago when the climate shifted to present norms.

Fire may have begun to be a factor in shaping the landscape as early as the middle Holocene. The changing plant species compositions and lower rainfall, particularly when fuel/vegetation moisture was low during prolonged dry periods, would have created conditions for wildfire. Fire ecology studies in California have demonstrated regular intervals of large fires in 20 to 50-year cycles (Mensing et al. 1999; Lightfoot 2005) during the late Holocene, in addition to evidence of anthropogenic-caused fires. In evaluating column samples from the Santa Barbara basin, “Firestorms erupted occasionally especially at the end of wet periods and at the beginning of significant droughts” (Mensing et al. 1999). Geomorphic changes are commensurate with fires of this magnitude: slope failures, mudflows, and debris flows that changed water courses (Brandoff-Kerr 2010).

3.1.2 Climate and Precipitation

The area is characterized by a Mediterranean climate with hot dry summers and cool wet winters. The rainy season occurs from October through April with precipitation averaging at about 16 inches annually.

Where coastal influences meet interior high temperatures, summer temperatures range from the 68 to 74 degrees. Cool humid marine air causes frequent fog and low clouds on the coast, generally at night and early morning in the late spring and early summer. The area experiences a diurnal cycle of onshore winds from the west and northwest that are replaced by mild offshore breezes flowing from warm inland valleys during the night and early morning. Winters are relatively mild annually and nighttime temperatures only rarely drop below freezing.

3.2 Archaeological Context

The history of human habitation in Ventura County extends back at least 12,000 years on the Channel Islands, and 6,900 years in the mountainous interior. Permanent villages or base camps would have been at lower elevations, along creeks and river drainages. Prehistoric archaeological sites within Ventura County range from chipped stone debitage and fire-affected rock at higher elevations, which indicates specialized activities and short-term occupation akin to camping, to multi-component sites representing base or seasonal settlements along the coast and closer to creeks and drainage bottoms.

3.2.1 Paleo-Indian Period (12,000 to 8,000 cal B.C.)

The Paleo-Indian Period is the earliest known human occupation of the Ventura County area, with evidence of a developing maritime culture found mostly on the Channel Islands. Recent work by scholars has pressed these earliest dates back further. People used relatively simple technology to procure plant foods, shellfish, and a limited variety of vertebrate species (Greenwood 1972; Jones and Waugh 1995; King 1982, 1990; Glassow 1996). There are at least 50 sites reported on the Channel Islands of San Miguel and Santa Rosa dating between 13,000 and 7,500 cal B.C. (Davis et al. 2010; Erlandson and Braje 2008). Mainland coastal sites occupied during this time would later become submerged by rising sea levels. Presently, there is a lack of archaeological evidence that demonstrates Paleo-Indian occupation in Ventura County.

3.2.2 Early Period (7,000 to 2,000 cal B.C.)

The Early Period reveals the earliest evidence of established occupation, with the Millingstone Horizon ending around 5,000 B.C. Most of the archaeological sites from this period are recorded at or near the coast, or on the Channel Islands. It was a time of rising sea levels that created an abundance of lagoons and estuaries (Glassow et al. 2007). This period is characterized by a subsistence shift to small seeds found in the chaparral plant community, as demonstrated by the abundance of multi-facial manos. Other common artifacts include metates, and a variety of flaked stone; plano-convex cores and core tools of quartzite, basalt and other volcanic stones. Larger populations were supported by a more diversified subsistence base that included not only seeds and other plant resources, but terrestrial and marine mammals, fish, and shellfish (Erlandson 1994; Glassow et al. 1988). Although deer are represented in the archaeological record, hunting and fishing contributed little to the diet, with the faunal diet relying heavily on mussels and Pismo clams. Residential bases are presumed to have been comprised of extended families during this period. Although quantities of animal bones do not appear to increase much in the archaeological record, hunting gained more prominence, as indicated by the variety of flaked stone artifacts and tools. A semi-sedentary lifestyle seems to have evolved. Occurrences of digging stick weights suggest harvest of tuberous plants.

3.2.3 Middle Period (1,400 B.C. to A.D. 1,150)

The Middle Period is marked by continued subsistence intensification and increased technological and economic complexity. Several technological developments include the inception of the mortar and pestle

for processing acorns and other foods, use of the bow and arrow to replace the *atlatl* for hunting, and the introduction of the plank canoe (*tomol*), to exploit marine resources more effectively. Coastal settlement increases significantly between 2,000 and 1,000 B.C. Sedentism is apparent, along with formal architecture, ceremonial structures and traditional cemeteries.

3.2.4 Middle to Late Transition Period (A.D. 1,150 - 1,300)

The Middle to Late Transition Period is characterized by the beginnings of political and social complexity and development of social hierarchy (Arnold 1992). Inland settlement became more pronounced as a result of climatic shifts and elevated sea temperatures (Jones et al. 1994). Population densities expanded, along with more sophisticated technology and craft specialization. By the end of this period, *Olivella* callus beads were used as currency throughout the region, and trade networks intensified between villages. There was an increase in the manufacture of elaborate shell ornaments and beads for trade between the Santa Barbara Channel groups, their neighbors, and the interior (Erlandson 1994). By the Late Transition Period, climatic fluctuations that increased ocean temperatures prompted a decrease in maritime activities and augmented a shift in settlement away from the coast as populations moved inland (Jones and Waugh 1995).

3.2.5 Late Period (1,000 cal A.D. to Missionization)

Around 1,000 A.D., the Medieval Climatic Anomaly, a 300-year period of warmer temperatures and drier climate, caused consequential, adverse environmental conditions, particularly intermittent droughts (Rabb and Larson 1997). During the Late Period, terrestrial resource production is thought to have decreased significantly, while socioeconomic complexity evolved. A conversion to concave based projectile points led to the abandonment of asphaltum, which had been used for hafting. Shellfish remained the principal protein food. A ranked society with hereditary elite was established, and population growth and socioeconomic complexity transpired, along with environmental change (Glassow et al. 2007). Several new artifact styles became popular after A.D. 1300, including leaf-shaped and triangular concave-based arrow points, “flowerpot” mortars, and circular shell fishhooks (Glassow 1996). It is likely that the aboriginal society was akin to the Chumash culture first encountered by Europeans (King 1990).

3.3 Ethnographic Context

Prior to Euro-American contact, the central California coastal region, including the northern Channel Islands and inland areas, was occupied by Chumash-speaking people. Their territory extended from San Luis Obispo to Malibu, and inland as far as the San Joaquin Valley. The Chumash have been divided into several geographic groups with strong Hokan language dialect associations, comprised of the Barbareño, Purisimeño, Inezeño, and Ventureño (Grant 1978). The project is within the ethnographic and historic territory inhabited by the Ventureño Chumash dialect group (Kroeber 1925). The Chumash occupied the area from Topanga Canyon to the Ventura River Valley, Oxnard Plain, Santa Clara Valley, Ojai, and Castaic (Van Valkenburgh 1935).

The Chumash were a non-agrarian culture known for having one of the most populous thriving, advanced societies of hunting-gathering California Native American groups. They practiced a regular seasonal round of population dispersal and aggregation in response to the location and seasonal availability of different food resources (Landberg 1965). In this way, large coastal villages would have been fully populated only in the late summer when pelagic fishing was at its peak. Shellfish were also exploited, including mussel and abalone from rocky shores and cockle and clams from sandy beaches. Acorns were a food staple;

they were ground into flour using stone mortars and pestles and then leached to remove tannic acid. In addition, a wide variety of seeds, including *chia* from various species of sage, were utilized. Through the winter months, the Chumash depended largely on stored food resources.

In this area, as elsewhere in California, basketry served many of the functions that pottery did in other places. Baskets were used for cooking, serving, storage, and transporting burdens. Some basket makers wove baskets so tightly that they could hold water, while others waterproofed their baskets by lining them with pitch or asphaltum (Chartkoff and Chartkoff 1984:130).

The Chumash lived in large, hemispherical houses constructed by planting willows or other poles in a circle and bending and tying them together at the top. These structures were then covered with tule mats or thatch. Structures such as this housed 40 to 50 individuals, or three-to-four-member family groups. Dance houses and sweathouses are also reported for the Chumash (Kroeber 1925:557).

Political organization was typified by small-scale chiefdoms. Chiefs were associated with villages or segments of larger villages. Higher status chiefs controlled entire regions containing several villages. The chiefly offices were normally inherited through the male line with a primogeniture rule in effect. Chiefs had several bureaucratic assistants to help in political affairs and serve as messengers, orators, and ceremonial assistants. A number of status positions were associated with specialized knowledge and rituals, such as a weather prophet, ritual poisoner, or herbalist (Bean 1974).

The protohistoric culture of the Chumash, defined as the time when intermittent trade and contact was experienced between Native Americans and Spanish trading vessels in route to the Orient, was disrupted by the arrival of the Spanish expedition led by Gaspar de Portolá in 1769. The establishment of the San Buenaventura Mission in 1782 further disrupted Chumash culture in Ventura County. Archaeological evidence verifies not only that the native population was rapidly decimated by missionization, but also that the culture itself disintegrated rapidly. Chartkoff and Chartkoff (1984:264) note that Spanish settlement barred many Native Americans from traditionally important resources including shellfish, clam shell beads, steatite, and asphaltum. Disease and forced relocation to Mission San Buenaventura disrupted traditional subsistence systems and, by 1810, most of the Chumash villages had been abandoned.

3.4 Historic Period Context

3.4.1 Mission Period (1760-1821)

In 1542, Juan Sebastían Cabrillo was the first of the exploring Europeans to sail along the California coast. The aftermath of Spanish exploration in Alta California led to immigrations and settlement. In 1769, Gaspar de Portolá led the first land expeditions from Baja California to the San Francisco Bay. Coined the Sacred Expedition, Fray Junípero Serra joined the journey with the intent to establish California missions and colonize the region. During the expedition, the site was selected for the future San Buenaventura Mission, which would be established in 1782 as the ninth of 21 missions established in Alta California (Triem 1985). Newly baptized Chumash provided nearly all the labor to construct and maintains the missions, which soon produced surplus amounts of wheat, beans, corn, cattle, and sheep for trade.

By 1804, five missions had been established in Chumash territory. Of sad note during this period was the perish of large populations of Native American tribes and mission neophytes, largely triggered from exposure to European diseases and the sudden introduction to subsistence and cultural changes, which contributed to low fertility rates and high infant mortality (Tompkins 1975).

To some extent, the San Buenaventura Mission and other missions along the central coast were somewhat geographically disconnected from the Alta California headquarters in Monterey and Los Angeles, largely due to a lack of accessible seaports and the shortcomings of travel along El Camino Real. The geographic divide continued during Mexican revolution from 1810 to 1821 (Hildebrandt and Darcangelo 2009:48).

3.4.2 Rancho Period (1821-1845)

California officially became a Mexican Territory after the Treaty of Cordoba was signed in 1821. The transfer of sovereignty from Spain to Mexico altered Mission San Buenaventura irrevocably. After secularization of the missions in 1834, approximately ten million acres were gradually transferred to private ownership via a system of land grants. Mexican officials dispersed large land grants to former Mexican military soldiers and their descendants as compensation for their service. In 1837, Governor Juan B. Alvarado ceded Rancho El Rio de Santa Clara o La Colonia, consisting of 44.883-acres of fertile soil in the plain south of the Santa Clara River, to a group of former soldiers who had served at the Santa Barbara Presidio The soldiers included Valentine Cota, Salvador Valenzuela, Vicente Pico, Rafael Valdez, Vincent Feliz, Leandro Gonzalez, Rafael Gonzalez, and Jose Maria Valenzuela (Maulhardt 2004, 2016).

The Mexican government also sold some of their holdings as a tactic to thwart Spain's control of California. California also opened to international trade, which caused "great and rapid economic transportation" as foreign companies competed for access to the developing hide-and-tallow industry (Hackel 1997). Native people who suffered from the mission's reduced economic circumstances were hired as vaqueros at the ranches.

3.4.3 Anglo-Mexican Period (1845-1880)

The Mexican-American War in 1846 weakened Mexico's hold on Alta California, and American influence steadily increased. In 1848, hostilities between the Mexican Californios and the Americans ceased and the two-year war ended with the Treaty of Guadalupe Hidalgo. As a result, California was declared a United States territory, and in 1850 it became the nation's thirty-first state (Chartkoff and Chartkoff 1984). Following statehood, passage of the Land Act of 1851 created the California State Lands Commission to adjudicate disputes regarding Mexican citizens' land claims, to determine their validity, and redistribute land where ownership was in question (Gates 1971). Often land grants were denied to the original grantee when formal legal documents were lacking, and the property fell into the hands of new owners, generally the recent American arrivals. This process also allowed settlers to homestead on unclaimed government lands. Proper documentation was filed for Rancho El Rio de Santa Clara o La Colonia in 1852, and twenty years later it was legally patented (Willey 1886).

During the Gold Rush, a rapid population increase caused the demand (and price) for California livestock to soar. However, a long drought from 1860 to 1864, which coincided with the Civil War, was devastating for the cattle industry throughout California. It decimated large numbers of cattle within Ventura County. As a result, most of the ranchos were divvied up and sold, with large acreages purchased by investors from the east, some who hoped to profit amid reports of oil discoveries in the area. Over the next twenty years, American settlers continued their influx into the state of California, with many marrying into the families of wealthy Californios and gradually outnumbering the Mexican citizens.

In 1865, Rafael Gonzalez sold 4,000 acres of La Colonia to Juan Camarillo. By 1866, German immigrant Johannes Christian Borchard arrived in the area and sought arable land for crop production and sheep grazing, and in 1866, he purchased the Gonzalez home and 1,000 acres of Rancho El Rio de Santa Clara o La Colonia, which had belonged to Leandro and Rafael Gonzalez. In the following year, German settlers

Gottfried and Sophie Maulhardt and brothers Jacob and Anton Maulhardt arrived. In 1871, other portions of the land grant were bought by Thomas Bard who subdivided much of the rancho into farm plots and sought to establish a wharf so crops could be loaded on ships locally for transport to market (Maulhardt 2004).

In 1872, after Christian Borchard found that barley crops thrived in alkali soils, brothers Jacob Maulhardt and Gottfried Maulhardt and Johannes Borchard got together to purchase 1,230 acres of prime farm land from Juan Camarillo who had earlier obtained a portion of the land grant from Leandro and Rafael Gonzalez. The Maulhardt brothers and Johannes Borchard later split the property three ways, so each would own 410 acres. In 1878, Jacob Maulhardt built his home, not far from the present Maulhardt residence next to the project site (Figure 4). It was there that he and his wife Dorothea Kohler raised their family (Maulhardt 2004; San Buenaventura Research Associates 2014).

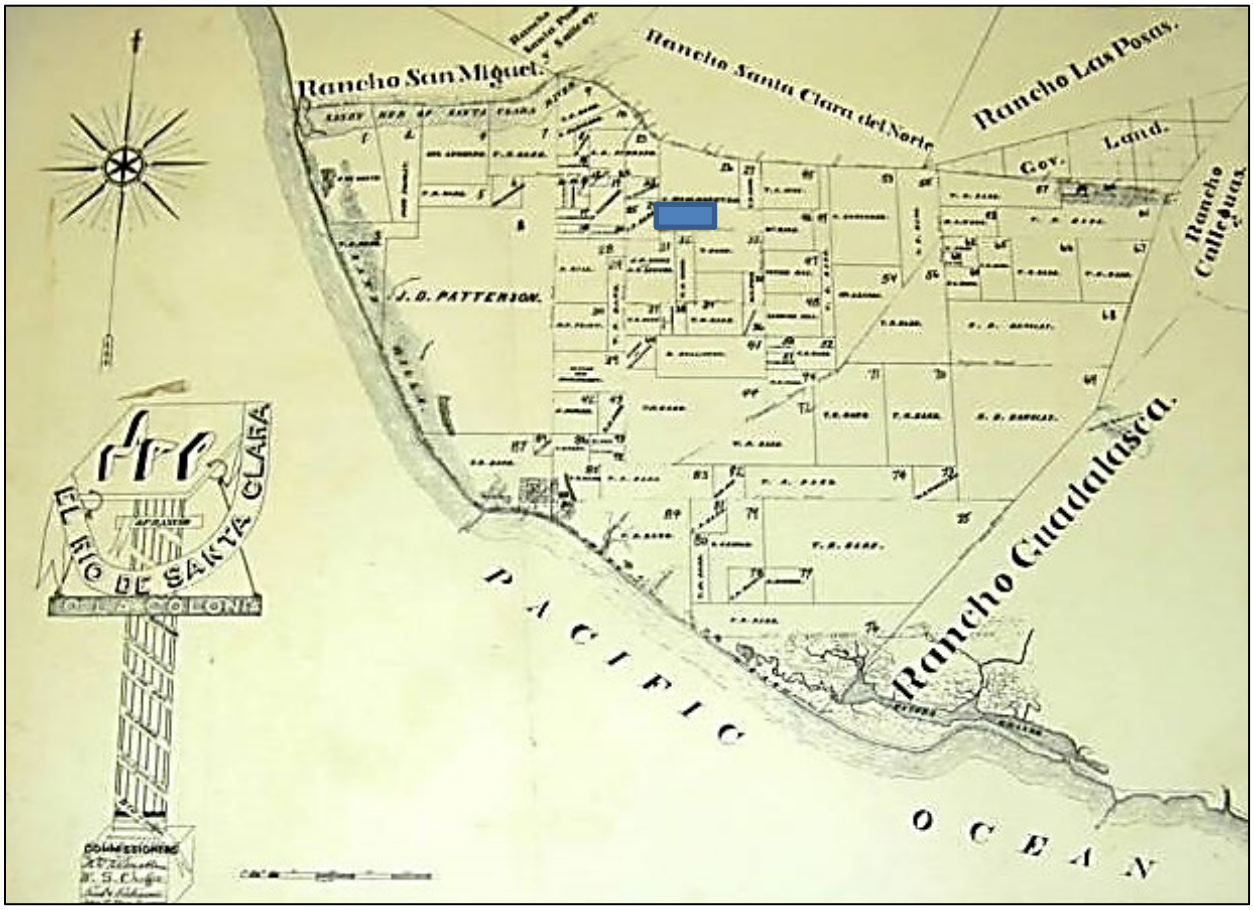

Figure 4. 1877 Map of Rancho El Rio de Santa Clara O La Colonia: partitioned by order Dist. Court 1st Jud. Dist. California. Hon. Eugene Fawcett; / John T. Storr, Surveyor. (Huntington Library archives). Blue-shaded area depicts project area within the Maulhardt Ranch property.

Along with agriculture, homes and businesses sprang up and towns emerged in the area that would later become Ventura County. In 1866, the community of San Buenaventura incorporated, and at that time the fledging city boasted a wharf, courthouse, bank, and library (City of Ventura 2019). Ventura County then seceded from Santa Barbara County in 1873.

3.4.4 Americanization Period (1880-1915)

During the early American Period, the ranchos continued to raise cattle and sheep, but the industry shifted from hides and tallow to dairy, meat, and agricultural products such as lima beans and sugar beets.

In 1887, the Southern Pacific Railroad constructed a spur from the Newhall Pass to San Buenaventura and a depot to expedite shipments of agricultural products produced in the Santa Clara River Valley and Oxnard Plain (Triem 2002). In 1897, the railroad established the Oxnard Depot in advance of the American Beet Sugar Factory, which opened on the north side of Wooley Road, east of Oxnard Boulevard in 1898 (Figure 5). The sugar beet factory, launched by entrepreneur Henry T. Oxnard, offered prosperity for the farming community that would later be named Oxnard. Mr. Oxnard was a well-known 'sugar baron' who had established the American Crystal Sugar Company. He was persuaded to invest in the superior quality sugar beets grown by farmers Albert Maulhardt, John Borchard, and others. The profitable $2 million sugar facility had the capacity to process 2,000 tons of sugar beets daily, which eliminated the need for shipping the product elsewhere, plus the factory provided plenty of jobs for the community. For a time, it was considered the world's largest sugar beet factory (Maulhardt 2016).

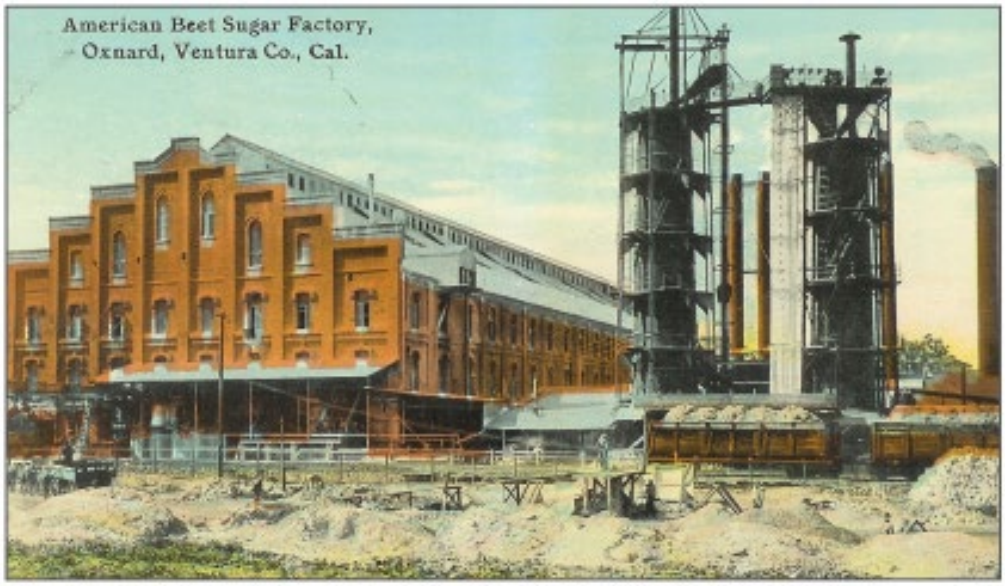

Figure 5. Postcard depicting the American Beet Sugar Factory in Oxnard.

In 1898, the townsite of Oxnard was platted by James A. Driffilll of the Colonia Improvement Company, who also managed construction of the sugar mill. The sugar beet industry created a population surge that brought many foreign workers, especially Japanese immigrants. In 1903, Oxnard became incorporated (Maulhardt 2014).

Louis G. Maulhardt inherited 100 acres of the Maulhardt Ranch after his father's death in 1899. He later accumulated additional acreage, where he and his wife Theresa Borchard raised a family, and successfully expanded the farming operation (Maulhardt 2004; San Buenaventura Research Associates 2014).

3.4.5 Twentieth Century Development (1915-Present)

In 1915/1916 the original Maulhardt Ranch farmhouse was demolished and replaced with a new residence. Other extant buildings on the ranch include a large two-story wooden barn constructed in 1906, and other ancillary buildings constructed ca. 1915. The oldest building on the property, the wood

carriage house, dates to ca. 1880 (San Buenaventura Research Associates 2014). The proposed project is located on the north and east sides of the Maulhardt Ranch.

The Great Depression of the 1930s were a difficult time in Oxnard, as it was throughout the United States. However, Oxnard felt an economic upswing during the 1940s, as it experienced significant growth due to increased populations and business interests subsequent to World War II. People were attracted to Oxnard and the overall Ventura County area by jobs in the petroleum industry at the Oxnard Oil Fields, the aerospace and technology, and other industry and retail business opportunities. In 1947, the Wagon Wheel Junction, conceived by developer Martin V. Smith, was a central automobile stop on the 101 Freeway between Los Angeles and Santa Barbara County, offering shopping, dining, and lodging accommodations for travelers. Between 1940 and 1950, the population more than doubled, from approximately 8,500 to over 21,500 residents. By 1960, there were more than 40,000 people living in Oxnard. Agriculture remained strong in Oxnard with sugar beet industry leading, with an estimate of 40 million bags of 100-pound sugar produced from local sugar beets for a duration of 60 years. Oxnard's sugar beet factory closed in 1958, due to the increased cost for crop production in California, as well as competition abroad and in the Southern states (CNU California 2017).

Oxnard continues to be a producer of agricultural crops, such as celery, strawberries, beans, chili peppers, onions, and bell peppers, but much of the former farmland has been replaced by commercial and retail development, as well as recreation and tourist attractions at the Channel Islands Harbor, Fisherman's Wharf, and the Maritime Museum.

4.0 RECORDS SEARCH

4.1 Records Search Results

PGI staff conducted a record search at the South-Central Coast Information Center of the California Historic Resources Information System (SCCIC-CHRIS), housed at the California State University, Fullerton on August 27, 2024. The SCCIC, an affiliate of the State of California Office of Historic Preservation, is the official state repository of archaeological and historical records and reports for Ventura, Los Angeles, Orange, and San Bernardino counties. The records search comprised a review of all recorded historic and prehistoric archaeological sites within a 0.50-mi radius of the project, as well as a review of prior cultural resource studies.

The objective of the records search and literature review for this project was: (1) to determine whether previously recorded cultural resources are present within or adjacent to the project area; (2) to assess the likelihood of unrecorded cultural resources, based on archaeological, ethnographic, and historical documents and literature; (3) to make preliminary evaluations based on the significance such resources, according to CRHR criteria; and (4) to recommend procedures for avoidance or mitigation of adverse effects to potentially significant resources.

The following resources were consulted as a part of this records search:

- National Register of Historic Places (NRHP), Index of Listed Properties;
- Office of Historic Preservation Historic Property Data File for Santa Barbara County; and
- California Historical Landmarks (California OHP 2019).

4.1.1 Previous Cultural Resources Studies

The records search identified thirty-nine (39) previous studies within 0.50-mi of the project area. Each of the previous studies are listed in Table 1. None of the studies intersect the Project area, and none of the prior studies indicate the Project area has been previously surveyed. However, the Project area borders the new Del Sol High School to the west, which was the subject of an archaeological survey report (Denardo and Hargett 2019) and subsequent Extended Phase 1 study prepared by PGI in 2019 (Denardo and Zavala 2019).

Table 1. Cultural Resources Studies within 0.50-Mile of the Project Area.

Report No.	Author, Year	Title
VN-00236	Horne, Stephen, 1980	*Final Report: Onshore Cultural Resources Assessment, Union Oil Company Platform Gina and Platform Gilda Project Federal Lease Ocs P-0202 and P-0216, Offshore Southern California.*
VN-00451	Wlodarski, Robert J. and Gwen R. Romani, 1985	*The Results of Archaeological Test Excavations on Tract Number 3943, the Northfield Business Park, Ventura County, California (CA-VEN-506, CA-VEN-666, CA-VEN-789).*
VN-00657	Wlodarski, Robert J., 1988a	*An Archaeological Reconnaissance Report for Approximately 120 Acres of Land Located on the Oxnard Plain Northeast Industrial Assessment District, City of Oxnard, Ventura County, California.*
VN-00733	Wlodarski, Robert J., 1988b	*Archaeological Reconnaissance Report for Portions of Land Located Within the Northeast Industrial Assessment District, City of Oxnard, Ventura County, California.*

Report No.	Author, Year	Title
VN-00949	W&S Consultants, 1990b	*Phase I Archaeological Survey and Cultural Resources Assessment for the Frank McGrath Ranch, Northeast Plan Area, City of Oxnard, Ventura County, California.*
VN-00950	W&S Consultants, 1990c	*Phase I Archaeological Survey and Cultural Resources Assessment for the John McGrath Ranch, Northeast Plan Area, City of Oxnard, Ventura County, California.*
VN-00951	W&S Consultants, 1990a	*Phase I Archaeological Survey and Cultural Resources Assessment for the Standard Pacific-Ventura Project Area, Northeast Plan Area, City of Oxnard, Ventura County, California.*
VN-01042	Boyer, J. and S. Craig, 1967	*UCLA-Archaeological Survey, City of Oxnard. Filed Project Number UCAS-147. Highway Construction Survey.*
VN-01875	Schmidt, June A., 2001	*Archaeological Survey Report: Rose Crossing, Oxnard.*
VN-01959	Maki, Mary K., 2001	*Phase1 Archaeological Survey of Approximately 11.5 Acres for Shea Homes Tentative Tract No. 5293 Oxnard, Ventura County, California.*
VN-02020	Larson, D., 2001	*Phase I Archaeological Investigation at 341 Bernoulli Circle, Oxnard, California.*
VN-02026	Romani, John F., 2001a	*Phase I Archaeological Assessment at 602 N. Graves Avenue Oxnard, California.*
VN-02028	Romani, John F., 2001b	*Phase I Archaeological Assessment of 900 Graves Avenue Oxnard, California.*
VN-02029	Wlodarski, Robert J., 2001	*A Phase I Archaeological Study for the Mayfield Village Property (tm 5294) City of Oxnard, County of Ventura, California.*
VN-02215	Wlodarski, Robert J., 2003	*A Phase I Archaeological Study for Lot 52, Northfield Business Park Northwest of the Junction of Hearst Drive and Cabot Place City of Oxnard, County of Ventura, California.*
VN-02216	Maki, M., 2002	*Phase I Archaeological Survey of Approximately 6.5 Acres for Pinnacle Communities Tentative Tract No. 5296, Oxnard, Ventura County, California.*
VN-02219	Wlodarski, Robert J., 2001	*A Phase I Archaeological Study for Lots 13-16 (between Eastman, Rose, W. 5th and Driskill) Within the North Field Business Park, City of Oxnard, County of Ventura, California.*
VN-02223	Wlodarski, Robert J., 2003	*A Phase I Archaeological Study for a 12.9 Acre Site Located on the Southwest Corner of Third Street and Rose Avenue City of Oxnard, County of Ventura, California.*
VN-02224	Duke, Curt, 2002	*Cultural Resources Assessment, Cingular Wireless Facility No. VY201-04, Ventura County, California.*
VN-02226	Wlodarski, Robert J., 2002	*A Phase I Archaeological Study for APN #213-0-090-025 Northeast Corner of Outlet Center Drive and Gonzales Roa, City of Oxnard, County of Ventura, California.*
VN-02425	Wlodarski, Robert J., 2003	*A Phase I Archaeological Study for 2301 Latigo Avenue, City of Oxnard, County of Ventura, California.*
VN-02427	Wlodarski, Robert J., 2003	*A Phase I Archaeological Study for Lot 6 (710 Graves Avenue) and Lot 7 (720 Graves Avenue), City of Oxnard, County of Ventura, California.*
VN-02441	Richards, Michael D., 2005	*A Phase I Cultural Resource Assessment of 21 Acres in the City of Oxnard, Ventura County, California.*
VN-02442	Holmes, Amy M., 2005	*Phase I Cultural Resources Assessment of Oxnard Water Blending Facility Number 3.*

Report No.	Author, Year	Title
VN-02445	Toren, George A. and John F. Romani, 2004	*Phase I Archaeological Investigation: 2220-2226 Camino Del Sol, Oxnard, California.*
VN-02447	Romani, John F., 2003	*Phase I: Archaeological Investigation: 1701 and 1751 Lombard Street; Oxnard, California.*
VN-02449	Romani, John F. and George A. Toren, 2004	*Phase I Archaeological Investigation: 1901 Outlet Center Drive, Oxnard, Ventura County, California, APN 213-0-090-015.*
VN-02469	Maki, Mary K., 2003	*Negative Archaeological Survey Report of Approximately 15 Acres for the Gables at East Village Residential Project City of Oxnard, Ventura County, California.*
VN-02471	Wlodarski, Robert J., 2005	*A Phase 1 Archaeological Study for 1800 and 1820 Eastman Avenue (lot 1 and Lots 2a and 2b) Located on the Southeast Corner of Rose Avenue and Eastman Avenue, City of Oxnard, Ventura County, California.*
VN-02472	Wlodarski, Robert J., 2005	*A Phase I Archaeological Study for Oxnard Meridian, Ltd., City of Oxnard PZ 04-200-07, Lots 34-39 and 53-56 of Tract 3943, City of Oxnard, County of Ventura, California.*
VN-02610	Wlodarski, Robert J., 2007	*A Phase I Archaeological Study for the Proposed Rose Ranch Project, a 9.89-acre Parcel Located at the Southwest Corner of Gonzales and Rose Avenue (APN 215-0-061-125), City of Oxnard, County of Ventura, California.*
VN-02830	Singer, Clay A., 2010	*Cultural Resources Survey and Impact Assessment for a 3.0 Acre Commercial Property at 700 Maulhardt Avenue in the City of Oxnard, Ventura County, California.*
VN-02876	McKenna, Jeanette A., 2000	*An Evaluation of Historic Resources Identified within the John McGrath Ranch Property in Oxnard, Ventura County, California.*
VN-02932	Toren, A. George and Romani, Gwen R., 2011	*Phase I Archaeological Investigation of 400 Lombard Street (APN 216-0-203-235 & 216-0-203-245), Oxnard, California.*
VN-02957	Romani, Gwen, 2011	*Phase I Archaeological Investigation for the City of Oxnard Recycled Water Project New Alignment, Wooley Road and Rose Avenue.*
VN-02968	Johnson, Brent, 2010	*Cultural Resources Records Search and Site Visit for T-Mobile USA Inc. SV11876A/Del Sol Park, 1600 Camino Del Sol, Oxnard, Ventura County, California.*
VN-02978	Sharpe, J. and L. Durio, 2004	*Groundwater Enhancement and Treatment (Great) Program, Cultural Resources Inventory Report.*
VN-02986	Entrix, Inc., 2004	*Environmental Analysis Onshore Component of BHP Billiton LNG International Inc. Cabrillo Port Project.*
VN-03283	Rincon Consultants, 2016	*City of Oxnard Central Services Department Fire Station Generator Replacements Project Cultural Resources Study.*

4.1.2 Previously Recorded Cultural and Historic Resources

The records search identified one prehistoric archaeological site within 0.50-mi of the project area. In 2019, PGI archaeologists observed prehistoric ecofacts (marine shell and bone) during a pedestrian survey in a strawberry field, which is the current location of Del Sol High School (Denardo and Hargett 2019). A subsequent Extended Phase 1 investigation did not recover intact midden or artifacts during

archaeological testing (Denardo and Zavala 2019). No other prehistoric or historic cultural resources have been recorded in the 0.50-mi search radius.

However, a portion of the proposed project is within the Maulhardt Ranch parcel where the historic residence was previously recommended eligible for the National Register, California Register, and determined to qualify as a Ventura County Landmark by San Buenaventura Research Associates in 2014. In 2019 Post/Hazeltine Associates evaluated all buildings on the subject parcel at 1853 E. Camino Del Sol and determined seven buildings (Main Residence; Garage/Living Quarters; Carriage House; Outbuildings #1, #2, #3; Barn), plus Mature Specimen Trees, and Agricultural Fields encompassing the remainder of the parcel are contributors to a National Register-eligible District. The current study identified a sparse scatter of historic artifacts and marine shell on the north side of the access driveway, north of the ancillary residence. Further, another previously identified historic resource, the Rose Ranch/McGrath Ranch (Primary Number 56-001806), is located within 0.50-mi of the project area.

4.1.3 Historic Maps and Aerial Photographs

Sanborn Fire Insurance Maps

There is no coverage of the project areas on Sanborn Fire Insurance Maps.

Topographic Quadrangle Maps

The 1904, 1911, 1925, 1940, 1947 topographic maps all indicate property boundaries. On each of the maps, the Maulhardt Ranch property is L-shaped with Rose and Rice roads marking the west and east boundaries and Ventura Boulevard (Hwy 101) forming the northern boundary. Colonia Road (Camino Del Sol) is in place in its current location. Three buildings are visible in the southwest corner of the parcel, with a driveway accessed from Rose Avenue.

In 1943 the topographic map reveals the Maulhardt property to be nearly rectangular in shape and extend to Ventura Boulevard (Hwy 101). One building is depicted in the location of the Maulhardt residence and portions of the land are orchards. The 1951 and 1956 maps show the western portion of the field as an orchard, but the remaining field to the east is vacant land. A well or irrigation system is present near the northeast corner of the field. Three residences and two barns are depicted in the Maulhardt Ranch area, with an orchard along the west and north side of the buildings. The 1974 map indicates the field is an orchard with a well or irrigation system near the northeast corner of the parcel. No significant changes are noted in the residential parcel (NETR 2024).

Aerial Photographs

PGI archaeologists reviewed historical aerial photographs dated 1927, 1938, 1947, 1959, 1967, and 1978. The 1927 aerial image depicts the Main Residence, Apartment, Carriage House, Horse Barn, Tin Shed, Garage, and Storage buildings. At that time, the property is accessed via five unpaved roads lined with eucalyptus trees. One of the roads accesses the property from Rose Road, whereas the others enter the property from Colonia Road. The main road to the residential area splits into an oval loop that leads to the main residence. Row crops cover much of the north field, but no buildings or other features are present.

By 1937, the road accessing the ranch property from Rose Road is gone and replaced by row crops west of the residential area. However, most of the project area appears unchanged from 1927. In 1947 the west half of the north field, and areas bordering the north and west sides of the Maulhardt residential area appear to be planted with citrus trees.

The 1959 aerial image shows a single road entering the ranch property from Colonia Road. The eucalyptus trees have been replaced with orchards, and the east half of the field to the north is planted with row crops. No buildings or other features are noted in the north field. Subsequent aerial images from 1967 and 1978 do not depict any significant changes.

4.1.4 Native American Consultation

PGI staff consulted with California Native American Heritage Commission (NAHC) to inquire about any known sacred sites in the project area; the results were negative. On September 24, 2024, the NAHC indicated an absence of Native American traditional cultural places and sacred sites in or around the project area. The NAHC provided a list of eight (8) Native American groups and individuals. Emails were provided to each contact on November 8, 2024 (Appendix A). Follow-up phone calls were made on November 12 and 14, 2024. Voicemail messages were left for two of the eight contacts; thus far, there have been no return calls. Both Mr. Vestuto pf the Barbareño/Ventureño Band of Mission Indians and Mr. Frausto of the Coastal Band of the Chumash Nation both stated that tribal monitors should be on site during ground disturbances.

Table 2. Native American Consultation.

Name	Date	Affiliation	Comment
Matthew Vestuto, Chairperson	11/8/2024; 11/12/2024	Barbareño/Ventureño Band of Mission Indians	On Nov. 12, 2024, Mr. Vestuto stated that tribal monitors should be on site during ground disturbances.
Julio Quair, Chairperson	11/8/2024	Chumash Council of Bakersfield	The email provided was no longer in use and the phone number provided was disconnected.
Gabe Frausto, Chairman	11/8/2024; 11/12/2024	Coastal Band of the Chumash Nation	Mr. Frausto stated that tribal monitors should be on site during ground disturbances.
Violet Walker, Chairperson	11/8/2024; 11/12/2024	Northern Chumash Tribal Council (NCTC)	Called on Nov. 12 and 14, 2024, but Ms. Walker's mailbox was full, so it was not possible to leave a phone message.
Crystal Mendoza, Elders' Council Administrative Assistant	11/8/2024; 11/12/2024	Santa Ynez Band of Chumash Indians	On Nov. 12 and 14, 2024 phone messages were left for Ms. Mendoza.
Sam Cohen, Government & Legal Affairs Director	11/8/2024	Santa Ynez Band of Chumash Indians	Email provided on 11/8/2024.
Nakia Zavalla, Tribal Historic Preservation Officer	11/8/2024	Santa Ynez Band of Chumash Indians	Email provided on 11/8/2024.
Wendy Teeter, Cultural Resources Archaeologist	11/8/2024; 11/12/2024	Santa Ynez Band of Chumash Indians	On Nov. 12 and 14, 2024 phone messages were left for Ms. Teeter.

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5.0 METHODOLOGY

5.1 Archaeological Field Methods

5.1.1 Phase I Cultural Resources Survey

On September 17, 2024, PGI archaeologist Carole Denardo, M.A. surveyed a portion of the project area, which included the 11.31-acre Maulhardt Ranch residential area (Photographs 1-19) and the western portion of the field north of Jacinto Drive, in an effort to identify prehistoric and historic cultural resources (Photographs 20-28). Much of the area on the west, east, and north sides of the Maulhardt Ranch residences is planted with lemon trees. The area was surveyed using transect intervals that varied between three and ten meters, depending on surface visibility, which varied between 20 and 100 percent. Bare swatches of ground and rodent back dirt piles were carefully inspected for the presence of cultural materials.

With the exception of graded areas on the west side and north end of the field north of Jacinto Drive, the ground surface visibility was extremely poor, due to high and/or thickly matted brush. PGI delayed the remainder of the pedestrian survey in the field until after goats, retained by the property owner, were able to consume much of the dry vegetation. On October 29, 2024, archaeologists Jenna Levine, MSc. and Farah Mosbah, B.A. returned to finish the cultural resources survey in the field north of Jacinto Drive (Photographs 29-39). At that time, overgrown shrubs and grasses still covered a portion of the parcel. The surrounding area includes single-family homes to the north. Jacinto Drive and Del Sol High School are visible to the south. To the west is Rose Avenue and single-family homes. East Village Park and Rio Rosales Elementary School are visible to the east. Ground visibility was high in locations of dirt roads and where the brush was cleared via goat consumption. Visibility was 0 percent in the center of the parcel where the brush was still high or matted. In areas manicured by goats, ground visibility ranged from 60 to 100 percent. An abandoned well, maintained by Ike's Pump & Drilling, Inc., and agricultural rows are visible in the northeast corner of the parcel. There was an electric fence enclosure for goats and sheep near the southwestern corner. The goat shepherd granted access to the staff and the area was surveyed. Modern clay irrigation pipe fragments and concrete rubble were observed along the eastern and southeast borders of the parcel. No prehistoric or historic cultural resources were observed in the parcel.

Photographs were taken with a digital camera. No cultural materials were collected or removed.

5.1.2 Project Personnel

Carole Denardo, M.A., RPA served as principal investigator and project manager. Ms. Denardo exceeds the U.S. Secretary of the Interior's Historic Preservation Professional Qualification Standards as outlined in 36 CFR 61. Ms. Denardo surveyed the residential parcel and the western portion of the northern parcel. Senior archaeologist Jenna Levine, MSc. assisted by PGI archaeologist Farah Mosbah, B.A., later completed the pedestrian field survey of the eastern portion of the project area.

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6.0 FIELD SURVEY RESULTS

The results of the Phase I cultural resources pedestrian survey were positive for archaeological resources within the residential property (Figure 9). The archaeologist observed a light scatter of cultural material on the north side of the access driveway, north of the ancillary residence (Figure 6) (Photographs 8-11).

Figure 6. Approximate location of artifact scatter.

The artifacts consist of one whiteware ceramic fragment, broken concrete fragments, two pieces of clear glass, and one piece of blue glass. Within the same area, PGI staff identified one *Chione undatella* and one *Argoppecten* sp. marine shell fragment. Of note was a shallow depression, measuring about three feet (1 meter) in diameter, near the artifacts. Given the paucity of artifacts and nondiagnostic attributes, it was not possible to ascertain the age of the artifacts during the survey. No cultural resources were collected.

6.1 Survey Photographs

Photo 1. Survey area along the north side of Camino Del Sol towards Rose Avenue, facing west.

Photo 2. View of graded area north of Camino Del Sol, facing north.

Photo 4. View of graded area east of Rose Avenue, facing north.

Photo 3. Northwest corner of residential parcel, facing east.

Photo 5. Survey through the lemon grove, facing north.

Photo 6. Landscaped areas near the Maulhardt residences, facing northeast.

Photo 7. View of north end of residential parcel, facing north.

Photo 8. View of sparse artifact scatter, facing east.

Photo 9. Sparse scatter of artifacts and slight depression, facing west.

Photo 10. Sparse scatter of artifacts.

Photo 12. Overview of area of artifact scatter.

Photo 11. Survey area near residence.

Photo 13. Survey in lemon grove on east side of property, facing south.

Photo 14. Survey in lemon grove on east side of property, facing north.

Photo 15. View of Camino del Sol from east side of lemon grove, facing south.

Photo 16. Rodent holes and back dirt soil in lemon grove, facing east.

Photo 17. East side of project area with view of high school, facing east.

Photo 18. Southeast corner of project area with view of high school, facing northeast.

Photo 20. South side of project area, facing southwest.

Photo 19. View south from the north side of Jacinto Drive.

Photo 21. Field on north side of Jacinto Drive, facing west.

Photo 22. Field north of Jacinto Drive, facing north.

Photo 23. Survey at north end of field, facing north.

Photo 25. Survey in tall vegetation in field, facing northwest.

Photo 27. View of graded area near Rose Ave, facing south.

Photo 26. View of graded area near Rose Ave, facing south.

Photo 28. Heavily graded area on west side of field, facing southwest.

Photo 29. Heavily matted vegetation throughout much of the field.

Photo 30. Overview of survey area, facing north.

Photo 31. Overview of survey area, facing south.

Photo 33. Modern concrete rubble and wood pallets, facing southwest.

Photo 32. View of irrigation well, facing north.

Photo 34. View of northern boundary of survey area, facing south.

Photo 35. North portion of field, facing north.

Photo 36. View of north portion of survey area, facing east.

Photo 37. View of southwest corner of survey area, facing north.

Photo 38. Survey area from south boundary, facing north.

Photo 39. View of Jacinto Drove and Del Sol High School from south boundary, facing south.

Photo 40. Modern clay irrigation pipe fragment.

7.0 CONCLUSIONS AND RECOMMENDATIONS

At the request of Meridian Consultants, LLC, PGI completed a records search, Native American consultation, and Phase I archaeological pedestrian survey of two separate parcels. They include the 11.31-acre Maulhardt Ranch residential property at 1853 E. Camino Del Sol (Assessor's Parcel Number (APN) 214-002-062), and the 44.21-acre vacant field north of Jacinto Drive and east of Rose Avenue (APN 214-002-061).

The portion of the proposed project on the Maulhardt Ranch parcel contains the Maulhardt historic residence, which was recommended eligible for the National Register of Historic Places (National Register), California Register of Historical Resources (California Register), and determined to qualify as a Ventura County Landmark by San Buenaventura Research Associates in 2014.

PGI staff did not observe any prehistoric or historic cultural materials in the field north of Jacinto Drive, but a small, sparse scatter of historic glass, ceramic, and marine shell fragments was observed near the north end of the residential property. The artifacts were observed near a slight depression, which suggests possible past use of this area for disposal of refuse. Given the paucity of artifacts and non-diagnostic attributes, there is uncertainty as to whether the artifacts represent discarded items from early occupation of the ranch, or from more recent times.

7.1 Recommendations

PGI recommends limited Extended Phase I testing by a qualified archaeologist in the area where the artifacts and marine shell were discovered to establish the horizontal and vertical deposition of artifacts and determine if important historic materials are present within the project area. Depending on the results of the Extended Phase I study, additional mitigation may be required if avoidance is not feasible.

In addition, given the poor visibility throughout much of the project area and the possibility of finding historic privies, refuse deposits, and other features in the area surrounding the Maulhardt Ranch, archaeological monitoring is recommended during initial grading for the project.

7.2 Regulations Concerning Discovery of Human Remains

There is a possibility of encountering human remains either in association with prehistoric occupation sites or as separate finds. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial, and Section 5097.99 of the Public Resources Code defines the obtaining or possession of Native American remains or grave goods to be a felony. If human remains are encountered during construction activities, any work in the vicinity should stop and the County Coroner contacted immediately. At the same time, a qualified archaeologist should be contacted to evaluate the situation. If the human remains are Native American in origin, then the Coroner must notify the Native American Heritage Commission within 24 hours of this identification.

California Public Resources Code §5097.98 (Notification of Native American human remains, descendants; disposition of human remains and associated grave goods) mandates that the lead agency adhere to the following regulations when a project results in the identification or disturbance of Native American human remains:

> (a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and

Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 48 hours of their notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

(b) Whenever the commission is unable to identify a descendant, or the descendant identified fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendant and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.

(c) Notwithstanding the provisions of Section 5097.9, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act (Division 13 (commencing with Section 21000)).

(d) Notwithstanding the provisions of Section 30244, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section, and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20 (commencing with Section 30000)).

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Ventura County 2022 Ordinance 4604 https://vcrma.org/en/cultural-heritage-ordinance-update.

APPENDIX A: NATIVE AMERICAN CONSULTATION

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Reginald Pagaling
Chumash

VICE-CHAIRPERSON
Buffy McQuillen
Yokayo Pomo, Yuki, Nomlaki

SECRETARY
Sara Dutschke
Miwok

PARLIAMENTARIAN
Wayne Nelson
Luiseño

COMMISSIONER
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Ohlone-Costanoan

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Stanley Rodriguez
Kumeyaay

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Laurena Bolden
Serrano

COMMISSIONER
Reid Milanovich
Cahuilla

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(916) 373-3710
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September 24, 2024

Carole Denardo
Provenience Group, Inc.

Via Email to: cdenardo@proveniencegroup.com

Re: New High School No. 8, Oxnard, California Project, Ventura County

To Whom It May Concern:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Ventura County
9/24/2024

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Email Address	Cultural Affiliation	Counties	Last Updated
Ventura	Barbareño/Ventureño Band of Mission Indians	N	Cultural Resource Committee,	P.O. Box 364 Ojai, CA, 93024	(805) 746-6685	CR@bvbmi.com	Chumash	Kern,Los Angeles,San Luis Obispo,Santa Barbara,Ventura	6/19/2023
	Chumash Council of Bakersfield	N	Julio Quair, Chairperson	729 Texas Street Bakersfield, CA, 93307	(661) 322-0121	chumashtribe@sbcglobal.net	Chumash	Kern,Los Angeles,San Luis Obispo,Santa Barbara,Ventura	
	Coastal Band of the Chumash Nation	N	Gabe Frausto, Chairman	P.O. Box 40653 Santa Barbara, CA, 93140	(805) 568-8063	fraustogabriel28@gmail.com	Chumash	Kern,Los Angeles,San Luis Obispo,Santa Barbara,Ventura	8/28/2023
	Northern Chumash Tribal Council	N	Violet Walker, Chairperson	P.O. Box 6533 Los Osos, CA, 93412	(760) 549-3532	violetsagewalker@gmail.com	Chumash	Kern,Los Angeles,San Luis Obispo,Santa Barbara,Ventura	6/5/2023
	Santa Ynez Band of Chumash Indians	F	Crystal Mendoza, Elders' Council Administrative Assistant	100 Via Juana Road Santa Ynez, CA, 93460	(805) 325-5537	cmendoza@chumash.gov	Chumash	Kern,Los Angeles,San Luis Obispo,Santa Barbara,Ventura	2/27/2024
	Santa Ynez Band of Chumash Indians	F	Sam Cohen, Government & Legal Affairs Director	100 Via Juana Road Santa Ynez, CA, 93460		scohen@chumash.gov	Chumash	Kern,Los Angeles,San Luis Obispo,Santa Barbara,Ventura	7/6/2023
	Santa Ynez Band of Chumash Indians	F	Nakia Zavalla, Tribal Historic Preservation Officer	100 Via Juana Road Santa Ynez, CA, 93460		nzavalla@chumash.gov	Chumash	Kern,Los Angeles,San Luis Obispo,Santa Barbara,Ventura	7/6/2023
	Santa Ynez Band of Chumash Indians	F	Wendy Teeter, Cultural Resources Archaeologist	100 Via Juana Road Santa Ynez, CA, 93460	(805) 325-8630	wteeter@chumash.gov	Chumash	Kern,Los Angeles,San Luis Obispo,Santa Barbara,Ventura	7/6/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed New High School No. 8, Oxnard, California Project, Ventura County.

Record: PROJ-2024-004969
Report Type: List of Tribes
Counties: Ventura
NAHC Group: All

APPENDIX I

Extended Phase I Archaeological Testing Report

Extended Phase 1 Archaeological Testing on the Maulhardt Ranch Property at 1853 Camino Del Sol Oxnard, Ventura County, California.

Prepared for:
City of Oxnard Community Development Department
214 South C Street
Oxnard, California 93030

Submitted to:
Meridian Consultants, LLC
860 Hampshire Road, Suite P
Westlake Village, California 91361

Prepared by:

Provenience Group, Inc.
1759 Cottonwood Street
Solvang, California 93463
(805) 350-3134

Authors:
Carole Denardo, M.A., RPA and Jenna Levine, MSc

March 2025; rev. July 2025

CONFIDENTIAL INFORMATION
Not Intended for Public Distribution

Statement of Confidentiality

This report identifies the locations of cultural resources, which are confidential. As nonrenewable resources, archaeological sites can be significantly impacted by disturbances that can affect their cultural, scientific, and artistic values. Disclosure of this information to the public may be in violation of state laws. To discourage the damage of vandalism and artifact looting, cultural resources locations should be kept confidential and report distribution restricted to those who need to know. Applicable California laws include, but may not be limited to, Government Code Sections 6250 *et seq.* and 6254 *et seq.* Furthermore, disclosure of site location information to individuals other than those meeting the California State Personnel Board criteria for Associate State Archaeologist or State Historian II violates the California Office of Historic Preservation's records access policy.

National Archaeological Data Base Information

Author(s):	Carole Denardo, M.A., RPA, Jenna Levine, MSc
Consulting firm:	Provenience Group, Inc. 1759 Cottonwood St. Solvang, California 93463 (805) 350-3134
Report Date:	March 2025; rev. June, July 2025
Report Title:	Extended Phase 1 Archaeological Testing on the Maulhardt/Stiles Ranch Property at 1853 Camino Del Sol, Oxnard, Ventura County, California
Prepared for:	City of Oxnard Community Development Department 214 South C Street Oxnard, California 93030
Submitted to:	Meridian Consultants, LLC 860 Hampshire Road, Suite P Westlake Village, California 91361
Submitted by:	Provenience Group, Inc. 1759 Cottonwood St. Solvang, California 93463 (805) 350-3134
Contract No:	100-2
U.S.G.S. Quad:	Oxnard, California
Acreage:	Approximately 11.31 acres
Key words:	Ventura County, Oxnard, APN 214-002-062, Maulhardt/Stiles Ranch, Chumash

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MANAGEMENT SUMMARY

At the request of Meridian Consultants, Provenience Group, Inc. (PGI) staff performed Extended Phase 1 (XP1) archaeological excavations on the 11.31-acre residential property at 1853 Camino Del Sol, in Oxnard, Ventura County, California. The project is located at the northeast corner of Camino Del Sol and Rose Avenue, within the historic Maulhardt Ranch property. The current Maulhardt residence was previously recommended eligible for the National Register of Historic Places (National Register), California Register of Historical Resources (California Register) and as a Ventura County Landmark by San Buenaventura Research Associates in 2014.

A prior cultural resources survey in September 2024 near the north end of the residential area of the property indicated a small, sparse scatter of historic glass, ceramic, and marine shell fragments near a slight depression. The presence of the artifact scatter suggested possible past use of this area for disposal of refuse. However, given the paucity of artifacts and lack of diagnostic markers, there was uncertainty about whether the artifacts represented discarded items from early occupation of the ranch, or from more recent times (Denardo and Levine 2024).

As a result, PGI recommended limited XP1 testing by a qualified archaeologist in the area where the artifacts and marine shell were discovered to determine the presence or absence of important historic materials within the project area. The objective of XP1 study was to establish the horizontal and vertical deposition of artifacts to determine if subsurface historic archaeological deposits exist within the project area.. This report summarizes the results of the study. On January 21, 2025, PGI staff excavated three shovel test probes (STPs) in the northern portion of the property. The archaeologists excavated two of the STPs in the location of a light scatter of historic artifacts at the south end of a lemon orchard, next to the unimproved road leading to homes at the back of the parcel. They placed the third STP near the west side of the carriage house where five complete historic bottles were scattered on the ground surface.

The results of the XP1 study indicated a sparse scatter of artifacts consisting of historic glass, ceramic, and a marine shell fragment within the project area, plus five complete historic bottles and additional fragments of glass and ceramic domestic artifacts on the west side of the carriage house. Historic artifacts appear to be associated with household activities at the Maulhardt Ranch. Diagnostic artifacts suggest deposition during the 1930s and 1940s. Of utmost importance would be pre-twentieth century artifacts that coincide with occupation of the original Maulhardt family residence that is no longer extant. As a result, PGI recommended Phase 2 archaeological testing by a qualified archaeologist prior to project-related ground disturbing activities. A Phase 2 report is currently in process.

In the event human remains are encountered, the monitoring archaeologist or construction crew should adhere to the provisions of sections 7052 and 7050.5 of the California Health and Safety Code. Section 7052 states that disturbance of Indian cemeteries is a felony. Section 7050.5 requires that construction or excavation be stopped near discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are Native American, Section 7052 states that the coroner must contact the California Native American Heritage Commission.

A copy of this report and attachments will be submitted to the Central Coast Information Center (CCIC) at the Museum of Natural History in Santa Barbara. Field notes and other project materials are on file at Provenience Group, Inc.'s office in Solvang, California.

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1.0 INTRODUCTION

At the request of Meridian Consultants, Provenience Group, Inc. (PGI) has completed Extended Phase 1 (XP1) archaeological testing of an 11.31-acre Maulhardt Ranch property (APN 214-002-062), at 1853 Camino Del Sol, in Oxnard, Ventura County, California (Figure 1). The historic residential property is at the northeast corner of Camino Del Sol and Rose Avenue. The current historic residence on the parcel was previously recommended eligible for the National Register of Historic Places (National Register), California Register of Historical Resources (California Register) and as a Ventura County Landmark by San Buenaventura Research Associates in 2014. The project area encompasses Township 1 North, Range 21 West, as shown on the U.S. Geological Survey (USGS) *Oxnard, California* 7.5-minute series topographic quadrangle map (Figure 1). This report summarizes the results of the study.

Prior to conducting the XP1 study, PGI performed a record search on August 27, 2024, archaeological pedestrian survey on September 17, 2024, and October 29, 204, Native American consultation, and submitted a Phase 1 archaeological technical report in November 2024.

PGI completed the XP1 archaeological resources study pursuant to the California Environmental Quality Act (CEQA) and Ventura County guidelines. CEQA requires lead agencies to evaluate proposed projects for their potential to impact archaeological resources (Public Resources Code Section 21082, 21083.2, and 21084.1, and California Code of Regulations 15064.5).

According to the CEQA Guidelines, "historical resources" include buildings, structures, objects, districts, or sites that may possess prehistoric or historical archaeological, architectural, cultural, or scientific importance. CEQA states that if a project will have a significant effect on important cultural resources, then alternative plans or mitigation measures need to be developed. However, only important cultural resources need to be considered in the mitigation plans.

Carole Denardo, M.A., RPA, who exceeds the U.S. Secretary of the Interior's Historic Preservation Professional Qualification Standards as outlined in 36 CFR 61, served as PGI's principal investigator and project manager. Ms. Denardo and staff archaeologists Jenna Levine, MSc. and Conor Cooley, B.A. performed the XP1 archaeological study.

The remainder of this section provides the project description and location; Section 2.0 discusses the regulatory framework; Section 3.0 summarizes environmental, ethnographic, and archaeological overviews for the region; Section 4.0 describes the records search results; Section 5.0 presents the field methodology; Section 6.0 discusses the survey results; Section 7.0 provides a summary and recommendation; and references are listed in Section 8.0.

1.1 PROJECT DESCRIPTION AND LOCATION

The property is located at 1853 Camino Del Sol in Oxnard, Ventura County, California (Figures 2 and 3). The parcel lies at the northeast corner of Camino Del Sol and Rose Avenue. Presently, the property includes the main residence, other dwellings, a barn, and ancillary buildings within the 11.31-acre historic Maulhardt Ranch property. The project area is within the southern expanse of the Santa Clara River flood plain. The parcel is currently surrounded by an agricultural field to the north, Del Sol High School to the east, and commercial and residential properties to the south and west. The elevation ranges between approximately 61 and 65 feet above mean average sea level (amsl) (Google Earth 2025).

The proposed project includes construction of multi-family residential buildings, parks, new streets, and parking lots, which entails demolition, grading, trenching, and excavation, which has the potential for impacts to the resources.

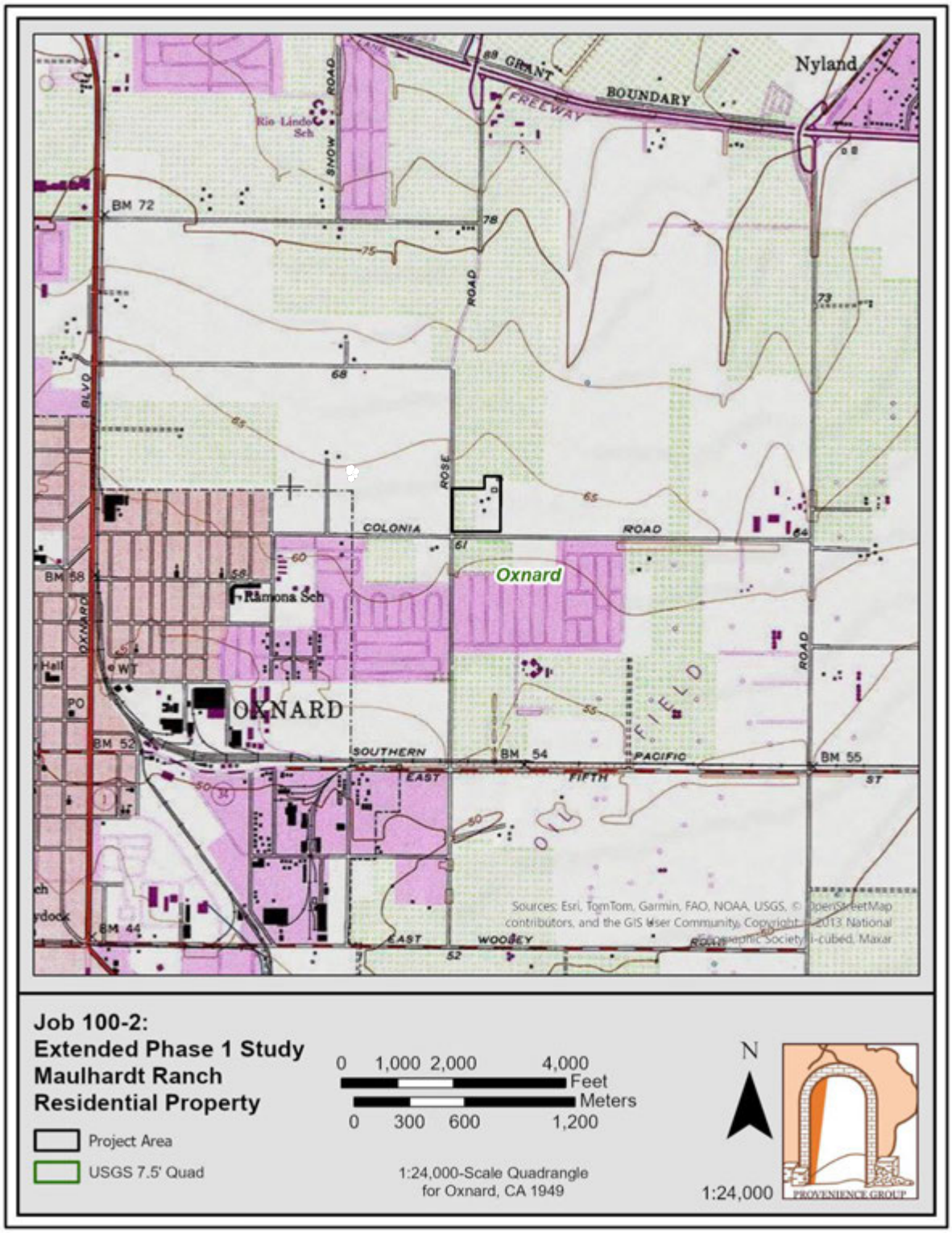

Figure 1. Project Location Map.

Figure 2. Aerial image of project area.

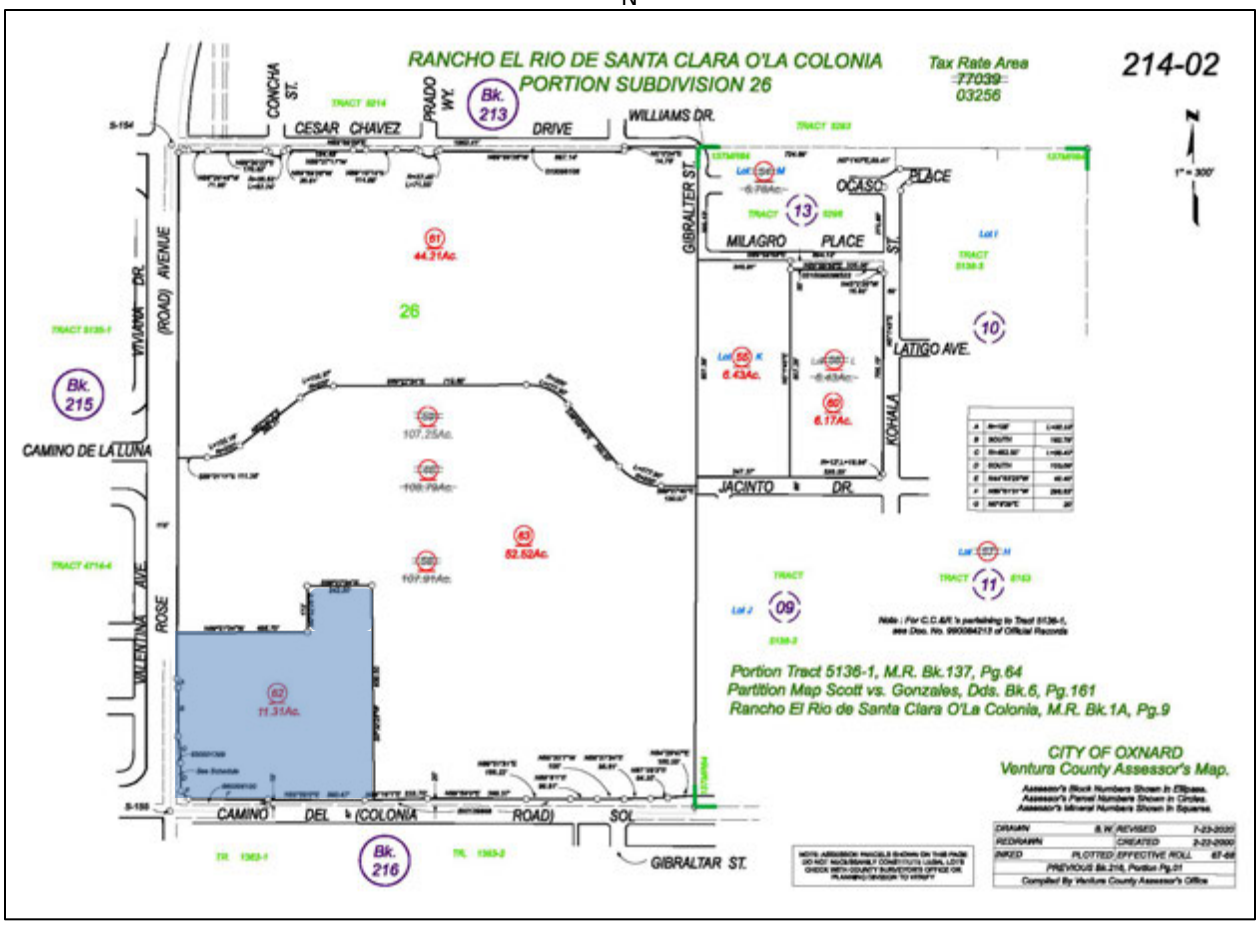

Figure 3. Assessor Parcel Map (APN 214-003-062) indicating project area, shaded light blue.

1.2 REGULATORY AUTHORITY

Provenience Group, Inc. conducted the project in accordance with state (CEQA guidelines) and local regulations (California Resources Agency 1996). CEQA equates a substantial adverse change in the significance of a cultural resource with a significant effect on the environment (Public Resources Code, Section 21084.1). "Substantial adverse change" is defined as demolition, destruction, relocation, or alteration activities that would impair significance (Public Resources Code, Section 5020.1).

Under the provisions of CEQA, where a project has the potential to affect an archaeological resource, it must be determined whether the resource at hand is "significant," as defined by CEQA, and therefore eligible for certain protections under the law (Public Resources Code, Sections 4852, 21083.2, and 21084.1). Provenience Group, Inc. conducted the XP1 study described in this report in fulfillment of these requirements. Research focused on prehistoric and historic land use.

1.3 CEQA CONSIDERATIONS

This study was carried out in compliance with the requirements of CEQA. The purpose of this study was to determine the presence or absence of subsurface archaeological resources and their horizontal and vertical limits within an area that may be impacted by construction of residential and walk-up facilities.

The California Register of Historical Resources (California Register) is the authoritative guide to the state's significant historical and archaeological resources (Public Resources Code, Section 4852). According to criteria established by the California Register, a resource is considered "historically significant" if it:

(A) is associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States;

(B) is associated with the lives of persons important to local, California, or National history;

(C) embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of a master or possesses high artistic values; or

(D) has yielded, or has the potential to yield, information important to prehistory or history of the local area, California, or the United States.

Resources meeting one or more of these criteria may be eligible for listing on the CRHR, and, therefore, for certain protections under CEQA. Additionally, CEQA Guidelines specify that an archaeological resource is "unique" and significant if it:

- is associated with an event or person of recognized significance in California or American history, or recognized scientific importance in prehistory;
- can provide information, which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions;
- has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;
- is at least 100 years old and possesses substantial stratigraphic integrity; or
- involves important research questions that historical research has shown can be answered only with archaeological methods (California Public Resources Code Section 21083.2).

2.0 PROJECT DESIGN

2.1 RESEARCH FOCUS

This research design follows the California Office of Historic Preservation's guidelines for *Archaeological Resource Management Reports (ARMR) Recommended Contents and Format*, the California Office of Historic Preservation's *Preservation Planning Bulletin - Guidelines for Archaeological Research Designs* (1991). Its purpose is to describe research themes and address the types of anticipated artifacts, locales of increased archaeological sensitivity, probable depth of cultural deposits, previous disturbances, and California Register-eligibility. The current project entails demolition, grading, trenching, excavation, and other ground disturbing activities.

To create an accurate reconstruction of site history and function, and to understand the processes of development and change occurring within the project area, information from published sources, historic maps, aerial photographs, archival documents, and archaeological materials is required.

Scientific or scholarly research values are judged within the context of a research design that provides the framework for examining variability and change in the archaeological record. A research design outlines the topics or questions that could be asked, given the kinds of data that a particular property type is likely to contain and evaluates whether that information can be gained from other sources (Maniery and Brown 1995).

This research design is based on a contextual approach, which emphasizes specific historical, social, and cultural behaviors contributing to the creation of archaeological remains (Hodder 1986:118-146; 1982:215-218). Through this approach, an archaeologist can examine cultural processes on a small scale, at the level of the mundane and day-to-day activities and experiences that together form a society's broader patterns of development. Use of a contextual approach requires the development of an historic context within which to place the activities that have led to the creation of an archaeological site. An historic context for an archaeological deposit might include information about specific characteristics of an individual or group, such as ethnicity and profession, as well as information about the political, social, and economic climate of the larger society, and may address technological trends relating to site formation processes and site components.

2.1.1 Research Questions and Data Requirements

If subsurface refuse deposits and/or features are present on the property, they could represent a time capsule of changing predilections by the family, or evidence of changes in farming techniques. Research questions and data requirements applicable to the project are described below.

- Hispanic-American Transition Period (1850-1870) and/or American Period (1870-1900) occupation represented?
- What activities are represented and is there any evidence of changes over time?
- Are there changes in food choices by the Maulhardt family over time?
- Is there any evidence of change in technologies regarding farming?

2.1.2 Data Requirements

Archaeological data sets are necessary to evaluate eligibility for listing in the National Register/California Register under Criterion D/4, so it is crucial to establish if a site contains these data sets. Research themes can be addressed though the recovery of an archaeological site's artifact assemblage. For instance, food remains are necessary to address questions about subsistence, and the presence of time-sensitive artifacts are warranted to determine a specific period of use. Further, documentary evidence is essential to link individuals and events and to understand the function of recovered artifacts.

In addition to documentary research data, the following data requirements include:

- trash pits associated with disposal patterns.
- deposits with sufficient quantity and variety of materials.
- locations of intact features with identifiable functions.
- hollow, refuse-filled features with distinctive depositional integrity.
- horizontal distributions of features indicating spatial organization, or specialized activity areas.

2.2 RESEARCH OBJECTIVE AND CONTEXT

Scientific or scholarly research values are judged within the context of a research design that provides the framework for examining variability and change in the archaeological record. A research design outlines the topics or questions that could be asked, given the kinds of data that a particular property type is likely to contain and evaluates whether that information can be gained from other sources (Maniery and Brown 1995). Archaeological research requires a broad theoretical perspective and framework for asking questions about the historic and archaeological record, as well as the appropriate middle-range theory linking general research questions to archaeological data. While most historical archaeological sites in California contain some information, the key to productive archaeology is to assess whether a property is likely to contain important new information not available from traditional historical sources.

The purpose of the XP1 study for this project was to establish the presence or absence of cultural materials and to determine the horizontal and vertical limits within the proposed project location. No evaluation occurred, but a subsequent Phase 2 archaeological study will determine the importance of the resource. The primary criteria used for assessing archaeological sites are a resource's ability to provide information of importance to the prehistory or history of an area and to illustrate the culture and lifeways of past inhabitants in the Central Coast region. Archaeological sites in Ventura County have the potential to contain important data that can increase our knowledge of past lives of people in the historic past.

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3.0 HISTORIC AERIAL PHOTOGRAPHIC RESEARCH

PGI archaeologists reviewed aerial photographs dated 1927, 1938, 1947, 1959, 1967, 1978, 1985, 1994, 2005, 2010, and 2012 (EDR 2017) (Appendix B). A summary of modifications over time are indicated below.

1927 – This aerial image depicts the two-story horse barn and equipment barn further north. A former building is shown near the southeast corner of the horse barn. No buildings are extant north of the Maulhardt residence, although a prominent U-shaped driveway leads up to the residence.

1938 – The carriage house is in place south of the horse barn and there is an ancillary house northwest of the main residence.

1947 – There are no substantial changes from the previous aerial image.

1959 – Two ancillary houses are stacked north of the main residence.

1967 –There is an access east-west oriented driveway extending north of the homes and west of the carriage house. An orchard crop is evident on three sides of the residential area of the property, with an agricultural crop to the east.

1978 – The U-shaped driveway has been replaced with a driveway that runs northward along the east side of the residences and past the horse barn. A new building is evident at an angle, northwest of the main residence and west of two adjacent ancillary houses. An east-west oriented driveway extends north of the ancillary homes and terminates on the northeast side of the new building. Orchard crops are in place north, south, and west of the buildings and what appears to be a younger orchard is on the east side of the Maulhardt farm. At that time, there is another new ancillary building on the east side of the property, south of the horse barn.

1985 – A second ancillary building appears west of the one built by 1978 on the east side of the property, south of the horse barn. The east end of the parcel is planted with a row crop, but the remainder of the property is surrounded by an orchard. The main driveway extends from Camino Del Sol, past the main residence, to the south side of the horse barn, and a secondary driveway, oriented east-west, runs from west of the carriage house to north of the angled building in the residential area of the property.

1994 – Few changes are noted to buildings on the property. The biggest change noted is the prior orchard has been mostly replaced with a new orchard. However, the older orchard remains around the main residence and east of the main driveway.

2005 – A protuberance of lemon trees are noted at the north side of the east-west oriented driveway, north of the ancillary homes, and extending north, west of the horse barn. More lemon trees are planted south of the main house and building at a slant. A younger orchard is present south of the farm and other ancillary buildings. Other agricultural fields surrounding the property are planted with row crops.

2010 – Few changes are noted from the previous aerial image. However, one ancillary building south of the horse barn has been demolished.

2012 – Few changes are noted from the previous aerial images.

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4.0 METHODOLOGY

4.1 PRIOR CULTURAL RESOURCES SURVEY RESULTS

The results of the Phase 1 cultural resources pedestrian survey of the project area were positive for archaeological resources. They indicated the presence of a small, sparse scatter of historic glass, ceramic, and marine shell fragments in the northern portion of the residential area of the Maulhardt Ranch property. The archaeologists observed artifacts near a slight depression, which suggests possible past use of this area for disposal of refuse. However, uncertainty remained about whether the artifacts represent discarded items from early occupation of the ranch, or from more recent times.

The artifacts consisted of one whiteware ceramic fragment, broken concrete fragments, two pieces of clear glass, and one piece of blue glass. Within the same area, PGI staff identified one *Chione undatella* and one *Argoppecten* sp. marine shell fragment. Of note was a shallow depression, measuring about three feet (1 meter) in diameter, near the artifacts. Given the paucity of artifacts and nondiagnostic attributes, it was not possible to ascertain the age of the artifacts during the survey. No artifacts were collected.

4.2 XP1 METHODS

On January 21, 2025, PGI archaeologists Jenna Levine, MSc. and Conor Cooley, B.A. conducted Extended Phase I (XP1) testing in the project area. Ms. Levine, MSc. served as Field Director for the project. She was assisted by Conor Cooley, B.A. The work was supervised by Principal Investigator Carole Denardo, M.A., who exceeds the Secretary of the Interior's Standards for Archaeology.

PGI staff excavated three STPs within the project area. PGI recommended Extended Phase I testing following positive results for cultural resources during a Phase I survey in 2024. Testing was conducted to determine if subsurface prehistoric archaeological deposits are present within the project area and to establish their horizontal and vertical extent. Three shovel test pits were excavated as part of Extended Phase I testing to identify the extent of subsurface deposits (Figure 4). All STPs measured 40 cm in diameter, with a depth of 60 cm, and each yielded beige sandy silt soil (7.5 YR 5/2 (Table 1)). STP 1 and 2 were both positioned at the edge of an unmaintained 30+ year-old lemon grove (Photos 1-3).STP 3 was placed next to the western wall of the historic carriage house built in the early 1900s (Photo 4). Surface soils from 0-40 cm consisted of a brown silt (7.5 YR 5/3) that transitioned to beige sandy silt (7.5 YR 5/2) from 40-60 cm, similar to soils in STPs 1 and 2.

Table 1. Soil Composition of STPs.

STP #	Depth	Soil Color/Type	Munsell
STP 1	0-60 cm.	Beige sandy silt	7.5 YR 5.2
STP 2	0-60 cm	Beige sandy silt	7.5 YR 5.2
STP 3	0-40 cm 40-60 cm	Brown silt Beige sandy silt	7.5 YR 5.3 7.5 YR 5.2

Figure 4. Aerial image depicting STPs in project area (Google Maps 2025).

Photo 1. Overview of STP 1 and 2 area, facing north.

Photo 2. Overview of STP 1 and 2 area, facing east.

Photo 3. Overview of STP 1 and 2 area, facing west.

Photo 4. Area near STP 3 location, facing east.

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5.0 EXTENDED PHASE I TESTING RESULTS

On January 21, 2025, PGI archaeologists Jenna Levine and Conor Cooley conducted Extended Phase I (XP1) testing in the project area. Extended Phase I testing was recommended by PGI following positive results for cultural resources during a Phase I survey. PGI staff conducted the testing to determine the presence or absence of subsurface cultural deposits within the project area and to establish the horizontal and vertical extent of the resources. The results were positive for archaeological resources. All three STPs measured 40 cm in diameter, with a depth of 60 cm.

Table 2. STP Results.

STP #	Results
STP 1	Artifacts consisted of one fragment of green glass, two fragments of aqua glass, a single piece of whiteware, possibly a cup base, with a maker mark "ABIN", and a small brick fragment.
STP 2	One white ceramic fragment and small corroded, fragments of unidentifiable metal.
STP 3	Two clear glass bottle fragments, two white ceramic fragments, eight faunal bones, and two pieces of charcoal.

STP 1 and 2 were both positioned at the edge of an unmaintained 30+ year-old lemon grove. Historic glass and white ceramics fragments, as well as one red brick fragment were found at or near the ground surface (0-10 cm) (Table 2). Soil in STP 1 consisted of redeposited fill material from 0-10 cm, consisting of one fragment of green glass and two fragments of aqua glass, a single piece of whiteware, possibly a cup base, with a maker mark "ABIN", and a small brick fragment. Sterile soils were revealed from 10-60 cm.

Photo 5. "ABIN/U.S" white ceramic fragment Found on the ground surface at STP 1.

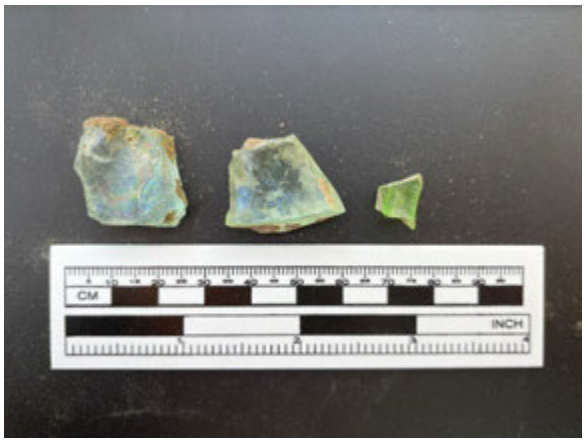

Photo 6.Green and aqua glass fragments in STP 1.

Photo 7. Red brick fragment found in the 0-10 cm level of STP 1.

Photo 8. STP 1 excavated to a depth of 60 cm.

In STP 2, the field crew recovered one artifact, consisting of a white ceramic fragment, from the 0-10 cm level, and small corroded, fragments of unidentifiable metal in the 10-20 cm level. None of the artifacts exhibited diagnostic attributes. STP 2 revealed sterile soils in the subsequent 20-60 cm levels (Photo 11).

Photo 9. White ceramic fragment found on the surface of STP 2.

Photo 10. Unidentified metal fragments recovered from the 10-20 cm level of STP 2.

Photo 11. STP 2 excavated to a depth of 60 cm.

Photo 12. Bottles on ground surface near STP 3.

PGI archaeologists excavated STP 3 near the western wall of the carriage house. On the ground surface near the STP location were four complete, and one nearly complete, historic bottles dating from ca. 1934 to 1968 (Photo 12). They include two Coca-Cola bottles with a hobble skirt shape and "BOTTLE PAT. D105529" embossed on the base, date these bottles from 1938-1951 (Photo 13) (Lockhart and Porter 2010). Also observed was a clear glass Nehi soda bottle that dates to 1946. The manufacturer was Owens-Illinois Glass Company, plant number 23, made in Los Angeles (Photo 14) (Lockhart and Hoenig 2018). Also noted on the ground surface near STP 3 was a clear glass bottle manufactured by the Glass Container Corporation, and dates between 1934 and 1968 (Photo 15). The fifth bottle, manufactured by the Owens-Illinois Company, dates to ca. 1944 (Photo 16) (SHA 2025). In addition, PGI discovered a single, white ceramic fragment with a green pattern on the surface near STP 3 (Photo 17). The pattern was not identified and the maker mark was not indicated.

Photo 13. One of two identical Coca Cola bottles observed near STP 3.

Photo 14. Nehi soda bottle on the ground surface near STP 3.

Photo 15. Clear glass bottle found on the ground surface near STP 3.

Photo 16. Bottle manufactured by the Owens-Illinois Company, found near STP 3.

Photo 17. Plate fragment with green pattern observed near STP 3.

Photo 18. STP 3 excavated to 60 cm.

PGI archaeologists excavated STP 3 to a depth of 60 cm (Photo 18). They recovered two clear glass bottle fragments, two white ceramic fragments, eight faunal bones, and two pieces of charcoal. The glass bottle fragments identified in the 0-10 cm level of the STP include a one-pint liquor base fragment (1954?) and one undiagnostic clear glass bottle fragment (Photo 23). The ceramic plate fragments have unidentified floral design patterns, and the bones represent small-to-medium mammals. No other artifacts or ecofacts were recovered from STP 3.

Photo 19. Bottle fragments recovered in the 0-10 cm level of STP 3.

Photo 20. Eight bone fragments and two chunks of charcoal recovered in the 20-30 cm level of STP 3.

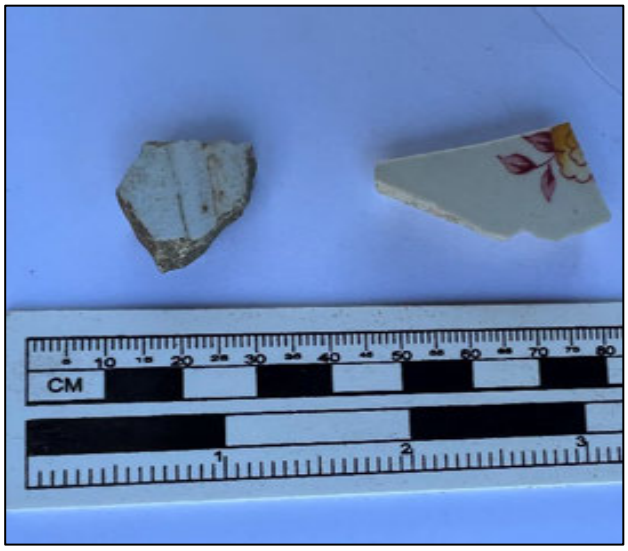

Photo 21. Two ceramic plate fragments recovered in the 20-30 cm level of STP 3.

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6.0 CONCLUSIONS AND RECOMMENDATIONS

At the request of Meridian Consultants, PGI staff completed Extended Phase 1 excavations on the 11.31-acre residential property at 1853 Camino Del Sol in Oxnard, Ventura County, California. The proposed project is located on the southwest side of the historic Maulhardt Ranch property. The current Maulhardt residence was previously recommended eligible for the National Register, California Register, and as a Ventura County Landmark by San Buenaventura Research Associates in 2014.

A prior cultural resources survey in September 2024 near the north end of the residential area of the property indicated a small, sparse scatter of historic glass, ceramic, and marine shell fragments near a slight depression. The presence of the artifact scatter suggested possible past use of this area for disposal of refuse. However, given the paucity of artifacts and lack of diagnostic markers, there was uncertainty about whether the artifacts represented discarded items from early occupation of the ranch, or from more recent times (Denardo and Levine 2024).

As a result, PGI recommended limited XP1 testing by a qualified archaeologist in the area where the artifacts were discovered to determine the presence or absence of important historic materials within the project area. On January 21, 2025, PGI staff excavated three shovel test probes (STPs) in the northern portion of the property. The archaeologists excavated two of the STPs in the location of a light scatter of historic artifacts at the south end of a lemon orchard, next to the unimproved road leading to homes at the back of the parcel. They placed the third STP near the west side of the carriage house where five complete historic bottles were scattered on the ground surface. The results of the XP1 study indicated a sparse scatter of artifacts consisting of historic glass, ceramic, and brick on the south edge of a lemon grove, plus five complete historic bottles and additional fragments of glass and ceramic domestic artifacts on the west side of the Carriage house. Historic artifacts appear to be associated with household activities at the Maulhardt Ranch. Diagnostic artifacts suggest deposition between 1934 and 1968.

6.1 Recommendations

Of utmost importance would be late nineteenth century artifacts that coincide with occupation of the original Maulhardt family residence that is no longer extant. Given the excavation results, PGI recommends Phase 2 archaeological testing by a qualified archaeologist prior to project-related ground disturbing activities to evaluate the resource, which will include excavation and lab analysis to identify the composition and distribution of the archaeological site and related significant deposits relative to potential project impacts, followed by making recommendations for listing on the California Register using the four criteria as thresholds for significance. As of July 2025, the Phase 2 report is being prepared.

6.2 Procedure for Unanticipated Discoveries

If previously unidentified cultural resources are encountered during construction within the project area, then the archaeologist will have the authority to halt work within 50 feet of the area until the project archaeologist can assess the find; determine its potential for significance; and develop measures to eliminate adverse impacts. Such measures may include avoidance through project redesign, or Phase 2 testing (excavation) to evaluate the significance of the find.

CEQA provides a measure of protection for human remains (Guidelines section 15064.5[d]), and for the accidental discovery of cultural resources (Guidelines section 15064.5[e]). These guidelines are particularly important as they consider the possibility that significant archaeological resources not noted

as a result of previous research efforts may be present within a project area and need to be treated in a way commensurate with CEQA standards.

6.2.1 Regulations Concerning Discovery of Human Remains

There is a possibility of encountering human remains either in association with prehistoric occupation sites or as separate finds. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial, and Section 5097.99 of the Public Resources Code defines the obtaining or possession of Native American remains or grave goods to be a felony. If human remains are encountered during construction activities, any work in the vicinity should stop and the County Coroner contacted immediately. At the same time, a qualified archaeologist should be contacted to evaluate the situation. If the human remains are Native American in origin, then the Coroner must notify the Native American Heritage Commission within 24 hours of this identification.

California Public Resources Code §5097.98 (Notification of Native American human remains, descendants; disposition of human remains and associated grave goods) mandates that the lead agency adhere to the following regulations when a project results in the identification or disturbance of Native American human remains:

> (a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 48 hours of their notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.
>
> (b) Whenever the commission is unable to identify a descendant, or the descendant identified fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendant and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.
>
> (c) Notwithstanding the provisions of Section 5097.9, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act (Division 13 (commencing with Section 21000)).
>
> (d) Notwithstanding the provisions of Section 30244, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section, and any action taken to implement an agreement developed pursuant to subdivision (1) of Section

5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20 (commencing with Section 30000).

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APPENDIX A: HISTORIC AERIAL PHOTOGRAPHS

2012 Aerial Photograph, USDA/NAIP.

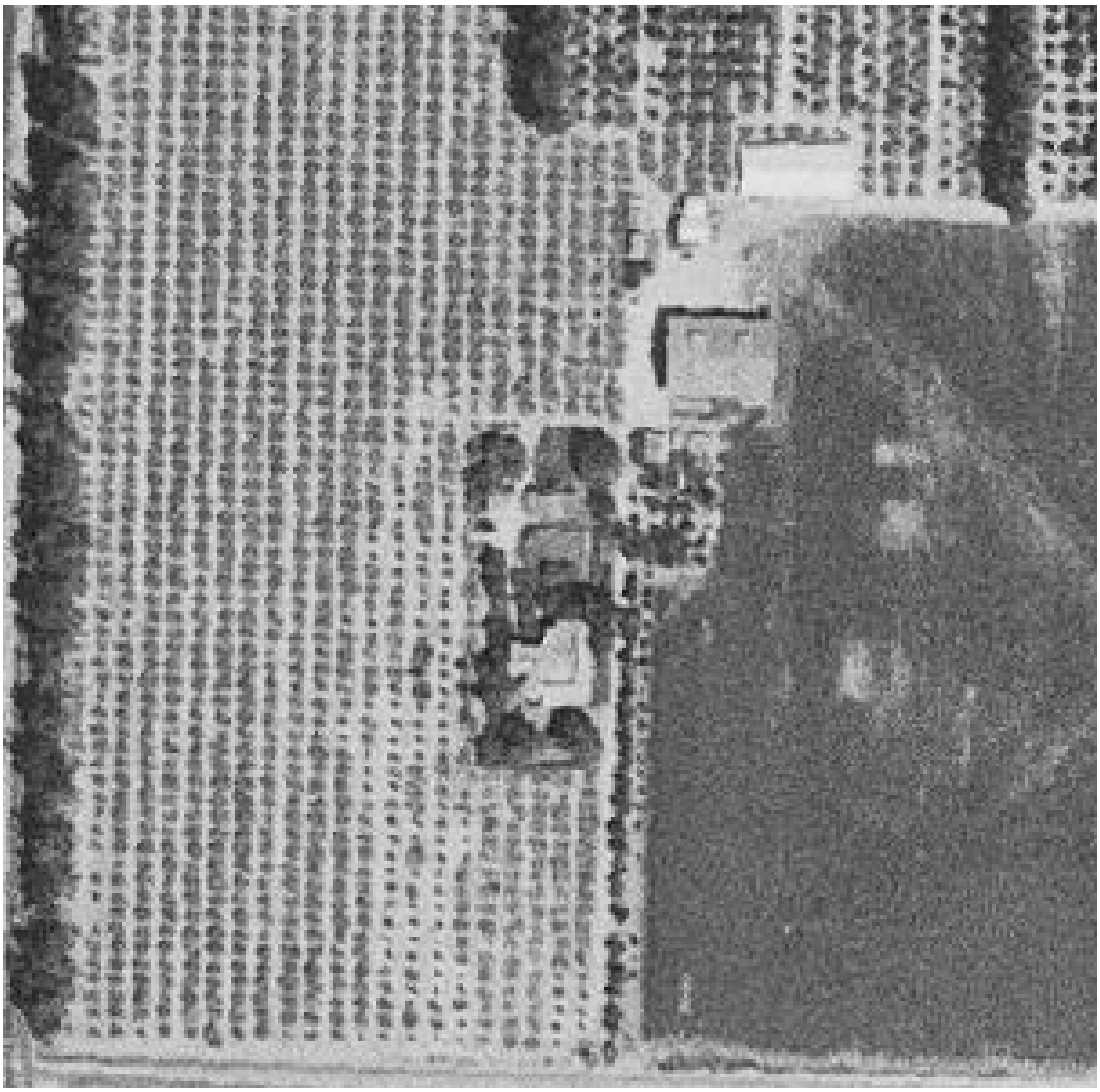
2010 Aerial Photograph, USDA/NAIP.

2005 Aerial photograph, USDA/NAIP.

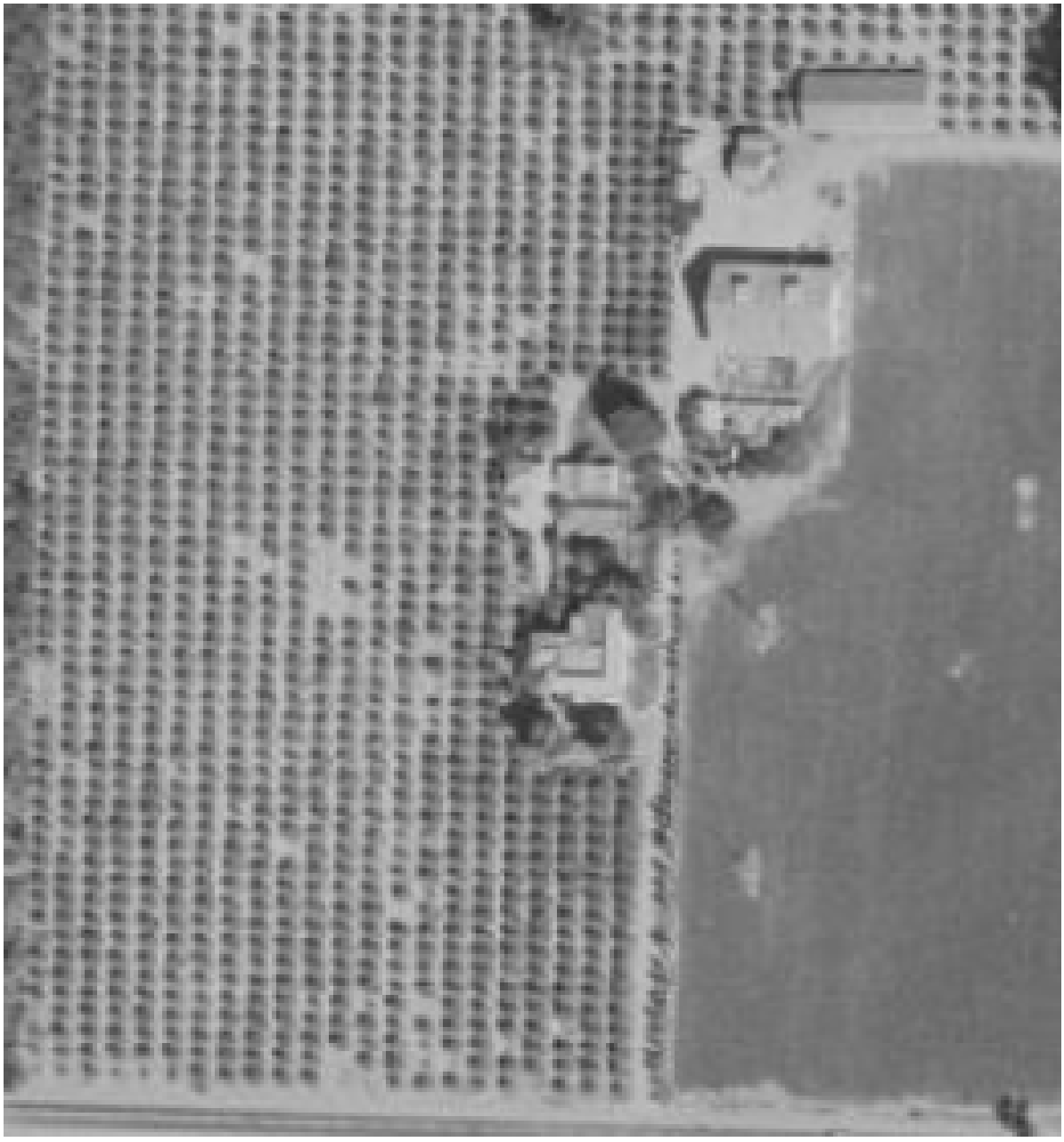
1994 Aerial Photograph, USGS/DOQQ.

1985 Aerial Photograph, Flight Date: August 6, 1985, USDA.

1978 Aerial Photograph, Flight Date: September 21, 1978, USDA.



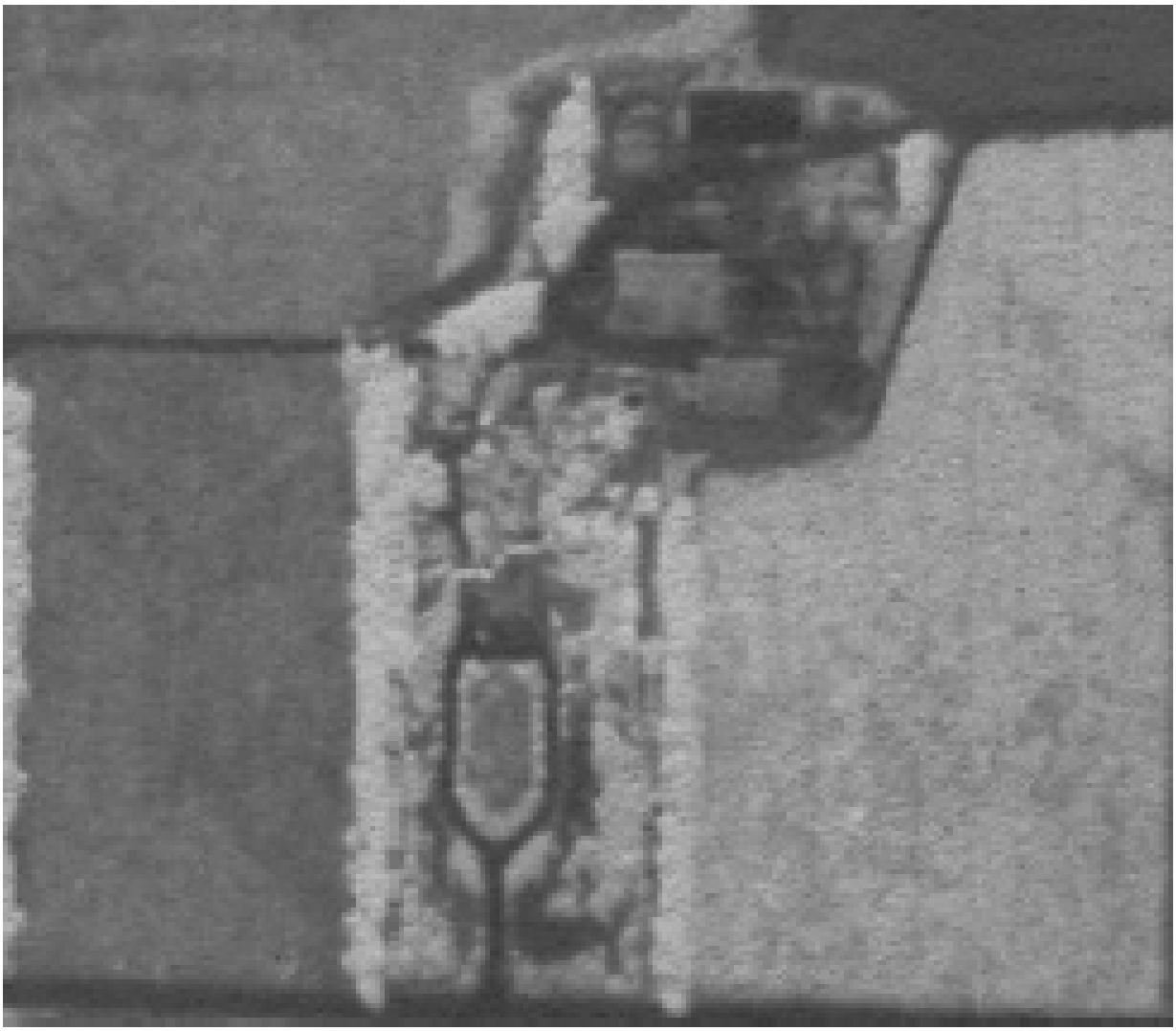
1967 Aerial Photograph, flight Date: August 13, 1967, USGS.



1959 Aerial Photograph, Flight Date: October 4, 1959, USDA.

1947 Aerial Photograph, Flight Date: August 15, 1947, USGS.

1938 Aerial Photograph, Flight Date: May 9, 1938, USDA.



1927 Aerial Photograph, Flight Date: January 1, 1927, USGS.

APPENDIX B: DPR 523 SITE RECORD FORM

APPENDIX J

Phase II Archaeological Testing Report

Phase 2 Archaeological Study
Maulhardt Residential Property
at 1853 Camino Del Sol in Oxnard
Ventura County, California

Prepared for:
City of Oxnard Community Development Department
214 South C Street
Oxnard, California 93030

Submitted to:
Meridian Consultants, LLC
860 Hampshire Road, Suite P
Westlake Village, California 91361

Prepared by:

Provenience Group, Inc.
1759 Cottonwood Street
Solvang, California 93463
(805) 350-3134

Authors:
Jenna Levine, MSc and Carole Denardo, M.A., RPA

August 2025

CONFIDENTIAL INFORMATION
Not Intended for Public Distribution

Statement of Confidentiality

This report identifies the locations of cultural resources, which are confidential. As nonrenewable resources, archaeological sites can be significantly impacted by disturbances that can affect their cultural, scientific, and artistic values. Disclosure of this information to the public may be in violation of state laws. To discourage the damage of vandalism and artifact looting, cultural resources locations should be kept confidential and report distribution restricted to those who need to know. Applicable California laws include, but may not be limited to, Government Code Sections 6250 *et seq.* and 6254 *et seq.* Furthermore, disclosure of site location information to individuals other than those meeting the California State Personnel Board criteria for Associate State Archaeologist or State Historian II violates the California Office of Historic Preservation's records access policy.

National Archaeological Data Base Information

Author(s): Jenna Levine, MSc and Carole Denardo, M.A., RPA

Consulting firm: Provenience Group, Inc.
1759 Cottonwood St.
Solvang, California 93463
(805) 350-3134

Report Date: August 2025

Report Title: Phase 2 Archaeological Study – Maulhardt Residential Property at 1853 Camino Del Sol in Oxnard, Ventura County, California

Prepared for: City of Oxnard Community Development Department 214 South C Street
Oxnard, California 93030

Submitted to: Meridian Consultants, LLC
860 Hampshire Road, Suite P
Westlake Village, California 91361

Submitted by: Provenience Group, Inc.
1759 Cottonwood St.
Solvang, California 93463
(805) 350-3134

Contract No: 108-3

U.S.G.S. Quad: Oxnard, California

Acreage: 11.8 acres (514,008 sq ft) – Planning Area C

Key words: Ventura County, Oxnard, APN 214-0020-615, Maulhardt/Stiles Residential Property, historic refuse deposit

MANAGEMENT SUMMARY

At the request of Meridian Consultants, Provenience Group, Inc. (PGI) performed a Phase 2 archaeological study on the Maulhardt/Stiles Residential Property (project area) at 1853 Camino Del Sol in Oxnard, Ventura County, California. The project is located at the northeast corner of Camino Del Sol and Rose Avenue within the historic Maulhardt Ranch Property. The current historic residence was previously recommended eligible for the National Register of Historic Places (National Register), California Register of Historical Resources (California Register) and as a Ventura County Landmark by San Buenaventura Research Associates in 2014.

A prior cultural resources survey in September 2024 in the northern portion of the residential area of the property indicated the presence of a small, sparse scatter of historic glass, ceramic, and marine shell fragments near a slight depression. The presence of the artifact scatter suggested possible past use of this area for disposal of refuse. However, given the paucity of artifacts and lack of diagnostic markers, there was uncertainty about whether the artifacts represented discarded items from early occupation of the ranch, or from more recent times (Denardo and Levine 2024). As a result, in January 2025, PGI recommended limited XP1 testing by a qualified archaeologist in the area where the artifacts and marine shell were discovered in an effort to reveal the presence or absence of important historic materials within the project area. The results of the XP1 study indicated a sparse scatter of artifacts consisting of historic glass, ceramic, and a marine shell fragment within the project area, plus five complete historic bottles and additional fragments of glass and ceramic domestic artifacts on the west side of the carriage house. Historic artifacts appeared to be associated with household activities at the Maulhardt Ranch. Diagnostic artifacts suggested deposition during the 1930s and 1940s.

PGI completed a supplemental Phase 2 study on July 22, 2025, to determine if significant historic artifacts are present in the project area. The study began with controlled backhoe trenching in an attempt to find a substantial refuse deposit. If discovered, PGI archaeologists were prepared to dig test excavation units (TEUs) to determine if recovered artifacts were found to qualify as important or unique cultural resources eligible for the National Register or California Register under Criterion A/1, B/2, C/3, or D/4. The collection of historic artifacts appear to be associated with domestic and ranching tasks at the Maulhardt/Stiles Ranch, but datable artifacts do not possess a clearly defined date range. The earliest possible date of manufacture is 1934, and the most recent possible date of manufacture is 1996. These results provide some insight into the lives of long-term residents who lived and worked at the Maulhardt/Stiles Ranch during the twentieth century. However, none of the artifacts date to the earliest occupation of the ranch during the late nineteenth century. Further, no significant subsurface refuse deposits or features were found during controlled backhoe excavation of any of the 8 trenches, and the majority of artifacts (54 percent) were recovered from the surface to a depth of 6-inches. Only two artifacts were recovered at a depth of 21 to 24 inches, and no artifacts were located deeper than 24-inches. Because the artifacts appear to be scattered within a disturbed context, their research value has been diminished. It is a subset of what we would have expected to find, so the assemblage as a whole, does not qualify as important or unique cultural resources eligible for the California Register under Criteria 1, 2, 3, or 4. As a result, PGI recommends archaeological monitoring by a qualified archaeologist during project-related ground disturbing activities.

A copy of this report and attachments will be submitted to the South Central Information Center (SCCIC) at the California State University, Fullerton, California. Field notes and other project materials are on file

at Provenience Group, Inc.'s office in Solvang, California.

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APPENDICES

DPR 523 Form

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1.0 INTRODUCTION

At the request of Meridian Consultants, Provenience Group, Inc. (PGI) completed controlled backhoe testing associated with a Phase 2 study on the Maulhardt Residential Property (project area) in Oxnard, Ventura County, California. The project area encompasses Township 2 North, Range 22 West, as shown on the U.S. Geological Survey (USGS) *Oxnard, California* 7.5-minute series topographic quadrangle map (Figure 1). This report summarizes the results of the study.

PGI completed the Phase 2 cultural resources study pursuant to the California Environmental Quality Act (CEQA) and Ventura County guidelines. CEQA requires lead agencies to evaluate proposed projects for their potential to impact archaeological resources (Public Resources Code Section 21082, 21083.2, and 21084.1, and California Code of Regulations 15064.5). According to the CEQA Guidelines, "historical resources" include buildings, structures, objects, districts, or sites that may possess prehistoric or historical archaeological, architectural, cultural, or scientific importance. CEQA states that if a project will have a significant effect on important cultural resources, then alternative plans or mitigation measures need to be developed. However, only important cultural resources need to be considered in the mitigation plans.

Carole Denardo, M.A., RPA, who exceeds the U.S. Secretary of the Interior's Historic Preservation Professional Qualification Standards as outlined in 36 CFR 61, served as PGI's principal investigator and project manager. Ms. Jenna Levine, MSc served as Field Director for the study.

The remainder of this section provides the project description and location; Section 2.0 discusses the regulatory framework; Section 3.0 summarizes environmental, ethnographic, and archaeological overviews for the region; Section 4.0 describes the research design; Section 5.0 presents the field methodology; Section 6.0 discusses the field study results; Section 7.0 presents the laboratory analysis; Section 8.0 provides a significance evaluation; Section 9.0 describes the summary and recommendations; and references are listed in Section 10.0.

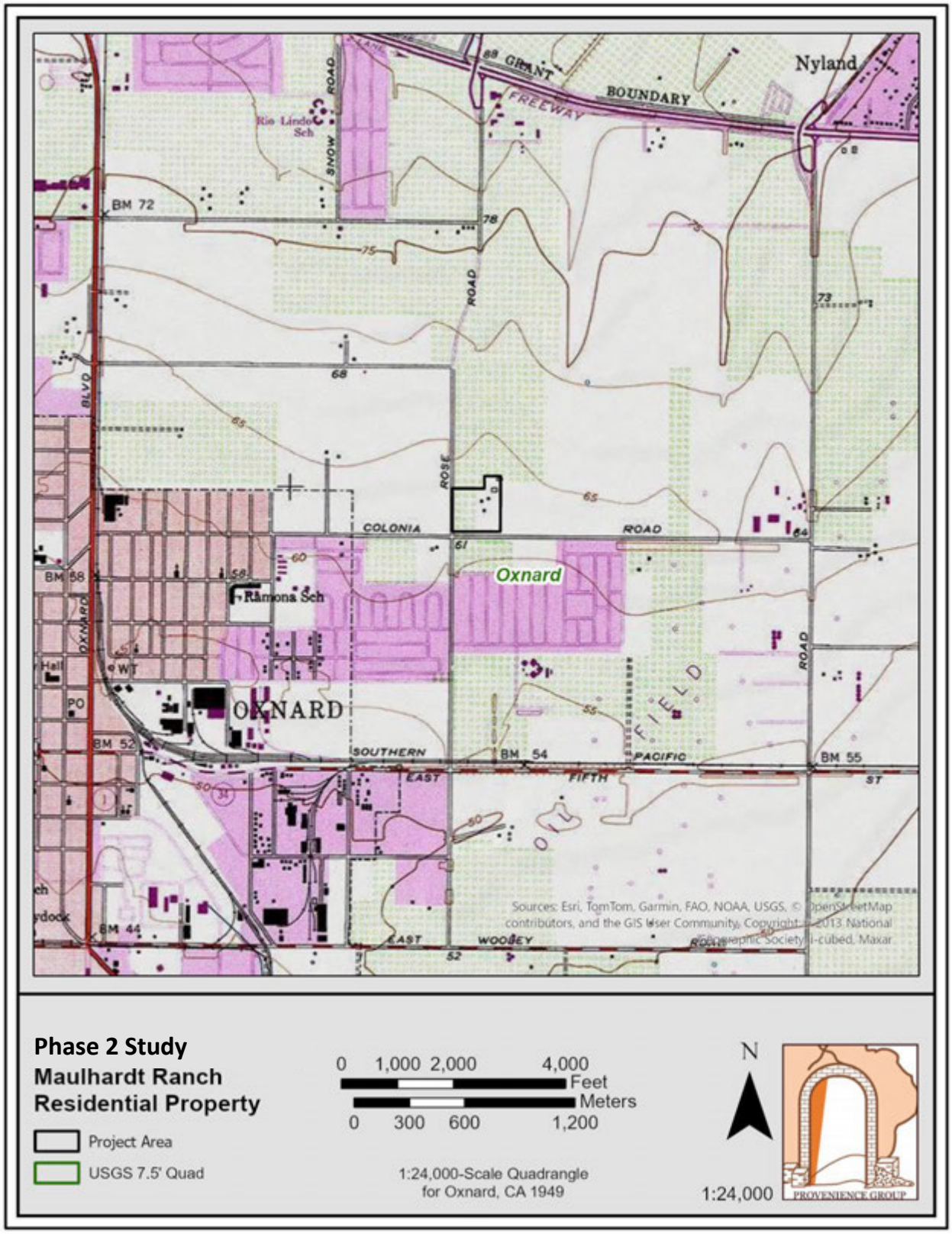

Figure 1. Project Location Map.

1.1 Project Description and Location

The project area is located at 1853 Camino del Sol, in the northeast corner of Camino Del Sol and Rose Avenue in Oxnard, Ventura County, California (Assessor's Parcel Number 214-0020-615) (Figure 1). The 11.8 acresresidential area of the Maulhardt/Stiles Ranch is defined as Planning Area C in the ADEIR (2024) (Figure 2). Proposed construction within this area, also referred to as the Southwest Neighborhood, entails construction of two new streets along the northern and eastern portions of Planning Area C, with a 1.02-acre public park in the center, that will extend from Rose Avenue to the proposed street to the east. Development plans include mostly multi-family residences, not to exceed four stories in height, with as many as 294 units within four development sites. Proposed housing will allow "single-family homes, rowhouses, multiplexes, walk-up apartments, and podium multi-family buildings" (ADEIR 2024:6). The plans also include up to 3,000 square feet of neighborhood-oriented commercial retail spaces. A detailed description of proposed plans for this project is presented in the ADEIR (ADEIR 2024).

The purpose of the Phase 2 study was to determine if significant historic artifacts are present in the project area, and to determine if recovered artifacts qualify as important or unique cultural resources eligible for the California Register.

The project area is within the southern expanse of the Santa Clara River flood plain. The parcel is surrounded by residential properties on the south and west sides, Del Sol High School to the east, and undeveloped acreage and Jacinto Drive to the north. The topography is mostly flat (Figure 3). The elevation ranges between 70 and 75 feet above mean average sea level (amsl) (Google Earth 2025).

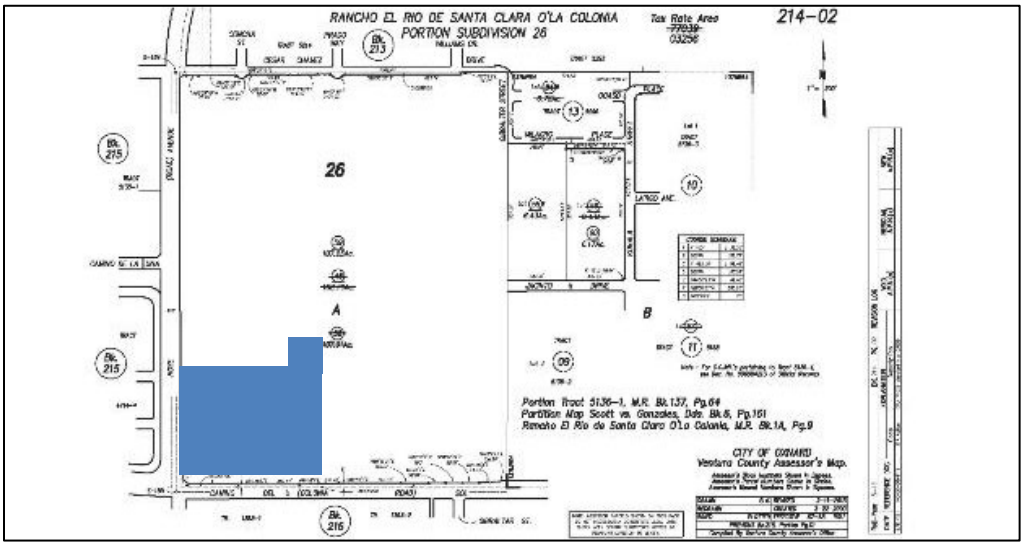

Figure 2. Assessor Parcel Map of Project Area (APN 214-0020-615), shaded blue.

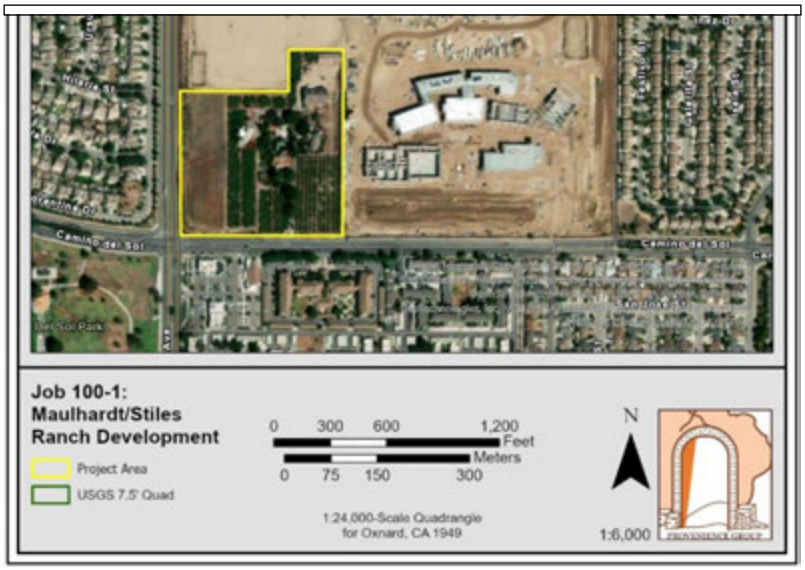

Figure 3. Aerial photograph indicating the Project Area.

2.0 REGULATORY FRAMEWORK

The following regulatory framework describes the applicable state and local statutes, ordinances, and policies pertaining to the protection of cultural resources. These laws must be considered during the planning process for projects that have the potential to affect cultural resources in Ventura County.

2.1 State Regulations

2.1.1 California Environment Quality Act (CEQA)

The California Environmental Quality Act (CEQA) statute and guidelines include procedures for identifying, analyzing, and disclosing potential adverse impacts to historical resources, which include all resources listed in or formally determined eligible for the National Register of Historic Places (National Register), the California Register of Historical Resources (California Register), or local registers. CEQA further defines a "historical resource" as a resource that meets any of the following criteria:

- A resource listed in, or determined to be eligible for listing in, the National Register or California Register;

- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant;

- A resource identified as significant (i.e., rated 1-5) in a historical resource survey meeting the requirements of Public Resource Code Section 5024.1(g) (Department of Parks and Recreation Form 523), unless the preponderance of evidence demonstrates that it is not historically or culturally significant; or

- Any object, building, structure, site, area, place, record or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the California Register (CEQA Guidelines Section 15064.5).

2.1.2 California Register of Historical Resources

California Register Criteria of Evaluation

All resources listed in or formally determined eligible for the National Register are eligible for the California Register. The California Register is a listing of California resources that are significant within the context of California's history. The California Register is a state-wide program of similar scope to the National Register. In addition, properties designated under municipal or county ordinances are eligible for listing in the California Register. A historic resource must be significant at the local, state, or national level under one or more of the following criteria that are defined in the California Code of Regulations Title 14, Chapter 11.5, Section 4850:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or

2. It is associated with the lives of persons important to local, California, or national history; or

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or

4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

The California Register criteria are similar to National Register criteria, and are tied to CEQA, as any resource that meets the above criteria is considered a historical resource under CEQA.

2.2 Local Ordinances and Guidelines

2.2.1 Ventura County Guidelines

Ventura County's 2040 General Plan defers to CEQA for cultural, historical, paleontological, and archaeological resource mitigation and preservation. Ventura County maintains a Cultural Heritage Ordinance. Its purpose is

- To recognize that cultural and historic resources are an important component of a quality environment and worthy of preservation for present and future generations;
- To help foster an awareness and appreciation of Ventura County's rich history and variety of cultural resources among both residents and visitors; and,
- To acknowledge that historic resources could not be protected without the dedicated efforts of individuals, advocates, property owners, community organizations, and volunteers who are responsible for their preservation, rehabilitation, restoration, and reconstruction. (VCRMA 2024).

2.2.2 Ventura County Cultural Heritage Board

The purpose of the Ventura County Cultural Heritage Board is to "research and record County history and to make historic landmark designations" (County Ordinance No. 4604). According to The Cultural Heritage Board is responsible for reviewing plans that entail alterations or demolition to any site designated as an official County Landmark, Site of Merit, Point of Interest, or District. They have the authority to assess and make determinations of eligibility for landmarking using the following Criteria for Landmark, Site of Merit, Point of Interest, and District. Status:

1. Character, interest or value, regardless of age, is significant to the heritage of the community.
2. A significant historical event occurred at the site.
3. It is reminiscent of an early state of development.
4. It is identified with a person who significantly contributed to the culture or development of the County, State or the Nation.
5. It exemplifies a particular architectural style or way of life.
6. It is the design or work of a person whose efforts have significantly influenced the heritage of the County.
7. It demonstrates outstanding architectural design, detail, materials, or craftsmanship.
8. Its preservation is essential to the integrity of another landmark.

9. Its location or physical characteristics represent an established visual feature of a neighborhood.

10. It has potential of yielding significant information of archaeological interest.

11. It is a natural environment that strongly contributes to the well-being of the community.

No. 4604 “AN ORDINANCE OF THE VENTURA COUNTY BOARD OF SUPERVISORS REPEALING AND REENACTING ARTICLE 5 OF CHAPTER 3 OF DIVISION 1 OF THE VENTURA COUNTY ORDINANCE CODE, BEGINNING AT SECTION 1360, ADDRESSING CULTURAL HERITAGE” (2022 ordinance 4604 https://vcrma.org/en/cultural-heritage-ordinance-update).

Sec. 1367. CRITERIA FOR DESIGNATION OF CULTURAL HERITAGE SITES.
For purposes of this Article, a site may be designated a Cultural Heritage Site by the Cultural Heritage Board or Board of Supervisors, as provided in this Article, if it meets the applicable criteria below.

a. Landmarks - Satisfy one or more of the below criteria of significance, in addition to retaining sufficient integrity. In evaluating integrity, the authenticity of the resource's physical identity shall be established by evidence of lack of deterioration and significant survival of the characteristics that existed during its period of significance. This shall be evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association, consistent with applicable National Register of Historic Places Bulletins for evaluating historic properties.

   (1) It is associated with events that have made a significant contribution to the broad patterns of Ventura County history;
   (2) It is associated with the lives of significant persons in Ventura County’s past;
   (3) It embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction;
   (4) It has yielded, or may be likely to yield, information important in history or prehistory.

b. Sites of Merit - Satisfy all of the following criteria:

   (1) Sites of historical, architectural, community, or aesthetic merit which have not been designated as Landmarks or Points of Interest, but which are deserving of special recognition;
   (2) Board of Supervisors approved surveyed sites with a National Register status code of 1 through 5; and
   (3) Retain sufficient integrity as described in Sec. 1367(a).

c. Points of Interest - Satisfy one of the following criteria:

(1) The site of a building, structure or object that no longer exists, but was associated with historic events, important persons, or embodied a distinctive character or architectural style; or
(2) A site that has historical significance, but has been altered to the extent that the integrity of the original workmanship, materials, or style has been substantially compromised; or
(3) The site of a historic event which has no distinguishable characteristics other than that a historic event occurred at that site, and the site is not of sufficient historical significance to justify the establishment of a Landmark.

d. Districts - Satisfy all of the following criteria:

(1) Possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development;
(2) Has precisely mapped and defined boundaries based upon a shared relationship among the properties constituting the District;
(3) Has at least one of the criteria for significance of Sec. 1367(a); and
(4) Retains sufficient integrity as described in Sec. 1367(a).

Sec. 1367-1. Additional Designation Standards. In addition to meeting the criteria in Sec. 1367, all the standards below must be met before a site becomes a designated Cultural Heritage Site. This section shall not apply in the determination of whether a site is eligible for Cultural Heritage Site designation.

a. It shall have historic, aesthetic or special character or interest for the general public, and not be limited in interest to a special group of persons;
b. Its designation shall not require the expenditure by the County of Ventura of any amount of money not commensurate with the value of the object to be preserved; and
c. Its designation shall not infringe upon the rights of a private owner thereof to make reasonable uses thereof which are not in conflict with the purposes of this Article.

2.2.3 City of Oxnard

The City of Oxnard largely defers to CEQA for guidance with cultural resources projects. Among the City of Oxnard's 2030 General Plan Goals and Policies Related to Cultural and Tribal Cultural Resources, are the following:

Chapter 3 Community Development - Goal CD-11: Protected historic and authentic qualities of Oxnard's traditional neighborhoods and historic districts;

2022 Update

Historic Preservation Goal CD-11 Protected historic and authentic qualities of Oxnard's traditional neighborhoods and historic districts.

CD-11.1 **Promote Existing Historic Areas** Promote an increased awareness of the Cultural Heritage Area, Heritage Square, Central Business District (CBD), and Henry T. Oxnard Historic District, and their historic landmarks through signage and appropriate pedestrian-oriented street furniture.

CD-11.2 **Historical District Expansion** Seek to preserve historical structures and neighborhoods by evaluating the potential to expand and create new historic neighborhoods.

CD-11.3 **Protect and Enhance Cultural Resources** Ensure that new public and private investment protects and enhances Oxnard's existing cultural resources, traditional neighborhoods, and historic districts, to the extent feasible.

CD-11.4 **Incorporate Historic Features** Require new developments within historic areas to incorporate historic and natural features and adaptive reuse into site development planning.

Chapter 5 Environmental Resources - Goal ER-1: Protection of natural and cultural resources, agriculture, and open spaces is well integrated with the built environment and human activities and achieves a symbiotic, mutually beneficial, sustainable relationship.

ER-1. Protection of Natural and Cultural Resources Goal Protection of natural and cultural resources, agriculture, and open spaces is well integrated with the built environment and human activities and achieves a symbiotic, mutually-beneficial, sustainable relationship.

ER 1.1 Protect Oxnard's Natural and Cultural Resources Protect the City's natural resource areas, fish and wildlife habitat, scenic areas, open space areas, parks, and cultural and historic resources from unnecessary encroachment or harm and if encroachment or harm is necessary, fully mitigate the impacts to the maximum extent feasible.

2.3 Regulations Concerning Discovery of Human Remains

California Public Resources Code §5097.98 (Notification of Native American human remains, descendants; disposition of human remains and associated grave goods) mandates that the lead agency adhere to the following regulations when a project results in the identification or disturbance of Native American human remains:

(a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 48 hours of their

notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

(b) Whenever the commission is unable to identify a descendant, or the descendant identified fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendant, and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.

(c) Notwithstanding the provisions of Section 5097.9, the provisions of this section (including those actions taken by the landowner or his or her authorized representative to implement this section), and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act (Division 13, commencing with Section 21000).

(d) Notwithstanding the provisions of Section 30244, the provisions of this section (including those actions taken by the landowner or his or her authorized representative to implement this section), and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20, commencing with Section 30000).

3.0 NATURAL AND CULTURAL OVERVIEW

3.1 Environmental Setting

The project area is in the western portion of the Transverse Ranges Geomorphic Province. It is within the Oxnard Plain; a large alluvial basin bounded on the north by the Santa Clara River and on the south by Calleguas Creek and the Santa Monica Mountains. Alluvial sediments, including poorly consolidated silt, sand, and gravel deposits along modern drainages and alluvial fans and floodplains appear in lower elevations (Conkling 2012). Elevations in the project area range from 70 to 75 feet amsl, and soils consist of Holocene wash deposits composed of unconsolidated sand, silt, and gravel (Clahan 2003).

3.1.1 Paleoenvironment

An understanding of the late Pleistocene and Holocene environments is crucial to the understanding of prehistoric California (West et al. 2007). The archaeological/geologic time scale of California can be divided into four broad periods: Terminal Pleistocene (before 10,000 years BP), Early Holocene (10,000 - 7,000 years BP), Middle Holocene (7,000 - 3,350 years BP), and Late Holocene (3,350 - 200 years BP) (Erlandson and Colten 1991). The period between 11,000 and 8,000 years ago is marked by the Pleistocene/Holocene transition. This was a time of dramatic change in vegetation and a warming period following the Late Glacial Maximum.

Initial development of Holocene plant communities (oak woodland, chaparral and coastal sage scrub) began during the Pleistocene-Holocene transition (11,000 to 8,000 years ago). The rapid increase in oaks, herbs and chaparral taxa corresponded with a decrease in conifers. During the Holocene, there were brief shifts in the pine to oak transition occurring at approximate one thousand-year intervals between 11,000 and 3,000 years ago (West et al. 2007). This indicates vegetation changes came in pulses, with a brief change event followed by a stabilization period with slower, more gradual changes, until the next change event or pulse. Vegetation changes were associated with similar climatic changes as conditions shifted from cool and wet to warm and dry (Brandoff-Kerr 2010).

Climatic data from the Middle Holocene show a distinct drying period with decreases in the woodland environments. The Late Holocene was marked by a moist and cool climate up until about 1,000 years ago when the climate shifted to present norms.

Fire may have begun to be a factor in shaping the landscape as early as the Middle Holocene. The changing plant species compositions and lower rainfall, particularly when fuel/vegetation moisture was low during prolonged dry periods, would have created conditions for wildfire. Fire ecology studies in California have demonstrated regular intervals of large fires in 20 to 50-year cycles (Mensing et al. 1999; Lightfoot 2005) during the late Holocene, in addition to evidence of anthropogenic-caused fires. In evaluating column samples from the Santa Barbara basin, “Firestorms erupted occasionally especially at the end of wet periods and at the beginning of significant droughts” (Mensing et al. 1999). Geomorphic changes are commensurate with fires of this magnitude: slope failures, mudflows, and debris flows that changed water courses (Brandoff-Kerr 2010).

3.1.2 Climate and Precipitation

The area is characterized by a Mediterranean climate with hot dry summers and cool wet winters. The rainy season occurs from October through April with precipitation averaging at about 16 inches annually. Where coastal influences meet interior high temperatures, summer temperatures range from the 68 to 74 degrees. Cool humid marine air causes frequent fog and low clouds on the coast, generally at night and early morning in the late spring and early summer. The area experiences a diurnal cycle of onshore winds from the west and northwest that are replaced by mild offshore breezes flowing from warm inland valleys during the night and early morning. Winters are relatively mild annually and nighttime temperatures only rarely drop below freezing.

3.2 Archaeological Context

The history of human habitation in Ventura County extends back at least 12,000 years on the Channel Islands, and 6,900 years in the mountainous interior. Permanent villages or base camps would have been at lower elevations, along creeks and river drainages. Prehistoric archaeological sites within Ventura County range from chipped stone debitage and fire-affected rock at higher elevations, which indicates specialized activities and short-term occupation akin to camping, to multi-component sites representing base or seasonal settlements along the coast and closer to creeks and drainage bottoms.

3.2.1 Paleo-Indian Period (12,000 to 8,000 cal B.C.)

The Paleo-Indian Period is the earliest known human occupation of the Ventura County area, with evidence of a developing maritime culture found mostly on the Channel Islands. Recent work by scholars has pressed these earliest dates back further. People used relatively simple technology to procure plant foods, shellfish, and a limited variety of vertebrate species (Greenwood 1972; Jones and Waugh 1995; King 1982, 1990; Glassow 1996). There are at least 50 sites reported on the Channel Islands of San Miguel and Santa Rosa dating between 13,000 and 7,500 cal B.C. (Davis et al. 2010; Erlandson and Braje 2008). Mainland coastal sites occupied during this time would later become submerged by rising sea levels. Presently, there is a lack of archaeological evidence that demonstrates Paleo-Indian occupation in Ventura County.

3.2.2 Early Period (7,000 to 2,000 cal B.C.)

The Early Period reveals the earliest evidence of established occupation, with the Millingstone Horizon ending around 5,000 B.C. Most of the archaeological sites from this period are recorded at or near the coast, or on the Channel Islands. It was a time of rising sea levels that created an abundance of lagoons and estuaries (Glassow et al. 2007). This period is characterized by a subsistence shift to small seeds found in the chaparral plant community, as demonstrated by the abundance of multi-facial manos. Other common artifacts include metates, and a variety of flaked stone; plano-convex cores and core tools of quartzite, basalt and other volcanic stones. Larger populations were supported by a more diversified subsistence base that included not only seeds and other plant resources, but terrestrial and marine mammals, fish, and shellfish (Erlandson 1994; Glassow et al. 1988). Although deer are represented in the archaeological record, hunting and fishing contributed little to the diet, with the faunal diet relying heavily on mussels and Pismo clams. Residential bases are presumed to have been comprised of extended families during this period. Although quantities of animal bones do not appear to increase much in the archaeological record, hunting gained more prominence, as indicated by the variety of flaked stone

artifacts and tools. A semi-sedentary lifestyle seems to have evolved. Occurrences of digging stick weights suggest harvest of tuberous plants.

3.2.3 Middle Period (1,400 B.C. to A.D. 1,150)

The Middle Period is marked by continued subsistence intensification and increased technological and economic complexity. Several technological developments include the inception of the mortar and pestle for processing acorns and other foods, use of the bow and arrow to replace the *atlatl* for hunting, and the introduction of the plank canoe (*tomol*), to more effectively exploit marine resources. Coastal settlement increases significantly between 2,000 and 1,000 B.C. Sedentism is apparent, along with formal architecture, ceremonial structures and traditional cemeteries.

3.2.4 Middle to Late Transition Period (A.D. 1,150 - 1,300)

The Middle to Late Transition Period is characterized by the beginnings of political and social complexity and development of social hierarchy (Arnold 1992). Inland settlement became more pronounced as a result of climatic shifts and elevated sea temperatures (Jones et al. 1995). Population densities expanded, along with more sophisticated technology and craft specialization. By the end of this period, *Olivella* callus beads were used as currency throughout the region, and trade networks intensified between villages. There was an increase in the manufacture of elaborate shell ornaments and beads for trade between the Santa Barbara Channel groups, their neighbors, and the interior (Erlandson 1994). By the Late Transition Period, climatic fluctuations that increased ocean temperatures prompted a decrease in maritime activities and augmented a shift in settlement away from the coast as populations moved inland (Jones and Waugh 1995).

3.2.5 Late Period (1,000 cal A.D. to Missionization)

Around 1,000 A.D., the Medieval Climatic Anomaly, a 300-year period of warmer temperatures and drier climate, caused consequential, adverse environmental conditions, particularly intermittent droughts (Rabb and Larson 1997). During the Late Period, terrestrial resource production is thought to have decreased significantly, while socioeconomic complexity evolved. A conversion to concave based projectile points led to the abandonment of asphaltum, which had been used for hafting. Shellfish remained the principal protein food. A ranked society with hereditary elite was established, and population growth and socioeconomic complexity transpired, along with environmental change (Glassow et al. 2007). Several new artifact styles became popular after A.D. 1300, including leaf-shaped and triangular concave-based arrow points, "flowerpot" mortars, and circular shell fishhooks (Glassow 1996). It is likely that the aboriginal society was akin to the Chumash culture first encountered by Europeans (King 1990).

3.3 Ethnographic Context

Prior to Euro-American contact, the central California coastal region, including the northern Channel Islands and inland areas, was occupied by Chumash-speaking people. Their territory extended from San Luis Obispo to Malibu, and inland as far as the San Joaquin Valley. The Chumash have been divided into several geographic groups with strong Hokan language dialect associations, comprised of the Barbareño, Purisimeño, Inezeño, and Ventureño (Grant 1978). The project is within the ethnographic and historic territory inhabited by the Ventureño Chumash dialect group (Kroeber 1925). The Chumash occupied the area from Topanga Canyon to the Ventura River Valley, Oxnard Plain, Santa Clara Valley, Ojai, and Castaic (Van Valkenburgh 1935).

The Chumash were a non-agrarian culture known for having one of the most populous thriving, advanced societies of hunting-gathering California Native American groups. They practiced a regular seasonal round of population dispersal and aggregation in response to the location and seasonal availability of different food resources (Landberg 1965). In this way, large coastal villages would have been fully populated only in the late summer when pelagic fishing was at its peak. Shellfish were also exploited, including mussel and abalone from rocky shores and cockle and clams from sandy beaches. Acorns were a food staple; they were ground into flour using stone mortars and pestles and then leached to remove tannic acid. In addition, a wide variety of seeds, including *chia* from various species of sage, were utilized. Through the winter months, the Chumash depended largely on stored food resources.

In this area, as elsewhere in California, basketry served many of the functions that pottery did in other places. Baskets were used for cooking, serving, storage, and transporting burdens. Some basket makers wove baskets so tightly that they could hold water, while others waterproofed their baskets by lining them with pitch or asphaltum (Chartkoff and Chartkoff 1984:130).

The Chumash lived in large, hemispherical houses constructed by planting willows or other poles in a circle and bending and tying them together at the top. These structures were then covered with tule mats or thatch. Structures such as this housed 40 to 50 individuals, or three-to-four-member family groups. Dance houses and sweathouses are also reported for the Chumash (Kroeber 1925:557).

Political organization was typified by small-scale chiefdoms. Chiefs were associated with villages or segments of larger villages. Higher status chiefs controlled entire regions containing several villages. The chiefly offices were normally inherited through the male line with a primogeniture rule in effect. Chiefs had several bureaucratic assistants to help in political affairs and serve as messengers, orators, and ceremonial assistants. A number of status positions were associated with specialized knowledge and rituals, such as a weather prophet, ritual poisoner, or herbalist (Bean 1974).

The protohistoric culture of the Chumash, defined as the time when intermittent trade and contact was experienced between Native Americans and Spanish trading vessels in route to the Orient, was disrupted by the arrival of the Spanish expedition led by Gaspar de Portolá in 1769. The establishment of the San Buenaventura Mission in 1782 further disrupted Chumash culture in Ventura County. Archaeological evidence verifies not only that the native population was rapidly decimated by missionization, but also that the culture itself disintegrated rapidly. Chartkoff and Chartkoff (1984:264) note that Spanish settlement barred many Native Americans from traditionally important resources including shellfish, clam shell beads, steatite, and asphaltum. Disease and forced relocation to Mission San Buenaventura disrupted traditional subsistence systems and, by 1810, most of the Chumash villages had been abandoned.

3.4 Historic Period Context

3.4.1 Mission Period (1760-1821)

In 1542, Juan Sebastían Cabrillo was the first of the exploring Europeans to sail along the California coast. The aftermath of Spanish exploration in Alta California led to immigrations and settlement. In 1769, Gaspar de Portolá led the first land expeditions from Baja California to the San Francisco Bay. Coined the Sacred Expedition, Fray Junípero Serra joined the journey with the intent to establish California missions and colonize the region. During the expedition the site was selected for the future San Buenaventura Mission, which would be established in 1782 as the ninth of 21 missions established in Alta California

(Triem 1985). Newly baptized Chumash provided nearly all the labor to construct and maintains the missions, which soon produced surplus amounts of wheat, beans, corn, cattle, and sheep for trade.

By 1804, five missions had been established in Chumash territory. Of sad note during this period was the perish of large populations of Native American tribes and mission neophytes, largely triggered from exposure to European diseases and the sudden introduction to subsistence and cultural changes, which contributed to low fertility rates and high infant mortality (Tompkins 1975).

To some extent, the San Buenaventura Mission and other missions along the central coast were somewhat geographically disconnected from the Alta California headquarters in Monterey and Los Angeles, largely due to a lack of accessible seaports and the shortcomings of travel along El Camino Real. The geographic divide continued during Mexican revolution from 1810 to 1821 (Hildebrandt and Darcangelo 2009:48).

3.4.2 Rancho Period (1821-1845)

California officially became a Mexican Territory after the Treaty of Cordoba was signed in 1821. The transfer of sovereignty from Spain to Mexico altered Mission San Buenaventura irrevocably. After secularization of the missions in 1834, approximately ten million acres were gradually transferred to private ownership via a system of land grants. Mexican officials dispersed large land grants to former Mexican military soldiers and their descendants as compensation for their service. In 1837, Governor Juan B. Alvarado ceded Rancho El Rio de Santa Clara o La Colonia, consisting of 44.883-acres of fertile soil in the plain south of the Santa Clara River, to a group of former soldiers who had served at the Santa Barbara Presidio The soldiers included Valentine Cota, Salvador Valenzuela, Vicente Pico, Rafael Valdez, Vincent Feliz, Leandro Gonzalez, Rafael Gonzalez, and Jose Maria Valenzuela (Maulhardt 2004, 2016).

The Mexican government also sold some of their holdings as a tactic to thwart Spain's control of California. California also opened to international trade, which caused "great and rapid economic transportation" as foreign companies competed for access to the developing hide-and-tallow industry (Hackel 1997). Native people who suffered from the mission's reduced economic circumstances were hired as vaqueros at the ranches.

3.4.3 Anglo-Mexican Period (1845-1880)

The Mexican American War in 1846 weakened Mexico's hold on Alta California, and American influence steadily increased. In 1848, hostilities between the Mexican Californios and the Americans ceased and the two-year war ended with the Treaty of Guadalupe Hidalgo. As a result, California was declared a United States territory, and in 1850 it became the nation's thirty-first state (Chartkoff and Chartkoff 1984). Following statehood, passage of the Land Act of 1851 created the California State Lands Commission to adjudicate disputes regarding Mexican citizens' land claims, to determine their validity, and redistribute land where ownership was in question (Gates 1971). Often land grants were denied to the original grantee when formal legal documents were lacking, and the property fell into the hands of new owners, generally the recent American arrivals. This process also allowed settlers to homestead on unclaimed government lands. Proper documentation was filed for Rancho El Rio de Santa Clara o La Colonia in 1852, and twenty years later it was legally patented (Willey 1886).

During the Gold Rush, a rapid population increase caused the demand (and price) for California livestock to soar. However, a long drought from 1860 to 1864, which coincided with the Civil War, was devastating for the cattle industry throughout California. It decimated large numbers of cattle within Ventura County.

As a result, most of the ranchos were divvied up and sold, with large acreages purchased by investors from the east, some who hoped to profit amid reports of oil discoveries in the area. Over the next twenty years, American settlers continued their influx into the state of California, with many marrying into the families of wealthy Californios and gradually outnumbering the Mexican citizens.

In 1865, Rafael Gonzalez sold 4,000 acres of La Colonia to Juan Camarillo. By 1866, German immigrant Johannes Christian Borchard arrived in the area and sought arable land for crop production and sheep grazing, and in 1866, he purchased the Gonzalez home and 1,000 acres of Rancho El Rio de Santa Clara o La Colonia, which had belonged to Leandro and Rafael Gonzalez. In the following year, German settlers Gottfried and Sophie Maulhardt and brothers Jacob and Anton Maulhardt arrived. In 1871, other portions of the land grant were bought by Thomas Bard who subdivided much of the rancho into farm plots and sought to establish a wharf so crops could be loaded on ships for transport to market (Maulhardt 2004).

In 1872, after Christian Borchard found that barley crops thrived in alkali soils, brothers Jacob Maulhardt and Gottfried Maulhardt and Johannes Borchard got together to purchase 1,230 acres of prime farmland from Juan Camarillo who had earlier obtained a portion of the land grant from Leandro and Rafael Gonzalez. The Maulhardt brothers and Johannes Borchard later split the property three ways, so each would own 410 acres. In 1878, Jacob Maulhardt built his home, not far from the present Maulhardt residence in the project site (Figure 4). It was there that he and his wife Dorothea Kohler raised their family (Maulhardt 2004; San Buenaventura Research Associates 2014).

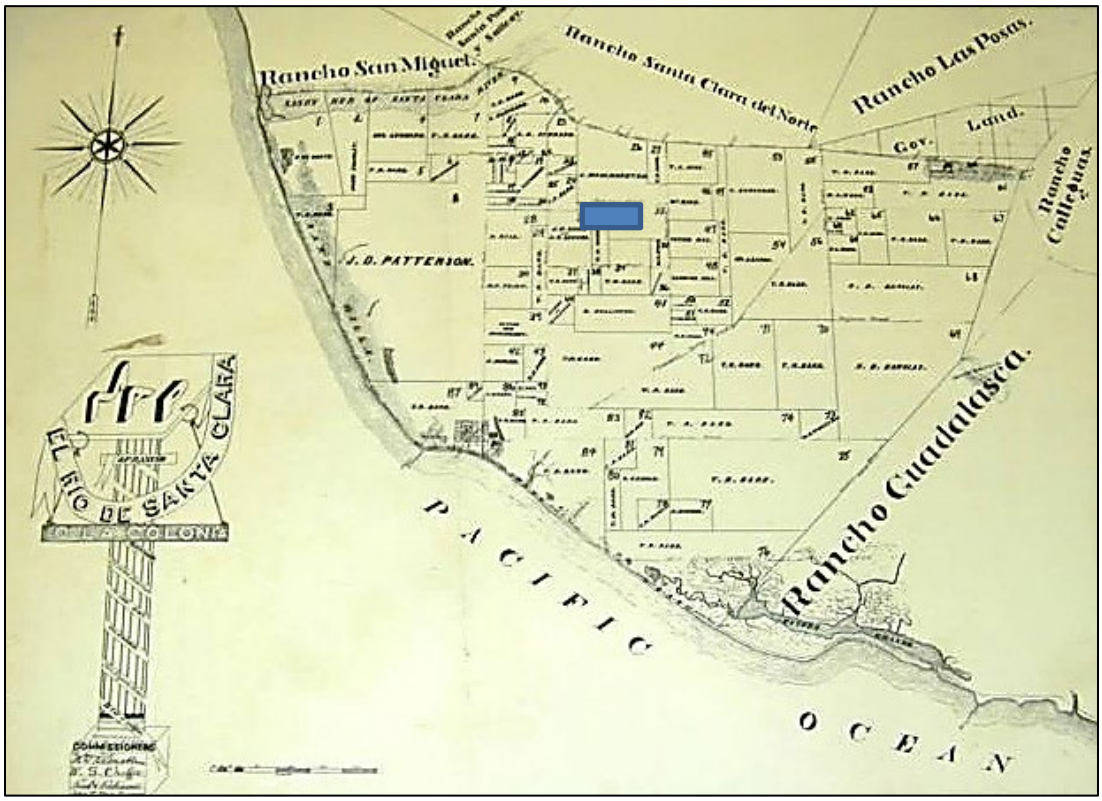

Figure 4. 1877 Map of Rancho El Rio de Santa Clara O La Colonia: partitioned by order Dist. Court 1st Jud. Dist. California. Hon. Eugene Fawcett; / John T. Storr, Surveyor. (Huntington Library archives). Blue-shaded area depicts project area within the Maulhardt Ranch property.

Along with agriculture, homes and businesses sprang up and towns emerged in the area that would later become Ventura County. In 1866, the community of San Buenaventura incorporated, and at that time the fledging city boasted a wharf, courthouse, bank, and library (City of Ventura 2019). Ventura County then seceded Santa Barbara County in 1873.

3.4.4 Americanization Period (1880-1915)

During the early American Period, the ranchos continued to raise cattle and sheep, but the industry shifted from hides and tallow to dairy, meat, and agricultural products such as lima beans and sugar beets.

In 1887, the Southern Pacific Railroad constructed a spur from the Newhall Pass to San Buenaventura and a depot to expedite shipments of agricultural products produced in the Santa Clara River Valley and Oxnard Plain (Triem 1985). In 1897, the railroad established the Oxnard Depot in advance of the American Beet Sugar Factory, which opened on the north side of Wooley Road, east of Oxnard Boulevard in 1898 (Figure 5). The sugar beet factory, launched by entrepreneur Henry T. Oxnard, offered prosperity for the farming community that would later be named Oxnard. Mr. Oxnard was a well-known 'sugar baron' who had established the American Crystal Sugar Company. He was persuaded to invest in the superior quality sugar beets grown by farmers Albert Maulhardt, John Borchard, and others. The profitable $2 million sugar facility had the capacity to process 2,000 tons of sugar beets daily, which eliminated the need for shipping the product elsewhere, plus the factory provided plenty of jobs for the community. For a time, it was considered the world's largest sugar beet factory (Maulhardt 2016).

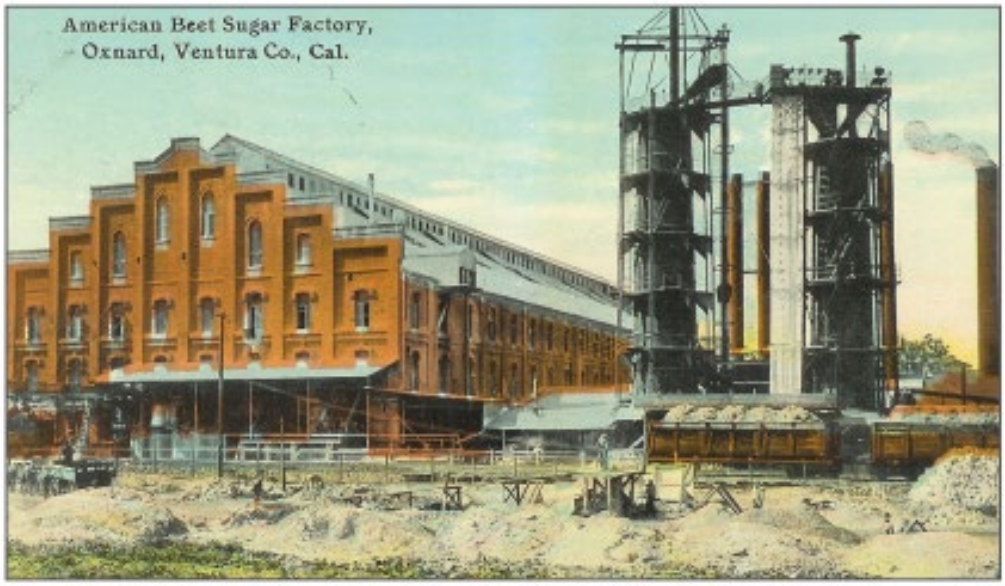

Figure 5. Postcard depicting the American Beet Sugar Factory in Oxnard.

In 1898, the townsite of Oxnard was platted by James A. Driffilll of the Colonia Improvement Company, who also managed construction of the sugar mill. The sugar beet industry created a population surge that brought many foreign workers, especially Japanese immigrants. In 1903, Oxnard became incorporated (Maulhardt 2014).

Louis G. Maulhardt inherited 100 acres of the Maulhardt Ranch after his father's death in 1899. He later accumulated additional acreage, where he and his wife Theresa Borchard raised a family, and successfully expanded the farming operation (Maulhardt 2004; San Buenaventura Research Associates 2014).

3.4.5 Twentieth Century Development (1915-Present)

In 1915/1916 the original Maulhardt farmhouse was demolished and replaced with a new residence. Other extant buildings on the ranch include a large two-story wooden barn constructed in 1906, and other ancillary buildings constructed ca. 1915. The oldest building on the property, the wood carriage house, dates to ca. 1880 (San Buenaventura Research Associates 2014). The proposed project is located in the residential area of the Maulhardt Ranch.

The Great Depression of the 1930s were a difficult time in Oxnard, as it was throughout the United States. However, Oxnard felt an economic upswing during the 1940s, as it experienced significant growth due to increased populations and business interests subsequent to World War II. People were attracted to Oxnard and the overall Ventura County area by jobs in the petroleum industry at the Oxnard Oil Fields, the aerospace and technology, and other industry and retail business opportunities. In 1947, the Wagon Wheel Junction, conceived by developer Martin V. Smith, was a central automobile stop on the 101 Freeway between Los Angeles and Santa Barbara County, offering shopping, dining, and lodging accommodations for travelers. Between 1940 and 1950, the population more than doubled, from approximately 8,500 to over 21,500 residents. By 1960, there were more than 40,000 people living in Oxnard. Agriculture remained strong in Oxnard with sugar beet industry leading, with an estimate of 40 million bags of 100 pound sugar produced from local sugar beets for a duration of 60 years. Oxnard's sugar beet factory closed in 1958, due to the increased cost for crop production in California, as well as competition abroad and in the Southern states (CNU California 2017).

Oxnard continues to be a producer of agricultural crops, such as celery, strawberries, beans, chili peppers, onions, and bell peppers, but much of the former farmland has been replaced by commercial and retail development, as well as recreation and tourist attractions at the Channel Islands Harbor, Fisherman's Wharf, and the Maritime Museum.

3.5 Maulhardt Ranch Use and History

Richard Maulhardt and the ranch foreman, Tony, were on site on July 22, 2025, when controlled backhoe testing occurred. They both provided valuable information regarding the property history as well as where the underground utilities are located. The Maulhardt family has owned the ranch for approximately 150 years and have raised a variety of animals and crops over time.

Richard Maulhardt stated that the "tree" in front of the Main Residence on the south side of the project area is actually a bush planted in 1917. There were insects that had damaged the bush and Walt Disney paid for the beneficial insects since they needed them to treat the same plant at Disneyland. The Laundry House (the green house) was one of the first buildings on the ranch. The small Carriage House was built circa 1892. The Eastern House was constructed in 1972, and it was where Richard Maulhardt's sister lived. His father wanted all the trees on the property to grow fruit, so Richard and his brother helped plant some of the trees, including the giant Mulberry tree northwest of the Laundry House. Loquats and banana trees were also planted at the ranch. Lemon trees were planted roughly 34 years ago and have not been replaced with a newer crop. The area east and south of the Eastern House was reserved for growing lima beans. The land where the new Del Sol High School is located previously contained a strawberry field. The

area to the south was replaced with a lemon grove, and the eastern area contained a mule corral. The family raised mules and chickens, and Richard Maulhardt's grandchildren raised pigs.

Richard Maulhardt was born in 1948 and does not recall any trash pits at the ranch. Organic materials, including branches, food waste, and paper were burned in two locations–one area north of the barn where there is currently a fire pit, and the other was west of the Laundry House. Richard and his parents did not drink alcohol, so not many bottles should be found on the property. Milk bottles were recycled at the local dairy east of the ranch, and the paper they were wrapped in were burned.

There are several underground utilities that Mr. Maulhardt and Tony kindly took the time to show PGI's Field Director, Jenna Levine and Paul Martyniuk of Martyn Field Services. They mentioned septic tanks and a leech line east of the Main House. Richard Maulhardt shared that he had excavated the leach line himself, which passes through the lane between the southeasternmost lemon tree and the Eastern House. There are also two septic tanks under the Mulberry tree, south of the tree trunk.

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4.0 RESEARCH DESIGN

The project site is within two historic archaeological sensitivity areas: American Period (1870-1900) and Early 20th Century (1900-1925). Prior historic research reveals that the Maulhardt family resided in the same location from as early as 1870 through recent time. Although the historic residences and farm buildings are still standing, most, if not all, are slated for demolition prior to new development.

4.1 Research Questions and Data Requirements

If significant subsurface refuse deposits and/or features are present on the property, they could represent a time capsule of changing predilections by the family, or evidence of changes in farming methods. Research questions and data requirements applicable to the project are described below.

4.1.1 Research Questions

- Is prehistoric occupation represented?
- Are there changes in building techniques over time?
- Is there any evidence for change of use of buildings?
- What activities are represented and is there any evidence of changes over time?
- Are there changes in food choices by the Maulhardt family over time?
- Is there any evidence of change in farming technologies?

4.1.2 Data Requirements

Archaeological data sets are necessary to evaluate eligibility for listing in the National Register/California Register under Criterion D/4, so it is crucial to establish if a site contains these data sets. Research themes can be addressed though the recovery of an archaeological site's artifact assemblage. For instance, food remains are necessary to address questions about subsistence, and the presence of time-sensitive artifacts are warranted to determine a specific period of use. Further, documentary evidence is essential to link individuals and events and to understand the function of recovered artifacts.

In addition to documentary research data, the following data requirements include:

- trash pits associated with disposal patterns;
- deposits with sufficient quantity and variety of materials;
- locations of intact features with identifiable functions;
- hollow, refuse-filled features with distinctive depositional integrity;
- horizontal distributions of features indicating spatial organization, or specialized activity areas.

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5.0 METHODOLOGY

5.1 Archaeological Field Methods

5.1.1 Controlled Backhoe Testing

Controlled Backhoe Testing directed by PGI Field Director Jenna Levine occurred on July 22, 2025. Martyn Field Services provided a mini backhoe excavator with a straight-edged bucket, and owner Paul Martyniuk served as equipment operator. Ms. Levine determined the number and locations of backhoe trenches while in the field, largely based on the locations of artifacts identified during the prior Phase 1 and Extended Phase 1 studies. Based on those findings, and discussions with Mr. Maulhardt, the testing represented an appropriate sample for the distribution of cultural resources. A total of eight trenches (T1, T2, T3, T4, T5, T6, T7, and T8) were machine excavated with the mini backhoe excavator (Figure 6). The plan was to excavate eight trenches with a length of ten feet and a depth of two feet. T1 was fourteen feet in length, which is why a PVC elbow was struck by accident. T8 only measured seven feet in length, due to the need to fit the excavator in a cramped space.

Figure 6. Map showing trench locations in project area (Google Maps 2025).

The archaeologist took photographs of each trench with a digital camera. Cultural materials were collected for laboratory analysis. If an excavated trenches exposed refuse deposits or other features, then that portion of the trench would remain open and a TEU would be hand-excavated in that location. However, only sparse quantities of artifacts, if any, were recovered in the trenches, so the entirety of each trench was backfilled at the end of the day, and excavation of TEUs was not warranted.

Despite Mr. Maulhardt pointing out locations of underground utilities, a few downed utility pipes were encountered during controlled backhoe trenching (Photo 1). The first one was in Trench 1 (T1) where a PVC pipe elbow was identified 12-15 inches below the ground surface. The irrigation line had been turned off prior to excavation, and the pipe was left exposed so it could later be fixed. A second irrigation line was exposed in Trench 5 (T5) (Photo 2). The concrete irrigation line had been abandoned more than 39 years ago.

Photo 3. Utility lines between the carriage house and the barn.

Photo 4. Abandoned concrete irrigation blow off valve.

5.1.2 Project Personnel

Carole Denardo, M.A., RPA served as principal investigator and project manager. Ms. Denardo exceeds the U.S. Secretary of the Interior's Historic Preservation Professional Qualification Standards as outlined in 36 CFR 61. PGI Archaeological Field Director Jenna Levine, MSc directed the backhoe excavation. She meets the U.S. Secretary of the Interior's Historic Preservation Professional Qualification Standards for Archaeology.

6.0 FIELD STUDY RESULTS

PGI archaeologist Jenna Levine placed T1 at the southeast corner of the northern lemon grove, west of the dirt road and across from the barn and carriage house (Photos 3-5). A sparse scatter of historic artifacts had been observed in this location during the prior Phase 1 and Extended Phase 1 studies.T2 was placed two feet west of the Carriage House (Photos 6-8), and T3 ran parallel to T2, roughly three feet away (Photos 9-11). A scatter of historic bottles had been previously identified on the ground surface in this area. T4 (Photos 12-14) and T5 (Photos 15-17) were excavated along the south side of the northern lemon grove north of the Laundry House and paved road. A sparse scatter of historic artifacts had been observed in this location during the prior Phase 1 and Extended Phase 1 studies. T6 was placed on the east edge of the property, south of the former mule corral and north of the southeast lemon grove (Photos 18-20). The T7 location was selected near the southeast corner of the Eastern House, where a white ceramic fragment, an aqua glass fragment, and a broken windowpane were observed on the ground surface (Photos 21-23). T8 was placed between two main utility lines and a water tank where surface artifacts had been observed (Photos 24-26).

Photo 3. Overview of T1 before trenching, facing north.

Photo 4. Overview of T1 at 1 ft depth, facing north.

Photo 5. Overview of T1 at 2 ft depth, facing north.

Photo 6. Overview of T2 before trenching, facing east.

Photo 7. Overview of T2 at 1 ft depth, facing west.

Photo 8. Overview of T2 at 2 ft depth, facing west.

Photo 9. Overview of T3 before trenching, facing east.

Photo 10. Overview of T3 at 1 ft depth, facing east.

Photo 11. Overview of T3 at 2 ft depth, facing east.

Photo 12. Overview of T4 before trenching, facing north.

Photo 13. Overview of T4 at 1 ft depth, facing east.

Photo 14. Overview of T4 at 2 ft depth, facing east.

Photo 15. Overview of T5 before trenching, facing north.

Photo 16. Overview of T5 at 1 ft depth, facing east.

Photo 17. Overview of T5 at 2 ft depth, facing east.

Photo 18. Overview of T6 before trenching, facing north.

Photo 19. Overview of T6 at 1 ft depth, facing south.

Photo 20. Overview of T6 at 2 ft depth, facing south.

Photo 21. Overview of T7 before trenching, facing north.

Photo 22. Overview of T7 at 1 ft depth, facing south.

Photo 23. Overview of T7 at 2 ft depth, facing south.

Photo 24. Overview of T8 before trenching, facing south.

Photo 25. Overview of T8 at 1 ft depth, facing west.

Photo 26. Overview of T8 at 2 ft depth, facing west.

Two of the eight trenches (T1 and T6) displayed an absence of cultural materials. Nearly half of artifacts recovered were from T8. T3 had the second highest number of artifacts (twelve). T2 yielded seven artifacts, T5 had five, and T4 and T7 each contained three (Table 1).

Table 1. Number of Artifacts Recovered from Excavated Trenches.

Trench Number	Number of Artifacts Recovered	Trench Number	Number of Artifacts Recovered
T1	0	T5	5
T2	7	T6	0
T3	12	T7	3
T4	3	T8	31

Most of the artifacts were recovered three to six inches below the ground surface (Table 2). The level with the second highest artifact density was the ground surface. T3 and T8 were the only trenches with artifacts found below 15 inches. Only two artifacts were recovered at a depth of 21-23 inches.

Table 2. Excavation Depth and Number of Artifacts Recovered

Depth (inches)	Number of Artifacts Recovered
Surface	12
0-3	3
3-6	18
6-9	8

Depth (inches)	Number of Artifacts Recovered
9-12	3
12-15	4
15-18	3
18-21	4
21-24	2

7.0 LABORATORY ANALYSIS

All of the collected artifacts were taken to PGI's laboratory for analysis. In total, sixty-one (61) historic artifacts were collected during the controlled trench excavations (Table 3). However, none of the cultural materials were obtained from extensive subsurface refuse deposits or other features, and none of the deposits exceeded a depth of 24-inches. An artifact catalogue resulting from the controlled backhoe trench excavations is provided in Table 4.

Table 3. Artifact Type and Number Collected.

Artifact Type	**Number Collected**	**Artifact Type**	**Number Collected**
Brick	1	Metal	3
Bone (Faunal)	15	Schist (?) Stone	1
Ceramic	8	Marine Shell	1
Glass	32	**Total**	**61**

Table 4. Artifact Catalogue.

Food Preparation/Consumption Items					
Type	**Quantity**	**Trench**	**Depth**	**Manufacturer**	**Date or Date Range**
Nehi Soda Bottle Company	1	Trench 2	Surface	*Owens-Illinois*	1945
Clear, textured glass bottle	1	Trench 2	Surface	*The Glass Container Corporation*	1934- 1968
Coca-Cola bottles	2	Trench 2	Surface	Coca-Cola; PAT. D-105529 "FRESNO CALIF."	1937-1951
Clear bottle base fragment with B embossed in a circle	1 bottle base	Trench 8	Not specified	Brockway Bottle Company	1980-1996
Tin can lid or base (crushed)	1	Trench 8	Not specified	Unidentified	Unidentified
Food Refuse					
Medium/large domestic animal bones	Various saw-cut fragments	Trenches 2, 3, 4, 8	Not specified	N/A	N/A

Bird (chicken or turkey) femur bone	1	Trench 2	Not specified	N/A	N/A
Marine shell (*Protothaca staminea*)	1	Trench 8	Not specified	Unidentified	Unidentified
Leisure and Recreation Items					
Coors bottle - broken by excavator	1 – in four pieces	Trench 8	3-6 inches	*Columbine Glass Company*	1971-1976
Coors bottle	1 neck/ shoulder fragment	Trench 2	Not specified	Unidentified	Unidentified
Tableware Items					
Whiteware	Various	Trenches 3, 8	Not specified	Unidentified	Unidentified
Porcelain	One fragment	Trench 8	Not specified	Unidentified	Unidentified
Personal Grooming					
Revlon perfume bottle	3 fragments including base, shoulder, and wall fragments	Trench 8	Not specified	Unidentified	Unidentified
Milk glass cold cream bottle	2 fragments including the base and rim	Trench 8	Not specified	Unidentified	Unidentified
Building Materials					
Clear glass windowpane	3 fragments further broken by backhoe	Trench 7	Not specified	Unidentified	Unidentified
Brick fragment	1 fragment	Trench 3	Not specified	Unidentified	Unidentified
Farming/Gardening Items					
Metal pitchfork head	1	Trench 8	Not specified	Unidentified	Unidentified
Metal hoe head	1	Trench 8	Not specified	Unidentified	Unidentified

Unidentified					
Schist stone	1	Trench 5	Not specified	Unidentified	Unidentified

7.1 Glass Bottle Identification

Nearly half of the artifacts were composed of glass and represent domestic or recreation-related artifacts, some which possess datable attributes. Five of six complete or nearly complete historic glass bottles, all recovered from the ground surface of T2, were found on the west side of the Carriage House. One other nearly complete glass bottle and two bottle bases were unearthed from T8, southeast of the Carriage House. Eight of the glass bottles and base fragments revealed identifiable maker's marks. However, only six glass bottles and one glass bottle base retained maker's marks or patent numbers suitable for dating. One clear glass *Owens-Illinois* (OI) bottle, found on the surface of T2. displayed a unique, wavy neck shape and broken off lip. It has a manufacture date between 1929 and 1960, based on a date range during which that logo was in use (Photos 27 and 28). The base exhibits letters and numbers "DES. PAT; 23 OI (symbol) 9•; 44710; 8; APPL'D FOR" embossed. PGI staff referred to the *Society for Historical Archaeology, Historic Glass Bottle Identification & Information* Website (https://sha.org/bottle/) to obtain pertinent bottle information.

Photo 27. Clear glass *Owens-Illinois* bottle.

Photo 28. Clear glass *Owens-Illinois* bottle base.

A one-quart clear glass Nehi Bottle Company bottle, recovered from the surface of T2, was shown to be manufactured by *Owens-Illinois* in 1945 (Photos 29 and 30). The base is embossed with "PROPERTY OF NEHI. BOTT. CO.; 29 OI (symbol) 45; CAPACITY ONE QUART; 4452-C; 5." The OI logo was used circa 1929 to 1960 and the number "45" to the right of the maker's mark indicates that it was manufactured in 1945.

Photo 29. Clear glass Nehi bottle.

Photo 30. Clear glass Nehi bottle base.

The largest bottle is a clear textured glass type found on the ground surface of T2 and manufactured by the *Glass Container Corporation* (Photos 31 and 32). "GC;5;1129" is embossed on the base, and the "GC" logo was used circa 1934 to 1968.

Photo 31. *Glass Container Corp*. bottle.

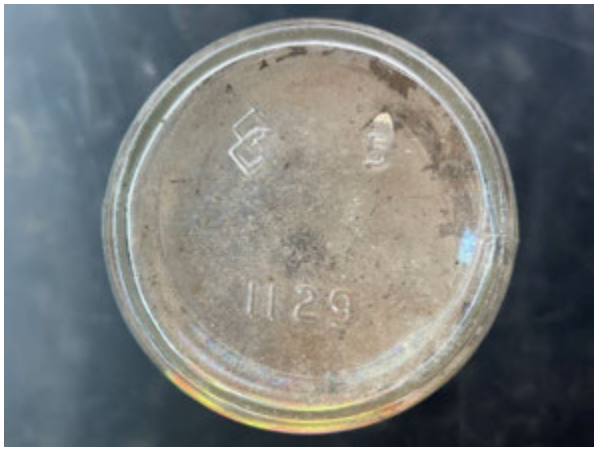

Photo 32. *Glass Container Corp*. bottle base.

Two complete Coca-Cola bottles collected from the surface of T2 have the same patent number embossed on the shoulders. The body is embossed with "Coca-Cola; TRADEMARK REGISTERED; BOTTLE PAT. D-105529" and the base is embossed with "FRESNO CALIF." (Photos 33-35). The patent number indicates the bottle was manufactured from 1937 to 1951.

A complete amber glass Coors bottle, uncovered at a depth of between three-to-six-inches in T8, was broken by the excavator bucket (Photo 36). The *Columbine Glass Company* maker's mark on the base of the bottle indicates manufacture from 1970 to 1976.

Photo 33. Two complete Coca-Cola bottles.

Photo 34. Coca-Cola bottle patent number D-105529.

Photo 35. Coca-Cola bottle base "FRESNO CALIF.

Photo 36. Broken amber glass Coors bottle recovered from T8.

7.2 Other Glass Artifacts Identification

In addition to the complete and nearly complete bottles identified at T2 and T8, the backhoe excavator also unearthed fragments of glass from T2, T4, T7, and T8. Among them is a broken Coors bottle partial neck fragment recovered from T2. "LED" (ie: BOTT**LED**) is embossed on the (Photo 37).

T4 revealed two unidentified clear glass fragments recovered from T4 (Photo 38). They appear to be bottle fragments.

Recovered from T7 were three fragments of clear window glass that broke into smaller pieces during backhoe excavation (Photo 39).

Additional fragments of glass, possibly bottle glass, were found in T8 (Photo 40). Among them was a clear glass bottle base, unearthed at a depth of three-to-six-inches, which displays an embossed 'B' in a circle, indicating it was made by the *Brockway Bottle Company* (Photo 41). The font of the 'B' indicates that the

bottle was manufactured between circa 1980 and 1996. Also recovered from T8 were three fragments of a *Revlon* perfume bottle (Photo 42).

Photo 37. Amber bottle fragment with "LED" (ie: bottled) embossed on the shoulder, in T2.

Photo 38. Artifacts from T4 include two glass fragments and one saw-cut bone.

Photo 39. Window glass fragments found in T7.

Photo 40. Miscellaneous glass fragments found in T8.

Photo 41. Clear bottle base, with B embossed in a circle. recovered in T8.

Photo 42. Glass Revlon bottle fragments in T8.

7.3 Ceramic Artifacts

Ceramic artifacts composed roughly an eighth of the collection and were mostly whiteware fragments, except for one piece of porcelain with a blue pattern (Photo 43), and a small brick fragment (Photo 46, left). None of the ceramic fragments exhibit maker's marks, and they did not display any other diagnostic characteristics. The milk glass jar rim and base fragments may represent cold cream jars, but PGI staff were unable to find any specific information about age (Photo 44).

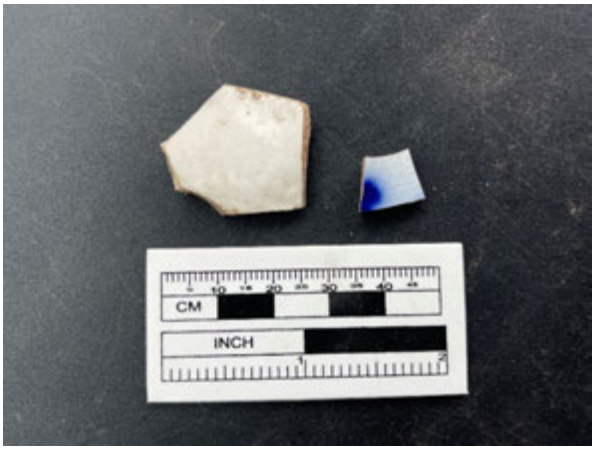

Photo 43. Whiteware and porcelain ceramic fragments from T8.

Photo 44. Milk glass jar fragments from T8, possibly cold cream jars.

7.4 Faunal Bone Identification

The second largest group of artifacts appear to be from domesticated animals, of which 18 were recovered. One bird femur, probably from a chicken or duck, was also found in T2 (Photo 45). Most of the bones recovered from T3 and T8 which were saw-cut ribs from domesticated medium to large animals, such as sheep (*Ovis*), goats (*Capra*), pigs (*Suidae*), and cattle (*Bos*) (Photos 38; 46-47).

Photo 45. Bird femur recovered from T2.

Photo 46. Saw-cut bone, whiteware, and brick fragment recovered from T3.

Photo 47. Saw-cut bone fragments from T8.

7.5 Metal Artifacts

Metal artifacts included one metal pitchfork head (Photo 48), one metal hoe head (Photo 49), and a crushed can lid or base (Photo 50), all recovered from T8. Both the pitchfork and the hoe represent artifacts that would have been used on the ranch, while the rusted can probably contained food.

Photo 48. Rusted pitchfork head from T8.

Photo 49. Rusted hoe head from T8.

Photo 50. Metal can lid or base from T8.

7.6 Miscellaneous Artifacts

Small quantities of other artifacts were recovered, including one marine shell fragment (Photo 51), and one possible schist stone (Photo 52). The marine shell fragment species is Protothaca staminea, which was consumed during prehistoric, historic, and more recent times.

Photo 51. Marine shell from T8.

Photo 52. Schist stone (center) from T5.

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8.0 SIGNIFICANCE EVALUATION

At the request of Meridian Consultants LLC, PGI completed a Phase 2 study of the subject parcel at 1853 Camino Del Sol in Oxnard, Ventura County, California. The project area encompasses the residential area of the historic Maulhardt/Stiles Ranch property. The historic buildings were previously recommended eligible for the National Register of Historic Places (National Register), California Register of Historical Resources (California Register) and as a Ventura County Landmark by San Buenaventura Research Associates in 2014.

7.1 Historic Significance of Artifacts Recovered During the Phase 2 Study

The collection of artifacts recovered during the controlled backhoe excavation were evaluated to determine if they qualify for the California Register. PGI staff used the four criteria below to determine if the site qualifies for inclusion in the California Register.

> 1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or
>
> 2. It is associated with the lives of persons important to local, California, or national history; or
>
> 3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or
>
> 4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

Most relevant to this study is Criterion 4, because the other three criteria generally refer to the built environment. Although 61 artifacts were recovered by PGI staff, most were found on the ground surface or buried only a few inches below the ground. Other than small quantities of artifacts, a substantial subsurface refuse deposit was not identified within any of the eight backhoe trenches. Given the paucity of artifacts and absence of an extensive buried refuse deposit, follow-up hand-excavation of TEUs was not warranted. Given the results, the data potential cannot address previous research questions.

The collection of historic artifacts appear to be associated with domestic and ranching tasks at the Maulhardt/Stiles Ranch, but datable artifacts do not possess a clearly defined date range. The earliest possible date of manufacture is 1934, and the most recent possible date of manufacture is 1996. These results provide some insight into the lives of long-term residents who lived and worked at the Maulhardt/Stiles Ranch during the twentieth century. However, none of the artifacts date to the earliest occupation of the ranch during the late nineteenth century. Further, no significant subsurface refuse deposits or features were found during controlled backhoe excavation of any of the 8 trenches, and the majority of artifacts (54 percent) were recovered from the surface to a depth of 6-inches. Only two artifacts were recovered at a depth of 21 to 24 inches, and no artifacts were located deeper than 24-inches.

Because the artifacts appear to be scattered within a disturbed context, their research value has been diminished. It is a subset of what we would have expected to find, so the assemblage as a whole, does not qualify as important or unique cultural resources eligible for the California Register under Criteria 1, 2, 3, or 4.

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9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 Recommendations

Because the artifacts appear to be scattered within a disturbed context, their research value has been diminished. It is a subset of what we would have expected to find, so the assemblage as a whole, does not qualify as important or unique cultural resources eligible for the California Register under Criteria 1, 2, 3, or 4.

As a result, PGI recommends archaeological monitoring by a qualified archaeologist during ground disturbing activities.

9.2 Procedure for Unanticipated Discoveries

If previously unidentified cultural resources are encountered during construction within the project area, then the archaeologist will have the authority to halt work within 50 feet of the area until the project archaeologist can assess the find; determine its potential for significance; and develop measures to eliminate adverse impacts.

CEQA provides a measure of protection for human remains (Guidelines section 15064.5[d]), and for the accidental discovery of cultural resources (Guidelines section 15064.5[e]). These guidelines are particularly important as they consider the possibility that significant archaeological resources not noted as a result of previous research efforts may be present within a project area and need to be treated in a way commensurate with CEQA standards.

9.2.1 Regulations Concerning Discovery of Human Remains

There is a possibility of encountering human remains either in association with prehistoric occupation sites or as separate finds. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial, and Section 5097.99 of the Public Resources Code defines the obtaining or possession of Native American remains or grave goods to be a felony. If human remains are encountered during construction activities, any work in the vicinity should stop and the County Coroner contacted immediately. At the same time, a qualified archaeologist should be contacted to evaluate the situation. If the human remains are Native American in origin, then the Coroner must notify the Native American Heritage Commission within 24 hours of this identification.

California Public Resources Code §5097.98 (Notification of Native American human remains, descendants; disposition of human remains and associated grave goods) mandates that the lead agency adhere to the following regulations when a project results in the identification or disturbance of Native American human remains:

> (a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation

work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 48 hours of their notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

(b) Whenever the commission is unable to identify a descendant, or the descendant identified fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendant and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.

(c) Notwithstanding the provisions of Section 5097.9, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act (Division 13 (commencing with Section 21000)).

(d) Notwithstanding the provisions of Section 30244, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section, and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20 (commencing with Section 30000)).

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Ephemera

Postcard depicting the American Sugar Beet Factory, Oxnard, Ventura County, California.

Maps

1877 Map of Rancho El Rio de Santa Clara O La Colonia: partitioned by order Dist. Court 1st Jud. Dist. California. Hon. Eugene Fawcett; / John T. Storr, Surveyor. Huntington Library archives.

State of California ◆ The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

Page 1 **of** 9 ***Resource Name or #:** (Assigned by recorder) Mulhardt-Stiles Ranch Historic Site
P1. Other Identifier: 1853 Camino Del Sol in Oxnard

***P2. Location:** ☒ **Not for Publication** ☐ **Unrestricted**
***a. County** Ventura **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** Oxnard **Date** 1949 **T** 1N ; **R** 21W ; ☐ **of** ☐ **of Sec** ; Mt. Diablo **B.M.**
c. Address 1853 Camino Del Sol City Oxnard Zip 93030
d. UTM: (Give more than one for large and/or linear resources) Zone 11N , 301195 mE/ 3787312 mN (NAD 83)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)
34°12'28.39"N, 119° 9'28.32"W (34.2078861, -119.157866)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
Historic refuse site consisting of 32 glass bottles and glass fragments, 8 ceramic fragments, 15 faunal bones, 3 metal artifacts, 1 marine shell, 1 brick fragment, and 1 schist fragment in the residential area of the Maulhardt-Stiles ranch property in Oxnard, California. A total of 61 historic artifacts were collected during Phase II testing (see pages 3-7 for artifact photographs).
***P3b. Resource Attributes:** (List attributes and codes) AH4. Privies/dumps/trash scatters

***P4. Resources Present:** ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)

P5b. Description of Photo: (view, date, accession #) Overview of site area, facing east, 21 January 2025, IMG_1254.HEIC.

***P6. Date Constructed/Age and Source:**
☒ Historic ☐ Prehistoric ☐ Both

***P7. Owner and Address:**
Maulhardt-Stiles Ranch
1853 Camino Del Sol
Oxnard, California 93030

***P8. Recorded by:** (Name, affiliation, and address)
Jenna Levine, Provenience Group, Inc. (PGI)
1759 Cottonwood Street
Solvang, CA 93463

***P9. Date Recorded:** 7/22/2025

***P10. Survey Type:** (Describe)
Archaeological reconnaissance; excavations

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Levine, Jenna and Carole Denardo
2025 Phase 2 Archaeological Study – Maulhardt Residential Property at 1853 Camino Del Sol in Oxnard, Ventura County, California

***Attachments:** ☐NONE ☒Location Map ☒Continuation Sheet ☐Building, Structure, and Object Record
☒Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List): Sketch map

ARCHAEOLOGICAL SITE RECORD

 ***Resource Name or #:** Maulhardt-Stiles Ranch Historic Site

***A1. Dimensions: a. Length:** 69.5 m. **(** 228 ft **)** × **b. Width:** 57.1 m. **(** 187 ft **)**

Method of Measurement: ☐ Paced ☐ Taped ☐ Visual estimate ☒ Other: GIS

Method of Determination (Check any that apply.): ☒ Artifacts ☐ Features ☐ Soil ☐ Vegetation ☐ Topography ☐ Cut bank ☐ Animal burrow ☒ Excavation ☐ Property boundary ☐ Other (Explain): A total of 8 trenches were excavated and the site boundary encompasses the trenches that contained artifacts.

Reliability of Determination: ☐ High ☐ Medium ☒ Low Explain: Excavations were only conducted in areas where there were either artifacts found on the ground surface or where the Mulhardt family suggested there might be a refuse deposit. The site boundaries may be greater than what was observed during trench excavation.

Limitations (Check any that apply): ☒ Restricted access ☒ Paved/built over ☐ Site limits incompletely defined ☒ Disturbances ☐ Vegetation ☐ Other (Explain): The ranch is private property and the land has been used to grow crops for over 150 years.Above and below ground construction completed for utilities, buildings, and ranching throughout that time.

A2. Depth: ☐ None ☒ Unknown Method of Determination: Artifacts were found at maximum depth of trenching (2 ft).

***A3. Human Remains:** ☐ Present ☐ Absent ☐ Possible ☒ Unknown (Explain): Although it appears unlikely that there are human remains on this site, there is a possibility that they are present.

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.): None.

***A5. Cultural Constituents (**Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.): Brick fragment (1); Ceramic fragments (3); Faunal bone (15); Glass bottles and fragments (32); Metal (3): rake head (1), hoe head (1), can fragment (1); Schist (1); Marine shell (1)

Complete glass bottles and/or bases (SHA 2025):

- Owens-Illinois manufactured for Nehi Soda Bottle Company dated 1945.
- Clear, textured glass bottle manufactured by The Glass Container Corporation dated 1934-1968
- 2 Coca-Cola Bottles with "Coca-Cola; PAT. D-105529 "FRESNO CALIF." embossed dated 1937-1951.
- Clear bottle base fragment with B embossed in a circle manufactured by Brockway Bottle Co. dated 1980-1996.
- Coors bottle base manufactured by Columbine Glass Company dated 1971-1976.

***A6. Were Specimens Collected?** ☐ No ☒ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.) Artifacts will remain in possession of the property owner unless a curation agreement is obtained.

***A7. Site Condition:** ☐ Good ☐ Fair ☒ Poor (Describe disturbances.): The ranch has had over 150 years of continuous as a family farm where crops and animals have been raised. The ranch is currently in use by the Mulhardt family, with ongoing ranch operations and regular activity occurring on the property.

***A8. Nearest Water** (Type, distance, and direction.)**:** Santa Clara River, approximately 2.9 miles northwest.

***A9. Elevation:** 65 amsl

A10. Environmental Setting (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.)**:** The site is located on flat ground within a lemon orchard within the City of Oxnard.

A11. Historical Information: The Maulhardt family has owned the ranch for approximately 150 years and have raised a variety of animals and crops over time (pers. comm. Richard Mulhardt 2025).

In 1872, brothers Jacob Maulhardt and Gottfried Maulhardt and Johannes Borchard got together to purchase 1,230 acres of prime farmland from Juan Camarillo who had earlier obtained a portion of the land grant from Leandro and Rafael Gonzalez. The Maulhardt brothers and Johannes Borchard later split the property three ways, so each would own 410 acres. In 1878, Jacob Maulhardt built his home, not far from the present Maulhardt residence in the project site. It was there that he and his wife Dorothea Kohler raised their family (Maulhardt 2004; San Buenaventura Research Associates 2014). Louis G. Maulhardt inherited 100 acres of the Maulhardt Ranch after his father's death in 1899. He later accumulated additional acreage, where he and his wife Theresa Borchard raised a family, and successfully expanded the farming operation (Maulhardt 2004; San Buenaventura Research Associates 2014).

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ☒ 1914-1945 ☒ Post 1945 ☐ Undetermined Describe position in regional prehistoric chronology or factual historic dates if known:

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations):

Historic artifacts found on the Mulhardt-Stiles Ranch reinforces their family history of living and operating the ranch, especially from the mid- to late 1900s.

A14. Remarks: None.

A15. References (Documents, informants, maps, and other references): pers. comm. Richard Mulhardt 2025;

Maulhardt
2004 *Oxnard: 1867-1940*. Arcadia Publishing, Charleston SC, Chicago, IL, Portsmouth NH, San Francisco California.;

San Buenaventura Research Associates
2014 *DPR 523 Site Record for the Louis G. Maulhardt Ranch*. Prepared for Maulhardt Trust et al., Oxnard, California.

Websites:
Society for Historical Archaeology (SHA), accessed February 2025, https://sha.org/.

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.): See attached Continuation Sheets.

Original Media/Negatives Kept at: PGI

***A17. Form Prepared by:** Jenna Levine **Date:** 22 July 2025

Affiliation and Address: 1759 Cottonwood Street, Solvang, CA 93463 ***Required information**

State of California - The Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI#
LOCATION MAP
Trinomial

Page 9 **of** 9 ***Resource Name or #** (Assigned by recorder) Maulhardt-Stiles Ranch Historic Site

***Map Name:** Oxnard, CA ***Scale:** 1:24,000 ***Date of map:** 1949

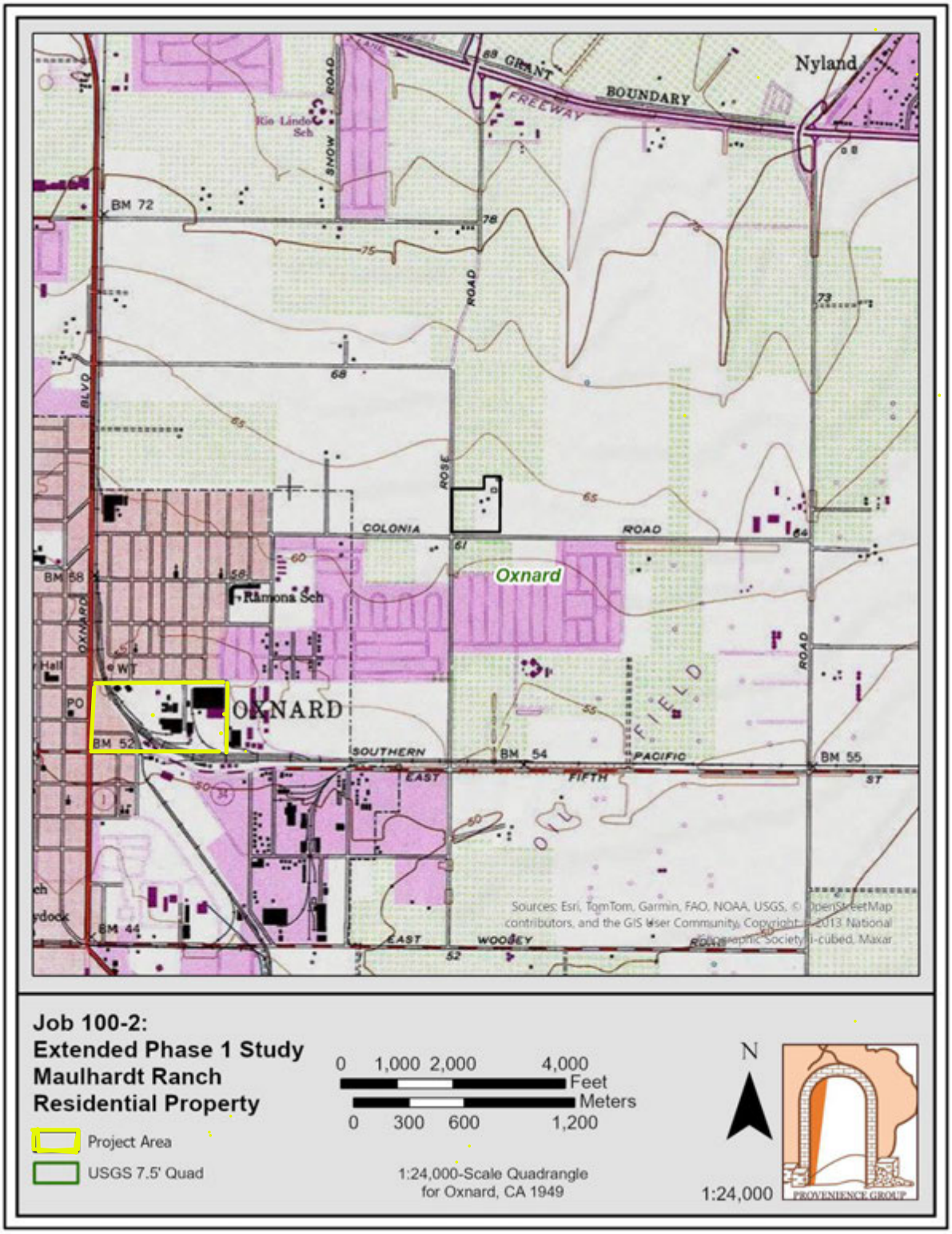

Photo 1. Clear glass Owens-Illinois bottle.

Photo 2. Clear glass Owens-Illinois bottle base.

Photo 3. Clear glass Nehi bottle.

Photo 4. Clear glass Nehi bottle base.

Photo 5. Glass Container Corp. bottle.

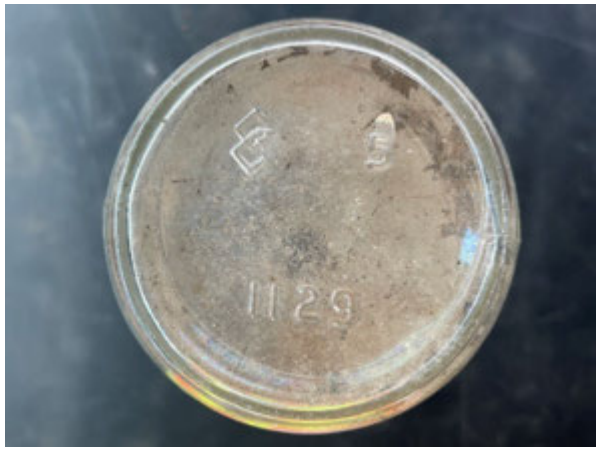

Photo 6. Glass Container Corp. bottle base.

Photo 7. Two whole Coca-Cola bottles.

Photo 8. Coca-Cola bottle patent number D-105529.

Photo 9. Coca-Cola bottle base "FRESNO CALIF.

Photo 10. Brockway Glass Co. maker's mark.

Photo 11. Amber glass Coors bottle.

Photo 12. Amber glass Coors bottle base.

Photo 13. Saw-cut bone, whiteware, and brick fragment from T3.

Photo 14. Saw-cut bone and 2 clear glass fragments from T4.

Photo 15. Bird femur from T2.

Photo 16. 1 whiteware, 1 schist(?), and 1 amber glass fragment from T5.

Photo 17. 1 aqua glass and 1 ceramic from T7.

Photo 18. Windowpane fragments from T7.

Photo 19. Saw-cut bone fragments and 1 weathered bone fragment from T8.

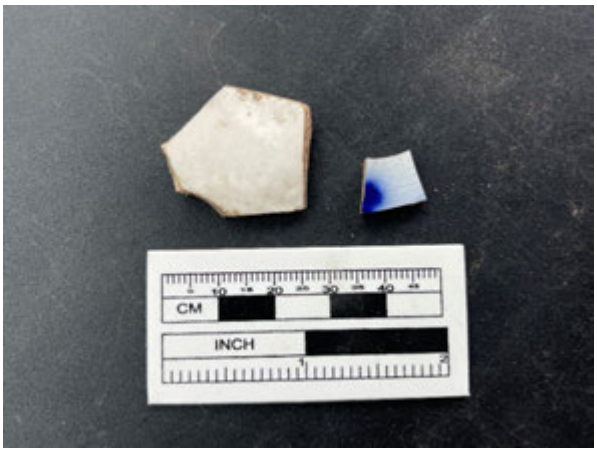

Photo 20. 1 whiteware and 1 porcelain ceramic fragments from T8.

Photo 21. Glass fragments from T8.

Photo 22. Milk glass fragments from T8.

Photo 23. Glass Revlon bottle fragments from T8.

Photo 24. Metal can fragment from T8.

Photo 25. Rusted hoe head from T8.

Photo 26. Rusted pitchfork head from T8.

Photo 27. Marine shell fragment from T8.

Sketch map depicting trench locations.

APPENDIX K

Structural Inspection Report

ALL-TRADE
Engineering & Design
17 E High Street Suit A
Moorpark, CA 93021
(805) 552-4000

STRUCTURAL INSPECTION REPORT

1853 EAST CAMINO DEL SOL
OXNARD, CA. 93030

Inspection Date:
4/11/2019

Prepared For:
HW HOLMES INC

Report Number:
19-083

Prepared By:
Shane Judd, P.E.
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ALL-TRADE ENGINEERING STRUCTURAL INSPECTION REPORT

1853 EAST CAMINO DEL SOL, OXNARD, CA. 93030

REPORT SUMMARY

THE SCOPE OF THE INSPECTION

All-Trade Engineering was contacted on April 4, 2019 to perform an inspection and evaluation of the subject structure. The site was inspected April 11, 2019and documented by a licensed Civil Engineer.

The barn in the North portion of the property and the primary residence in the middle of the property are the two buildings of concern. It was the intent of the site visit to determine the structural and economic feasibility of retrofitting, altering, and/or relocating these two buildings.

LIMITATIONS OF THE INSPECTION

The intent of this report is to evaluate the structural condition of an existing two story barn and single family residence. The inspection will not identify all components, since some structural components are hidden from visual inspection. As a result, additional repairs and unforeseen issues should still be

anticipated. This is a visual report and a structural building analysis is beyond the scope of this report. Our opinion is not a guarantee or warranty of any kind. No materials testing was performed.

NOTE: ***This report was prepared for and paid for by the client named above. This report is not valid without the signed inspection agreement and is not transferable.***

As we disclosed, this is a visual inspection, and was limited by the following conditions:

- Some structural elements were concealed behind finished surfaces, and could not be visually inspected.
- Only representative samplings of visible structural elements were inspected.
- Vehicles and/or storage restricted access to some structural elements.
- Engineering or architectural services such as calculations of structural capacities, adequacy, or integrity are not part of this inspection.
-

REPORT OVERVIEW

THE SCOPE OF THE INSPECTION

The All-Trade Engineering Structural Inspection is an examination and opinion of the structural condition and integrity of an existing building, and identifies areas that require improvement, repair, retrofit, or condemnation. This report is based upon widely-held engineering principles and judgment, and it follows a standard of care which defines a level of skill and competence ordinarily and contemporaneously demonstrated by professionals of the same discipline practicing in the same locale and faced with the same or similar facts and circumstances. No as-built framing or building plans were provided for cross-reference.

1853 EAST CAMINO DEL SOL, OXNARD, CA. 93030

STRUCTURAL ELEMENTS INSPECTED

This report will focus on the inspections made of the visible and accessible FRAMING, FLOOR, and ROOF structural elements of the barn, including the:

- **VERTICAL FORCE RESISTING SYSTEM DEFICIENCIES**
- **LATERAL FORCE RESISTING SYSTEM DEFICIENCIES**

IT IS THE PROFESSIONAL OPINION OF THIS OFFICE THAT THE BARN AND THE RESIDENCE CAN NOT BE RELOCATED. IT IS ALSO THE PROFESSIONAL OPINION OF THIS OFFICE THAT THE BARN SHOULD NOT BE OCCUPIED WITHOUT SIGNIFICANT STRUCTURAL RETROFIT.

Photos are attached at the end of this report.

BARN

Roof Framing

OBSERVATIONS & RECOMMENDATIONS: The roof framing is constructed of old conventional barn framing. There are braces and kickers throughout in order to shorten rafter spans, column unbraced lengths, and out of plane hinge points. This framing is far outdated. Most of the framing is grandfathered in except for at some point a layer of roof sheathing was added. This roof sheathing helped and harmed the structure. The sheathing provides lateral stability and increases shear transfer capacity to the lateral force resisting elements of the structure. The problem with this increased lateral stability of the roof is the increase in weight on the roof. The original framing is skip sheeting and is about 2 psf. The roof sheathing that was added is at least an additional 3 psf dependent on the thickness. The added weight adds over 15,000 lb to the roof framing over the 5,000 square foot roof area.

There is a 2x ridge board and rafters at the peak of the roof. This is a typical tied roof assembly in conventional framing except that there is no horizontal tension tie across the bottom 1/3 of the rafters. The rafters by sheer compression are holding the ridge board in place.

There is not blocking at the parallel rafter bays to help brace the 20'+ tall walls out of plane.

For the reasons stated above the roof is wobbly and at risk of collapsing inward under high wind, seismic, or re-roofing conditions.

SEE PIC #3 & 4

BARN

Floor Framing

OBSERVATIONS & RECOMMENDATIONS (Walls): The floor framing is conventional spaced floor joists with floor planks. There is no plywood flooring nor diaphgragm. Water damage and efflorescence was observed in a handful of locations. The most glaring deficiency is the lack of positive connections at post to beam connections. Most everything is toenailed and face nailed. There are no positive connections providing any lateral stability. There is also no blocking in between joists at the bearing points nor at parallel bearing wall conditions.

Additionally, the problem previously stated on the roof is also a contributing factor to the main problem with the floor level. 15,000 pounds is a lot of weight to add to an already outdated lateral force resisting system. There are no braces anywhere in the middle of the structure in either direction.

For the reasons stated above the floor is wobbly and at risk of collapsing inward under high wind, seismic, or re-roofing conditions.

SEE PIC #5 & 6

MAIN RESIDENCE

DESCRIPTION OF FEASIBILITY OF RELOCATING THE HOUSE

OBSERVATIONS & RECOMMENDATIONS: The primary residence is an old structure built out of masonry and concrete. The walls vary in thickness from 8-12" thick. They have been clad stucco and finished with roof tile. The interior walls are finished with plaster and wood siding. There is also a basement.

This is not typical for a single family residence. This is much bulkier and heavier than a typical residence. There is a significant amount of earthwork that would need to be done to relocate the basement. It can not be relocated without new grading and retaining walls. The existing walls would not calculate out even if they could be carrier and relocated.

Moving the rest of the house would require tearing it into multiple sections to make them movable by crane. Even still, moving those heavy pieces and trying to reconnect them would not work without triggering full lateral and vertical retrofitting. The connections, foundations, lateral force resiting system, rebar, concrete compressive strength, components and cladding, floor framing, and all finishes would be required to be brought up to current code. This is not economically feasible. It would be cheaper and faster to rebuild the whole house.

1853 EAST CAMINO DEL SOL, OXNARD, CA. 93030

CLOSURE

The conclusions and recommendations contained within this report are based on field observations of the site conditions. Recommendations are based on the assumption that the subsurface conditions do not deviate appreciably from those indicated by the individual test pits placed on the subject site. If conditions encountered during construction appear to differ from those described in this report, ***ALLTRADE*** *should be notified so we may determine if any modifications are necessary. In this way, any required supplemental recommendations can be made with a minimum delay to the project.*

The recommendations are based on the preliminary information provided to us at the start of the investigation. Any changes of this information may require additional work. This report has been prepared in accordance with generally accepted engineering practices and makes no warranties, either express or implied, as to the professional advice provided in this report.

This report is based upon widely-held engineering principles and judgment, and it follows a standard of care which defines a level of skill and competence ordinarily and contemporaneously demonstrated by professionals of the same discipline practicing in the same locale and faced with the same or similar faces and circumstances. No materials testing was requested or performed.

Inasmuch as the review of an existing structure requires that certain assumptions cannot be verified without spending great sums of additional money, or destroying otherwise adequate or serviceable portions of the building, please be aware that there may be unforeseen or unobserved problems. It must be understood this is our opinion, based on a surficial examination of the building and in no way should be construed as any kind of guarantee, warranty or certification.

This report is for the use of the construction team and landlord representatives, in regards to the subject site and building, and is not transferable to third parties. We have no duty, contract, obligation or liability to third parties. Other persons must obtain their own expert opinion. This report should only be considered valid for three months from the report date. Code changes, industry standards, as well as property conditions can change our opinion in longer time frames. This report is copyright protected and is illegal to copy or Xerox. Additional copies are available from our office.

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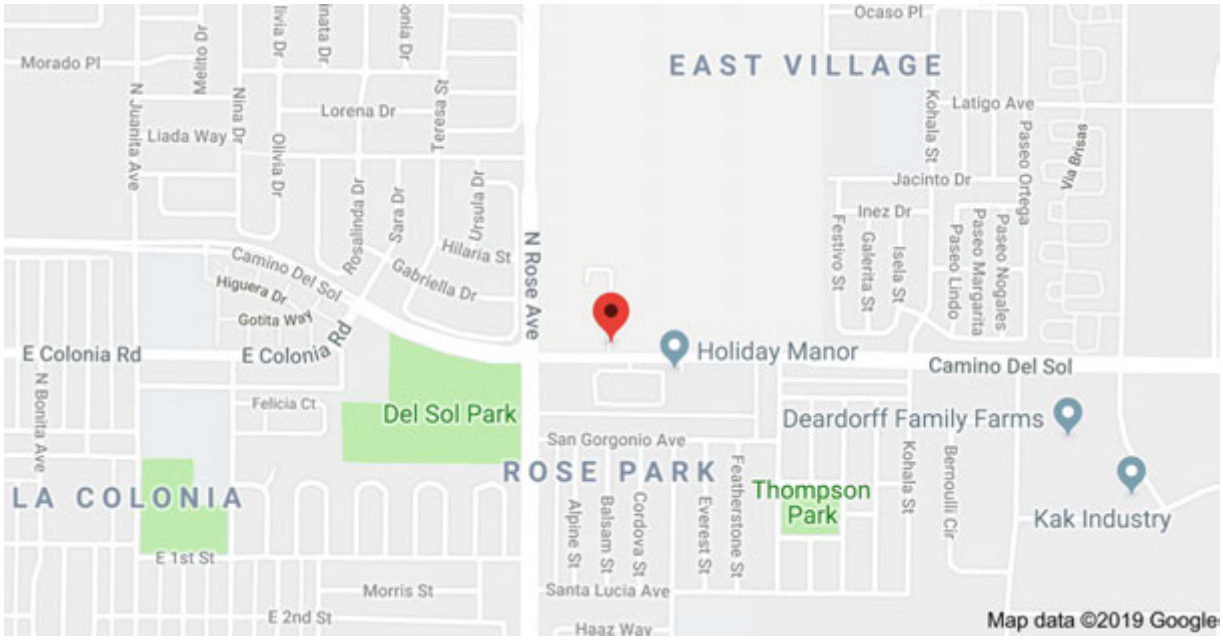
ALL-TRADE Engineering & Design

1853 EAST CAMINO DEL SOL, OXNARD, CA. 93030

PHOTO GALLERY

Vicinity Map



Map of the vicinity of the property and surrounding streets.

1853 EAST CAMINO DEL SOL, OXNARD, CA. 93030

PHOTO GALLERY

Aerial View of Property

Overall view of the property showing general slope and adjacent hillsides.

PHOTO GALLERY

PIC #3 & 4 - ROOF FRAMING

Pics of the barn roof framing

PHOTO GALLERY

PIC #5 & 6 - FLOOR FRAMING

APPENDIX L

Geotechnical Report

advanced geotechnical services, inc.

August 21, 2025
Client Number 5340
Report Number 11438

Maulhardt / Stiles Families
c/o Parkstone Companies
860 Hampshire Road, Suite U
Westlake Village, CA 91362

Attention: Chad Penrod

Addendum to Preliminary Geotechnical Feasibility Study
Proposed Tentative Tract No. 6059, Maulhardt / Stiles Ranch
Northeast of Rose Avenue at Camino Del Sol and
South of Cesar Chavez Drive and North of Jacinto Drive Between Rose Avenue and Gibraltar Street
Oxnard, California

In accordance with your request and authorization, Advanced Geotechnical Services, Inc., (AGS) has prepared this addendum report to supplement our **Preliminary Geotechnical Feasibility Study, Proposed Tentative Tract No. 6059, Maulhardt / Stiles Ranch, Northeast of Rose Avenue at Camino Del Sol and South of Cesar Chavez Drive and North of Jacinto Drive Between Rose Avenue and Gibraltar Street, Oxnard, California** report dated February 5, 2025 (AGS Report No. 11337), and unless noted otherwise all recommendations as presented in that report shall remain applicable to the construction of the proposed improvements at the subject site.

AGS understands that the above referenced AGS report (Report No. 11337) was submitted to, and reviewed by, Dudek on behalf of the City of Oxnard. On May 29, 2025, Mr. Penrod at Parkstone Companies relayed the informal comments made by Dudek with respect to their review of the above referenced report. All of these informal comments were addressed via electronic communication at the request of the reviewer, and all of our responses were accepted by the reviewer through this process. One of the items, however, is clarified in this addendum report herein.

Where our above referenced report included an incomplete sentence in *Section 3.3.1 Infiltration Discussion* that ended the 2nd paragraph of page 8, this was intended to state the findings of research of nearby groundwater data from the California Department of Water Resources **Water Data Library**, https://wdl.water.ca.gov. AGS reviewed groundwater data from several wells surrounding the subject site. However, the nearest well is located a distance greater than 1,400 feet southeast of the eastern portion of the subject site. Data from this well as well as data from other wells surrounding the subject site at greater distances indicate fluctuating groundwater surface elevations ranging from artesian at times to depths of tens of feet below ground surface.

Regardless, our findings regarding groundwater at the site remain applicable as presented in *Section 3.3 Groundwater* of our above referenced report:

> *"At the time of our field exploration program, groundwater was encountered at depths ranging from approximately 18.5 feet to 27.5 feet below the existing ground surface. The shallowest groundwater was encountered in Borings B-6 and B-7. The deeper groundwater was encountered in Borings B-1 and B-2. Based on the Depth to Historically High Groundwater Map, Figure 3 (CDMG, 2002), the historically highest groundwater level below the site was approximately 8 feet below the existing ground surface."*

Limits and Liability

The analysis and recommendations submitted in this addendum report are based in part on our **Preliminary Geotechnical Feasibility Study, Proposed Tentative Tract No. 6059, Maulhardt / Stiles Ranch, Northeast of Rose Avenue at Camino Del Sol and South of Cesar Chavez drive and North of Jacinto Drive Between Rose Avenue and Gibraltar Street, Oxnard, California** report dated February 5, 2025 (AGS Report No. 11337), and the limitation and liability section in that report shall apply to this addendum. We have strived to provide our services in accordance with generally accepted geotechnical engineering practices in this community at this time, but we make no warranty, either express or implied.

This opportunity to be of service is sincerely appreciated. This report and our previously published report prepared for the subject site should be read from beginning to end to understand their limitations and to avoid taking a recommendation out-of-context. If you have any questions, or if we may be of any further assistance, please do *not* hesitate to call. We look forward to being of continued service to you on this project.

Respectfully submitted,
Advanced Geotechnical Services, Inc.

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Principal Engineer

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cc: (1) Addressee (1) File Copy

References

Advanced Geotechnical Services, Inc. (2025), **Preliminary Geotechnical Feasibility Study, Proposed Tentative Tract No. 6059, Maulhardt / Stiles Ranch, Northeast of Rose Avenue at Camino Del Sol and South of Cesar Chavez Drive and North of Jacinto Drive Between Rose Avenue and Gibraltar Street, Oxnard, California**, Report No. 11337, dated February 5, 2025.

California Department of Water Resources (2025) **Water Data Library**, https://wdl.water.ca.gov.

advanced geotechnical services, inc.

February 5, 2025
Client Number 5340
Report Number 11337

Maulhardt / Stiles Families
c/o Parkstone Companies
860 Hampshire Road, Suite U
Westlake Village, CA 91362

Attention: Chad Penrod

Preliminary Geotechnical Feasibility Study
Proposed Tentative Tract No. 6059, Maulhardt / Stiles Ranch
Northeast of Rose Avenue at Camino Del Sol and
South of Cesar Chavez Drive and North of Jacinto Drive Between Rose Avenue and Gibraltar Street
Oxnard, California

In accordance with our proposal and your authorization, Advanced Geotechnical Services, Inc., (AGS) has prepared this *Preliminary Geotechnical Feasibility Study* for the proposed tentative tract development to be established at the subject site. This report presents the results of our data research, subsurface exploration, laboratory testing, and our professional opinions regarding the geotechnical engineering factors that may affect the proposed development. The feasibility level recommendations presented within this report have been prepared without the benefit of a detailed development plan other than a conceptual plan and a set of preliminary grading plans, and have yet to be peer reviewed by the building official, and may be subject to revision

Based on the results of this study, it is our opinion that the site is *suitable* for development, provided the feasibility level recommendations presented in this report are properly incorporated in the future design and construction processes. However, it should be noted that the preliminary level analyses and recommendations presented within this report may be subject to change once a detailed development plan has been created.

This opportunity to be of service is sincerely appreciated. This report should be read from cover to cover to understand its limitations and to avoid taking a recommendation out-of-context. If you have any questions, or if we may be of any further assistance, please do *not* hesitate to call. We look forward to being of continued service.

Respectfully submitted,
Advanced Geotechnical Services, Inc.

Shaun Simon, PE, CEG
Principal Engineer

Brett Wanner, CEG
Principal Engineering Geologist

Enclosure: *Report No. 11337*

cc: (5) Addressee (1) Jensen Design & Survey (1) File Copy

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advanced geotechnical services, inc.

PRELIMINARY GEOTECHNICAL FEASIBILITY STUDY

Proposed Tentative Tract 6059
Maulhardt / Stiles Ranch
Northeast of Rose Avenue at Camino Del Sol and
South of Cesar Chavez Drive and North of Jacinto Drive
Between Rose Avenue and Gibraltar Street
Oxnard, California

Report to
Maulhardt / Stiles Families
c/o Parkstone Companies
Westlake Village, California

February 5, 2025
Client Number 5340
Report Number 11337

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1. INTRODUCTION

1.1 General Remarks

This *Preliminary Geotechnical Feasibility Study* has been prepared for the proposed Tentative Tract No. 6059 development to be established within the subject site. The purposes of this study are to (1) evaluate the seismicity of the site and potential seismic hazards, (2) identify on-site soil conditions that may affect the proposed project, and (3) provide preliminary, feasibility level geotechnical recommendations for the future development of the site, including site preparation and grading, temporary excavations, foundation design, seismic design, floor slab design, and drainage. This report presents the findings of our data review, subsurface exploration, laboratory testing, engineering analyses and evaluations, and our conclusions and recommendations.

It should be noted that the preliminary, feasibility level analyses and recommendations presented within this report have been prepared *without* the benefit of a detailed development plan, and have been yet to be peer reviewed by the building official, and may be subject to change. Additional exploration and updated analyses may be warranted once a detailed site development plan has been created.

Appendices are attached following the main report. Appendix A includes an explanation of the field exploration program, and the boring logs; Appendix B includes the laboratory test results; Appendix C includes the results of the seismicity study; Appendix D presents the results of onsite percolation testing as performed by others; Appendix E includes the results of the liquefaction and dynamic dry settlement evaluation; Appendix F includes the references used in this study, and the Figures and Plates referenced in this report are included in Appendix G.

1.2 Scope of Services

This preliminary geotechnical feasibility study included:

a. Site observation and review of geotechnical and geologic data of the general study area. A *Site Location Map* showing a broad view of the overall areas where the site is located is provided as Figure 1, and an *Existing Site Plan* showing more detailed current site conditions is provided as Plate 1. Both of these figures were created using images obtained from the Google Earth (2025) web app. A *Proposed Site Plan* is provided as Plate 2. This plan was created utilizing the *Illustrative Plan* prepared by Parkstone Companies. A *Proposed Grading Plan* is provided as Plate 3. This plan was created utilizing *the Cover Sheet / Sub-Neighborhood Land Use Plan* prepared by Jensen Design and Survey as part of their *Tentative Tract No. 6059* plan set (6 sheets) dated April 8, 2024.

b. Review of site specific studies prepared for the subject site and adjacent properties as published by Earth Systems Pacific (2018 and 2022) and Tetra Tech, Inc. (2018 and 2019), and as referenced herein.

c. Reconnaissance of the site and the immediate vicinity of the subject site.

d. Drilling, sampling, and logging of ten (10) small diameter hollow-stem auger borings to depths between approximately 20 feet to 51.5 feet below the existing ground surface; and advancing 16 Cone Penetrometer Test (CPT) soundings to depths between approximately 35 feet to 70.5 feet below the existing ground surface. The exploratory borings and CPTs were located in the field using a tape measure and approximate reference points. Thus, the actual locations of the exploratory borings and CPTs may deviate slightly from the locations shown on the attached Plates 1, 2, and 3. The boring logs and CPT profiles are included in Appendix A, along with a general description of the field operations.

e. Laboratory testing of selected samples to determine the engineering properties of on-site soils. The results of laboratory testing are presented in Appendix B, and on the boring logs in Appendix A. Soil samples will be *discarded* 30 days after the date of this report, unless this office receives a specific request and fee to retain the samples for a longer period of time.

f. Determination of seismic parameters for potential on-site ground motion, in accordance with the 2022 California Building Code.

g. Engineering analysis of the data and information obtained from our field study, laboratory testing, and literature review.

h. Development of preliminary, feasibility level geotechnical recommendations for site preparation and grading, and preliminary, feasibility level geotechnical design criteria for building foundations, floor slabs, underground utility trenches, temporary excavations, pavement, and drainage for the proposed development.

i. Preparation of this preliminary, feasibility level report summarizing our findings, conclusions, and recommendations regarding the geotechnical aspects of the project site.

The scope of this preliminary geotechnical feasibility study did *not* include an assessment of potential environmental issues.

1.3 Site Description

The subject site consists of two parcels of land, both of which are located in the City of Oxnard, Ventura County, California: APN 214-0-020-620, the southern parcel, is an 11.31-acre sized parcel of land currently improved with existing residences and barn structures located to the northeast of the intersection of Rose Avenue at Camino Del Sol; and APN 214-0-020-615, the northern parcel, is a 44.21-acre sized parcel of unimproved land located to the south of Cesar Chavez Drive and north of Jacinto Drive between Rose Avenue and Gibraltar Street. These two parcels are not contiguous, and are bisected by the existing Del Sol High School campus, such that the parcels are no closer than approximately 580 feet in the closest location which separates proposed Lots 1 through 9 (comprising the northern parcel) from Lots 10 through 13 (comprising the southern parcel), as shown on the *Proposed Site Plan* included as Plate 2 of this report. The distance from the southwestern corner of the southern parcel and the northeastern corner of the northern parcel is approximately 3,000 feet. The southern parcel is generally approximately 800 feet in the north-south direction by approximately 685 feet in the east-west direction. The northern parcel is generally approximately 1150 feet in the north-south direction by 1940 feet in the east-west direction.

The northern parcel is generally unimproved except for existing water well and pump system in the northeast corner, and occupied by generally sparse to moderate vegetation consisting of brush. The southern parcel is occupied by an existing agricultural ranch with several residential structures, two large barns, and various orchards. The western portion is generally unimproved and currently void of vegetation with the exception of sparse brush and weeds. This parcel is accessible by an existing paved driveway from the Camino Del Sol roadway to the south.

The southern parcel is bounded by the Del Sol High School campus to the north and east, the Camino Del Sol roadway to the south, and Rose Avenue to the west. The northern parcel is bounded by the Jacinto Street and the Del Sol High School campus to the south, Rose Avenue to the west, Cesar Chavez Drive and an existing residential neighborhood to the north, and East Village Park, Gibraltar Street, and an existing residential neighborhood to the east.

The current site conditions are shown on the attached Plate 1, *Existing Site Plan*, which was created utilizing an aerial image obtained from the Google Earth (2025) online web app. The topography of the subject site and

surrounding area is roughly level to gently south to southwesterly sloping, based on our site observations, information available online (Google Earth, 2025), and regional topographic maps.

Review of available historic aerial photographs available through the University of California, Santa Barbara's Map and Imagery Library archives via the UCSB Frame Finder web application indicates that the subject parcels have been used as an agricultural ranch for orchards and row crops dating back to before 1927. Photographs since 1927 through 1994, and satellite imagery available online (Google Earth, 2025) since 1994 to present day indicate that the orchard and row crop ranch has continued to present day. Anecdotal data from the owner indicates that this site use has occurred since circa 1869, including the establishment of the residential and barn buildings dating back to this time.

1.4 Proposed Development

The proposed development will consist of the design and construction of new, multi-family residential structures, including mixed-use commercial space within the aforementioned structures, associated private streets, driveways, parking areas, and open space / park areas. Although detailed, final development plans have not been provided to our office as of the date of this report, it is our understanding based on upon review of the information provided by the client's representative and project civil engineer that it is proposed to develop the subject sites into 13 lots totaling approximately 950 residential dwelling units including 40,000 square feet of commercial space within these structures, as shown on the *Proposed Site Plan* and the *Proposed Grading Plan* included as Plates 2 and 3, respectively, of this report. Although the *Illustrative Plan* by Parkstone Companies indicates that Multiplex, Walk-up, and Podium type structures are planned, as shown on Plate 2, no specific loading information was available at the of this report, and the proposed structures are anticipated to use a combination of concrete and wood frame construction, with concrete floor slab-on-grade. Wall loads are expected to be in the range of 1 to 3 kips per foot, and column loads are anticipated to be in the range of 50 to 200 kips.

As shown on the *Proposed Site Plan*, Plate 2, Lots 1 through 9 are planned in the northern parcel with Lot 1 comprising 134 dwelling units and 8,000 square feet of commercial space within podium structures on 3.53 acres; Lot 2 comprising 66 dwelling units and 2,000 square feet of commercial space within podium structures on 1.74 acres; Lot 3 comprising 48 dwelling units within multiplex structures and 24 dwelling units and 1,000 square feet of commercial space within walk-up structures on 2.4 acres; Lot 4 comprising 49 dwelling units and 2,000 square feet of commercial space within walk-up structures on 1.47 acres; Lot 5 comprising 55 dwelling units and 2,000 square feet of commercial space within walk-up structures on 1.64 acres; Lot 6 comprising 64 dwelling units and 2,000 square feet of commercial space within walk-up structures on 1.89 acres; Lot 7 comprising 96 dwelling units and 2,000 square feet of commercial space within walk-up structures on 2.83 acres; Lot 8 comprising 76 dwelling units within multiplex structures on 3.18 acres; and Lot 9 comprising 44 dwelling units within multiplex structures on 1.85 acres.

Lots 10 through 13 are planned in the southern parcel with Lot 10 comprising 92 dwelling units and 1,000 square feet of commercial space within podium structures on 2.0 acres; Lot 11 comprising 45 dwelling units within walk-up structures on 0.99 acres; Lot 12 comprising 63 dwelling units walk-up structures on 1.78 acres; and Lot 13 comprising 94 dwelling units and 2,000 square feet of commercial space within podium structures on 2.11 acres.

Preliminary grading plans prepared by Jensen Design and Survey, Inc., dated April 2024 available at the time this report was prepared, as utilized as the base map for the *Proposed Grading Plan* included as Plate 3 of this report, indicate that site grading is expected to consist of removal and recompaction of the upper site soils for support of the proposed structure, backfill of related new utilities, and only very minor modifications to the existing site topography, to establish grade for the building pads and site drainage.

1.5 Review of Available Reports

Geotechnical exploration was previously performed at various locations of portions of the subject site by others (Earth Systems, 2022) for the purpose of infiltration testing. In their **Infiltration Test Reporting, Tentative Tract 6059,**

Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California, dated March 11, 2022, Earth Systems Pacific reported 17 hollow-stem auger borings drilled to total depths ranging from 3 feet to 19.5 feet below ground surface (bgs) for the purpose of performing percolation testing. These borings were sited at various locations across both parcels of the subject site. Copies of the boring logs are included in Appendix A, and the percolation test findings are discussed in *Section 3.3.1 Infiltration Discussion* of this report, and the percolation test data is included in Appendix D of this report. The interpreted locations of these borings are shown in Plates 1, 2, and 3 in Appendix G of this report.

Earth Systems Pacific also performed 53 hollow-stem auger borings ranging from 10 feet to 51.5 feet bgs and seven (7) cone penetrometer test (CPT) soundings ranging from 45 feet to 60 feet bgs as part of their **Geotechnical Engineering Report, Oxnard High School No. 8, Northeast of Camino Del Sol and North Rose Avenue, Oxnard, California**, dated August 31, 2018 report for the adjacent site known as the Oxnard Union High School District's High School No. 8 (Del Sol High School). The interpreted locations of relevant hollow stem auger borings and CPTs from this study are shown on Plates 1, 2, and 3, and copies of these logs are included in Appendix A. Earth Systems Pacific reported encountering alluvial deposits consisting of silty sand, poorly graded sand, well graded sand, some gravels, silt and clay to total depths explored, and reported encountering groundwater ranging from approximately 20 to 25 feet bgs.

Recommendations were provided for site preparation to consist of a removal and recompaction operation to establish the proposed future site grade and provide for a minimum of 6 feet of newly compacted fill below existing grade, or 4 feet of newly compacted fill below future foundations, whichever is deeper.

The Del Sol High School Campus has since been constructed including the Administration and Classroom buildings, with the exception of the sports field complex infrastructure in the northern portion of the school site.

2. GEOLOGIC SETTING

2.1 Geology

The subject site is located within the Oxnard Plain of the Central Ventura Basin within the Western Transverse Ranges geomorphic province of California. Geologic conditions beneath the subject property have been interpreted and characterized based upon our review of published and unpublished references, and our subsurface exploration. Our interpretations involve projections of data and assume that geologic conditions are reasonably constant between borings. Work should continue under the review of the project Geotechnical Consultant to ensure that geologic conditions different from those described below are recognized and evaluated as soon as possible. Certain subsurface conditions such as groundwater levels and the consistency of near-surface soils will vary with the seasons.

The subject site is located within the Oxnard USGS 7.5-minute quadrangle. According to *Geologic Map of the 7.5 Minute Oxnard Quadrangle* (Clahan, 2003), the subject site is underlain by Holocene alluvial materials (Qha2 and Qhwa), which was confirmed during our site exploration program.

2.2 Faulting

Southern California is a tectonically active region subject to hazards associated with earthquakes and faulting. Faults are classified as either Holocene active, pre-Holocene active, or age undetermined. Holocene active faults are defined by the State of California as faults that have exhibited surface displacement within the last 11,700 years. Alquist-Priolo Earthquake Fault Zones are zones that have been established by the State that contain Holocene active surface fault traces, and projects that are located within these zones require that a fault investigation be performed to determine if active faulting affects the site. The subject site is *not* located in an Alquist-Priolo Earthquake Fault Zone, and therefore a subsurface fault investigation is not required, and has not been performed.

3. EARTH MATERIALS AND SUBSURFACE CONDITIONS

3.1 Alluvium (Qa)

Native younger alluvial soils were encountered in the exploratory borings and CPT soundings, and extending to the maximum depths explored, (from 20 feet to) 51.5 feet in the borings, and (from 35 feet to) 70.5 feet in the CPT soundings. The native alluvium consists of highly variable layers and mixtures of clayey to sandy silt, silty sand and clay. There are two units of alluvium mapped throughout the site: Holocene wash alluvial deposits (Qhw2) consisting of unconsolidated poorly sorted silty sands, and Holocene Alluvial Deposits (Qha2) associated with overbank deposits including scour, incising, and channeling. The following exploratory data points are located in earth materials mapped as Qhw2: CPT-1, CPT-2, CPT-3, CPT-4, CPT-9, CPT-10, CPT-11, CPT-12, CPT-13, CPT-15, CPT-16, B-2, B-3, B-6, B-7, B-8, B-9, and B-10. The following exploratory data points are located in earth materials mapped as Qha2: CPT-5, CPT-6, CPT-7, CPT-8, CPT-14, B-1, B-4, B-5. Qhw2 are alluvial deposits that were deposited following incision and scouring through the Qha2 unit, and thus the Qha2 is older than the Qhw2. The layers within the Qha2 and Qhw2 are not laterally continuous even within each unit as shown by the CPT profiles, boring logs, and six geologic cross sections A-A through F-F' created across the sites (Plates 4 through 6). These Holocene deltaic alluvial deposits conformably overlie Upper Pleistocene alluvial sands and gravels at a depth of approximately 70 feet below ground surface (Turner, 1975).

The earth materials in the upper 4 to 10 feet (approximately) were generally slightly moist to moist, and ranged from loose to dense, and fine- to coarse-grained sand and silty sand. In the northern portion of the site, the upper 5 to 8 feet is generally more fine-grained. Below 10 feet in depth across the sites, zones of fine-grained materials generally within approximately 2 to 5 feet in thickness were encountered to total depths explored. Silty sand, poorly graded sand, and well graded sand were encountered in a dense condition with discrete zones of medium dense layers to total depths explored. Refusal was encountered in the CPTs at the location of CPT-3, CPT-7, and CPT-14 within dense sand at a depth of approximately 39 feet, 35 feet, and 46 feet, respectively. More detailed depictions of the earth materials encountered are provided on the enclosed boring and CPT logs included in Appendix A of this report.

Boring B-1 and B-2 were excavated approximately 10 feet east of CPT-5, and CPT-13, respectively, in order to provide correlation between actual earth material samples, and the CPT data. In our opinion there was a generally good correlation between the actual samples of earth materials obtained, and the CPT data. It should be noted that the descriptions of the earth materials on the boring logs are based on the Unified Soil Classification System, and the visual identification and measured properties of the soils in the laboratory, whereas the 'Soil Behavior Type' (SBT) interpreted from the CPT soundings is based on the in-situ *behavior* of the soil. The results obtained from the two different methods can therefore vary slightly, particularly in the classification of primarily silty or clayey soils. Variations can also occur at the transitions between material types, where the cone 'feels' the influence of adjacent layers, and can sometimes interpret an earth material near these transitions as some intermediate mixture of earth materials.

3.2 Soil Parameters

3.2.1 Compaction

Compaction curves were developed in this study for representative samples of the upper site soils, as summarized in the following table and presented on the plates included in Appendix B. Maximum dry density and associated optimum moisture contents are shown for the following samples, obtained between the ground surface and a depth of approximately 5 feet.

Material Shear Strengths Summary

Sample	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
B-1 @ 0-5ft	Brown Silty SAND	122.5	9.5

B-2 @ 0-5ft	Brown Silty SAND	118.5	10.5
B-4 @ 0-5ft	Light Brown Silty SAND	130.0	7.5
B-5 @ 0-5ft	Dark Brown Silty SAND	126.0	9.5
B-6 @ 0-5ft	Yellowish Brown Silty SAND	127.5	9.5
B-7 @ 0-5ft	Light Brown Silty SAND	125.5	10.0
B-8 @ 0-5ft	Dark Brown Silty SAND	122.0	9.5
B-9 @ 0-5ft	Dark Brown Silty SAND	124.0	10.0
B-10 @ 0-5ft	Light Brown Silty SAND	118.0	10.5

3.2.2 Compressibility

Consolidation tests were performed on representative undisturbed samples of the onsite soils, and on remolded samples intended to represent the future compacted fill. The consolidation test results showed a *very low* potential for hydroconsolidation and overall compressibility on the remolded sample, and a *low* potential for hydroconsolidation, and *low* overall level of compressibility on the undisturbed samples tested. The results of the consolidation testing are presented in Appendix B of this report.

3.2.3 Shear Strength

Direct shear testing was used to measure the peak and ultimate shear strength properties of representative samples of the onsite soils, both remolded and undisturbed, in terms of a cohesion value and a friction angle. The results of the direct shear testing are presented in Appendix B of this report.

Material Shear Strengths Summary

Sample ID	Soil Description	Peak Cohesion, psf	Peak Friction Angle, degrees	Ultimate Cohesion, psf	Ultimate Friction Angle, degrees
B-1 @ 0-5'	Future Engineered Fill – Light Brown Silty SAND (Remolded)	350	19	240	22
B-1 @ 12.5'	Quaternary Alluvium – Light Olive Brown SAND (Undisturbed)	140	35	130	28
B-2 @ 0-5'	Future Engineered Fill - Light Brown Silty SAND (Remolded)	270	26	200	32
B-2 @ 12.5'	Quaternary Alluvium – Olive Brown SAND (Undisturbed)	460	33	110	27
B-4 @ 5'	Quaternary Alluvium – Light Brownish Gray SAND (Undisturbed)	220	32	120	29
B-5 @ 0-5'	Future Engineered Fill – Dark Brown Silty SAND (Remolded)	340	24	190	27
B-5 @ 5'	Quaternary Alluvium – Brown SAND (Undisturbed)	210	31	110	28
B-6 @ 0-5'	Future Engineered Fill – Yellowish Brown Silty SAND (Remolded)	200	32	110	30
B-7 @ 0-5'	Future Engineered Fill – Light Brown Silty SAND (Remolded)	470	21	220	27
B-8 @ 5'	Quaternary Alluvium – Olive Brown Sandy CLAY (Undisturbed)	370	19	230	23
B-8 @ 18'	Quaternary Alluvium – Yellowish Brown Clayey SAND (Undisturbed)	470	32	370	30

3.2.4 Expansion Category

The potential of the soil to swell or expand increases with an increase in soil density, a decrease in initial moisture content, an increase in clay content, and an increase in the activity of the clay content. Expansive soils change in volume (shrink or swell) due to changes in the soil moisture content. The risk of soil expansion increases with an increase in expansion index.

The expansion index of representative samples of the upper site soils obtained from Borings B-1, B-2, B-4 through B-10 between the ground surface and a depth of approximately 5 feet was found to be between 0 and 11, which is in the *very low* expansion category. A representative sample of the blended, recompacted soils should be obtained from the surface of the completed building pads after grading to confirm the expansion indices.

3.2.5 Corrosivity

The risk of corrosion of construction materials relates to the potential for soil-induced chemical reaction. The rate of deterioration depends on soil resistivity, texture, acidity, and chemical concentration. A representative sample of the upper site soils was transported to an outside laboratory for corrosivity testing, and the results of these tests

are attached in Appendix B, and summarized in the following table. Sulfate and chloride concentrations are expressed in mg/kg on a dry weight basis.

Boring Number	Depth (ft)	Description	pH	Chloride (mg/kg)	Sulfate (mg/kg)	Specific Conductance (umhos/cm)
B-1	0 – 5	BROWN SILTY SAND	8.1	24	190	3700
B-2	0 - 5	BROWN SILTY SAND	8.2	8.4	105	5100
B-4	0 - 5	LIGHT BROWN SILTY SAND	8.2	9.5	280	5600
B-5	0 – 5	DARK BROWN SILTY SAND	8.0	5.0	120	3200
B-6	0 – 5	YELLOWISH BROWN SILTY SAND	8.2	7.9	330.	3000
B-7	0 – 5	LIGHT BROWN SILTY SAND	8.6	2.2	59	7500
B-8	0 – 5	DARK BROWN SILTY SAND	7.6	2.8	26	7500
B-9	0 – 5	DARK BROWN SILTY SAND	8.0	4.0	220	4000
B-10	0 – 5	LIGHT BROWN SILTY SAND	7.5	7.2	380	2800

The sulfate content is negligible (less than 1000 mg/kg) based on ACI 318, and therefore special considerations are not required for concrete which will be in contact with the onsite soils. A representative sample of the blended, recompacted soils should be obtained from the surface of the completed building pad after grading for additional corrosivity testing to confirm the sulfate content. Additionally, based on the Caltrans Corrosion Guidelines Version 3.2, published May 2021, earth materials with a minimum resistivity of 1500 ohm-cm or less indicates the presence of high quantities of soluble salts at a screening level, but earth materials are considered non-corrosive if the soluble chloride is less than 500 ppm, the soluble sulfates is less than 1500 ppm, and the pH is greater than 5.5.

3.3 Groundwater

At the time of our field exploration program, groundwater was encountered at depths ranging from approximately 18.5 feet to 27.5 feet below the existing ground surface. The shallowest groundwater was encountered in Borings B-6 and B-7. The deeper groundwater was encountered in Borings B-1 and B-2. Based on the *Depth to Historically High Groundwater Map*, Figure 3 (CDMG, 2002), the historically highest groundwater level below the site was approximately 8 feet below the existing ground surface.

Groundwater elevations are dependent on seasonal precipitation, irrigation, land use, and climatic conditions, among other factors, and as a result fluctuate. Therefore, water levels at the time of construction and during the life of the development may vary from the observations or conditions at the time of our field exploration.

3.3.1 Infiltration Discussion

The intentional introduction of enormous amounts of water into the ground via the infiltration of onsite stormwater is a relatively new concept, and is inherently risky, regardless of any precautions which may be taken. In our opinion, *the infiltration of water directly below any proposed building footprint would be especially risky, and ill-advised.* The infiltration features should also be set back a minimum of 8 feet from all foundations per Ventura County requirements. There should be careful coordination of the site utility locations with any proposed stormwater infiltration features. The proposed stormwater infiltration features should *not* be allowed to come into contact with, or to even be in close proximity to utility trench backfill, and utilities should not be allowed to cross above, below or through any proposed infiltration features.

The following is excerpted directly from the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures, Errata Update June 29, 2018:

> *Groundwater Considerations*
> *Site groundwater conditions should be considered prior to Retention BMP, Biofiltration BMP, and Treatment Control Measure siting, selection, sizing, and design. The depth to groundwater beneath the*

project during the wet season may preclude infiltration, since five feet of separation to the seasonal high ground water level and mounded groundwater level is required. Depth to seasonal high groundwater level shall be estimated as the average of the annual minima (i.e., the shallowest recorded measurements in each water year, defined as October 1 through September 30) for all years on record. If groundwater level data are not available or not considered to be representative, seasonal high groundwater depth can be determined by redoximorphic analytical methods combined with temporary groundwater monitoring for November 1 through April 1 at the proposed project site.

Based on the above definition of the 'seasonal high groundwater level utilized to determine the minimum 5-foot vertical separation between the bottom of infiltration features and groundwater, the absolute highest historic groundwater level *doesn't* necessarily need to be used for this. We are not aware of any nearby groundwater monitoring wells, however, that would be representative of the groundwater level onsite. There are however, several groundwater

The city of Oxnard in the past has allowed infiltration at deeper levels than 5 feet above the historically highest groundwater level which is conservatively used for liquefaction analysis. It is our understanding that the reason for the 5-foot separation to groundwater is to allow any contaminants within the infiltrated water to theoretically be 'scrubbed' from the water prior to encountering groundwater, however AGS does not practice in the environmental field.

Infiltration testing was previously performed by others at the subject site utilizing 17 small diameter exploratory borings (Earth Systems, 2022). These test locations are shown on our Plates 1, 2, and 3, and the exploratory logs are included in Appendix A, and the infiltration test results are included in Appendix D. Earth Systems (2022) reported performing the infiltration testing following the falling-head borehole infiltration test procedure using 3 inch diameter slotted pvc casing in 8-inch diameter exploratory borings and lining the annulus with pea gravel; testing with 2 feet of water; and using Porchet's Equation to transform the results from a percolation rate to an infiltration rate, and applying a correction factor to account for the gravel within the annulus. Earth Systems (2022) reported advancing these borings to drilled depths ranging from 3 feet to 5 feet, 8.5 feet, 14 feet, 16.5 feet, and 19.5 feet. The results of the infiltration testing reported by Earth Systems (2022) indicate that the recommended rate ranged from 0.21 inch/hour to 8.6 inch/hour. Infiltration rates at 3 and 5 feet average approximately 1.3 to 1.8 inch/hour, however the highest rate was 5.24 in this zone, and with 5 of the 10 infiltration tests in the upper 5 feet resulted in recommended infiltration rates of less than 1 inch/hour.

As it is currently a requirement within the City of Oxnard that field infiltration testing be performed at the time of construction to verify the system design as installed, it is recommended that as large of a factor of safety as possible be utilized on the above rates (at least F.S. = 2) in the design of future infiltration facilities in an effort minimize possible future redesign.

4. GEOLOGIC HAZARDS

4.1 Flooding

The northeastern portion of the site is mapped within an area of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, as shown on the FIRM flood hazard map panel prepared by FEMA (FEMA, 2010). The remainder portion of the subject site is located in an area outside of 0.2% Annual Flood Hazard.

4.2 Dam Failure Inundation

A review of Section 2.11 and Figures 2.11.1 and 2.11.2 of the Ventura County General Plan, Hazards Appendix (County of Ventura 2013) and Section 4.3.3.1 and Tables 4-5, 4-6, and 4-7 and Figure 4-3 of the Multi-Jurisdictional Hazard Mitigation Plan for Ventura County, California (County of Ventura 2005) shows that there are four major reservoirs in the Santa Clara River watershed upstream of the site that are FEMA high hazard dams that would

inundate the site area in the event of a reservoir failure. A dam that stores more than 1,000 acre-feet of water, is higher than 150 feet, and has the potential to cause downstream property damage is classified as a high hazard dam by FEMA. The four dams are Santa Felicia Dam at Lake Piru, Castaic Dam at Lake Castaic, Pyramid Dam on Piru Creek, and Bouquet Canyon Dam. Based on data provided by operators of each dam, the site would be inundated by flood waters within approximately 4 to 4.5 hours of a failure.

5. SEISMICITY

5.1 Seismic Design Criteria

The seismic design of structures based on the 2022 California Building Code (CBC) utilizes the *Maximum Considered Earthquake Ground Motion*. This ground motion and the associated spectral response accelerations are then adjusted for the general type of earth materials within approximately the upper 100 feet underlying the site, termed a *Site Class*. The *Site Class* is based on parameters such as shear wave velocity, standard penetration test resistance, undrained shear strength, and earth material type. For the subject site, which is underlain by medium dense to dense unconsolidated alluvial deposits, the appropriate *Site Class* would be 'D', which corresponds to a *Stiff Soil.*

The site-specific seismic design criteria required by the 2022 CBC were determined utilizing the interactive ASCE Hazard Tool (2024) online web program, utilizing the ASCE 7-16 Standard. The complete output from this web app is attached in Appendix C, and the primary design parameters are summarized in the table below. The *Site Class* option of '*D – Stiff Soil*' was utilized in the analysis.

ASCE Standard	Site Class	F_a	F_v	PGA	PGA_M	S_S	S_1	S_{MS}	S_{M1}	S_{DS}	S_{D1}
7-16	D	1.0	N/A*	0.764	0.840	1.744	0.645	1.744	N/A*	1.163	N/A*

*** See Section 11.4.8 of ASCE 7-16**

Conformance to these criteria does *not* constitute a guarantee or assurance that significant structural damage will *not* occur if a maximum level earthquake occurs. The primary goal of seismic design is to protect life and *not* to avoid all damage, since such design may be economically prohibitive.

5.2 Earthquake Effects

The intensity of ground shaking during an earthquake can result in a number of phenomena classified as ground failure, which include ground rupture due to faulting, landslides, liquefaction, and seismically induced dry settlement. Other seismic hazards include seiches and tsunamis. Descriptions of each of these phenomena and an assessment of each, as it may affect the subject site, are included in the following sections. The Seismic Hazards Mapping Act of 1990, which became effective in 1991, requires mitigation of seismic hazards to a level that does *not* cause collapse of buildings intended for human occupancy, but it does *not* require mitigation to a level of no ground failure or structural damage.

5.2.1 Shallow Ground Rupture

Ground surface rupture occurs when movement along a fault is sufficient to cause a gap or rupture where the upper edge of the fault zone intersects the ground surface, and such ruptures rarely occur as single breaks or are confined to a narrow zone. More commonly, ground rupture associated with faulting is characterized by relatively short segments of faulting that occur over a broad area of the upper plate. In some cases, particularly in unconsolidated alluvial sediments, *secondary ground ruptures* can develop from a number of causes not necessarily related directly to surface rupture of the causative fault. The secondary ruptures may be caused by seismically-induced settlement, landslides, and liquefaction. The subject site is *not* located in an Alquist-Priolo Earthquake Fault Zone, and therefore surface fault rupture is not considered a hazard at the subject site, and a subsurface fault investigation is not required and therefore has not been performed.

5.2.2 Earthquake-Induced Landsliding

Landslides are slope failures that occur where the horizontal seismic forces act to induce soil failure. Seismic Hazard Maps have been released by the California Geological Survey that delineate areas that have been subject to, or are potentially subject to landsliding or permanent ground displacement as a result of earthquake-induced ground shaking. The subject site is not located in a seismic hazard zone for landslides, and the subject site and surrounding areas are relatively flat. Therefore, on-site earthquake-induced landsliding is *not* considered to be a hazard.

5.2.3 Seiches and Tsunamis

Seiches are an oscillation of the surface of an inland body of water that varies in period from a few minutes to several hours. Seismic ground motions can induce such oscillations. Tsunamis are large sea waves produced by submarine earthquakes or volcanic eruptions. Since the site is *not* located close to an inland body of water and is at an elevation sufficiently above sea level to be outside the zone of a tsunami runup, the risk of these two hazards is *not* considered pertinent to this site.

5.2.4 Evaluation of Liquefaction Potential

The subject site is located in an area designated as being potentially liquefiable on the State of California *Seismic Hazard Zones Map* of the Oxnard Quadrangle (CDMG, 2002), as shown on the attached Figure 4 (as indicated by the green shading). Therefore, a detailed liquefaction analysis was performed.

Liquefaction is a phenomenon in which certain types of saturated soils experience a temporary reduction in shear strength and behave as a liquid. This occurs due to the loss of point-to-point grain contact as a result of excess pore pressure buildup during cyclic loading accompanying strong earthquakes. Soils most prone to liquefaction are saturated, fine-grained sands, silty sands, and some silts with low relative densities and low plasticity.

Liquefaction potential depends on soil type, age of materials, density, depth to groundwater, shaking intensity and confining pressures over the potentially liquefiable soil mass. Geologically young sediments (Pleistocene to recent) coupled with a shallow groundwater table (less than 50 feet) are conditions which are indicative of an elevated liquefaction potential.

Sixteen CPTs (CPT-1 through CPT-16) were advanced to assess the liquefaction potential at the site. Three of the CPTs were advanced to a depth of approximately 70 feet below ground surface (CPT-1 to 70.37 feet, CPT-5 to 70.34 feet, and CPT-6 to 70.49 feet). Ten of the CPTs (CPT-2, CPT-4, CPT-8 through CPT-13, CPT-15 and CPT-16) were advanced to approximately 50 feet. CPT-3, CPT-7, and CPT-14 were attempted to be advanced to 50 feet, however, these CPTs met refusal shallower than 50 feet. Ten small-diameter exploratory borings were excavated for the purpose of verifying the soil behavior type implied by the CPTs, and for the purpose of visual and manual description and for obtaining specimens for laboratory testing. Boring B-1 was excavated to a depth of 51.4 feet, adjacent to CPT-5; B-2 was excavated to a depth of 50.8 feet adjacent to CPT-13; and B-6 was excavated to a depth of 51.5 feet adjacent to CPT-2. Younger alluvial soils consisting primarily of relatively dense and medium dense sand, and very stiff clay were encountered from the historically highest groundwater level to the total depth of exploration, 70.49 feet.

The results of these analyses, along with other geologic information about the area, were then used to evaluate the potential for the occurrence of liquefaction. The geotechnical data obtained from the exploratory borings and our laboratory test results, including equivalent standard penetration test (SPT) data, percent fines, clay fraction and Atterberg limits results, were utilized in our evaluation of liquefaction hazard potential at the site.

The historically highest groundwater level in the vicinity of the site is an estimated 8 feet below the existing ground surface, as shown on the attached Figure 3, *Depth to Historically High Groundwater* map (CDMG, 2002), and existing groundwater was encountered at a depth of approximately 18.5 to 27.5 feet below the ground surface during our site exploration program. Therefore, the potential for liquefaction was analyzed by conservatively using the

historically highest groundwater depth of 8 feet, and a 2nd scenario was evaluated based on the groundwater at a depth of 20 feet below ground surface, based on a conservative estimate of the depths that groundwater was encountered in the exploratory borings.

The methods following the recommendations of the NCEER (Youd and Idriss, 1997; Youd et al, 2001) were used in the liquefaction analysis, supplemented by the recommendations of Bray and Sancio (2006), and Boulanger and Idriss (2006) in the analysis of fine grained soils (clays and silts). A design-level earthquake magnitude of 7.53 (determined from a probabilistic analysis of 2% in 50 year recurrence using the USGS Seismic Deaggregation, Unified Hazard Tool available tool), and a site acceleration of 0.98g (PGAM) (determined from the USGS Seismic Deaggregation, Unified Hazard Tool available tool) were utilized to perform the liquefaction evaluation.

The earth materials underlying the site from the historically highest groundwater level to the total depth explored of approximately 70.5 feet consist of channelized deposits of medium dense to very dense silty sand to sand, with corrected equivalent SPT blow counts generally above 30, with interlayered stiff to very stiff silt and clay layers. These fine-grained layers are encountered between approximately the upper five (5) feet to the total depth explored across the site. Representative samples of the clayey soils were also determined to have plasticity indices of ranging from 18 to 41. However, the data from the 16 CPT soundings indicate that many of the silty sand and sand layers that, based on the soil behavior type, are medium dense have the potential to liquefy. Thus, liquefaction analysis was performed using the CPT data, with supplemental data based on lab results of hydrometer and plasticity index. Therefore, based on the preliminary screening criteria contained within SP117A (CGS, 2008), some of the sandy materials below the historically highest groundwater level would not be considered subject to liquefaction based on equivalent SPT blow counts all above 30, and the very stiff clayey earth materials would be expected to 'behave like clays' (Boulanger and Idriss, 2006; CGS, 2008), and these layers were deemed non-liquefiable. The results show a maximum potential seismically-induced liquefaction settlement of approximately 2.28 inches from a depth of 8 feet below ground surface to a depth of approximately 50 feet, and a maximum of approximately 1.56 inches from a depth of 20 feet below ground surface to a depth of approximately 50 feet. The results also show that liquefaction settlement is predicted to depths of approximately 68 feet below ground surface in CPT-5. The results of the liquefaction analyses are shown in Appendix E. The site is considered to have areas of *low* and *high* risk of liquefaction settlement and related phenomena. The areas of *high* risk are associated with the areas surrounding CPT-1, CPT-2, CPT-5, CPT-6, CPT-13, CPT-15, and CPT-16.

5.2.5 Dynamic Dry Settlement

The potential for seismically-induced dry settlement of the soils underlying the subject site as a result of densification of the sandier earth materials during seismic shaking was analyzed, and the results are shown in the attached Appendix E. The calculations were performed utilizing the CPT data and the and the methods of Robertson and Shao (2010) which updated the methods of Pradel (1998) to use the CPT data to estimate corrected, equivalent SPT blow counts. The analysis was conservatively performed from the ground surface to a depth of 20 feet, the assumed average current groundwater level. Soils below the groundwater level would not be prone to dynamic dry settlement.

In accordance with standard local practice, the acceleration to be utilized in the dynamic dry settlement is the greater of $S_{DS}/2.5$ or $^2/_3$ PGA_M (Blake, 2015). The greater of these values is $^2/_3$ $PGA_M = 0.650$ (which is greater than $S_{DS}/2.5 = 0.465$). The upper approximately 8 feet of earth materials underlying the proposed structures will consist of future compacted fill, which would not be considered subject to significant dynamic dry settlement.

The results show a maximum potential seismically-induced dry settlement of approximately 1.13 inches from the ground surface to a depth of 20 feet, which would be considered to be *moderate* to *high*.

5.2.6 Total Seismic Settlement

The results of the liquefaction analyses and dry dynamic settlement analyses are summarized in the tables below, presenting our results of these analyses with groundwater assumed at the historical high of 8 feet below ground surface, and also where the groundwater assumed at 20 feet below ground surface.

Groundwater at 8 feet

CPT Number	Total Liquefiable Thickness (feet)	Liquefaction Settlement (inches)	Dry Dynamic Settlement (inches)*	Total Seismic Settlement (inches)	Total Seismic Settlement *following 7 foot removal* (inches)
1	8.07	1.08	-	1.08	1.08
2	8.19	1.27	-	1.27	1.27
3	0.76	0.10	-	0.10	0.10
4	3.14	0.62	-	0.62	0.62
5	9.26	1.45	-	1.45	1.45
6	10.32	1.65	-	1.65	1.65
7	2.30	0.37	-	0.37	0.37
8	2.50	0.51	-	0.51	0.51
9	4.50	0.69	-	0.69	0.69
10	2.21	0.36	-	0.36	0.36
11	4.22	0.77	-	0.77	0.77
12	2.63	0.41	-	0.41	0.41
13	10.93	2.28	-	2.28	2.28
14	6.27	1.10	-	1.10	1.10
15	9.70	1.97	-	1.97	1.97
16	7.03	1.37	-	1.37	1.37

***Assuming over-excavation minimum 7 feet below ground surface, scarify & recompact bottom**

Groundwater at 20 feet

CPT Number	Liquefaction Settlement (inches)	Dry Dynamic Settlement (inches)	Total Seismic Settlement (inches)	Total Seismic Settlement *following 7 foot removal* (inches)*
1	1.51	0.13	1.64	1.56
2	1.16	0.26	1.42	1.36
3	0.03	0.22	0.25	0.70
4	0.74	0.08	0.82	0.77
5	1.28	1.13	2.41	1.93
6	1.94	0.11	2.05	2.00
7	0.47	0.06	0.53	0.53
8	0.65	0.12	0.77	0.71
9	0.76	0.18	0.94	0.90
10	0.55	0.14	0.69	0.59
11	0.73	0.67	1.40	0.80
12	0.08	0.22	0.30	0.15
13	1.56	0.78	2.34	1.74
14	0.28	0.42	0.70	0.40
15	1.53	0.92	2.45	1.82
16	1.07	0.25	1.32	1.24

***Assuming over-excavation minimum 7 feet below ground surface, scarify & recompact bottom**

The potential for loss of bearing was evaluated using Ishihara's (1985) boundary curves in which the thickness of overlying non-liquefiable soils is compared to the thickness of the liquefied soil layers with SPT blow counts of 10 or less per foot. The site data indicates that the risk of surface manifestation and loss of bearing are considered low for many areas, and high for others. The areas of high risk comprise Lots 6 through 10. The utilization of a geogrid-

stabilized gravel raft, or rigid mat foundation, or deep ground improvement should mitigate for any reduced bearing strength of the earth materials below the level of groundwater.

Secondary effects of liquefaction, including loss of bearing and lateral spreading are also not anticipated if the recommended ground improvements recommended in the *Removal* section of *Site Preparation* are implemented.

5.2.7 Lateral Spreading

Seismically induced lateral spreading involves primarily lateral movement of earth materials due to ground shaking in conjunction with liquefaction. Lateral spreading can manifest as near-vertical cracks with predominantly horizontal movement of the soil mass involved towards an adjacent open face slope face, or gently sloping ground. The ground deformations can adversely damage the buildings and cause connecting services to be completely severed. Based on the ground surface gradient of less than approximately 0.35% and data from the exploratory borings and CPTs which indicates that potentially liquefiable layers are laterally discontinuous between exploratory data points, it is our professional opinion that the site is considered to have a *low* risk of lateral spreading.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions and Design Requirements

Based on the findings of our data review, subsurface exploration, laboratory testing, field testing, and engineering analysis, and within the scope of this study, the proposed development is considered *feasible* from a geotechnical engineering viewpoint, provided the feasibility level recommendations in this report are incorporated into the project plans and implemented during construction, however, it should be noted that the preliminary, feasibility level analyses and recommendations presented within this report have been prepared *without* the benefit of a detailed development plan, and have been yet to be peer reviewed by the building official, and may be subject to change. Additional exploration and updated analyses may be warranted once a detailed site development plan has been created. The following is a general discussion of the main geotechnical issues affecting the site, and recommended mitigation measures. More detailed recommendations are provided in subsequent sections of this report.

In order to provide more uniform foundation support for the proposed structures, it is recommended that the upper site soils be over-excavated and recompacted to provide a relatively uniform blanket of newly placed compacted fill for support of the proposed structures. The proposed structures may then be constructed on conventional, shallow spread footings bearing exclusively in newly placed, certified compacted fill, with a minimum of 4 feet of compacted fill underlying all footings.

Subgrade conditions vary across the site. Based upon the findings from our field exploratory program, there are medium dense/soft, compressible soils within the upper seven (7) feet below each of the sites. Portions of the sites are underlain by alluvial soils that are potentially liquefiable and subject to unsaturated seismic settlement in a design-level earthquake event. Below that, earth materials are mixed with a combination of both relatively dense/stiff and medium dense/soft earth materials, but are potentially subject to liquefaction down to depths of approximately 68 feet below ground surface. These conditions combine to create a significant settlement potential of on the order of 3 to 3-1/4 inches across some portions of the sites unless mitigation measures described herein are implemented. These suggested mitigation measures include:

(i) An over-excavation and replacement of the near surface soils with a shallow geogrid-reinforced gravel raft and engineered fill;

(ii) Vibro Stone Columns;

(iii) A Rammed Aggregate Pier system; and or

(iv) A Rapid Impact Compaction program.

Some portions of the sites are underlain by subgrade conditions that do *not* indicate excessive static or seismic settlement, where an effective ground improvement may be a typical removal and recompaction.

It is recommended that any loose or disturbed upper site soils be over-excavated and recompacted for support of pavements, curbs, sidewalks and any other miscellaneous exterior surface improvements, and it is recommended that an overall minimum of 2 feet of newly placed compacted fill be provided for support of these improvements.

6.1.1 Faults / Seismicity

Although no known active surface fault traces traverse through the subject site, like most of Southern California, the site lies within a seismically active area. Earthquake resistant structural design is recommended. Designing structures to be earthquake-proof is generally considered to be impractical and cost prohibitive. Significant damage to structures may therefore be unavoidable during large earthquakes.

Structural design based on the 2022 CBC (California Building Code) structural analysis procedures specifies the use of the seismic parameters given previously in the *Seismic Design Criteria* section. These minimum code values are intended to protect life and may not provide an acceptable level of protection against significant cosmetic damage and serious economic loss. Significantly higher than code parameter values may be necessary to further reduce potential economic loss during a major seismic event. Structural Engineers, however, often regard higher than code values or procedures as impractical for use in structural design. The Structural Engineer and project Owner must decide if the level of risk associated with code values is acceptable and, if not, to assign appropriate seismic values above code values for use in structural design.

6.1.2 Hazardous Materials

AGS has *not* been retained to provide any type of environmental assessment of the subject property, *nor* to provide recommendations with respect to any contamination that might be present.

6.1.3 Site Grade Adjustments

Grading for the proposed project will consist of removal and recompaction of the upper site soils, and possible slight modification of the topography to create the proposed building pads and provide proper site drainage. A preliminary conceptual grading plan was provided to our office for the preparation of this report, and as shown on Plate 3 of this report, the finished building pad areas are expected to be at or near the current existing site grade.

6.1.4 Excavation Characteristics

Difficult excavation of the onsite earth materials in terms of hard or cemented materials is not anticipated, however, the relatively sandy earth materials may be subject to caving.

6.1.5 Shrinkage

Shrinkage results when the soil being placed as fill is compacted to a dry density greater than the in-place source materials. Based on experience, it is estimated that an average shrinkage factor of about 15% will result from recompaction of the upper onsite soils. This estimate is based on an average relative compaction of 92% for recompacted materials, and average densities of the undisturbed ring samples. This estimate does not account for the effects of volume losses due to clearing, grubbing and stripping operations, or uncertainty in the density of the in-place materials. If the actual average degree of compaction differs from that used to estimate shrinkage, the actual shrinkage may also differ. Variations in the estimated shrinkage factors should be anticipated and provisions for such variations should be included in the project specifications.

6.1.6 Drainage

All surface runoff must be carefully controlled and must remain a crucial element of site maintenance. Proper drainage and irrigation are important to reduce the potential for excessive infiltration adjacent to foundations. Final grading should provide positive drainage away from footings. All drainage shall be collected and diverted away

from the proposed building and foundations in non-erosive devices. Gutters and roof drains should be provided, properly maintained, and discharge directly into glue-joined, watertight subsurface piping. All drainage piping should be watertight and discharge to an appropriate location, as determined by the project Civil Engineer.

All underground plumbing fixtures should be absolutely leak-free. As part of the maintenance program, utility lines should be checked for leaks for early detection of water infiltrating the soils that could cause detrimental soil movements. Detected leaks should be promptly repaired. Proper drainage shall also be provided away from the building footings during construction. This is especially important when construction takes place during the rainy season.

Seepage of surface irrigation water or the spread of extensive root systems into the subgrade of footings, slabs, concrete flatwork or pavements can cause differential movements and consequent distress in these structural elements. Trees and large shrubbery should *not* be planted so that roots grow under foundations and flatwork when they reach maturity. Landscaping and watering schedules should be planned with consideration for these potential problems.

Drainage systems should be well maintained, and care should be taken to *not over* or *under* irrigate the site. Landscape watering should be held to a minimum while maintaining a uniformly moist condition without allowing the soil to dry out. During extreme hot and dry periods, adequate watering may be necessary to keep soil from separating or pulling back from the foundations. Cracks in paved surfaces should be sealed to limit infiltration of surface waters.

6.1.7 Plan Review

When final grading and development plans become available, they should be reviewed by AGS *prior* to submittal to regulatory agencies for approval. Additional analysis *may* be required at that time depending on specific details of the proposed grading and improvements. Approval by this office will be indicated on the plans by signature and stamp.

Please be aware that the contract fee for our services to prepare this report does not include additional work that may be required, such as grading observation and testing, footing observations, plan review, or responses to governmental (regulatory) plan reviews associated with you obtaining a building permit. Where additional services are requested or required, you will be billed on an hourly basis for consultation or analysis. AGS requests a minimum of 24 hours be provided for plan reviews. Please anticipate additional time for plan corrections if all of our geotechnical recommendations have not been added to the plans, prior to our approving and stamping the plans.

6.1.8 Additional Recommendations

The following additional feasibility level geotechnical recommendations should be incorporated into the final design and construction plans. All such work and design should be in conformance with applicable governmental regulations or the recommendations contained herein, whichever are more restrictive. The following feasibility level recommendations have been provided *without* the benefit of a detailed grading and site development plan, and have *not* been reviewed or approved by any governing agency at this time. These feasibility level recommendations may subject to change based on the details of the proposed future grading and development plans and based on obtaining approval from the City. The final design of the proposed project should be made following approval from the City.

6.2 Site Preparation

The areas of the proposed new structures should be prepared so that foundations are founded above a blanket of newly placed compacted fill with a relatively uniform thickness. General guidelines are presented below to provide a basis for quality control during site grading. It is recommended that all compacted fills be placed and compacted with engineering control under continuous observation and testing by the Soil Engineer and/or their field representative, and in accordance with the following requirements.

6.2.1 Removals

a. When demolishing any existing improvements or subsurface structures in the vicinity of the proposed improvements, the contractor should locate any existing foundations, floor slabs, debris pits, artificial fill, and subsurface trash which may be present. These soils and structures should be completely removed. The resulting excavations should be cleaned of all loose or organic material. In areas to receive fill or to support the proposed structures, deeper removals will be required, as discussed below.

b. Remove all vegetation and loose soil *prior* to fill placement. The general depth of stripping should be sufficiently deep to remove any root systems or organic topsoil which may be present. A careful search shall be made for subsurface trash, abandoned masonry, abandoned tanks and septic systems, and other debris during grading. All such materials, which are *not* acceptable fill material, shall be removed *prior* to fill placement. The removal of trees and large shrubs should include complete removal of their root structures, where applicable.

c. The proposed building areas should be over-excavated to a minimum depth of 7 feet below the existing and or future site grade, and a minimum of 4 feet below the bottom of the proposed foundations, *whichever is deeper*. The limits of over-excavation should extend a minimum of 5 feet beyond the outside perimeter of foundations, where possible. The excavated earth materials should be removed and replaced as compacted fill, as described below. Note that the requirement to over-excavate a minimum of 4 feet below the bottom of footings includes any elevator pit footings as well.

d. For preliminary design and cost estimating purposes, AGS has developed the following preliminary remedial recommendations for building areas impacted by seismic settlement estimates that range from greater than 3/4 inch to approximately 2-1/4 inches of total seismic settlement. Based on the results of AGS's geotechnical study and experience on similar sites, over-excavation and ground improvement by replacement and densification of near-surface soils in combination with a robust, stiffened foundation system is usually the most economical method to mitigate liquefaction-induced damage due to seismic settlements.

   If a mat foundation or a reinforced concrete stiffened slab-on-grade foundation system described in Sections *6.5.3 Mat Foundations* or *6.5.4 Stiffened-Reinforced Slab-On-Grade* is used to support the proposed buildings, the following recommendations apply:

   Following clearing and removals, the soils in the building areas should be removed to a horizontal plane at the minimum depths indicated below. Removals should extend beneath the entire building area and laterally beyond the building footing perimeter a minimum distance equal to the removal depth below the perimeter footings, including beyond any appurtenant structures rigidly attached to the building such as staircases, covered walkways, etc. During construction, locally deeper removals may be recommended based on field conditions. The exposed soil surface should be scarified to a depth of 12 inches, moisture conditioned to 0% - 4% over optimum moisture content, and compacted to a minimum of 90% relative compaction (per ASTM D 1557) prior to placing any fill.

   Minimum overexcavation depths / elevations should be to 7 feet below the existing and or proposed future grade, or 4 feet below bottom of foundations, whichever is deeper, with a 2-foot thick geogrid-stabilized gravel raft at the bottom of the overexcavation. This recommendation is applicable to proposed buildings in the areas of proposed Lots 2 and 3, 5 through 10, and 13. For the other lots (1, 4, 11, and 12), the overexcavation and recompaction is recommended; however, the geogrid-stabilized gravel raft, Vibro-Stone, or Geopier Rammed

Aggregate Pier are *not* necessary *unless* total differential settlement less than 1 inch in 30 feet is required for the purposes of design.

e. ***Geogrid-Stabilized Gravel Raft Ground Improvement for Building Areas:*** If a mat or stiffened reinforced concrete slab-on-grade foundation (see in Sections *6.5.3 Mat Foundations* or *6.5.4 Stiffened-Reinforced Slab-On-Grade*) is used, the foundation area should be underlain by a geogrid-stabilized gravel raft. The stabilized gravel raft should consist of three layers of Tensar Interax® NXST Geogrid with a 12" thick layer of Caltrans Class 2 Aggregate Base or Crushed Aggregate Base (current Greenbook) between each geogrid layer, for a total raft thickness of 24 inches. Aggregate base should be compacted to 95% minimum compaction. The bottom layer of geogrid is placed upon compacted subgrade removal surface at the depth recommended above. The lateral extent of the overexcavation should be a minimum 5 feet beyond the building footprint.

The bottom geogrid should have a minimum of 3 feet of overlap and the remaining upper geogrids should have a minimum of one foot overlap.

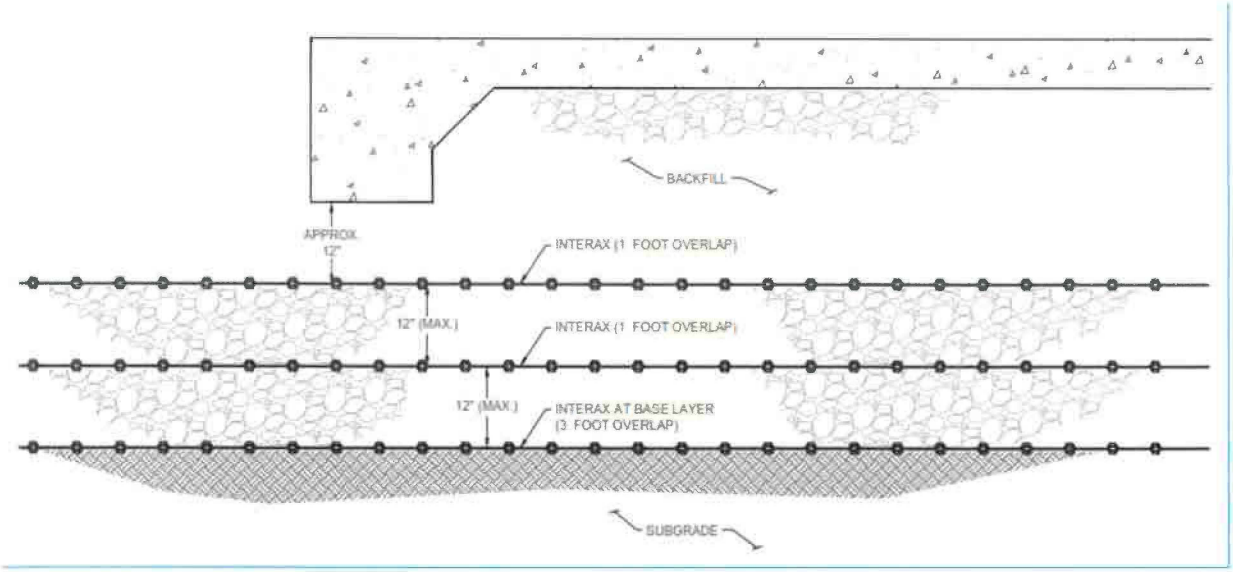


Figure from Tensar, 2021

Geogrid-Stabilized Gravel Raft Section

f. AGS should observe the excavation progress as the bottom is reached and must observe and approve the bottom prior to scarification and compaction.

g. If the excavation bottom encounters shallow groundwater or excessive moisture, the bottom may be stabilized following the recommendations presented in the *Bottom Stabilization* section below.

h. In areas to receive new exterior hardscape (i.e. concrete paving, sidewalks, curbs, walkways, etc.) or other miscellaneous surface improvements, all existing fill materials and any other loose or disturbed soil should be removed and recompacted. The depth of over-excavation in these areas should be a minimum of either 12 inches below existing grade, or 12 inches below the bottom of any improvements, or supporting aggregate base section, whichever is deeper.

i. In areas to be established as paved roadways, all existing fill materials and any other loose or disturbed soil should be removed and recompacted. The depth of over-excavation below future roadway areas should be a minimum of either 24 inches below existing grade, or 24 inches below the bottom of the supporting aggregate base section, whichever is deeper.

j. A careful search shall be made for any deeper areas of existing fill or loose soil during grading operations. If encountered, these loose areas should be properly removed to the firm underlying soil and properly backfilled and compacted as directed by a field representative of the Project Soils Engineer.

6.2.2 Bottom Stabilization

a. In the event that the soils at the bottom of over-excavation are very moist or wet at the time of grading, additional stabilization of the bottom of over-excavation with large float rock, gravel, and/or geogrid may be required, and/or the use of track-mounted equipment or excavators may be necessary. Stabilization of the bottom of over-excavation may be required, depending on the time of year and recent precipitation at the time of grading, and the type of equipment utilized. Based on the soil moisture conditions and earth material types encountered at the time of our field exploration, however, bottom stabilization is not expected to be required.

6.2.3 Vibro Stone Columns Ground Improvement for Building Areas

An alternative ground improvement method for the site is Vibro Stone Columns. This is a dynamic densification of aggregate material that replaces columns of weaker earth materials and densifies granular soils in the areas between Vibro Stone Columns, which can be an effective method to reduce seismic settlement.

Vibro Stone Column design and construction is performed by a licensed design-build contractor. All aspects of design and construction of the Vibro Stone Column system are the responsibility of the Vibro Stone Column licensee. The design-build contractor should work with the project structural engineer to design an appropriate Vibro Stone column program that meets the specific structural performance design.

AGS should review the Vibro Stone Column design submittal to ensure the design substantially conforms to the soil conditions provided in this, or subsequent, geotechnical investigation reports.

6.2.4 Rammed Aggregate Pier Ground Improvement for Building Areas

An alternative ground improvement method for the site is a Rammed Aggregate Pier (RAP) foundation system. The benefits of a RAP system include significantly reducing or eliminating the extent of remedial grading, smaller footings due to increased allowable bearing pressure and coefficient of friction when compared to values allowed for compacted fill, and reduced static and seismic settlements. RAP elements enhance settlement control by providing a composite stiffened crust to reduce soil compressibility and seismic settlement.

The construction process consists of utilizing pre-augered or displacement methods. The augered or displaced cavities are backfilled with aggregate that is compacted in place using static crowd pressure augmented with a high frequency, low amplitude, vibratory hammer. The impact hammer densifies aggregate vertically while the tamper foot forces aggregate laterally into cavity sidewalls resulting in stiff RAP elements and stiffened matrix soil. Constructed diameters typically range from 16 to 30 inches depending on the method of installation.

Rammed Aggregate Pier design and construction is performed by a licensed design-build contractor. All aspects of design and construction of the Rammed Aggregate Pier system are

the responsibility of the licensee. The design-build contractor should work with the project structural engineer to design an appropriate Rammed Aggregate Pier program that meets the specific structural performance design.

AGS should review the RAP design submittal to ensure the design substantially conforms to the soil conditions provided in this, or subsequent, geotechnical investigation reports.

6.2.5 Rapid Impact Compaction Ground Improvement for Building Areas

Due to the potential for seismically-induced settlements, it is recommended that soil improvement consisting of Rapid Impact Compaction (RIC) be considered. Subsequent to the performance of RIC, the proposed structures may be supported on a conventional shallow foundation system deriving support in the improved soils. Ground improvement through RIC uses a hydraulic hammer to repeatedly strike the ground surface to achieve densification. RIC is most effective when being used to treat granular soils up to 15 feet below the surface. As compaction and densification is achieved, additional fill may be required to maintain the desired elevation. Additionally, since RIC uses dynamic compaction, the vibrations and noise produced by RIC must be tolerable to the site and adjacent properties.

The pattern and depth of the ground improvements may vary depending upon the purposes of mitigation and stratigraphic conditions. The contractor should design the RIC based on the settlement and bearing pressure criteria stated herein. The contractor should evaluate the post-ground improvement static and dynamic settlements within the remediation zone and provide this information to the project structural engineer for consideration in the design of the structures. The RIC ground improvement should extend at least 20 feet laterally outside the edge of planned building structures, where feasible. RIC design should be based on acceptable settlement and bearing capacity criteria. The RIC design package should be submitted to AGS for review at least two weeks prior to mobilization for construction. Within the design package, the specialty contractor should outline a performance and load testing program to verify the effectiveness of the ground improvement and to confirm the bearing capacity of the improved soils.

During the load testing, a representative of AGS should be present to observe the RIC and testing. The information obtained from the load testing should be used to modify the depth necessary to achieve design capacities, as well as develop installation criteria that can be used during construction. Common testing methods include post-improvement CPTs/SPTs and a plate-load test or geophysical test methods. Where plate-load testing is performed, the load test should be performed to a capacity of 1.5 times the design load. As a minimum, we recommended at least one (1) post-improvement CPT/SPT for every 5,000 SF of improvement plan area and two load tests be performed. Where geophysical test methods are performed, an initial baseline test should be performed prior to the start of ground improvement. Once the baseline measurements are established, the threshold for achieving the desired bearing pressure and settlement will be established.

6.2.6 Suitable Fill Material

a. The excavated site soils, cleaned of deleterious material, may be utilized for fill. Rock larger than 6 inches should *not* be buried or placed in compacted fill. Rock fragments less than 6 inches may be used provided the fragments are *not* placed in concentrated pockets, and a sufficient percentage of finer grained material surrounds and infiltrates the rock voids.

b. Imported material should generally have engineering properties similar to, or more favorable than, those on the subject site, and have an expansion index less than 20. Imported material will require testing to verify the engineering properties, and must be approved by the Soil Engineer *prior* to placement on the site.

6.2.7 *Placement of Compacted Fill*

a. All fill materials should be placed in controlled, horizontal layers *not* exceeding 6 to 8 inches thick, and moisture conditioned to at least optimum moisture content, but no more than approximately 5% above optimum. Fill materials should be compacted to a minimum 90% of the laboratory maximum dry density, as determined by ASTM D1557. If the relative compaction does not meet this criteria, the contractor should rework the fill until it does meet the criteria. If the fill materials pump (flex) under the weight of construction equipment, difficulties in obtaining the required minimum compaction may be experienced. Therefore, if soil pumping occurs, it may be necessary to control the moisture content to a closer tolerance (e.g., 2 to 3% above optimum), use construction equipment that is not as prone to cause pumping, and/or a stabilizing layer of float rock, gravel, geogrid, or a combination of these, as described above.

b. The field test methods to be used to determine the in-place dry density of the compacted fill shall be in conformance with either ASTM D1556 (sand cone test method) or ASTM D2922 (nuclear gauge method).

c. Subgrade for the support of any concrete or asphalt pavement subject to vehicular traffic, including the proposed future roadways and any proposed future parking lot areas, shall be moisture conditioned as required, and be recompacted to at least 95% of the maximum dry density to a depth of at least 12 inches.

6.2.8 *Testing of Compacted Fill*

a. At least one compaction test shall be performed for every 500 yd^3 of the fill material. In addition, at least one test shall be performed for every 2 feet of fill thickness.

6.2.9 *Inclement Weather and Construction Delays*

a. If construction delays or the weather result in the surface of the fill drying, the surface should be scarified and moisture conditioned before the next layer of fill is added. Each new layer of fill should be placed on a rough surface so planes of weakness are not created in the fill.

b. During periods of wet weather and before stopping work, all loose material shall be spread and compacted, surfaces shall be sloped to drain to areas where water can be removed, and erosion protection or drainage provisions shall be made in accordance with the plans provided by the Civil Engineer. After the rainy period, the Soil Engineer and/or his field representative shall *review* the site for authorization to resume grading and to provide any specific recommendations that may be required. As a minimum, however, surface materials previously compacted before the wet weather shall be scarified, brought to the proper moisture content, and recompacted *prior* to placing additional fill.

c. During the construction of concrete foundations and flatwork, construction sequences should be scheduled to reduce the time interval between foundation excavation, subgrade preparation and concrete placement to avoid drying and cracking of the earth materials, or the surface should be covered or periodically wetted to prevent drying and cracking.

6.2.10 *Responsibilities*

a. Representative samples of material to be used as compacted fill should be analyzed in the laboratory by the Soil Engineer to determine the physical properties of the materials. If any materials other than those previously tested are encountered during grading, the appropriate analysis of this material shall be conducted by the Soil Engineer as soon as practicable. Any imported soil from off-site sources shall be approved *prior* to placement.

b. All grading work shall be observed and tested by the Project Soil Engineer or their field representative to confirm proper site preparation, excavation, scarification, compaction of on-site soil, selection of satisfactory fill materials, and placement and compaction of fill. All removal areas and footing excavations shall be observed by the field representative of the Project Soil Engineer before any fill or steel is placed.

c. The lateral limits and the depths of the required over-excavation should be shown by the Civil Engineer on the grading plans.

d. The grading contractor has the ultimate responsibility to achieve uniform compaction in accordance with the geotechnical report and grading specifications.

6.3 Utility Trench Backfill

The on-site soils are suitable for backfill of utility trenches from 1-foot above the top of the pipe to the surface, provided the material is free of organic matter and deleterious substances. The natural soils should provide a firm foundation for site utilities, but any soft or unstable material encountered at pipe invert should be removed and replaced with an adequate bedding material.

The site Civil Engineer in accordance with manufacturer's requirements should specify the type of bedding materials. Granular soils will need to be imported for bedding and shading of utilities. Jetting of bedding materials should *not* be permitted unless appropriate drainage is provided and the bedding has a sand equivalent greater than 50.

Trench backfill should be placed in 6 to 8-inch lifts, moisture conditioned and properly compacted, as described in the *Site Preparation* section of this report. The upper 1 foot below subgrade in any areas subject to vehicular traffic should be compacted to a minimum of 95% of the maximum dry density. Jetting of trench backfill is *not* acceptable to compact the backfill.

In areas where utility trenches pass through an existing pavement section, the trench width at the surface shall be enlarged a minimum of 6 inches on each side to provide bearing on undisturbed material for the new base and paving section to match the existing section.

Major underground utilities shall *not* cross beneath buildings unless specifically approved by the Project Civil Engineer and respective utility company. If approved, trenches crossing building areas shall be backfilled with a select gravelly sand compacted to 95% relative compaction.

6.4 Temporary Excavations

It is anticipated that temporary excavations made as part of the required removal and recompaction operations may be made to a maximum vertical height of approximately 5 feet, with excavations over 5 feet in height sloped back at a 1:1 gradient, where space allows.

Where there is insufficient space to allow safe temporary excavations, the excavations required as part of the removal and recompaction operations should either be slot cut or shored. It is anticipated that the majority of the temporary excavations where the building perimeter is located in close proximity to the property line could be slot-cut. If excavations encroach upon property limits for elements such as elevator pits, then shoring will likely be required for the removal and recompaction in any elevator pit areas since these excavations are anticipated to be as deep or deeper than approximately 8 to 9 feet deep, and will expose a large vertical cross-section of primarily sandy soils, and may be prone to caving. If permission could be obtained from the city to encroach a sufficient distance into adjacent areas outside the property lines, temporary sloped excavations may be possible, without the need for slot cuts or shoring.

Excavations should *not* be allowed to become soaked with water or to dry out. Surcharge loads should *not* be permitted within a horizontal distance equal to the height of the excavation from the top of the excavation, unless the excavation is properly shored. Excavations that might extend below an imaginary plane inclined at 45 degrees below the edge of an existing foundation should be properly shored to maintain foundation support for the existing structure. All excavations should be observed by a representative of the Soil Engineer during initial excavation, to confirm the anticipated soil conditions, and recommend modifications if necessary.

6.4.1 Slot Cuts

Where safe, temporary vertical or sloped excavations will not be possible, the required removal and recompaction operations should either be performed utilizing the A-B-C slot cut method, or the excavation should be shored, depending on the height of the excavation, proximity to property lines, and earth materials exposed in the excavations. For slot cuts, the individual slots should be a maximum of 8 feet in width, and up to a maximum of 12 feet deep. The following sequence of construction should be followed during the removal and recompaction in the A-B-C slots:

a. Make an initial excavation at a 1:1 slope gradient (45 degrees).

b. Excavate the initial A-slots to a sufficient depth to achieve a minimum of 7-foot depth below the current or future grade, whichever is deeper, and also provide a minimum of 4 feet of compacted fill below the bottom of footings. Recompact the earth materials back into the A-slots.

c. Repeat the above procedure in the B-slots, and finally the C-slots, benching the fill into the compacted fill placed in the adjacent slot(s).

During slot cutting operations, additional loads (such as; vehicles, heavy equipment, etc.) should *not* be allowed to operate within 5 feet laterally of the top of the excavation, or within a lateral distance equal to the excavation height, whichever is greater.

6.4.2 Shoring

Where the depth of excavation is greater than 5 vertical feet, laying back of the top of the excavation and or the sue of slot cutting is not feasible, and or where the excavation may be surcharged by an adjacent existing improvement, the use of soldier piles may be necessary. Soldier piles typically consist of steel beams placed in drilled holes, and backfilled with concrete up to the anticipated bottom of excavation, and slurry above.

It is anticipated that the soldier piles will be designed as cantilevers, due to the relatively small retained height expected. A triangular distribution of lateral earth pressure may be utilized in the design of cantilever shoring, and any surcharge from adjacent traffic or structures should be added, if necessary.

The following recommendations can be utilized in the design of the shoring system:

a. Soldier piles founded into competent native earth materials can be used for the shoring system. The spacing of the soldier piles should *not* be greater than 8 feet on center.

b. Soldier piles should be embedded a minimum of 8 feet into competent native earth materials, but not less than the depth required for adequate vertical support and lateral resistance. Soldier piles can be assumed fixed at 5 feet below the bottom of temporary excavation.

c. A skin friction of 330 psf can be used to determine vertical support.

d. A triangular distribution of lateral earth pressure may be utilized in the design of the soldier piles, utilizing an equivalent fluid pressure of 30 pcf, plus surcharge loading due to any adjacent structures or other surcharge.

e. Passive earth pressure may be computed as an equivalent fluid having a density of 250 pounds per cubic foot (pcf), with a maximum passive earth pressure of 2500 psf. The allowable passive earth pressure may be increased by 100% for isolated piles. Piles with spacing greater than 3 pile diameters on center can be considered isolated.

f. Drilling of piles should be observed and approved on a continuous basis by a representative of the Soil Engineer. The City Inspector should be notified of the pile drilling *prior* to drilling piles.

g. The exposed earth materials should be inspected during excavation to determine where lagging may be necessary, although due to the sandy nature of the soils, continuous lagging is expected to be required. Due to the arching effect of the soils, a maximum lagging pressure of 400 pounds per square foot may be used for design, providing piles are not spaced greater than 8 feet on center. All lagging should be placed as soon as possible after the excavation is made.

Earth materials exposed in the temporary excavations should be kept moist but not saturated, to limit raveling and sloughing during construction. If wood lagging is used, care should be taken to fill all void spaces between the excavation face and the lagging. All timber lagging must be removed *prior* to permanent construction unless the timbers are properly treated, which they typically are. Any materials used for backfill behind the excavation walls should be free-draining. It is recommended that AGS be allowed to regularly inspect the temporary excavation as work progresses in order to monitor the excavations and verify that conditions assumed for design remain unchanged.

6.5 Foundation Design

After removal and recompaction of the upper site soils as previously discussed in this report, and the implementation of ground improvement measures has been performed as required, conventional, shallow footings founded exclusively in newly placed, certified compacted fill can be utilized for foundation support for the proposed structures. The following design parameters may be used in the design of conventional, shallow footings.

6.5.1 Minimum Footing Dimensions

Minimum required foundation depths and widths are provided below. These embedment depths are into the recommended bearing material, or below the lowest adjacent, final grade, whichever is deeper. Where located adjacent to utility trenches, footings shall extend below a 1:1 plane projected upward from the inside bottom of the trench.

Minimum Footing Embedment Depth, Inches	Minimum Continuous Footing Width, Inches	Minimum Isolated or Pad Footing Width, Inches
18 (1 and 2 Story) 24 (3+ Stories)	12 (1-Story) 15 (2-Stories) 18 (3+ Stories)	24

6.5.2 Allowable Bearing Pressure and Lateral Resistance

Allowable net vertical soil bearing pressure, including dead and live loads, are given below for footings founded in the recommended bearing material, at the minimum required embedment depths. The bearing capacity can be increased by ⅓ when considering short duration wind or seismic loads.

Bearing Material	Allowable Bearing Pressure, psf	Allowable Sliding Friction Coefficient	Allowable Passive Resistance, psf per foot of depth	Maximum Passive Resistance, psf
COMPACTED FILL	2000	0.30	200	2500

Resistance to lateral loads can be assumed to be provided by friction acting along the base of the foundation, and by passive earth pressure on the side of the footing. For footings located adjacent to the property lines, the existing native soil beyond the property line may be utilized for passive resistance. The allowable friction coefficient may be used with the vertical dead loads, and the allowable lateral passive pressure can be utilized for the sides of footings. These allowable values can be increased by a factor of 1.5 to convert from allowable to ultimate values.

6.5.3 Mat Foundation

A mat foundation underlain by a minimum of 4 feet of engineered fill may be designed for a maximum allowable bearing pressure of 1,000 pounds per square foot and modulus of subgrade reaction of 50 psi per inch. The mat should be designed with a minimum thickness of 12 inches and should be reinforced as necessary to provide a rigid floor system. Our analysis assumes the mat foundation would be embedded at a minimum of 24 inches below the lowest adjacent grade. The bearing pressure should not be increased for static loads. This bearing capacity is applicable for dead load plus live load and may be increased by up to one-third (1/3) when transient loads such as wind and/or seismic loads are included. The weight of the concrete foundations can be neglected. Resistance to lateral loading may be provided by friction acting on the base of foundations. A coefficient of friction of 0.30 may be applied to dead load forces.

Passive pressure for structures founded in the engineered fill may be taken as 200 pcf of equivalent fluid weight for resistance to lateral load to a maximum value of 2,500 psf. Passive resistance should be neglected in the upper six (6) inches unless the surface is contained by a pavement or a slab.

If a mat foundation is to be planned in conjunction with a geogrid-stabilized gravel raft, then the above parameters may be used, except that the maximum allowable bearing pressure can be taken as 2,000 pounds per square foot. The bearing pressure should not be increased for static loads. This bearing capacity is applicable for dead load plus live load and may be increased by up to one-third (1/3) when transient loads such as wind and/or seismic loads are included.

6.5.4 Stiffened-Reinforced Slab-On-Grade Foundations

We recommend using a stiffened reinforced slab-on-grade for the proposed structures. A stiffened reinforced concrete slab-on-grade with continuous footings along the perimeter and internal grade beams may be considered to support the proposed structures, as follows:

- The footings should extend to a minimum depth of 18 inches below lowest adjacent grade. Footings should be continuously reinforced with a minimum of two #5 reinforcing bars placed within 3 inches from the bottom of the footing and two #5 reinforcing bars placed within 3 inches from the top of the footing. Resistance to lateral loading may be provided by friction acting on the base of foundations. A coefficient of friction of 0.30 may be applied to dead load forces. Passive pressure may be taken as 275 pcf of equivalent fluid weight for resistance to lateral load to a maximum value of 3,000 psf. Passive resistance should be neglected in the upper six (6) inches unless the surface is contained by a pavement or a slab.
- Stiffened reinforced concrete slabs-on-grade may be designed in accordance with the CBC Section 1808A.6.2 which recommends the CRSI/WRI Slab-on-ground Foundation manual using an average subgrade soil plasticity index (PI) of 30, allowable soil bearing capacity of 1,500 pounds per square foot, and modulus of subgrade reaction of 150 pounds per square inch.

  The slab should have a minimum thickness of 6 inches and be designed with concrete having a minimum compressive strength of 3,000 psi. The slab should be continuously reinforced with #5 reinforcing bars placed in both directions at a maximum spacing of 18 inches on center.

Engineered fill underlying the slab should be moisture-conditioned and compacted in accordance with the recommendations presented in this report prior to placement of concrete. Concrete contraction joints should be constructed at intervals designed by the structural engineer to help control cracking of the slab.

- Internal grade beams should be placed at a maximum spacing of 30 feet on center and should be arranged to divide the structure into squares or rectangles in accordance with the requirements of the CBC. All foundation elements, including isolated or spread footings, should be tied together with internal grade beams. Internal grade beams should extend a minimum of 18 inches below the top of the slab and should have a minimum width of 12 inches. Alternatively, the slab may be thickened to provide an equivalent section equal in stiffness as determined by the structural design engineer.

6.5.5 Foundation Settlement

Static settlement of proposed foundations due to dead and frequently applied live loads is not expected to exceed approximately ¾ to 1-inch under the assumed loading conditions, and is expected to occur primarily upon initial application of loading. Differential settlement is not expected to exceed approximately ½-inch.

The maximum settlement of the foundations as a result of liquefaction and dynamic dry settlement of the underlying soils in response to strong seismic shaking is anticipated to be 2-1/4-inches. The potential differential dynamic dry settlement is typically assumed to be up to approximately 2/3 of the total settlement, which would be approximately 1-1/2 inches, and would occur over a distance of 30 feet.

Total differential settlement (due to both static and seismic) is estimated to be up to approximately 2 inches over a distance of 30 feet. For areas where total differential settlement is estimated to exceed more than approximately 1 inch over a distance of 30 feet, we recommend the use of the geogrid-stabilized gravel raft and stiffened reinforced shallow foundations, which is intended to reduce the effects of differential settlement due to seismically-induced settlement, including loss of bearing. This condition is expected in the areas of Lots 2 and 3, 5 through 10, and 13. Also, deep ground improvement mitigation consisting of Vibro-Stone Columns, Rammed Aggregate Piers, or Rapid Impact Compaction may be designed in order to reduce total and differential settlement to acceptable levels.

Alternatively, AGS understands that the structures can be designed for the tolerable settlement thresholds as given in ASCE 7-16 Section 12.13.9 for shallow foundations, where:

- Risk Category II Single-Story Structures other than concrete or masonry walls can be designed for
  - 10.8 inches total settlement
  - 5.4 inches differential settlement in 30 feet
  - Shallow foundation with ties, integral slab, or mat

- Risk Category II Multi-Story Structures with concrete or masonry walls can be designed for
  - 3.6 inches total settlement
  - 1.8 inches differential settlement in 30 feet
  - Shallow foundation with ties, integral slab, or mat

- Risk Category II Multi-Story Structures other than concrete or masonry walls can be designed for
  - 7.2 inches total settlement
  - 3.6 inches differential settlement in 30 feet
  - Shallow foundation with ties, integral slab, or mat

See the tables in section 5.2.6 above showing the estimated total seismic settlement from the analyses from the initial conditions and from over-excavation depths with reference to the tolerable settlements from ASCE 7-16 Section 12.13.9. See Appendix E for seismic settlement analyses output.

6.5.6 Lateral Surcharge from Adjacent Structures

If an adjacent structure encroaches upon any elements of the proposed or existing structures within a 1:1 (H:V) plane projected from the bottom edge of an adjacent structure or footing, additional lateral pressure should be considered as a surcharge load on the structure that is being surcharged. The magnitude and application of any surcharge loading should be evaluated by the Project Structural Engineer.

6.5.7 Steel Reinforcement

All foundations should be reinforced with a minimum of four #4 steel bars. Two of these should be placed near the top of the foundation, and two should be placed near the bottom. Final structural details of the footings, such as footing thickness, concrete strength, and amount of reinforcement, should be established by the project Structural Engineer, but should comply with the above minimums. The upper site soils were determined to have an expansion index of 0 to 11, which is in the *very low* expansion category. Expansion index testing should be performed at the completion of grading to confirm the expansion index at subgrade level of the finished building pad.

6.5.8 Required Observations

Prior to placing concrete in the footing excavations, an observation should be made by a field representative of the Project Soil Engineer to confirm that the footing excavations are free of loose and disturbed soils and are embedded in the recommended earth materials.

6.6 Slab-On-Grade

All floor slabs should be supported on newly placed compacted fill. If earthwork operations are conducted such that the construction sequence is not continuous or if construction operations disturb the surface soils, it is recommended that the exposed subgrade to support concrete slabs be tested within a day of the concrete pour to verify adequate compaction and moisture conditions. If adequate compaction and moisture conditions are not demonstrated, the disturbed subgrade should be over-excavated, scarified, and recompacted in accordance with the guidelines in the *Site Preparation* section of this report *prior* to the slab being poured.

6.6.1 Steel Reinforcing

It is recommended that the proposed concrete slabs on grade be a minimum of 5 inches thick, and be reinforced with a minimum of #4 steel bars placed on 18-inch centers each way. The final structural details, such as (1) slab thickness, (2) concrete strength, (3) type, amount, and placement of reinforcing, and (4) joint spacing, should be determined by the project Structural Engineer, but it is recommended that the thickness and steel reinforcing comply with the minimum values provided above. The upper onsite soils are in the *low* expansion range, with an expansion of 29.

Cracking of concrete floor slabs can occur and is relatively common. Steel reinforcement, crack control joints and proper concrete curing are intended to reduce the risk of concrete slab cracking. Fiber reinforced concrete can also be utilized to reduce the risk of slab cracking. In addition, concrete slabs are generally not perfectly level, but they should be within tolerances included in the project specifications.

Tile flooring can crack, reflecting cracks in the underlying concrete slab. Therefore, if tile flooring is used, the slab designer should consider additional steel reinforcement, above minimum requirements, in the design of concrete slabs where tile will be installed. Furthermore, the tile installer should consider installation methods, such as using a vinyl crack isolation membrane between the tile and concrete slab, to reduce the potential for tile cracking.

6.6.2 Vapor Barrier

It is recommended that all building floor slabs be underlain by a minimum of 4 inches of sand. It is also recommended that a minimum 15-mil thick plastic vapor barrier be used under floor slabs in moisture sensitive areas. The vapor barrier should be installed in accordance with the recommendations contained in the latest version of ASTM E1643.

The literature is mixed regarding the preferred placement of the vapor barrier with respect to the sand and concrete slab. Some designers prefer to place the vapor directly below the concrete slab, and some prefer to sandwich the vapor barrier between layers of sand. It is our opinion, and the opinion of the California Geotechnical Engineering Association that the decision of where to place the vapor barrier does not fall under the responsibility or expertise of the Soil Engineer, and we will therefore defer to the project designer on this matter. Appropriate precautions should be taken whichever vapor barrier placement is chosen.

Seams of the vapor barrier should be overlapped and sealed. Where pipes extend through the vapor barrier, the barrier should be sealed to the pipes. Tears or punctures in the vapor barrier should be completely repaired prior to placement of concrete. The concrete mix should be designed so as to minimize possible curling of the slab. The concrete slab should be allowed to cure properly before placing vinyl or other moisture-sensitive floor covering.

6.7 Concrete and Asphalt Pavement Design

All areas to be paved with asphalt or concrete should be graded in accordance with the recommendations provided in the *Site Preparation* section of this report. Compaction tests will be required for all asphalt and aggregate base. A minimum relative compaction of 95% is required for the asphalt, aggregate base, and upper 12 inches of subgrade soils in areas subject to vehicular traffic. The aggregate base course should have an *R*-value of at least 78 and should comply with specifications for untreated crushed aggregate base (CAB), crushed miscellaneous base (CMB), or processed miscellaneous base (PMB), as defined Section 200-2 of the current Green Book (Standard Specifications for Public Works Construction), or aggregate base (AB-Class 2) as defined in Section 605.3 of the current Caltrans Highway Design Manual. The following pavement sections provide the minimum thickness of asphalt concrete permitted by the Caltrans design procedure. Alternate designs with greater asphalt thickness and smaller base course thickness are also possible. Base materials should be placed and compacted in lifts not exceeding 6 inches. Asphalt should *not* be placed if the base is pumping. Base materials are *not* required beneath curbs and gutters. However, if base materials are not utilized beneath the curbs and gutters, it is recommended that the subgrade soils be scarified to a minimum depth of 12 inches below the bottom of curb, and recompacted to at least 95% relative compaction.

6.7.1 Asphalt Pavements

Asphalt pavement section calculations were performed for asphalt pavement design for a range in traffic indices. Selection of the appropriate traffic index to use should be made by the Project Civil Engineer based on their knowledge of traffic flow and loadings.

The structural sections for asphalt pavement were computed in general accordance with the Caltrans method (**California Department of Transportation Highway Design Manual**), using an *R-value* of 14 for the upper site soils. Results of *R*-Value testing performed on samples obtained from the exploratory borings ranged from 21 to 57, therefore a conservative factor of safety of 1.5 was applied to the lowest laboratory determined value. The recommended pavement sections for various traffic indices are summarized in the following table.

Traffic Index	*R-Value = 14*	
	Thickness, Inches	
	Asphalt Concrete	Aggregate Base
5.0	4.0	6.0
6.0	4.5	9.0
7.0	4.5	12.5

6.7.2 Confirmation of R-Value

Additional testing to determine the *R*-value of the subgrade soils in street, parking and driveway areas should be performed near the completion of grading, in order to confirm the pavement structural sections. It should be noted that the pavement structural section design recommendations presented in this report may change if a different *R*-value is obtained for the actual subgrade soils.

6.7.3 Concrete Pavements

It is recommended that all exterior concrete pavement subject to vehicular traffic be a minimum of 6 inches thick, and be underlain by a minimum of 4 inches of aggregate base. Concrete flatwork subject only to pedestrian traffic (i.e. walkways, sidewalks, etc.) should be a minimum of 4 inches thick, and may be placed directly on compacted subgrade. All exterior concrete should be reinforced with a minimum of #4 steel bars placed on 24-inch centers each way.

6.7.4 Pavement Maintenance

Pavement section design assumes that proper maintenance practices, such as sealing and repair of localized areas of distress, are employed throughout the design life of the pavement.

6.8 Retaining Wall Design Criteria

The following general retaining wall design criteria is provided for use in the design of elevator pit retaining walls, and any other miscellaneous small retaining walls which may be incorporated into the project design, although the exact locations and heights of any other miscellaneous proposed retaining walls which may be utilized are not yet known. It is anticipated that all proposed retaining walls will retain less than 6 feet of earth materials, and therefore seismic lateral forces need not be incorporated into the design.

Retaining wall foundations may be designed utilizing the criteria provided in the *Foundation Design* section of this report.

6.8.1 Lateral Earth Pressures

The earth pressure behind retaining walls depends on the allowable wall movement, type of backfill materials, backfill slopes, surcharges, and hydrostatic pressures if any. The following equivalent fluid pressures are recommended for vertical walls with no hydrostatic pressure, no surcharge, no seismic effects, and a backfill slope with a gradient less (flatter) than 5(H):1(V). Seismic lateral forces would be in addition to the static wall pressures provided below, and would be required for walls retaining more than 6 feet, which is not currently anticipated.

	Equivalent Fluid Unit Weight, pcf			
Wall Movement	Clean Sand or Gravel Backfill (GW, GP, SW, SP)	Silty Sand or Silty Gravel Backfill (SM, GM)	Clayey Sand, Clayey Gravel Backfill (SC, GC)	Silts, Clays (ML, CL)
FREE TO DEFLECT	30	40	45	55
RESTRAINED	40	50	60	80

In areas where the retaining walls retain sloping ground steeper than 5(H):1(V), the equivalent unit weights in the above table should be increased by 13 pcf for gradients up to 2(H):1(V) for Clean Sand or Gravel Backfill only. Use of backfill materials other than Clean Sand or Gravel is not recommended for sloping ground steeper than a 5:1 gradient.

These values are applicable for backfill placed between the wall stem and an imaginary plane rising at a 45-degree angle from below the edge (heel) of the wall footing. If the onsite soil is used as backfill within this zone, the equivalent fluid unit weight associated with a soil classification of SM should be used.

The surcharging effect of anticipated adjacent loads on the wall backfill due to traffic, footings, or other loads, should be included in the wall design. The magnitude of lateral load due to surcharging depends on the magnitude of the surcharge, the size of the surcharge-loaded area, the distance of the surcharge from the wall, and the restraint of the wall. We can provide assistance in evaluating the effects of surcharge loading, if desired, once details are known and provided.

6.8.2 Backfill and Drainage

Except for the upper 18 to 24 inches, the soil immediately adjacent to backfilled retaining walls should be free-draining filter material (such as Caltrans Class 2 permeable material), or gravel wrapped in filter fabric, within a minimum horizontal distance of 1-foot from the back face of the wall. As an alternative to either one of these, a drainage tile product such as Miradrain may be applied to the back face of wall, over the waterproofing. Weep holes and/or a subdrain pipe, as appropriate, should be installed at the base of retaining walls. Subdrain pipe should consist of a minimum 4-inch diameter perforated PVC pipe meeting ASTM D2729 or better, surrounded by a minimum of 1 cubic foot of gravel per lineal foot of pipe, and the entire pipe and gravel system should be wrapped in filter fabric, such as Mirafi 140N. Accordion or similar type pipe is *not* acceptable for subdrain pipe. The top 18 to 24 inches should be backfilled with less permeable compacted fill to reduce infiltration. A *Typical Retaining Wall Drainage* Detail has been provided as Figure 5 of this report.

During grading and backfilling operations adjacent to any wall, heavy equipment should not be allowed to operate within 5 feet laterally of the wall or within a lateral distance equal to the wall height, whichever is greater, to avoid developing excessive lateral pressures. Within this zone, only hand-operated equipment should be used to compact the backfill soils.

7. OBSERVATIONS AND TESTING

Prior to the start of site preparation and/or construction, *it is recommended that a meeting be held with the Contractor to discuss the project*. We recommend that AGS be retained to perform the following tasks prior to, and/or during construction. Please *advise* AGS a minimum 24 hours *prior* to any required site visit. *All approved plans, permits, and geotechnical reports must be at the jobsite and be made available during inspections.*

a. *Review* grading, foundation, and drainage plans to *verify* that the recommendations contained in this report have been properly interpreted and are incorporated into the project specifications. *If we are not accorded the opportunity to review these documents, we can take no responsibility for misinterpretation of our conclusions and recommendations.*

b. *Observe and advise* during all grading activities, including site preparation and placement of fill, temporary excavations and slot cutting, installation of shoring, and all foundation excavations, to *confirm* that suitable fill soils are placed upon competent material, and to allow design changes if subsurface conditions differ from those anticipated, *prior* to the start of construction.

c. *Observe* the installation of all drainage devices.

d. *Test* all fill placed for engineering purposes to *confirm* that suitable fill materials are used and properly compacted.

8. LIMITS AND LIABILITY

All building sites are subject to elements of risk that cannot be wholly identified and/or entirely eliminated. Building sites are subject to many detrimental geotechnical hazards, including but *not* limited to the effects of water infiltration, erosion, concentrated drainage, total settlement, differential settlement, expansive soil movement, seismic shaking, fault rupture, landsliding, and slope creep. The risks from these hazards can be reduced by employing subsurface exploration, laboratory testing, analyses, and experienced geotechnical judgment. Many geotechnical hazards, however, are highly dependent on the property owner properly maintaining the site, drainage facilities, and slope and by correcting any deficiencies found during occupancy of the property in a timely manner. Even with a thorough subsurface exploration and testing program, significant variability between test locations and between sample intervals may exist. Ultimately, geotechnical recommendations are based on the experience and

judgment of the geotechnical professionals in evaluating the available data from site observations, subsurface exploration, and laboratory tests. Latent defects can be concealed by earth materials, deposition, geologic history, and existing improvements. If such defects are present, they are beyond the evaluation of the geotechnical professionals. No warranty, expressed or implied, is made or intended in connection with this report, by furnishing of this report, or by any other oral or written statement. Owners and developers are responsible for retaining appropriate design professionals and qualified contractors in developing their property and for properly maintaining the property. Retaining the services of a geotechnical consultant should *not* be construed to relieve the Owner, Developer, or Contractors of their responsibilities or liabilities.

The analysis and recommendations submitted in this report are based in part on our subsurface exploration, laboratory testing, site observations, and provided data on geology and the proposed site development. Our descriptions and the boring logs may show distinctions between fill and native soils, between native (e.g., alluvium, colluvium, slopewash) and bedrock formation, and between soil type (e.g., sands and silty sands). Such distinctions were based on geologic information, grading plans when available, intermittent recovered soil/bedrock samples, and judgment. Delineations between these categories of materials may not be perfect and may be subject to change as more information becomes available. For example, judgments may be clouded when recovered samples are intermittent and small in comparison to the volume of soil under study, and macrostructure that would aid the identification process are not as apparent as they would be when the borehole is geologically downhole logged by entering the excavation. When the age of the fill is old, the difference between the structure of the fill and native materials may be less pronounced, or the degree of bedrock formation weathering sometimes makes it difficult to distinguish between overlying alluvium, colluvium, or slopewash and weathered bedrock formational material. In general, our recommendations are based more on the properties of the materials than on the category of the material type such as fill, alluvium, colluvium, slopewash, or bedrock formation. Furthermore, the actual stratigraphy may be more variable than shown on the logs.

Although this report may comment on or discuss construction techniques or procedures for the design engineer's guidance, this report should *not* be interpreted to prescribe or dictate construction procedures or to relieve the contractor in any way of their responsibility for the construction.

Please be aware that the contract fee for our services to prepare this report does not include additional work that may be required, such as grading observation and testing, footing observations, plan review, or responses to governmental (regulatory) plan reviews associated with you obtaining a building permit. Where additional services are requested or required, you will be billed for any equipment costs and on an hourly basis for consultation or analysis.

The Soil Engineer's actual scope of work during construction is very limited and does *not* assume the day-to-day physical direction of the work, minute examination of the elements, or responsibility for the safety of the contractor's workers. Our scope of services during construction consists of taking soil tests and making visual observations, sometimes on only an intermittent basis, relating to earthwork or foundation excavations for the project. We do *not* guarantee the contractor's performance, but rather look for general conformance to the intent of the plans and geotechnical report. Any discrepancy noted by us regarding earthwork or foundations will be referred to the Owner, project Engineer, Architect, or Contractor for action.

This report is issued with the understanding that it is the responsibility of the Owner, or of their representative, to ensure that the information and recommendations contained herein are called to the attention of the Architect and Engineers for the project and incorporated into the plan and that the necessary steps are taken to see that the Contractor carry out such recommendations in the field. Advanced Geotechnical Services, Inc., (AGS) has prepared this report for the exclusive use of the Client and authorized agents, and this report should *not* be considered transferable. We do recommend, however, that the report be given to future property Owners for the sole purpose of disclosing the report findings.

Findings of this report are valid as of the date of issuance. Changes in conditions of a property may occur with the passage of time whether attributable to natural processes or works of man on this or adjacent properties. Furthermore, changes in applicable or appropriate standards occur due, for example, to legislation and broadening of knowledge. Accordingly, findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, *this report is subject to our review and remains valid for a maximum period of one year*, unless we issue a written opinion of its continued applicability thereafter.

In the event of any changes in the nature and design of the proposed improvements, the conclusions and recommendations contained in this report shall *not* be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

This report may be subject to review by controlling agencies, and any modifications they deem necessary should be made a part thereof, subject to our technical acceptance of such modifications. All submissions of this report should be in its entirety. Under no circumstances should this report be summarized and synthesized to be quoted out of context for any purpose.

Test findings and statements of professional opinion do *not* constitute a guarantee or warranty, and *no* warranties, either expressed or implied, are made as to the professional advice provided under the terms of this agreement. We have strived, however, to provide our services in accordance with generally accepted geotechnical engineering practices in this community at the time of this report.

Appendix A

Field Exploration, Boring Logs, and CPT data

Appendix A
Field Exploration, Boring Logs, and CPT Data

The field exploration included a site reconnaissance and subsurface exploration. During the site reconnaissance, the surface site conditions were noted, and the approximate locations of any exploration points were determined. The following descriptions of exploration methods are generic and may include methods not used on this project. Reference to the boring logs can be made to determine which methods are applicable to this project, and any differences between what is described below and actually occurred is described on the boring logs or in the main body of the report.

The test borings were advanced by either hand digging, digging with a backhoe, or drilling. In the case of drilling, a truck-mounted rotary drilling rig with a hollow-stem auger or bucket was used to advance the borings. When we expect to encounter shallow groundwater, a wet rotary drilling operation is usually used. The method actually used is noted on the boring logs. For geologic studies when the need for visual examination of the bedding and other stratigraphic features is needed along with engineering data, the larger bucket augers are used to allow a geologist to enter the excavation for visually logging the hole. When geologically logging borings and trenches, the sides are scraped prior to logging. A prefix B is used to designate a boring made with a drilling rig. When hand dug, the boring numbers have a prefix HB. When a backhoe was used, prefixes TP (test pit) or T (trench) are used. The difference between a trench and test pit being the length of the exploration; a trench being a long narrow exploration, most commonly used for fault studies. In each case, the soils were logged by technical personnel from our office and visually classified in the field in general accordance with the Unified Soil Classification system. The field descriptions have been modified as appropriate to reflect laboratory results when preparing the final boring logs.

Relatively undisturbed samples of the subsurface materials were obtained at appropriate intervals in the borings using a steel drive sampler (2.5-inches inside diameter, 3-inches outside diameter) lined with brass, one-inch-high sample rings with a diameter of 2.4 inches. This is referred to as a modified California sampler. The boring may be advanced by drilling with a hollow-stem auger or with a wet rotary operation. If below the groundwater, the hollow-stem is filled with water or drilling mud to counteract the fluid pressure of the groundwater. The sampler was usually driven into the bottom of the borehole with successive drops of a 140-pound safety hammer connected to the sampler with either A or AW rod and falling 30 inches. An automatic hammer is usually used when drilling with a CME dill rig, and a Safe-T-Driver is used when drilling with a Mobile drill rig. When above the groundwater level, a downhole Safe-T-Driver is usually used. Studies have shown that hammer efficiencies of the automatic hammer is over 90% while that of the Safe-T-Driver is about 70%, based on impact velocities. When a bucket auger is used to advance the boring, the driving weights change with depth, depending on the weight characteristics of the telescoping kelley bar, but the height of fall is usually 18 inches. Sampler driving resistance, expressed as blows per 6 inches of penetration, is presented on the boring logs at the respective sampling depths. When the borings or trenches are excavated with a backhoe, the sampler is pushed into the soil with the force of the backhoe. A hand sampler is used when the borings or trenches are advanced by hand digging or in some cases when a backhoe is used to make the excavation. This hand sampler is similar to the conventional California sampler, but lighter weight. An approximately 8-pound hammer falling about 18 inches is used to drive the hand sampler about 6 inches into the bottom of the exploration. The type of sampler used is noted on the boring logs. In some cases the hammer weight and falling distance deviate from those given above. The actual conditions are shown on the boring logs and supersede the conditions given above.

Ring samples were retained in close-fitting, moisture tight containers for transport to our laboratory for testing. Bulk samples, which were collected from cuttings, were placed in bags and transported to our laboratory for testing.

When noted on the boring logs, standard penetration test (SPT) samples were obtained using either a 20-inch or a 32-inch long split-barrel sampler with a 2-inch outside diameter and a 1.375-inch inside diameter when liners are used (1.5-inch inside diameter without liners). Unless noted otherwise, liners are used. This sampler is driven into

the soil with successive drops of a 140-pound, safety hammer falling 30 inches. The blows are recorded for each 6 inches of penetration for a total penetration of 18 or 24 inches. The sum of the number of blows for the last 12 inches of an 18-inch penetration or the middle 12 inches of a 24-inch penetration is referred to as the *N* value.

Logs, which are presented on Plates at the end of this Appendix, include a description and classification of each stratum, sample locations, blow counts, groundwater conditions encountered during drilling, results from selected types of laboratory tests, and drilling information. Keys to *Soil and Bedrock Symbols and Terms* are included on Plate A-1 and Plate A-2.

The Cone Penetrometer Test (CPT) soundings were conducted in accordance with ASTM D 5778 using an electronic piezocone penetrometer. The test consists of hydraulically pushing a conical pointed penetrometer with a cylindrical friction sleeve and a piezo-element located behind the conical point into subsurface soils at a slow, steady rate. Parameters electronically measured and recorded nearly continuously during the CPT are soil bearing resistance at the cone tip (qc), soil frictional resistance along the cylindrical friction sleeve (fs), and pore water pressure directly behind the cone tip (U). These measured values are then used to estimate the type and engineering properties of soils being penetrated using published correlations between qc, fs, and U.
At the completion of the sounding the apparent groundwater depth and cave-in depth was measured with weighted tape and the CPT hole was abandoned by backfilling bentonite into the hole. Paved surfaces were patched with cold mix asphalt or quickset concrete.

Each boring or trench, unless noted otherwise, was backfilled with cuttings at the completion of the logging and sampling. The backfill, however, may settle with time, and it is the responsibility of our client to ensure that such settlement does *not* become a liability.

Advanced Geotechnical Services

Key to Soil Symbols and Terms

Major Divisions			USCS Group Symbols	Typical Names
Coarse-Grained Soils (More than half of material is larger than No. 200 sieve)	Gravels (More than half of coarse fraction is larger than No. 4 sieve)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravels with fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand, clay mixtures
	Sands (More than half of coarse fraction is smaller than No. 4 sieve)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sand, little or no fines
			SP	Poorly graded sands, gravelly sands little or no fines
		Sands and fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils (More than half of material is smaller than No. 200 sieve)	Silts and Clays Liquid Limit < 50		ML	Silts and very fine sands, rock-flour, silty or clayey fine sands, or clayey silts with slight plasticity
			CL	Inorganic clays of low or medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays Liquid Limit > 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
	Highly Organic Soils		OH	Organic clays of medium to high plasticity, organic silts
			Pt	Peat and other highly organic soils

Legend of Laboratory Tests

G - Grain Size	C - Consolidation	PP - Pocket Penetrometer
A - Atterberg Limits	DS - Direct Shear	CH - Chemical
P - Compaction	U - Unconfined	
S - Swell/Expansion	T - Triaxial	

Sampler Type

Modified California / Hand Sampler — SPT / Shelby Tube — Rock Core / Bulk — No Recovery

Terms used in this report for describing soils according to their texture or grain size distributions are generally in accordance with the Unified Soil Classification System.

Terms Describing Density and Consistency

Coarse Grained soils (major portion retained on No. 200 sieve) include (1) clean gravels, (2) silty or clayey gravels, and (3) silty, clayey, or gravelly sands. Relative density is related to SPT blow count corrected for overburden pressure or drive energy.

Density		SPT *N* Value Blows/Ft	Relative Density %
Very Loose	vl	0 to 4	0 to 15
Loose	l	4 to 10	15 to 35
Medium Dense	md	10 to 30	35 to 65
Dense	d	30 to 50	65 to 85
Very Dense	vd	> 50	85 to 100

Fine Grained soils (major portions passing No. 200 sieve) include (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shear strength as indicated by penetrometer readings, direct shear, or SPT blow count.

Consistency	Shear Strength, ksf	SPT *N* Value
Very Soft	< 0.25	0 to 2
Soft	0.25 to 0.50	2 to 4
Firm	0.50 to 1.00	4 to 8
Stiff	1.00 to 2.00	8 to 16
Very Stiff	2.00 to 4.00	16 to 32
Hard	> 4.00	> 32

Terms Characterizing Soil Structure

Slickensided	Having inclined planes of weakness that are slick and glossy in appearance.
Fissured	Containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated	Composed of thin layers of varying color and texture.
Interbedded	Composed of alternate layers of different soil types.
Calcareous	Containing appreciable quantities of calcium carbonate.
Well Graded	Having wide range in grain sizes and substantial amounts of intermediate particle sizes.
Poorly Graded	Predominately one grain size, or having a range of grain sizes with some intermediate sizes missing.
Porous	Having visibly apparent void spaces through which water, air, or light may pass.

Soil Moisture

From low to high, the moisture content is indicated by:

Dry	D
Slightly Moist	Sl M
Moist (near optimum for compaction)	M
Very Moist	V M
Wet	W

Size Proportions

Designation	Percent by Weight
Trace	< 5
Few	5 to 10
Little	15 to 25
Some	30 to 45

Grain Size Distribution

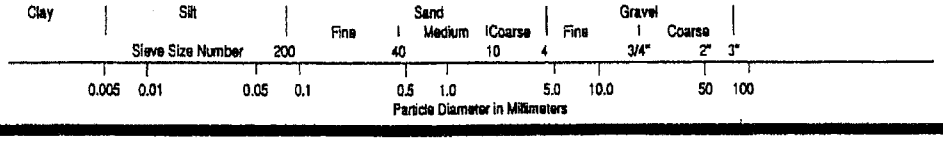


Plate A-1

Advanced Geotechnical Services

Key to Bedrock Symbols and Terms

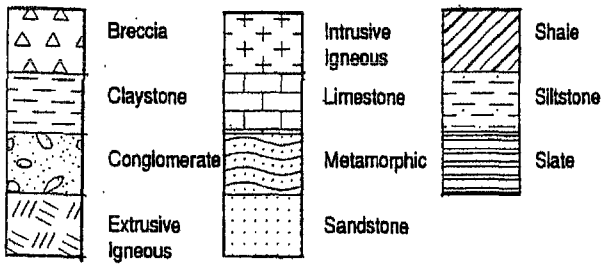
Degree of Weathering
Diagnostic Feature

Descriptive Term	Discoloration Extent	Fracture Condition	Surface Characteristics	Original Texture	Grain Boundary Condition
Unweathered	None	Closed or discolored	Unchanged	Preserved	Tight
Slightly Weathered	Less 20% of fracture spacing on both sides of fracture	Discolored, may contain thin filling	Partial discoloration	Preserved	Tight
Moderately Weathered	Greater than 20% of fracture spacing on both sides of fracture	Discolored, may contain thick filling, cemented rock	Partial to complete discoloration, not friable except poorly cemented rocks	Preserved	Partial Opening
Highly Weathered	Throughout		Friable and possibly pitted	Mainly Preserved	Partial Separation
Completely Weathered	Throughout		Resembles a soil	Partly Preserved	Complete Separation

Discontinuity Spacing

Description for Structural Feature: Bedding, Foliation, or Flow Banding	Spacing		Description for Joints, Faults, or Other Fractures
Very Thickly (Bedded, Foliated, or Banded)	More than 2 m	More than 6 ft	Very Widely (Fractured or Jointed)
Thickly	60 cm to 2 m	2 to 6 ft	Widely
Moderately	20 to 60 cm	8 to 24 in.	Medium
Thinly	60 to 200 mm	2.5 to 8 in.	Closely
Very Thinly	20 to 60 mm	0.75 to 2.5 in.	Very Closely
Description for Microstructural Features: Bedding, Foliation, or Cleavage			
Intensely (Laminated, Foliated, or Cleaved)	6 to 20 mm	0.25 to 0.75 in.	Extremely Close
Very Intensely	< 6 mm	< 0.25 in.	

Graphic Symbols - Bedrock



Rock Hardness

Classification	Field Test
Very Weak	Can be dug by hand and crushed with fingers.
Weak	Friable, can be gouged deeply with a knife and will crumble readily under light hammer blows.
Moderately Strong	Can be peeled with a knife. Material crumbles under firm blows with the sharp end of a geologic pick.
Strong	Cannot be scaped or peeled with a knife point. Hand held specimen breaks with firm blows of the pick.
Very Strong	Difficult to scratch with knife point. Cannot break hand held specimen.

Separation of Fracture Walls

Description	Separation of Walls, mm
Closed	0
Very Narrow	0 to 0.1
Narrow	0.1 to 1.0
Wide	1.0 to 5.0
Very Wide	> 5.0

Fracture Filling

Description	Definition
Clean	No fracture filling material
Stained	Discoloration of rock only. No recognizable filling material.
Filled	Fracture filled with recognizable filling material.

Surface Roughness

Description	Classification
Smooth	Appears smooth and is essentially smooth to the touch. May be slickensided.
Slightly Rough	Asperities on the fracture surfaces are visible and can be distinctly felt.
Medium Rough	Asperites are clearly visible and fracture surface feels abrasive to the touch.
Rough	Large angular asperites can be seen. Some ridge and high-side angle steps evident.
Very Rough	Near vertical steps and ridges occur on the fracture surface.

Where slickensides are observed, the direction of the slickensides should be recorded after the standard discontinuity surface description.

PLATE A-2

advanced geotechnical services, inc.

Boring Log B-1

Sheet 1 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/11/24**

Comment **East of CPT 5**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **27.5** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.					
		6 8 12		**Alluvium (Qa)** Light brown Silty SAND, slightly moist, medium dense		93.0	9.3		E.I. = 2
5		9 16 28		Yellowish brown fine grained SAND, slightly moist, medium dense		101.7	8.2		
				Light grayish brown SILT, moist, stiff					
		7 15 16		Light olive brown well graded SAND, slightly moist, dense			3.7		
10		9 18 30		grades to tan color with gravel between 11 to 12 ft.			4.2		
		25 50@6"				97.9	3.8		
15		20 31 33					3.8		
		13 19 50@3"		Interbedded thin bedded tan clay layer & light olive brown medium to very coarse grained SAND, moist, dense gravel @ 19 ft.		114.3	9.4		
20		27 50@6"		gravel @ 21 ft.			4.1		
		50@5"		becomes coarse grained SAND, moist, dense		114.6	3.7		
		26 30 31		Brown to dark grayish brown Silty SAND, moist to very moist, dense			16.6		
25		21 33 31					23.8		
		35 50@3"		Grayish brown medium grained SAND, wet, dense		111.4	14.8		

Plate A- 3

advanced geotechnical services, inc.

Boring Log B-1

Sheet 2 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/11/24**

Comment **East of CPT 5**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **27.5** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	#200, %	Other Tests
		16 34 47		Light olive brown fine to medium grained SAND, well graded, wet, dense			20.8		
		22 38 50@6"					15.5		
		13 33 50@4"					16.2		
35		7 26 15					23.9		
				Dark gray SILT, very moist, stiff					
		30 50@3"		Dark gray coarse grained SAND, wet, dense		107.8	17.3		
40		50@5"		gravel @ 40.5 ft.			13.6		
		27 50@3"		gravel @ 43 ft.		121.9	10.4		
45		41 50@4"		becomes very coarse grained			14.1		
		23 50@4"		gravel @ 48 ft.		104.4	16.8		
50		11 32 50@5"		with thin bedded interbeds of very dark gray CLAY, very stiff, wet			23.2		
55				Total Depth Explored = 51.4 ft. Groundwater Encountered @ 27.5 ft. Backfilled with Spoils 12/11/2024					

This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate A- 4

advanced geotechnical services, inc.

Boring Log B-2

Sheet 1 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/11/24**

Comment **East of CPT 13**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **27.0** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.					
				Alluvium (Qa) Yellowish brown Silty SAND, slightly moist, medium dense					E.I. = 0
		7 15 16				96.6	5.0		
				Olive brown very fine grained SAND, slightly moist, medium dense grades to					
5		9 11 11		Olive brown to light grayish brown SILT, moist, stiff		90.1	19.0		
				Olive brown to tan fine to medium grained SAND, slightly moist, dense					
		7 10 13					3.8		
10		10 12 18					3.0		
		21 50@4"		Olive brown very coarse grained SAND, slightly moist, dense		100.7	6.2		
15		29 41 50@6"		Olive brown well graded SAND with gravel, slightly moist, dense			7.9		
		50@5"		Dark olive brown very coarse grained gravelly SAND with minor silt, slightly moist, dense		98.6	7.4		
20		15 9 28		Interbedded olive brown SILT and well graded SAND, moist, stiff/dense			14.7		
		23 35 50@"		Tan well graded SAND, moist, dense			18.5		
25		19 45 46		Dark grayish brown Gravelly SAND, wet, dense ▼			13.0		
		50@5"				119.5	11.5		

Plate A- 6

advanced geotechnical services, inc.

Boring Log B-2

Sheet 2 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/11/24**

Comment **East of CPT 13**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **27.0** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	#200, %	Other Tests
		15 19 23		Dark gray to black Sandy SILT with coarse grained SAND lenses, very moist, stiff			29.6		38% Sand, 52% Silt, 9% Clay
		13 17 19		Gray very coarse grained SAND, wet, dense			18.9		
		7 16		Dark olive gray silty CLAY, moist, stiff			14.3		PI = 20, 57% Sand, 22% Silt, 20% Clay
		15		Gray very coarse grained SAND, wet, dense					
35		26 36 50@5"		Dark gray CLAY, moist, stiff			15.2		
				Dark gray well graded SAND, wet, dense					
				with gravel @ 36.5 ft.					
		28 50@4"				120.8	14.7		
40		22 50@5"					18.1		
		17 46 50@5"				103.2	23.3		
		12 37 50@5"		Very dark gray SILT, moist, very stiff			17.9		56% Sand, 34% Silt, 8% Clay
45				Dark olive gray well graded SAND, wet, dense					
		15 50@6"		Dark olive gray very coarse grained SAND, wet, dense		124.5	9.4		
50		47 50@4"		Dark olive gray well graded SAND, wet, dense			15.6		
55				Total Depth Explored = 50.8 ft. Groundwater Encountered @ 27 ft. Backfilled with Spoils 12/11/2024					

Plate A- 7

advanced geotechnical services, inc.

Boring Log B-3

Sheet 1 of 1

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/11/24**

Comment **Between CPTs 15 and 16**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water _____ ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.					
				Alluvium (Qa) Dark yellowish brown Silty SAND, slightly moist, dense					
		12 19 31		Yellowish brown to tan well graded SAND, slightly moist, dense		111.5	6.2		
5		17 18 13				94.0	6.2		
		20 44 50@5.5"		with minor gravel below 7.5 ft., becomes tan color		106.9	3.2		
10		10 12 16					3.1		
		19 21 36		with large gravel and clay rip-up clasts below 12.5 ft.		93.3	10.5		
15		21 26 28		Yellowish brown very coarse grained SAND, slightly moist, dense			4.2		
		22 35 50@3"		with dark grayish brown Sandy CLAY		105.8	20.1		
				with gravel and cobble below 19 ft. auger refusal on large cobble or boulder @ 20 ft.					
20									
25				Total Depth Explored = 20 ft. Auger Refusal @ 20 ft. No Groundwater Encountered Backfilled with Spoils 12/11/2024					

Plate A- 7

advanced geotechnical services, inc.

Boring Log B-4

Sheet 1 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/17/24**

Comment **Between CPTs 6 and 7**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **23.0** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.					
				Alluvium (Qa) Light olive brown Silty SAND, dry, loose @ surface, becomes slightly moist, dense					E.I. = 0
		16 12 18				109.7	4.2		
5		16 27 34		Light brownish gray fine to medium grained SAND, slightly moist, dense		105.2	2.9		
		25 28 36		Brown medium to coarse grained SAND, slightly moist, dense		113.1	3.2		
10		26 31 38				115.3	3.7		
		31 43 50@4"				121.2	3.8		
15		7 11 14		Light olive brown fine to medium grained Silty SAND with trace gravel, slightly moist, dense			4.4		
		31 33 50@6"		Dark grayish brown very coarse grained SAND with gravel, slightly moist, dense		113.9	6.3		
20		8 8 13					4.4		
		24 42 50@5"		▼ groundwater encountered @ 23 ft.		115.8	12.6		
25		7 12 15		Dark grayish brown very coarse grained SAND with clay rip-up clasts, wet, dense			14.2		
		11 20 18					14.2		
		23 18 28		Dark grayish brown very coarse grained Gravelly SAND, wet, dense		120.7	9.8		

Plate A- 8

advanced geotechnical services, inc.

Boring Log B-4

Sheet 2 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/17/24**

Comment **Between CPTs 6 and 7**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **23.0** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
		8 16 22		Dark grayish brown coarse grained SAND with trace gravel, wet, dense			12.0		
		10 29 50@6"				121.7	9.5		
		26 20 25					14.5		
35				heaving sands @ 35 ft. auger advanced to 45 ft. after several attempts to sample @ 35 ft. no sample recovery between 35 ft. and 45 ft.					
40									
45		12 16 33		Dark grayish brown SAND with trace gravel, very moist, dense			13.2		
		10 27 39		Dark grayish brown to black fine grained Sandy SILT, moist, very stiff		109.9	18.4		43% Sand, 46% Silt, 10% Clay
50		10 12 16		Dark gray fine grained Silty SAND to Sandy SILT, moist, dense/very stiff			23.9		
55				Total Depth Explored = 51.5 ft. Groundwater Encountered @ 23 ft. Backfilled with Spoils 12/17/2024					

Plate A- 9

advanced geotechnical services, inc.

Boring Log B-5

Sheet 1 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/17/24**

Comment **Between CPTs 7 and 8**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **22.0** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.					
				Alluvium (Qa) Brown Silty SAND, dry, loose @ surface, becomes slightly moist, medium dense					E.I. = 1
		9 10 9		Brown fine to medium grained SAND, slightly moist, medium dense		103.7	6.0		
5		14 16 18		Brown medium to coarse grained SAND, with light brown iron oxide staining, moist, medium dense		108.8	3.4		
		24 40 50@6"		Brown medium to coarse grained SAND, slightly moist, dense		107.9	2.5		
10		21 28 28		Brown SAND with trace gravel, slightly moist, dense		104.8	3.5		
		22 34 50@6"		Gray SAND, slightly moist, dense		110.3	3.4		
15		6 10 15		Dark grayish brown SAND with trace gravel, slightly moist, dense			5.3		
		24 39 50@6"		Grayish brown very coarse grained SAND with gravel, slightly moist, dense		121.8	3.2		
20		7 12 14		Grayish brown medium grained SAND, slightly moist, dense			5.2		
		21 25 19		Grayish brown very coarse grained Clayey SAND with gravel, wet, dense		121.8	10.9		
				Olive brown Silty SAND, wet, dense					
25		19 29 16		Olive brown very coarse grained SAND with few gravel, wet, dense			16.0		62% Sand, 7% Silt, 3% Clay
		21 21 18		Grayish brown very coarse grained Gravelly SAND, wet, dense		127.1	8.6		

Plate A- 10

advanced geotechnical services, inc.

Boring Log B-5

Sheet 2 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/17/24**

Comment **Between CPTs 7 and 8**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **22.0** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	#200, %	Other Tests
		8 8 12		with interbeds of very fine grained SAND, wet, dense			14.9		
35				Total Depth Explored = 31.5 ft. Groundwater Encountered @ 22 ft. Backfilled with Spoils 12/17/2024					
40									
45									
50									
55									

This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

advanced geotechnical services, inc.

Boring Log B-6

Sheet 1 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/20/24**

Comment **Southwest of CPT 2**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **18.5** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.					
				Alluvium (Qa) Light brown to moderate yellowish brown Silty SAND, dry, loose @ surface, becomes slightly moist, moderately dense					E.I. = 6
		4 7 10				112.3	10.5		
5				Grayish brown medium grained SAND, with minor gravel in coarse grained lenses, slightly moist, dense					
		13 25 32				110.4	3.7		
		12 19 23		Olive brown very coarse grained SAND with gravel, slightly moist, dense		114.2	3.1		
10		15 26 31				103.0	4.2		
		23 32 42				109.7	3.9		
		17 23 32		to light yellowish brown, with large subangular gravel and cobble			4.6		
15		18 19 21					5.5		
		15 23 24		Olive gray very coarse grained SAND with gravel, wet, dense ▼ groundwater @ 18.5 ft.		123.5	8.0		
20		4 7 7		Light gray medium to coarse grained SAND, wet, dense			17.1		
		31 46 50@4"				118.2	12.1		
25		6 7 8					16.0		
		3 6 10		Moderate yellowish brown Silty Clayey SAND to olive brown Sandy SILT, very moist, dense/stiff			18.9		

Plate A- 12

advanced geotechnical services, inc.

Boring Log B-6

Sheet 2 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/20/24**

Comment **Southwest of CPT 2**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation ____ ft Depth to Water **18.5** ft After ____ hrs on ____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
		4 7 9		Dark grayish brown medium to coarse grained SAND, wet, dense			19.9		
		15 13 37				108.5	17.3		
35		13 15 19		Dark grayish brown medium to coarse grained SAND with few gravel, wet, dense			15.7		
		8 13 50@4"				117.5	13.8		
40		7 9 13		Olive gray medium to coarse grained SAND with few gravel, wet, dense			14.8		
		15 18 9		Olive gray very coarse grained SAND, with minor clay & few gravel, wet, dense		118.0	9.6		
45		9 12 15		Olive gray medium to coarse grained SAND with minor gravel, wet, dense			20.8		
		11 19 27					14.1		
50		11 19 24		Olive gray very coarse grained SAND, wet, dense			18.0		
55				Total Depth Explored = 51.5 ft. Groundwater Encountered @ 18.5 ft. Backfilled with Spoils 12/20/2024					

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Boring Log B-7

Sheet 1 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/20/24**

Comment **Between CPTs 3 and 4**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **18.5** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				Alluvium (Qa)					E.I. = 5
				Brown to light brown Silty SAND, slightly moist, medium dense					
		8 11 13				98.8	18.5		
5				Grayish brown fine to medium grained SAND, slightly moist, medium dense					
		17 24 42				112.3	3.8		
				with gravel and small cobble below 6 ft.					
		50@4.5"		no sample recovery @ 7.5 ft.					
		15 23 27		Olive brown medium to coarse grained SAND with trace gravel, slightly moist, dense		114.1	3.5		
10		17 23 33				106.9	4.6		
		12 7 8				94.2	2.9		
15				with gravel lense @ 14.5 ft.					
		5 9 13					6.6		
		12 19 26		Olive brown medium to coarse grained SAND, wet, dense ▼ groundwater @ 18.5 ft.			18.4		
20		8 15 17		Olive brown medium to coarse grained SAND, wet, dense			12.1		
		7 13 19		Olive brown medium to coarse grained SAND, wet, dense			16.4		
25		6 7 19		Olive brown medium to coarse grained SAND, wet, dense			17.0		
		8 13 25		Olive brown very coarse grained SAND with gravel and clay rip up clasts, wet, dense		86.7	16.8		36% Sand, 40% Silt, 22% Clay; PI = 18

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Boring Log B-7

Sheet 2 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/20/24**

Comment **Between CPTs 3 and 4**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **18.5** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
		8 13 23		Olive brown very coarse grained SAND with trace gravel, wet, dense			13.5		
35				Total Depth Explored = 32 ft. Groundwater Encountered @ 18.5 ft. Backfilled with Spoils 12/20/2024					
40									
45									
50									
55									

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Boring Log B-8

Sheet 1 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/20/24**

Comment **Between CPTs 9 and 16**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **22.0** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	#200, %	Other Tests
				This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.					
				Alluvium (Qa) Light olive brown Silty SAND, slightly moist, medium dense					E.I. = 11
		4 7 8				103.3	7.7		
				Yellowish brown fine grained Silty SAND, slightly moist, medium dense					
5		4 7 7		Olive brown Sandy CLAY, with light brown iron oxide staining, moist, stiff		89.2	32.3		
				Olive brown fine to medium grained SAND, slightly moist, medium dense					
		9 12 15		Light brownish gray medium to coarse grained SAND with trace gravel, light brown iron oxide staining, slightly moist, medium dense to dense		98.5	2.7		
10		5 7 9		Light brownish gray medium to coarse grained SAND with few gravel, slightly moist, medium dense to dense			4.8		
		50@5"		Dark yellowish brown medium to coarse grained SAND with few gravel, slightly moist, dense cobble below 13 ft.		105.2	5.1		
15		4 7 11		Dark yellowish brown very coarse grained SAND with some gravel, slightly moist, medium dense to dense			8.1		
		8 3 11		Dark olive brown Sandy CLAY, moist, very stiff			4.6		PI = 41; 45% Sand, 32% Silt, 22% Clay
		15 13 45		Dark yellowish brown very coarse grained SAND, slightly moist, dense Yellowish brown coarse grained Clayey SAND, moist, dense Light gray very coarse grained SAND, moist, dense		118.0	5.3		
20		9 7 13		Grayish brown medium to coarse grained SAND with few gravel, moist, dense			4.2		
		6 3 4		with lenses of very moist, Sandy CLAY groundwater @ 22.5 ft.			21.5		PI = 7; 48% Sand, 27% Silt, 23% Clay
25		5 7 9		Dark gray Sandy SILT, very moist, very stiff			12.7		53% Sand, 37% Silt, 7% Clay
		8 15 18		Grayish brown very coarse grained Silty SAND with trace gravel, wet, dense			16.0		
		6 9 50@4"		Grayish brown medium to very coarse grained SAND with trace gravel, wet, dense lenses of dark gray SILT below 29.5 ft.		115.5	13.6		

Plate A- 16

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Boring Log B-8

Sheet 2 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/20/24**

Comment **Between CPTs 9 and 16**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **22.0** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
		4 6 7		Grayish brown medium to coarse grained SAND with trace gravel, wet, dense			16.2		
		6 7 7		with interbedded clay layers, moist, very stiff			15.3		
35				Total Depth Explored = 33 ft. Groundwater Encountered @ 22.5 ft. Backfilled with Spoils 12/20/2024					PI = 7
40									
45									
50									
55									

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Boring Log B-9

Sheet 1 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/27/24**

Comment **Northwest of CPT 16**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **23.5** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	#200, %	Other Tests
				This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.					
		4 6 12		**Alluvium (Qa)** Dark yellowish brown to light grayish brown Silty SAND, loose, dry @ surface, becomes slightly moist, medium dense		88.5	16.0		E.I. = 1
5		8 7 9		Dark yellowish brown medium to coarse grained SAND, slightly moist, medium dense		90.3	11.0		
				Olive brown Silty SAND, slightly moist, medium dense					
		9 12 16		Light olive brown coarse to very coarse grained SAND, with minor gravel, slightly moist, medium dense to dense		109.2	2.6		
10		6 6 9		Light olive brown medium to coarse grained SAND, slightly moist, medium dense to dense			3.0		
		18 24 35		Light olive brown coarse to very coarse grained SAND, with trace gravel, slightly moist, dense		109.4	3.0		
15		11 13 15		Light olive brown coarse to very coarse grained SAND, with trace gravel, slightly moist, dense			4.0		
		6 6 9		Very dark brown Silty SAND with interbedded thin bedded Sandy CLAY, very moist, dense/very stiff		101.4	22.6		
20		6 8 12		Dark grayish brown medium to coarse grained SAND, slightly moist, dense			3.6		
		20 40 50@4"		Olive brown medium to coarse grained SAND, slightly moist, dense ▼ groundwater encountered @ 23.5 ft.		103.4	10.5		
25		9 15 19		Dark grayish brown medium to coarse grained SAND, wet, dense			14.6		
		24 40 50@3"		Olive brown coarse to very coarse grained SAND, with clay inclusions, wet, dense		112.3	20.9		
		5		Very dark grayish brown coarse grained SAND with gravel, wet, dense			13.4		

Plate A- 18

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Boring Log B-9

Sheet 2 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/27/24**

Comment **Northwest of CPT 16**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation ____ ft Depth to Water **23.5** ft After ____ hrs on ____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
		15 24							
		26 50@6"		Dark grayish brown fine grained SAND, wet, dense		107.2	19.1		
				Light gray to tan coarse grained SAND with gravel, wet, dense					
35		7 9 11		Dark grayish brown coarse grained SAND with clay, wet, dense			17.2		
		6 8 11		Dark gray Sandy SILT, moist, stiff Dark grayish brown coarse grained SAND with minor gravel, wet, dense			18.9		PI = 7
		5 8 7		Dark grayish brown very coarse grained SAND, wet, dense			14.7		
40		7 11 14		Dark gray SILT, moist, stiff Dark grayish brown coarse to very coarse grained SAND, with minor gravel, wet, dense			15.7		
		20 42 44		Dark grayish brown coarse grained SAND, wet, dense			16.1		
		19 30 35					11.9		
45		14 18 34		Dark grayish brown coarse grained SAND, wet, dense			13.9		
		28 45 50@5"		lenses of dark olive gray silt		102.8	23.7		
50		16 24 31		Dark grayish brown coarse grained SAND, wet, dense			16.7		
				Total Depth Explored = 51.5 ft. Groundwater Encountered @ 23.5 ft. Backfilled with Spoils 12/27/2024					
55									

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Boring Log B-10

Sheet 1 of 2

Project Maulhardt-Stiles Families Client No. 5340 Date Drilled 12/27/24

Comment Between CPTs 11 and 12

Drilling Company/Driller Choice Drilling Equipment Hollow Stem Auger

Driving Weight (lbs) 140 Average Drop (in.) 30 Hole Diameter (in.) 8

Elevation ____ ft Depth to Water 24.5 ft After ____ hrs on ____ Logged By BW

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
				This log, which is part of the report prepared by Advanced Geotechnical Services, Inc. for the named project, should be read together with that report for complete interpretation. This summary applies only at this boring location and at the time of drilling. Subsurface conditions may differ at other locations and at the time of drilling. Subsurface conditions may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.					
		6 7 8		**Alluvium (Qa)** Yellowish brown Silty SAND, dry, loose @ surface, becomes slightly moist, medium dense		100.2	4.7		E.I. = 0
5		7 8 10		Yellowish brown fine grained Silty SAND, slightly moist, medium dense		95.0	11.3		
		6 10 11		Pale brown medium grained SAND with light brown iron oxide staining, slightly moist, medium dense to dense		97.6	2.1		
10		6 10 15		Brown Sandy SILT, moist, very stiff		89.8	32.0		
		13 16 25		Grayish brown coarse to very coarse grained SAND, slightly moist, dense		107.6	2.2		
		7 9 8		Light olive brown coarse grained SAND with little gravel, slightly moist, medium dense to dense			4.1		
15		5 7 9		Light olive brown coarse grained SAND with little gravel, slightly moist, medium dense to dense			2.4		
		16 22 40		Olive brown gray very coarse grained SAND with little gravel, slightly moist, dense		121.9	4.7		
20		7 15 20		Light olive brown medium to coarse grained SAND, slightly moist, dense			3.9		
		29 50@6"		Light olive brown coarse to very coarse grained SAND, with gravel, wet, dense		114.7	3.3		
25		10 15 17		▼ groundwater encountered @ 24.5 ft. Dark grayish brown SAND with few gravel, wet, dense			16.6		
		14 19 28		Dark grayish brown medium grained SAND, wet, dense			14.9		
				Dark grayish brown coarse grained SAND w/ clay rip up clasts, wet,					

Plate A- 20

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Boring Log B-10

Sheet 2 of 2

Project **Maulhardt-Stiles Families** Client No. **5340** Date Drilled **12/27/24**

Comment **Between CPTs 11 and 12**

Drilling Company/Driller **Choice Drilling** Equipment **Hollow Stem Auger**

Driving Weight (lbs) **140** Average Drop (in.) **30** Hole Diameter (in.) **8**

Elevation _____ ft Depth to Water **24.5** ft After _____ hrs on _____ Logged By **BW**

Depth, ft	Sample	Blows/6"	Graphic Symbol	Description of Material	Attitudes	Dry Unit Weight, pcf	Moisture Content, %	-#200, %	Other Tests
		8 12 17		dense Dark gray SILT, moist, stiff Dark grayish brown very coarse grained SAND, wet, dense			21.6		
35				Total Depth Explored = 32 ft. Groundwater Encountered @ 24.5 ft Backfilled with Spoils 12/27/2024					
40									
45									
50									
55									

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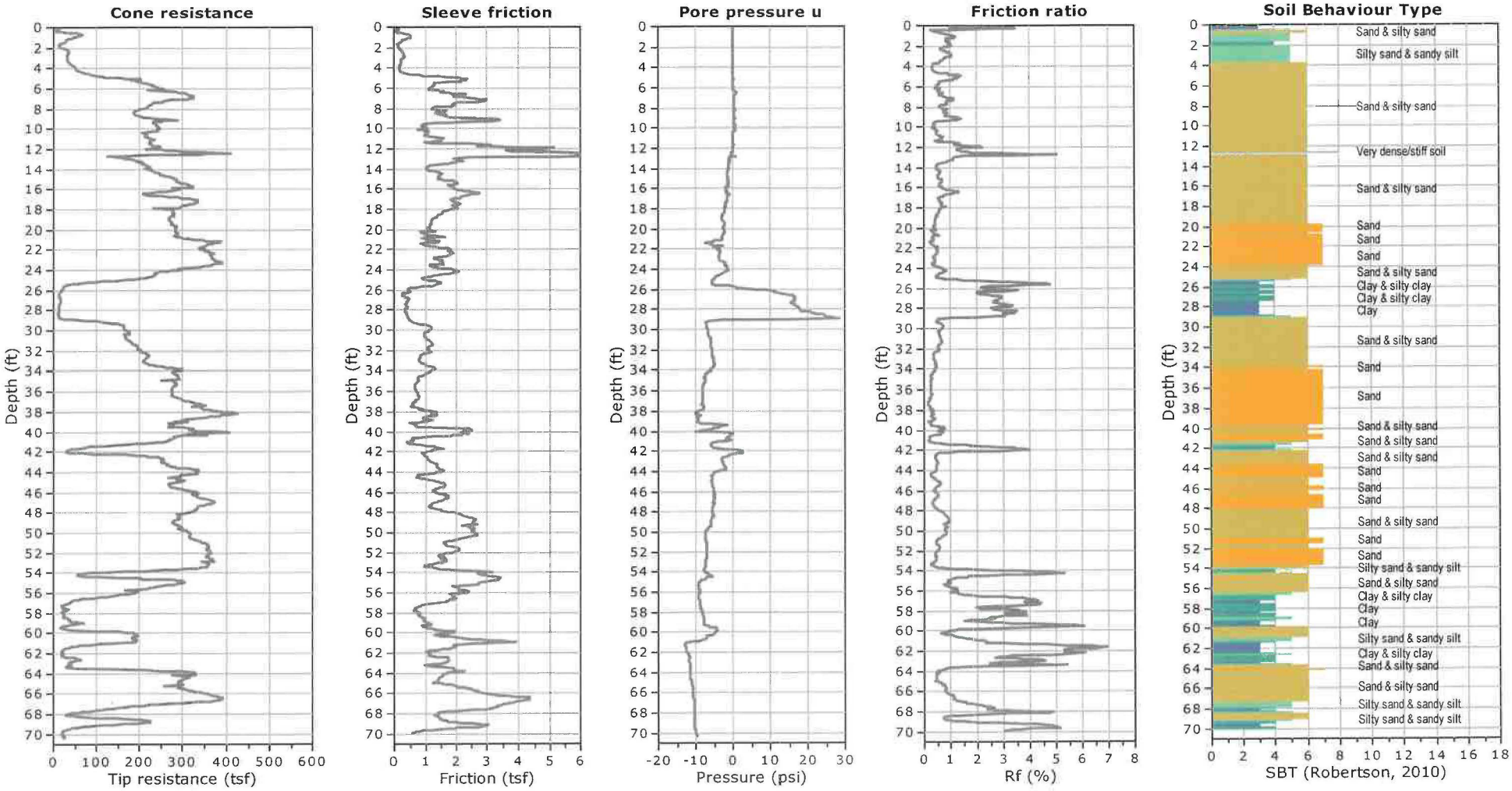
Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-1
Total depth: 70.37 ft, Date: 11/21/2024



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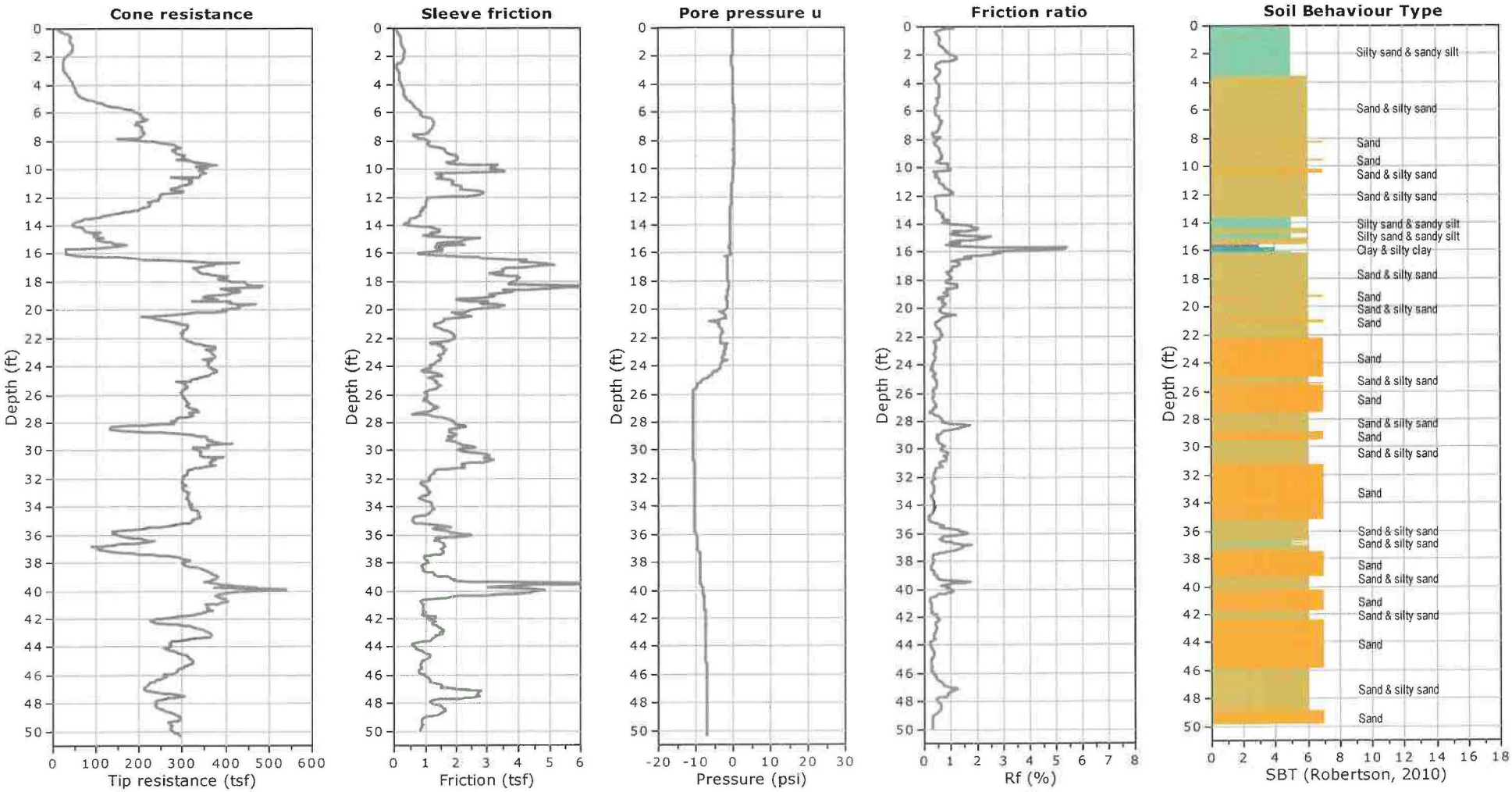
Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-2
Total depth: 50.27 ft, Date: 11/21/2024



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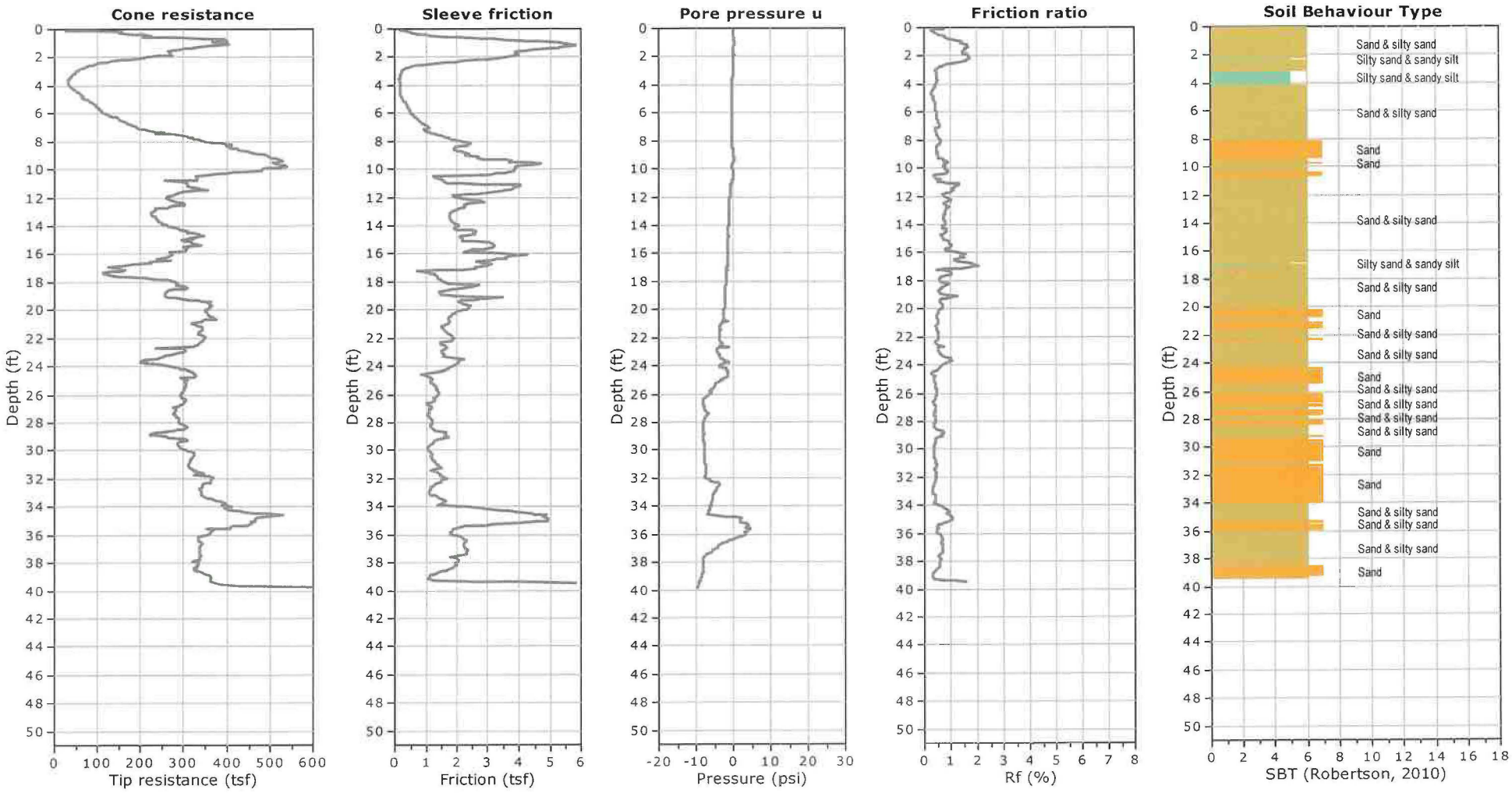
Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-3
Total depth: 39.83 ft, Date: 11/21/2024



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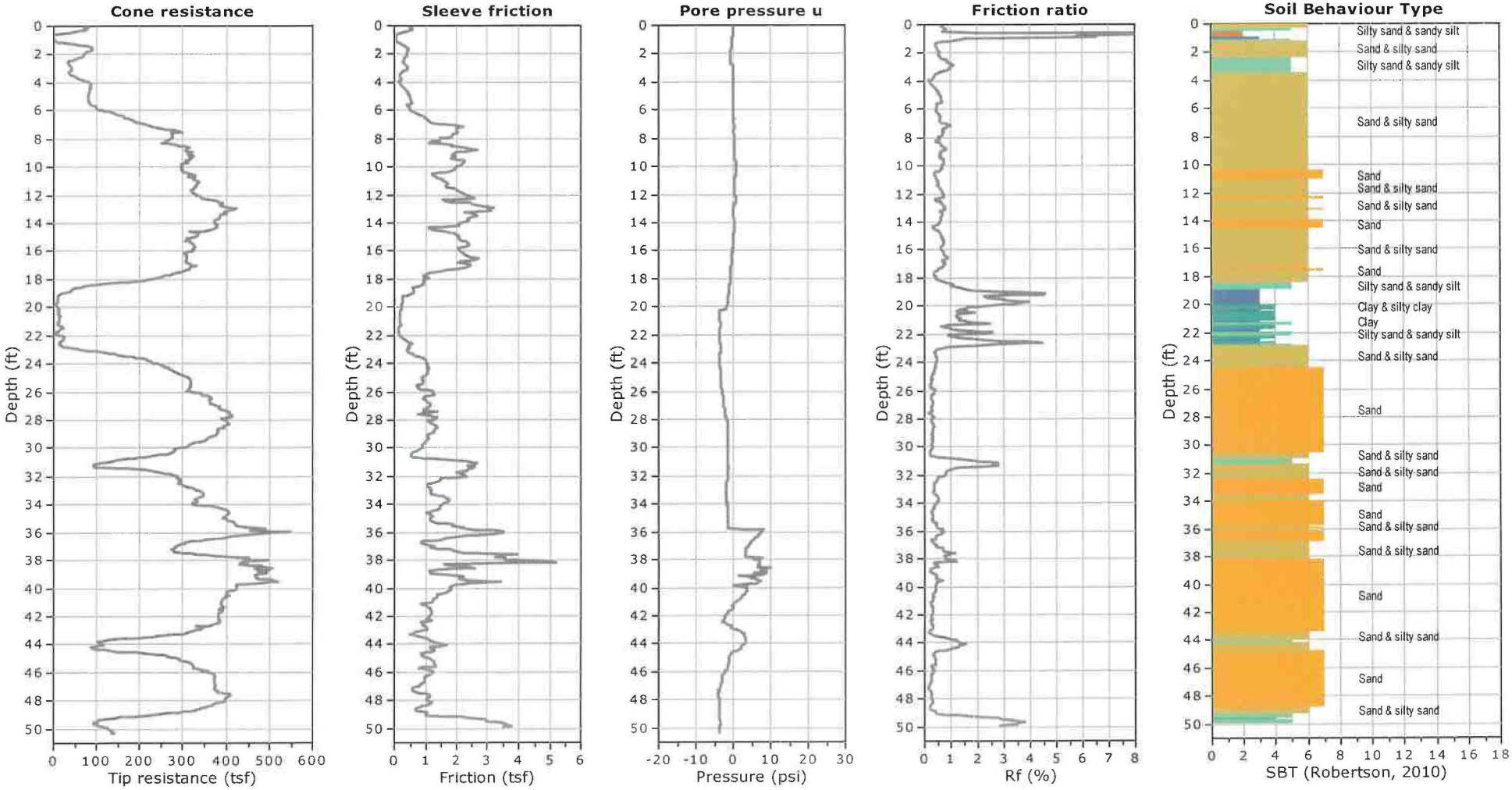
Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-4
Total depth: 50.34 ft, Date: 11/21/2024



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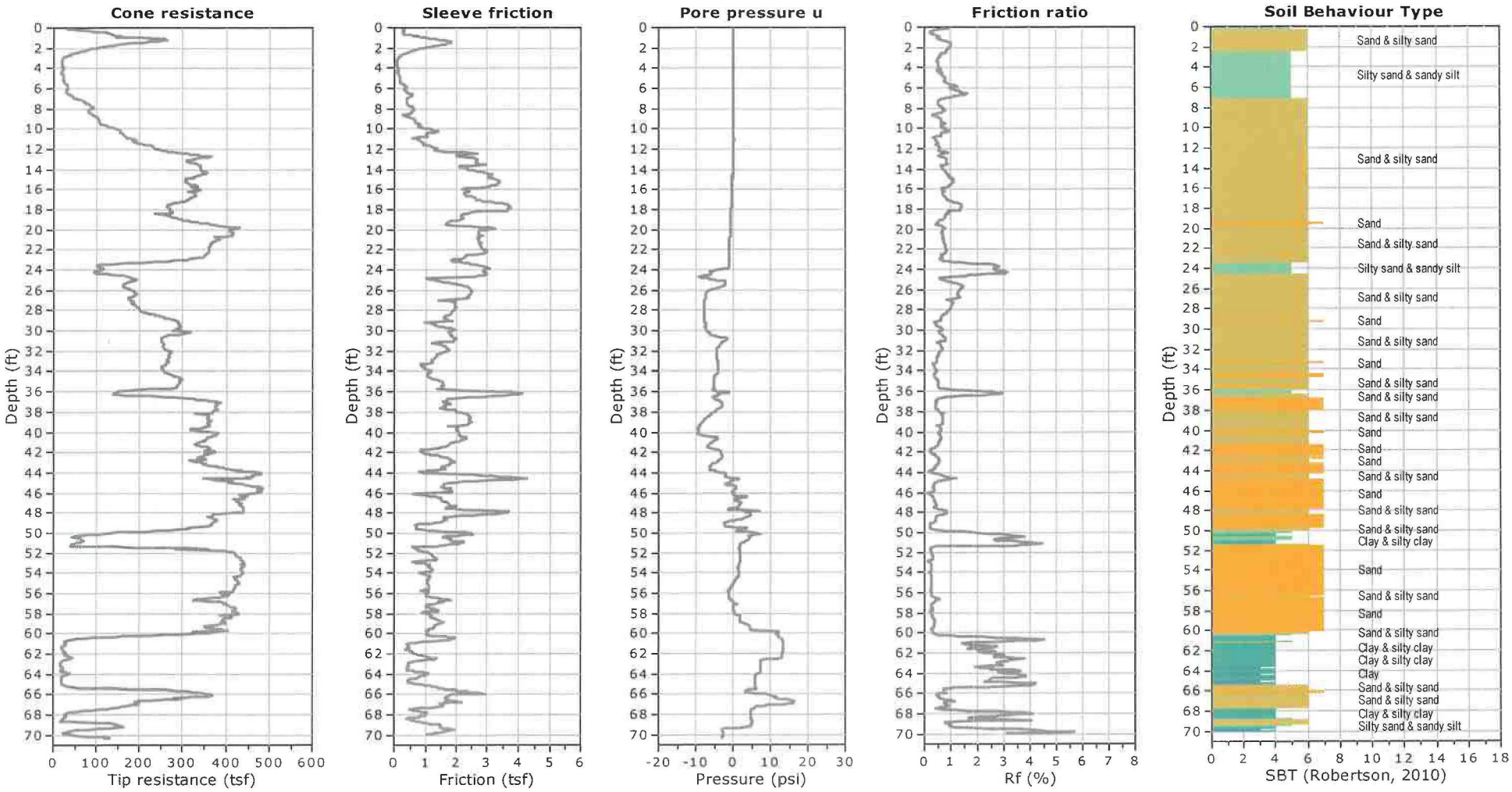
Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-5
Total depth: 70.34 ft, Date: 11/21/2024



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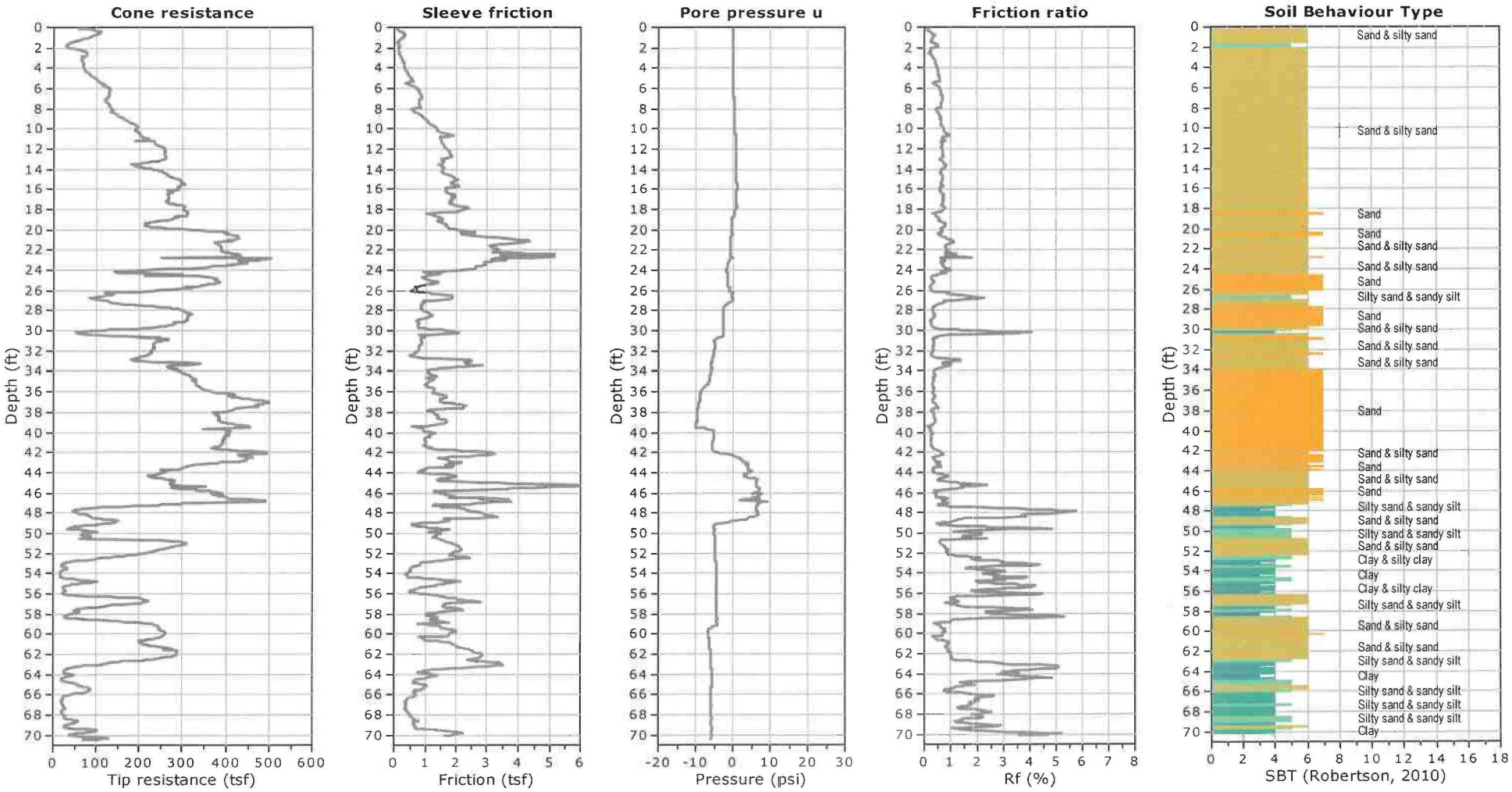
Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-6
Total depth: 70.49 ft, Date: 11/21/2024



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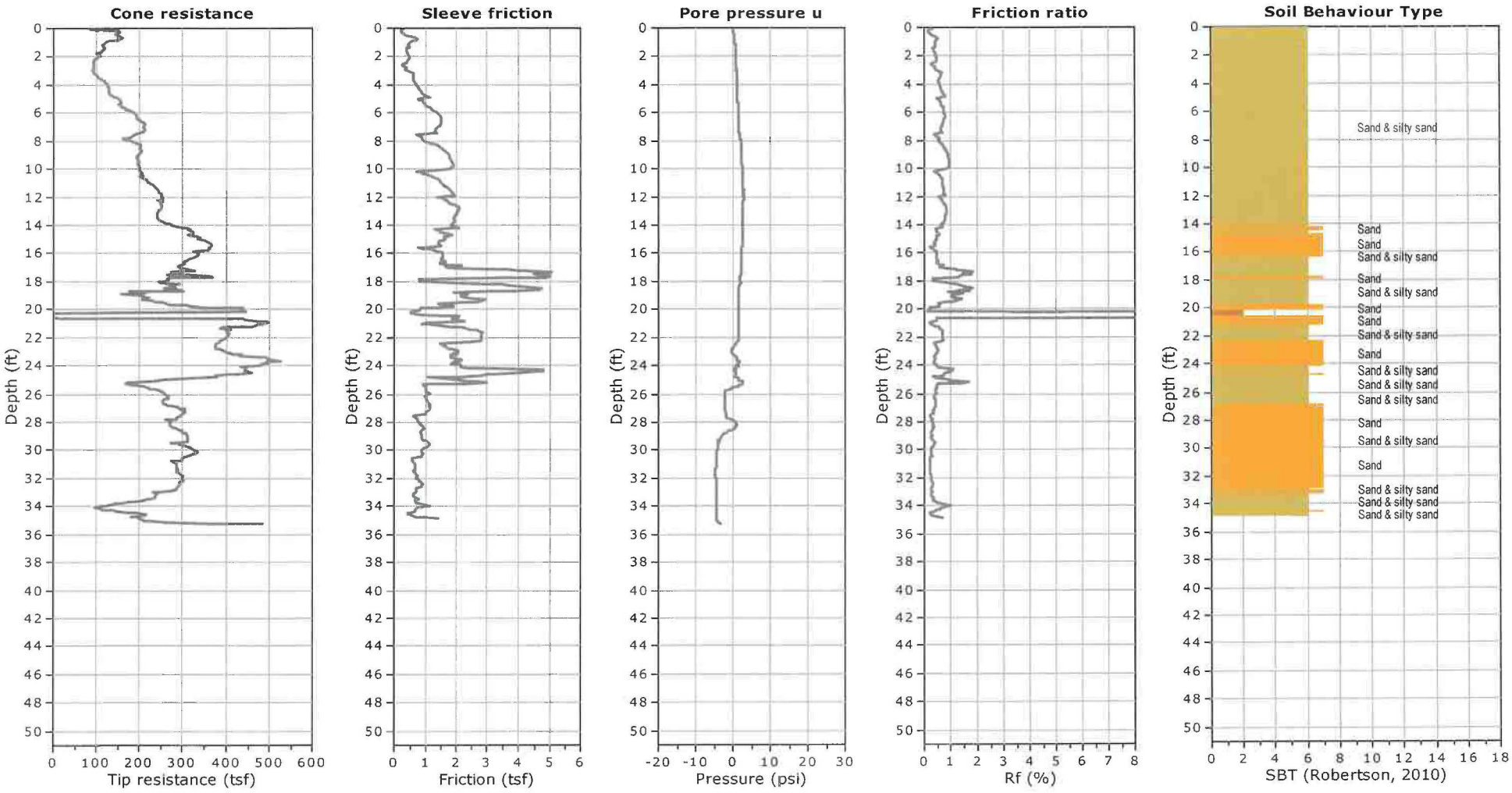
Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-7
Total depth: 35.24 ft, Date: 11/21/2024



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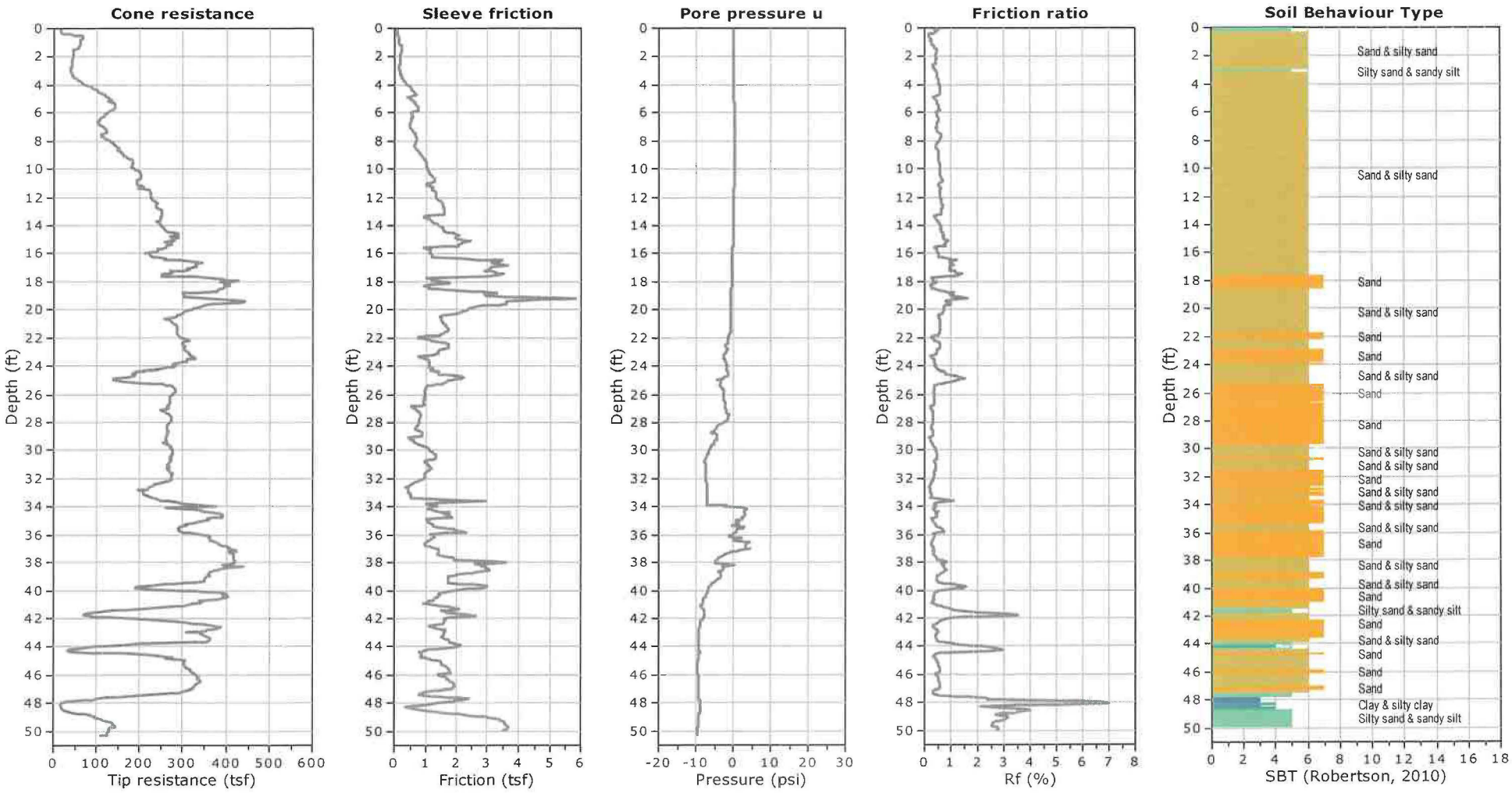
Project: **AGS - Mauldhardt / Stiles Families**
Location: **Cesar Chavez Dr & Prado Way, Oxnard, CA**

CPT-8
Total depth: 50.33 ft, Date: 11/21/2024



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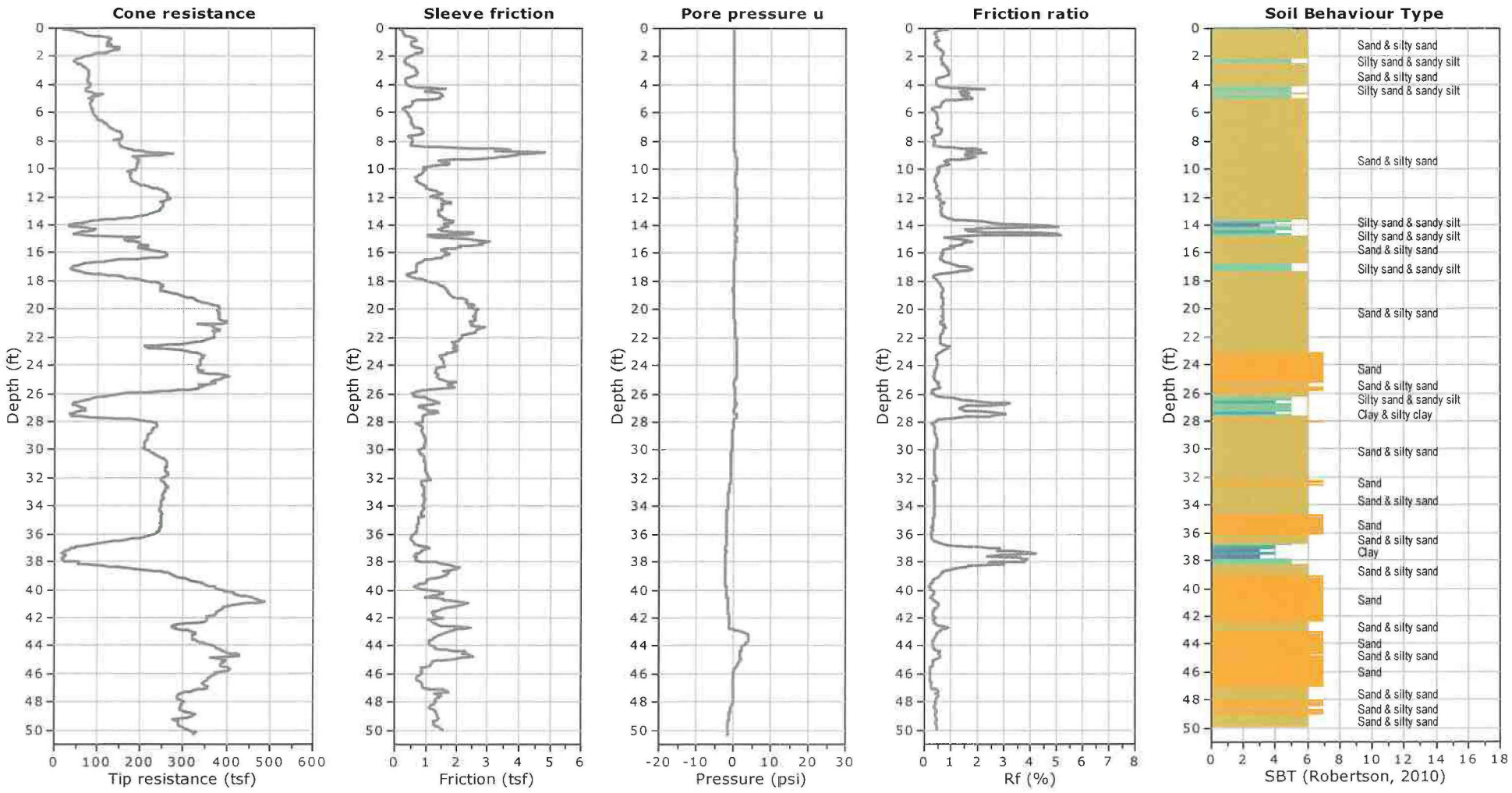
Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

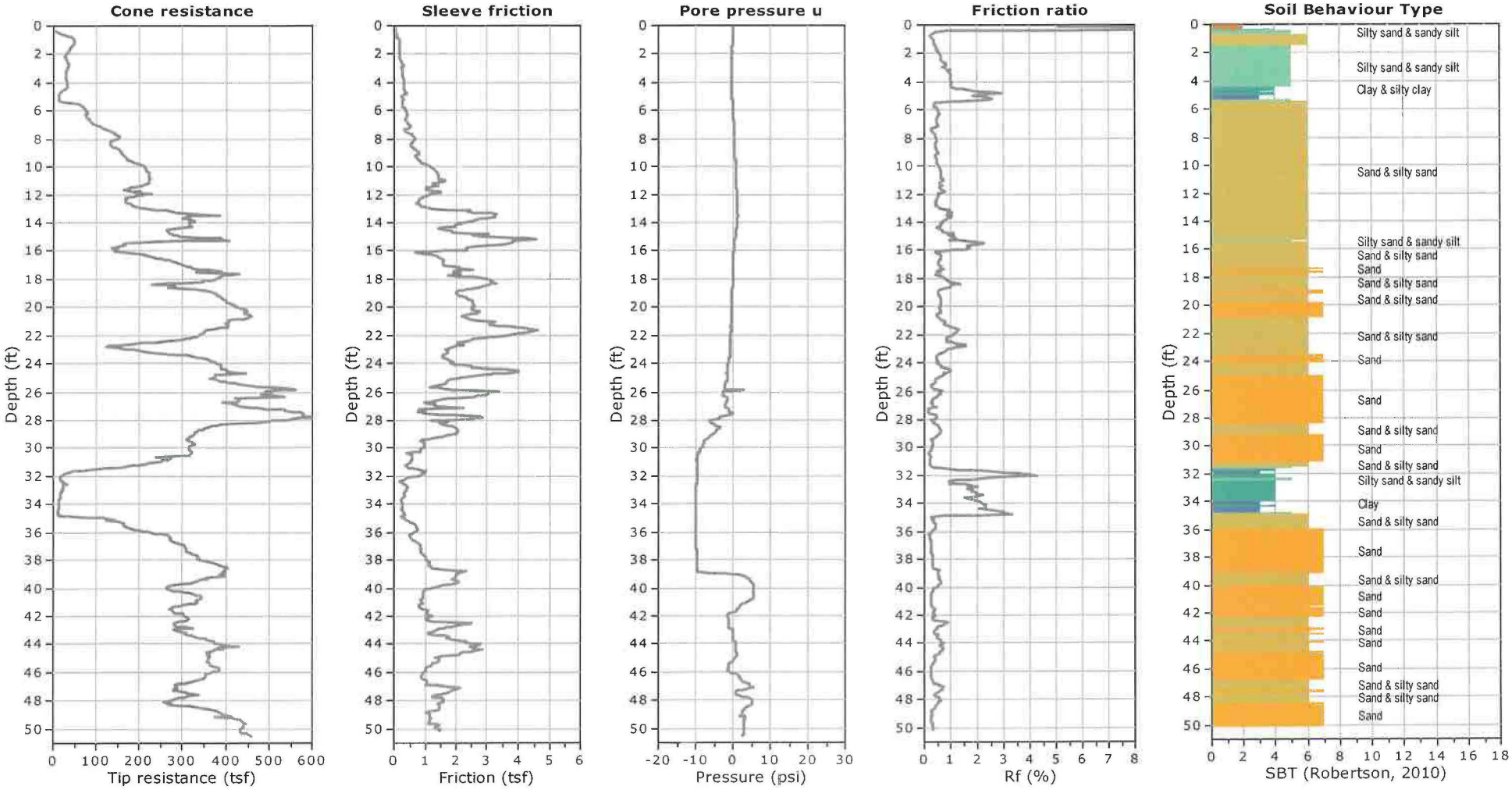
CPT-9
Total depth: 50.30 ft, Date: 11/21/2024



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-10
Total depth: 50.50 ft, Date: 11/21/2024



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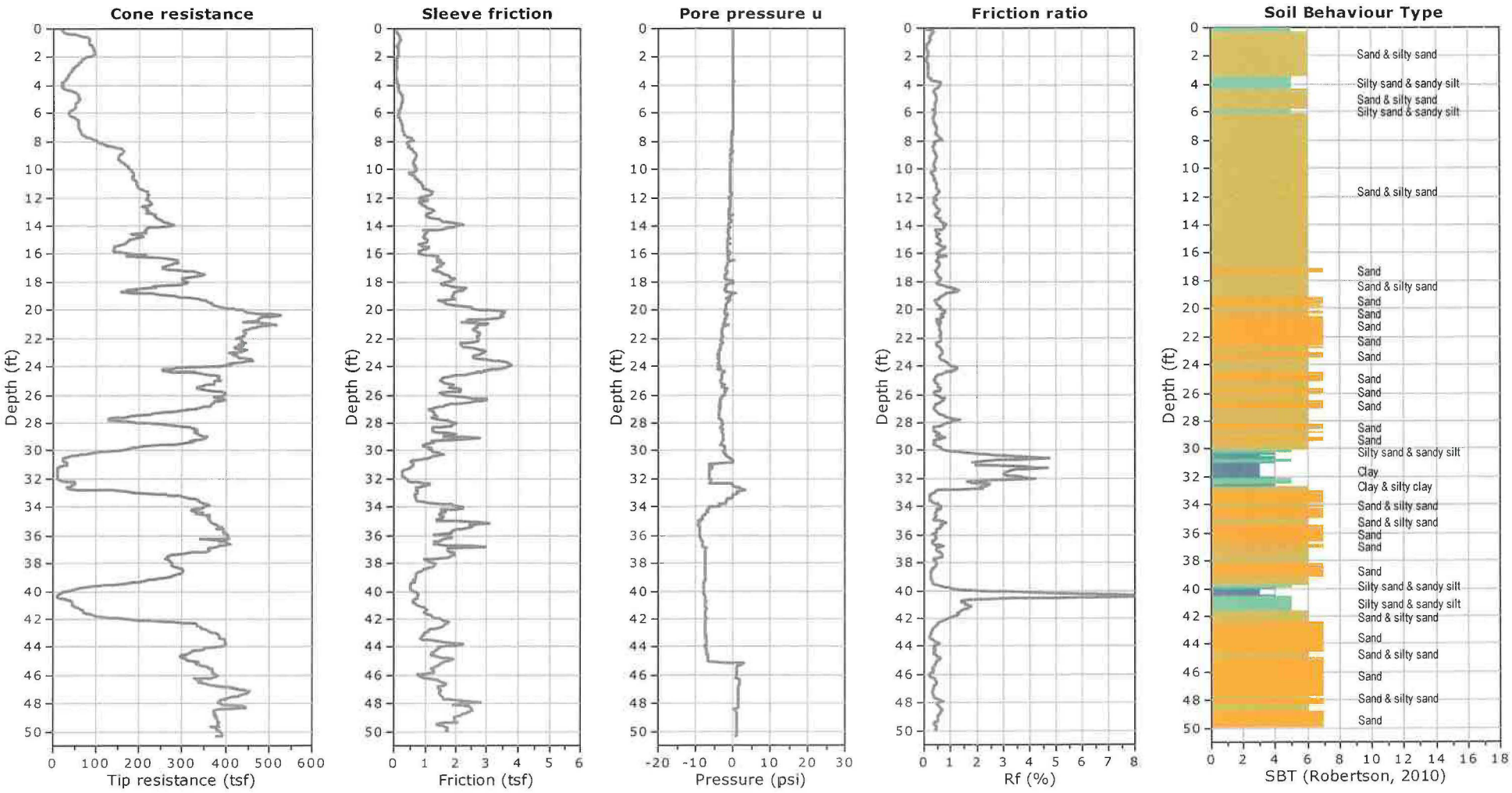
steve@kehoetesting.com
www.kehoetesting.com

Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-11
Total depth: 50.36 ft, Date: 11/22/2024



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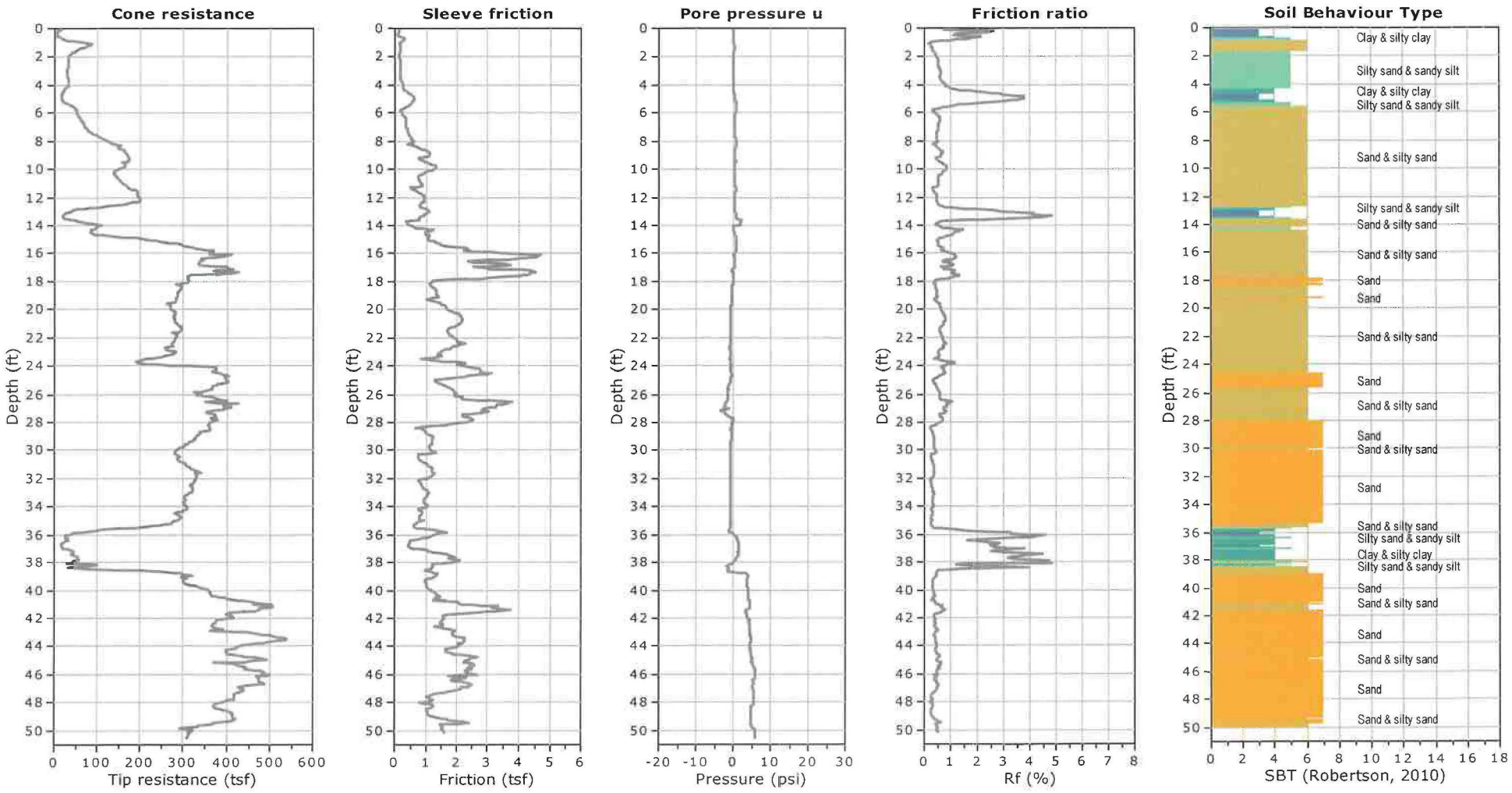
Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-12
Total depth: 50.47 ft, Date: 11/22/2024



Kehoe Testing and Engineering
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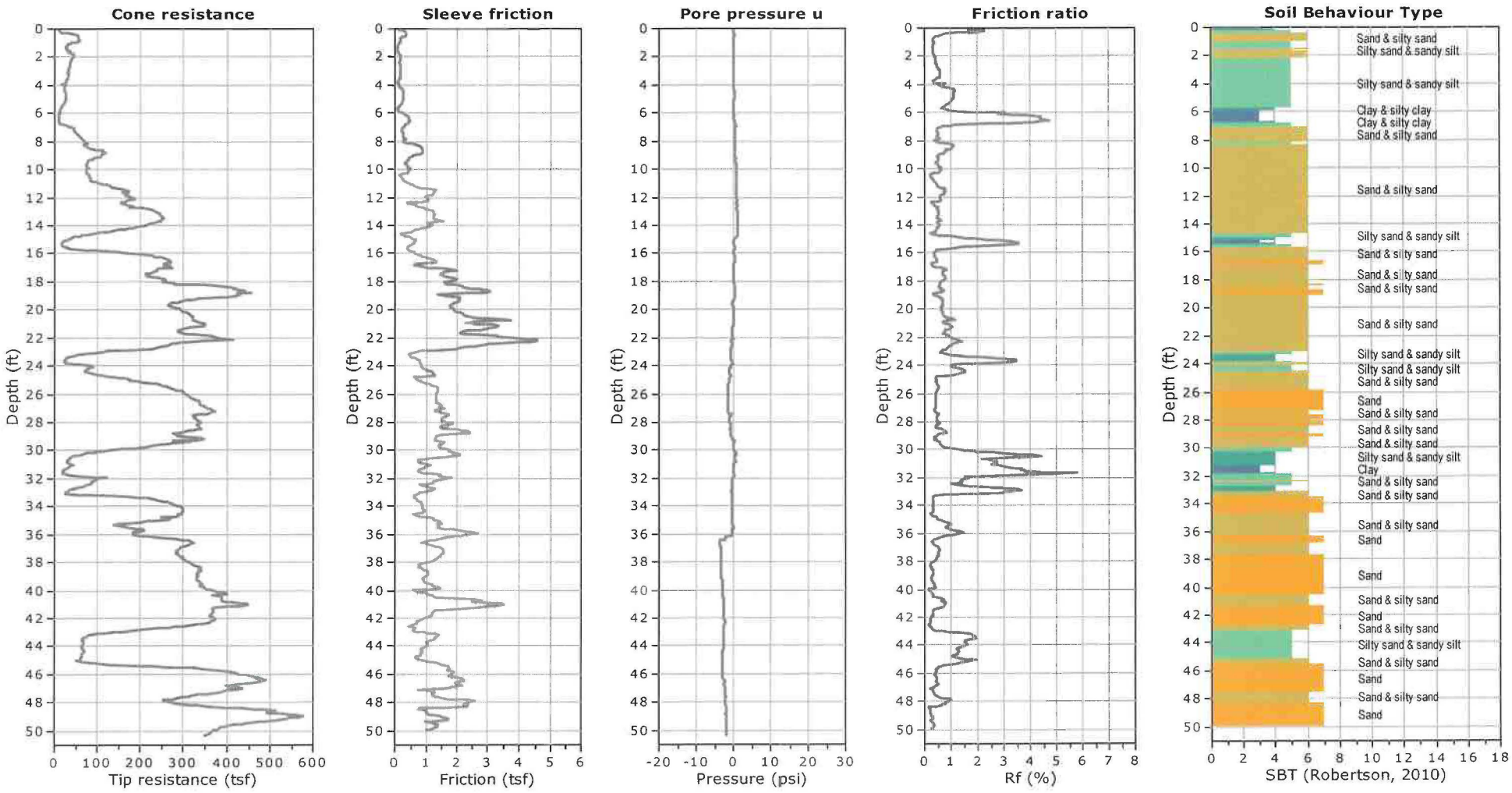
steve@kehoetesting.com
www.kehoetesting.com

Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-13
Total depth: 50.31 ft, Date: 11/22/2024



Kehoe Testing and Engineering
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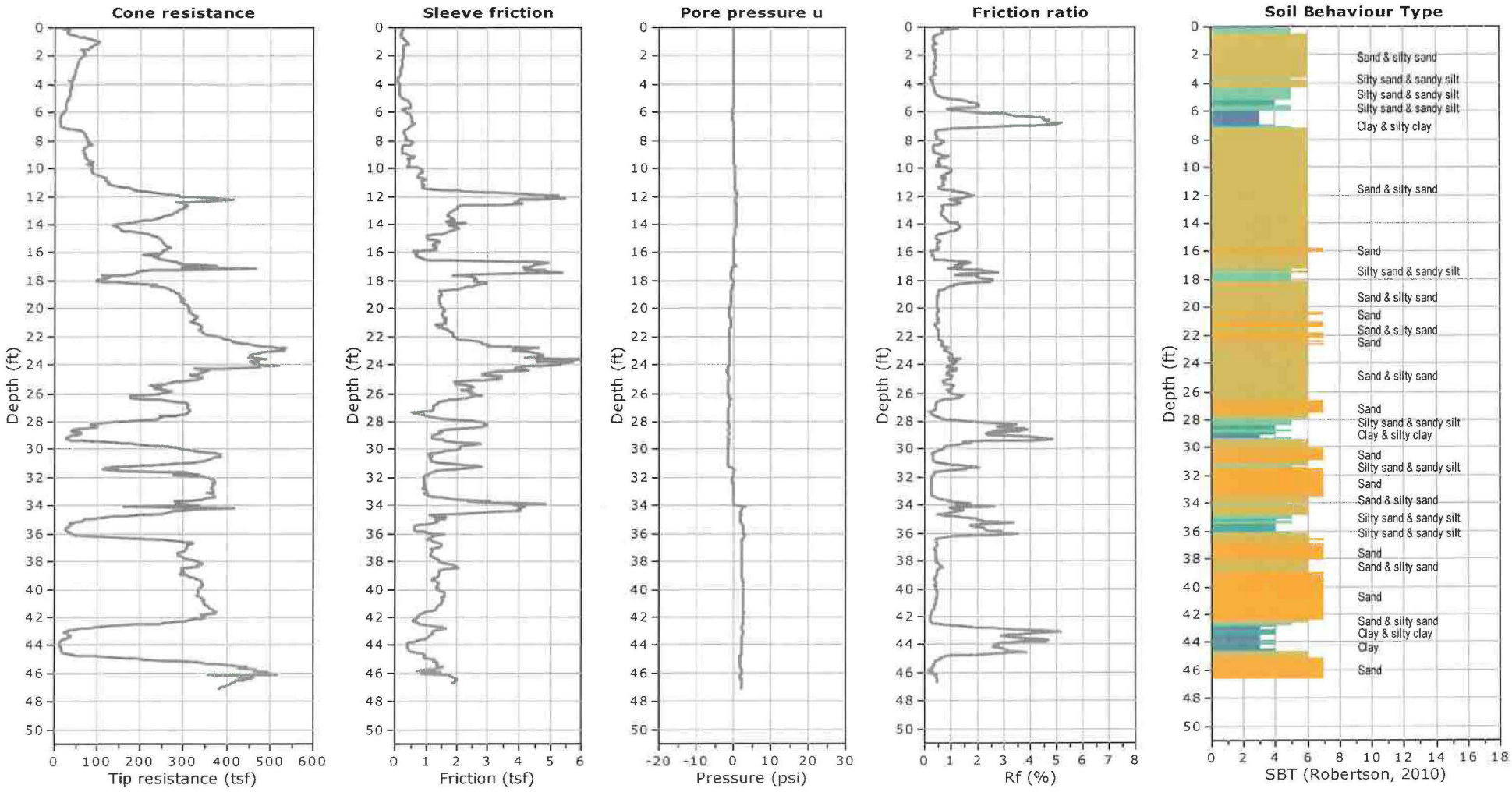
steve@kehoetesting.com
www.kehoetesting.com

Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-14
Total depth: 47.05 ft, Date: 11/22/2024



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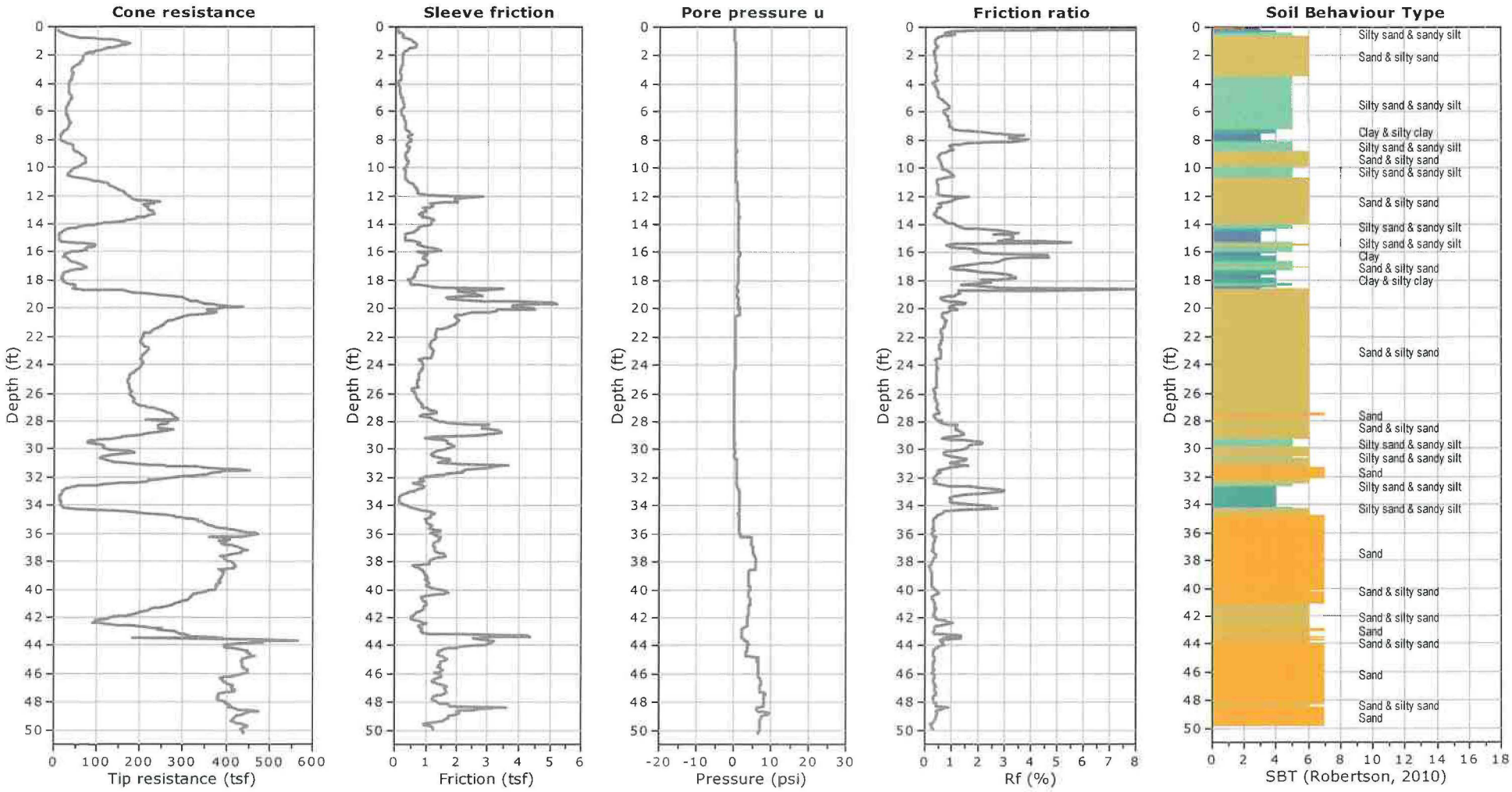
Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-15
Total depth: 50.24 ft, Date: 11/22/2024



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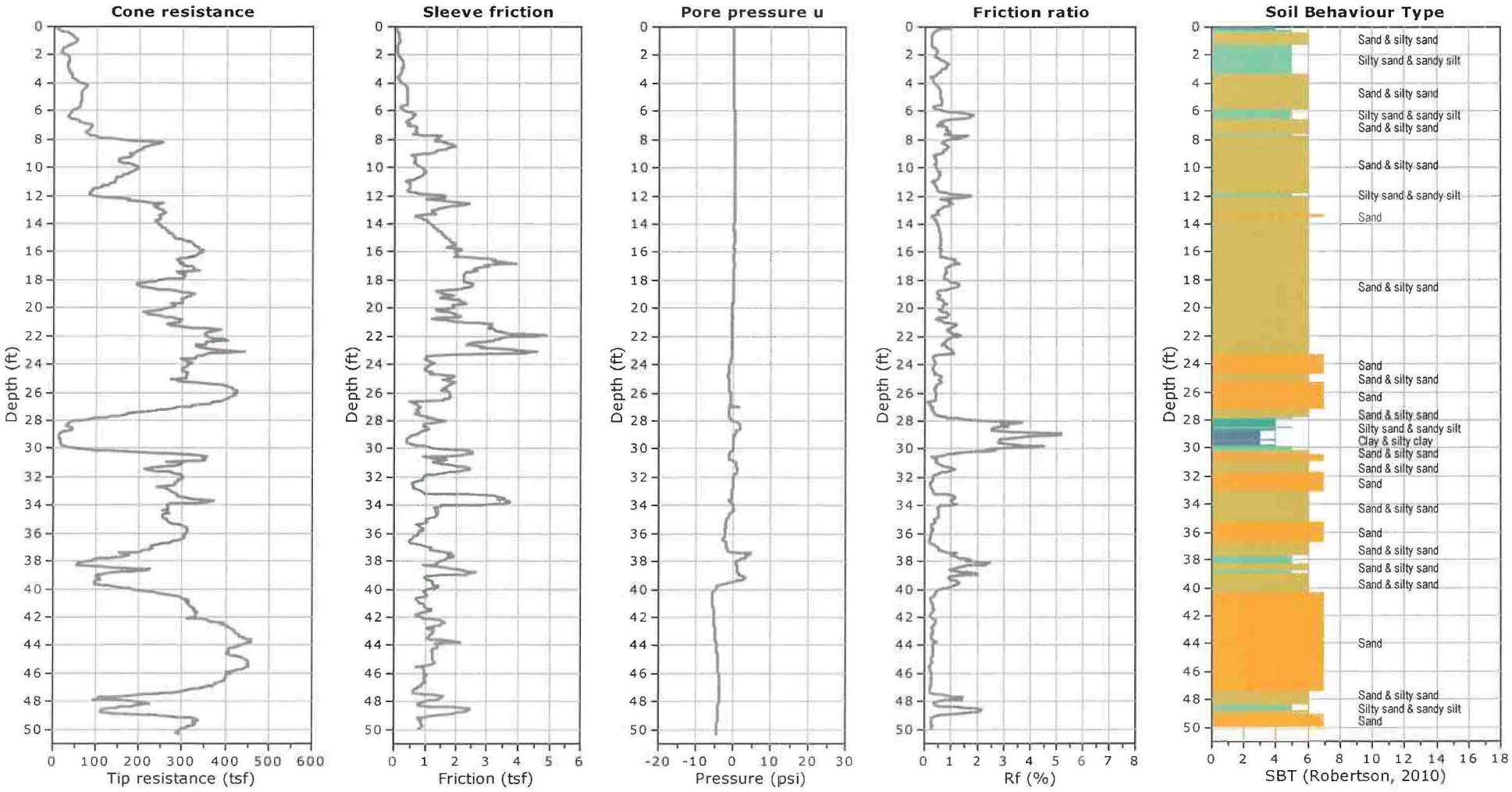
steve@kehoetesting.com
www.kehoetesting.com

Project: AGS - Mauldhardt / Stiles Families
Location: Cesar Chavez Dr & Prado Way, Oxnard, CA

CPT-16
Total depth: 50.34 ft, Date: 11/22/2024



Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-1
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM/ ML			**ALLUVIUM:** Brown Silty fine Sand to fine Sandy Silt, medium dense, damp
5									**Total Depth: 3.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-2
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, medium dense, damp
5									
10									
15									**Total Depth: 14.0 feet** **No Groundwater Encountered**
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-3
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, medium dense, damp
5									**Total Depth: 3.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-4
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-5
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, medium dense, damp
10						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, some coarse Sand, little fine Gravel, medium dense, damp
15									**Total Depth: 16.5 feet** **No Groundwater Encountered**
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-6
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-7
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, little Clay, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-8
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, little Clay, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-9
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, little Clay, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-10
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, medium dense, damp
10						SM			**ALLUVIUM:** Brown Silty fine Sand, little Clay, medium dense, damp
15									**Total Depth: 16.5 feet** **No Groundwater Encountered**
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-11
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-12
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, little Clay, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-13
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, some medium Sand, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-14
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						ML			**ALLUVIUM:** Gray Brown fine Sandy Silt, little Clay, medium dense, damp
5						SM			**ALLUVIUM:** Brown Silty fine to coarse Sand, medium dense, damp
10									**Total Depth: 8.5 feet** **No Groundwater Encountered**
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-15
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						ML			**ALLUVIUM:** Gray Brown fine Sandy Silt, little Clay, medium dense, damp
5						SM			**ALLUVIUM:** Brown Silty fine to coarse Sand, medium dense, damp
10									**Total Depth: 8.5 feet** **No Groundwater Encountered**
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-13
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						ML			**ALLUVIUM:** Gray Brown fine Sandy Silt, trace Clay, medium dense, damp
10						SW			**ALLUVIUM:** Brown fine to coarse Sand, trace to little Silt, medium dense, damp
15						SM			**ALLUVIUM:** Brown Silty fine to coarse Sand, trace fine Gravel, medium dense, damp
20									**Total Depth: 19.5 feet** **No Groundwater Encountered**
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems

1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-17
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, medium dense, damp
5						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, little to some coarse Sand, medium dense, damp
10									**Total Depth: 8.5 feet** **No Groundwater Encountered**
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems Pacific

BORING LOG LEGEND

SAMPLE / SUBSURFACE WATER SYMBOLS	GRAPH. SYMBOL
CALIFORNIA MODIFIED	■
STANDARD PENETRATION TEST (SPT)	●
SHELBY TUBE	▭
BULK	○
SUBSURFACE WATER DURING DRILLING	▼
SUBSURFACE WATER AFTER DRILLING	▽

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

MAJOR DIVISIONS	GROUP SYMBOL	TYPICAL DESCRIPTIONS	GRAPH. SYMBOL
COARSE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS LARGER THAN #200 SIEVE SIZE)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
	GP	POORLY GRADED GRAVELS, OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON-PLASTIC FINES	
	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES	
	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
	SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES	
	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES	
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES	
FINE GRAINED SOILS (HALF OR MORE OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE)	ML	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS	
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
	PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	

OBSERVED MOISTURE CONDITION

DRY	SLIGHTLY MOIST	MOIST	VERY MOIST	WET (SATURATED)

CONSISTENCY

COARSE GRAINED SOILS			FINE GRAINED SOILS		
BLOWS/FOOT		DESCRIPTIVE TERM	BLOWS/FOOT		DESCRIPTIVE TERM
SPT	CA SAMPLER		SPT	CA SAMPLER	
0-10	0-16	LOOSE	0-2	0-3	VERY SOFT
11-30	17-50	MEDIUM DENSE	3-4	4-7	SOFT
31-50	51-83	DENSE	5-8	8-13	MEDIUM STIFF
OVER 50	OVER 83	VERY DENSE	9-15	14-25	STIFF
			16-30	26-50	VERY STIFF
			OVER 30	OVER 50	HARD

GRAIN SIZES

U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENING		
# 200	# 40	# 10	# 4	3/4"	3"	12"

SILT & CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

TYPICAL BEDROCK HARDNESS

MAJOR DIVISIONS	TYPICAL DESCRIPTIONS
EXTREMELY HARD	CORE, FRAGMENT, OR EXPOSURE CANNOT BE SCRATCHED WITH KNIFE OR SHARP PICK; CAN ONLY BE CHIPPED WITH REPEATED HEAVY HAMMER BLOWS
VERY HARD	CANNOT BE SCRATCHED WITH KNIFE OR SHARP PICK; CORE OR FRAGMENT BREAKS WITH REPEATED HEAVY HAMMER BLOWS
HARD	CAN BE SCRATCHED WITH KNIFE OR SHARP PICK WITH DIFFICULTY (HEAVY PRESSURE); HEAVY HAMMER BLOW REQUIRED TO BREAK SPECIMEN
MODERATELY HARD	CAN BE GROOVED 1/16 INCH DEEP BY KNIFE OR SHARP PICK WITH MODERATE OR HEAVY PRESSURE; CORE OR FRAGMENT BREAKS WITH LIGHT HAMMER BLOW OR HEAVY MANUAL PRESSURE
SOFT	CAN BE GROOVED OR GOUGED EASILY BY KNIFE OR SHARP PICK WITH LIGHT PRESSURE, CAN BE SCRATCHED WITH FINGERNAIL; BREAKS WITH LIGHT TO MODERATE MANUAL PRESSURE
VERY SOFT	CAN BE READILY INDENTED, GROOVED OR GOUGED WITH FINGERNAIL, OR CARVED WITH KNIFE; BREAKS WITH LIGHT MANUAL PRESSURE

TYPICAL BEDROCK WEATHERING

MAJOR DIVISIONS	TYPICAL DESCRIPTIONS
FRESH	NO DISCOLORATION, NOT OXIDIZED
SLIGHTLY WEATHERED	DISCOLORATION OR OXIDATION IS LIMITED TO SURFACE OF, OR SHORT DISTANCE FROM, FRACTURES: SOME FELDSPAR CRYSTALS ARE DULL
MODERATELY WEATHERED	DISCOLORATION OR OXIDATION EXTENDS FROM FRACTURES, USUALLY THROUGHOUT; Fe-Mg MINERALS ARE "RUSTY", FELDSPAR CRYSTALS ARE "CLOUDY"
INTENSELY WEATHERED	DISCOLORATION OR OXIDATION THROUGHOUT; FELDSPAR AND Fe-Mg MINERALS ARE ALTERED TO CLAY TO SOME EXTENT, OR CHEMICAL ALTERATION PRODUCES IN SITU DISAGGREGATION
DECOMPOSED	DISCOLORATION OR OXIDATION THROUGHOUT, BUT RESISTANT MINERALS SUCH AS QUARTZ MAY BE UNALTERED; FELDSPAR AND Fe-Mg MINERALS ARE COMPLETELY ALTERED TO CLAY

drafting/masters/Boring Log Legend121714.dwg

Earth Systems Pacific

Boring No. 1
PAGE 1 OF 2
JOB NO.: 301953-002
DATE: 04-10-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM	SILTY SAND: brown, loose, moist (Alluvium)	0-4	○			
3		thin lens of sandy silt					
4	SP	POORLY GRADED SAND: light brown/orange brown mottled, loose, moist, medium grained	5.0-6.5	■	98.0	3.5	2 4 6
10	SW	WELL GRADED SAND: gray brown, medium dense, moist	10.0-11.5	■	108.6	3.1	5 10 15
13		trace fine to coarse gravel					
15			15.0-16.5	■	115.0	3.5	9 20 24
20			20.0-21.5	●			9 16 21
24		wet ▼					
26							

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 1
PAGE 2 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 04/10/2018

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SW		WELL GRADED SAND: as above					
30	SW-SM		WELL GRADED SAND WITH SILT AND GRAVEL: gray brown, dense, wet, fine to coarse gravel	30.0-31.5	●			6, 17, 20
40			medium dense, thin discontinuous lenses of fine to very fine grained silty sand	40.0-41.5	●			3, 4, 12
50			dense	50.0-51.5	●			8, 15, 21
51			End of Boring @ 51.5'					
52			Subsurface water encountered @ 24.5'					
53								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 2
PAGE 1 OF 2
JOB NO.: 301953-002
DATE: 04-10-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM	SILTY SAND: brown, loose, moist (Alluvium)	0-2.5	○			
3	ML	SANDY SILT: gray brown, medium stiff, moist, trace clay	2.5-5	○			
5	SP	POORLY GRADED SAND: light brown/orange brown mottled, loose, moist, medium grained	5.0-6.5	■	99.5	7.3	4 5 9
6			5-9	○			
9		gray brown, medium dense	10.0-11.5	■	110.6	4.9	7 14 21
12	SW	WELL GRADED SAND: gray brown, medium dense, moist, trace fine to coarse gravel	15.0-16.5	■	106.2	3.9	9 16 25
19			20.0-21.5	●			3 5 6
21		wet ▼					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No. 2
PAGE 2 OF 2

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 04/10/2018

OXNARD HIGH SCHOOL NO. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
27	SP		POORLY GRADED SAND: brown, medium dense, wet, medium grained, trace fine to coarse gravel, thin lenses of sandy silt					
30				30.0-31.5	●			4 · 7 9
32			some gravel					
34	SW-SM		WELL GRADED SAND WITH SILT: gray brown, medium dense, wet, trace fine to coarse gravel					
39			gray					
40				40.0-41.5	●			7 9 11
48	SM		SILTY SAND: gray, medium dense, wet, fine grained					
50				50.0-51.5	●			5 7 12
52			End of Boring @ 51.5' Subsurface water encountered @ 21.0'					
53								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 3
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-26-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)	0-4	○			2
2			moist	2.0-3.5	■	101.5	7.3	4 4
4	SP		POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	97.0	7.8	3 6 9
10				10.0-11.5	●			2 6 9
11			medium dense					
12			End of Boring @ 11.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 4
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, moist (Alluvium)					
2				2.0-3.5	■	98.8	11.9	1, 2, 3
4	SP		POORLY GRADED SAND: light brown, loose, moist, trace gravel					
5				5.0-6.5	■	94.1	5.8	3, 6, 7
8	SW		WELL GRADED SAND: light brown, loose, moist	8.5-10.0	●			3, 3, 6
10			End of Boring @ 10.0' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 5
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: light brown, loose, slightly moist (Alluvium)					
2			very moist, trace clay, decreasing silt content	2.0-3.5	■	95.4	17.0	1 2 2
3				2-5	○			
5				5.0-6.5	■	96.0	10.0	2 4 8
6	SP		POORLY GRADED SAND: light brown, loose, moist					
8	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	8.5-10.0	●			4 6 7
10			End of Boring @ 10.0' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 6
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-16-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: light brown, loose, slightly moist (Alluvium)					
1			moist					2
2				2.0-3.5	■	97.9	9.3	2
3								3
4	ML		SANDY SILT: brown to light brown, soft, very moist					1
5				5.0-6.5	■	89.3	30.5	3
6				4-7	○			4
7	SP		POORLY GRADED SAND: light brown, loose, moist					
8								4
9			medium dense	8.5-10.0	●			5
10								6
11			End of Boring @ 10.0'					
12			No Subsurface Water Encountered					
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 7
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: light brown to brown, loose, slightly moist (Alluvium)					
2			moist					
5	SP		POORLY GRADED SAND: light brown, loose, moist, trace fine gravel	5.0-6.5	■	90.9	5.4	2, 3, 6
10	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	10.0-11.5	■	105.8	4.2	4, 10, 11
15				15.0-16.5	●			4, 8, 10
17			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 8
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist, trace clay					
4	SP		POORLY GRADED SAND: light brown, loose, moist, trace fine gravel	5.0-6.5	■	95.8	5.9	2, 5, 7
9			medium dense	10.0-11.5	■	101.2	7.4	7, 12, 12
12	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel, trace clay	15.0-16.5	●			5, 9, 10
16.5			End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 9
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-16-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist, trace clay					
4	SP		POORLY GRADED SAND: light brown, loose, very moist, trace fine gravel	5.0-6.5	■	96.2	16.3	2, 4, 5
10			medium dense, moist	10.0-11.5	■	98.9	3.6	7, 11, 13
12	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine to coarse gravel, trace clay	15.0-16.5	■	116.1	3.9	5, 9, 16
18			trace cobbles					
20			dense	20.0-21.5	●			7, 14, 18
24	CL		LEAN CLAY: brown to gray brown, very soft, very moist, trace silt	25.0-26.5	●			0, 1, 1
26			End of Boring @ 26.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 10
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-16-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist					
5				5.0-6.5	■	87.0	31.2	1, 2, 2
5			very moist					
7	SP		POORLY GRADED SAND: light brown, loose, moist					
10	SW		WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel	10.0-11.5	■	105.7	3.5	6, 17, 22
15	SC		CLAYEY SAND: brown, loose, very moist, trace fine gravel	15.0-16.5	●			4, 5, 6
16			End of Boring @ 16.5'					
			No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 11
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-26-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

SOIL DESCRIPTION

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist	2.0-3.5	■	97.6	11.9	2, 3, 4
5	SP		POORLY GRADED SAND: light brown, loose, moist	5.0-6.5	■	101.9	6.6	2, 5, 9
10	SW		WELL GRADED SAND: light brown, medium dense, moist	10.0-11.5	●			6, 9, 12
12			End of Boring @ 11.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 36
PAGE 1 OF 1
JOB NO.: 301953-002
DATE: 07-26-2018

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol
and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM	SILTY SAND: brown, loose, slightly moist (Alluvium)					
2		moist					
3	ML	SANDY SILT: gray brown, soft, moist					
5	SP	POORLY GRADED SAND: light brown, medium dense, moist, trace fine gravel, trace silt	5.0-6.5	■	92.6	9.4	3 6 11
8	SW	WELL GRADED SAND: light brown, medium dense, moist, trace fine gravel and cobbles					
10			10.0-11.5	■	114.0	5.2	7 22 31
11		blow counts from 10.5' to 11.5' not reliable due to rocks					
15		dense	15.0-16.5	●			6 13 18
16		End of Boring @ 16.5' No Subsurface Water Encountered					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

Boring No.: 45
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem

JOB NO.: 301953-002
DATE: 07-26-2018

OXNARD HIGH SCHOOL No. 8
Northeast of Camino Del Sol and North Rose Avenue
Oxnard, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SM		SILTY SAND: brown, loose, slightly moist (Alluvium)					
2			moist	0-5	○			
4			increasing silt content					5
5	SP		POORLY GRADED SAND: light brown, medium dense, moist	5.0-6.5	■	99.1	8.3	6 13
9	SW		WELL GRADED SAND: light brown, medium dense, moist, trace silt, trace coarse gravel and cobbles					6
10				10.0-11.5	■	118.1	5.1	18 24
14								10
15			dense	15.0-16.5	■	121.4	4.5	27 34
20			silt ends, wet, medium dense	20.0-21.5	●			6 13 15
24	CL		SANDY LEAN CLAY: gray, very soft, moist, trace silt					
25				25.0-26.5	●			0 1 1
26			End of Boring @ 26.5' Subsurface Water Encountered Between 20.0' and 24.0'					

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

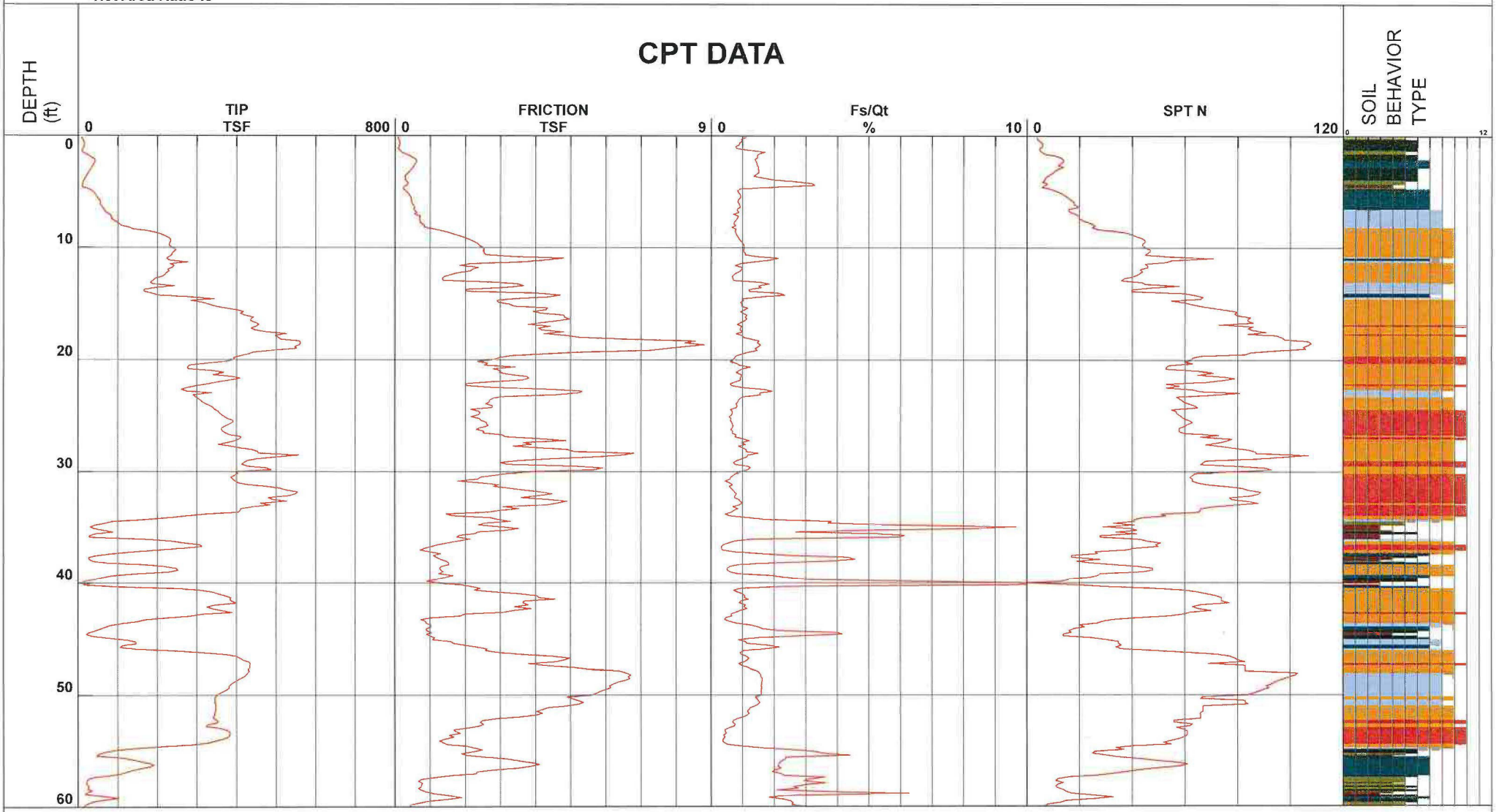
NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems

Project	Oxnard Union High School No.8	Operator	RC AS	Filename	SDF(037).cpt
Job Number	301953-001	Cone Number	DDG1448	GPS	
Hole Number	CPT-02A	Date and Time	7/16/2018 3:49:22 PM	Maximum Depth	61.02 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 15cm squared

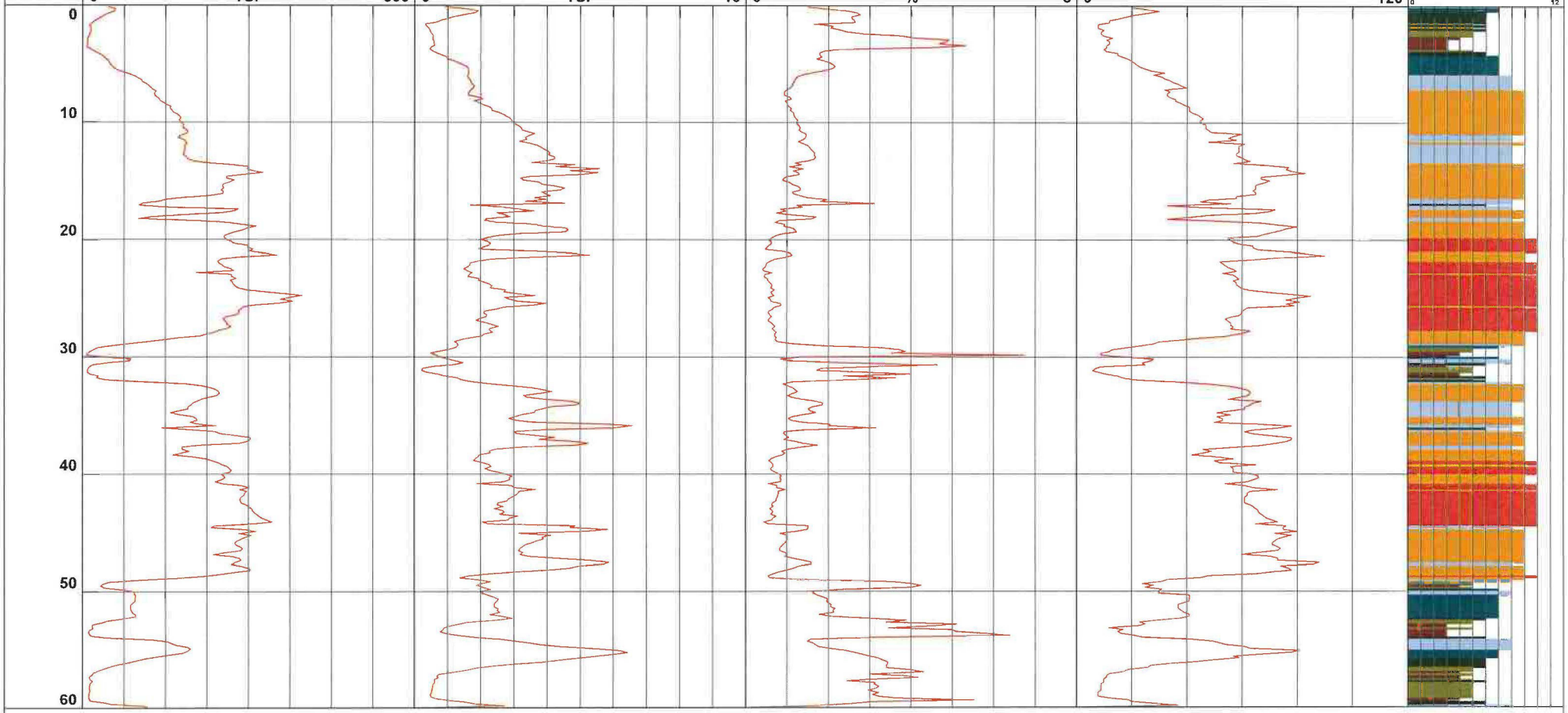
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union HS No.8	Operator	RC AS	Filename	SDF(702).cpt
Job Number	301953-001	Cone Number	DDG1379	GPS	
Hole Number	CPT-03	Date and Time	4/20/2018 11:12:25 AM	Maximum Depth	60.20 ft
EST GW Depth During Test		24.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

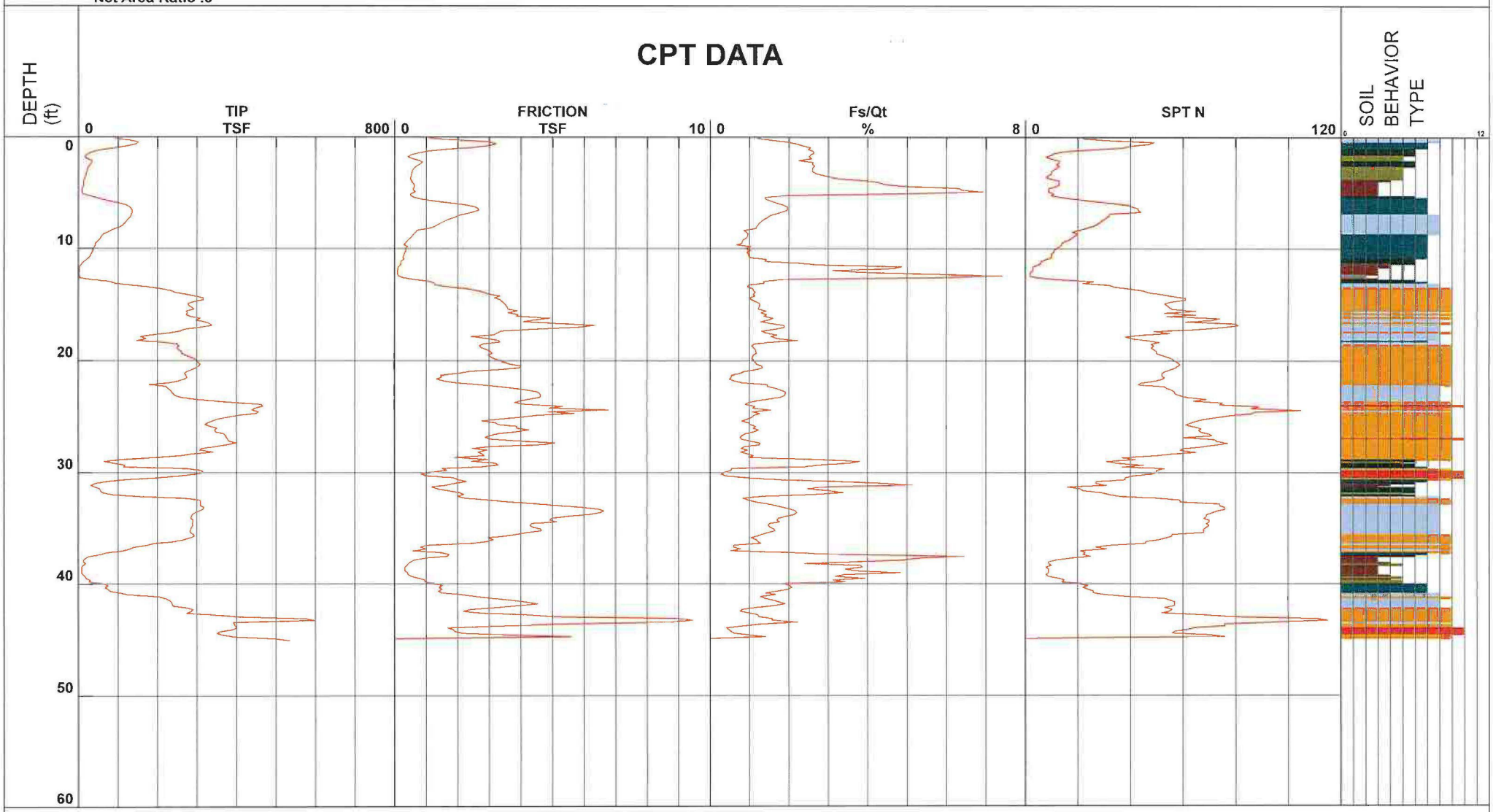
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union HS No.8	Operator	RC AS	Filename	SDF(703).cpt
Job Number	301953-001	Cone Number	DDG1379	GPS	
Hole Number	CPT-04	Date and Time	4/20/2018 11:57:08 AM	Maximum Depth	45.11 ft
EST GW Depth During Test		24.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 10cm squared

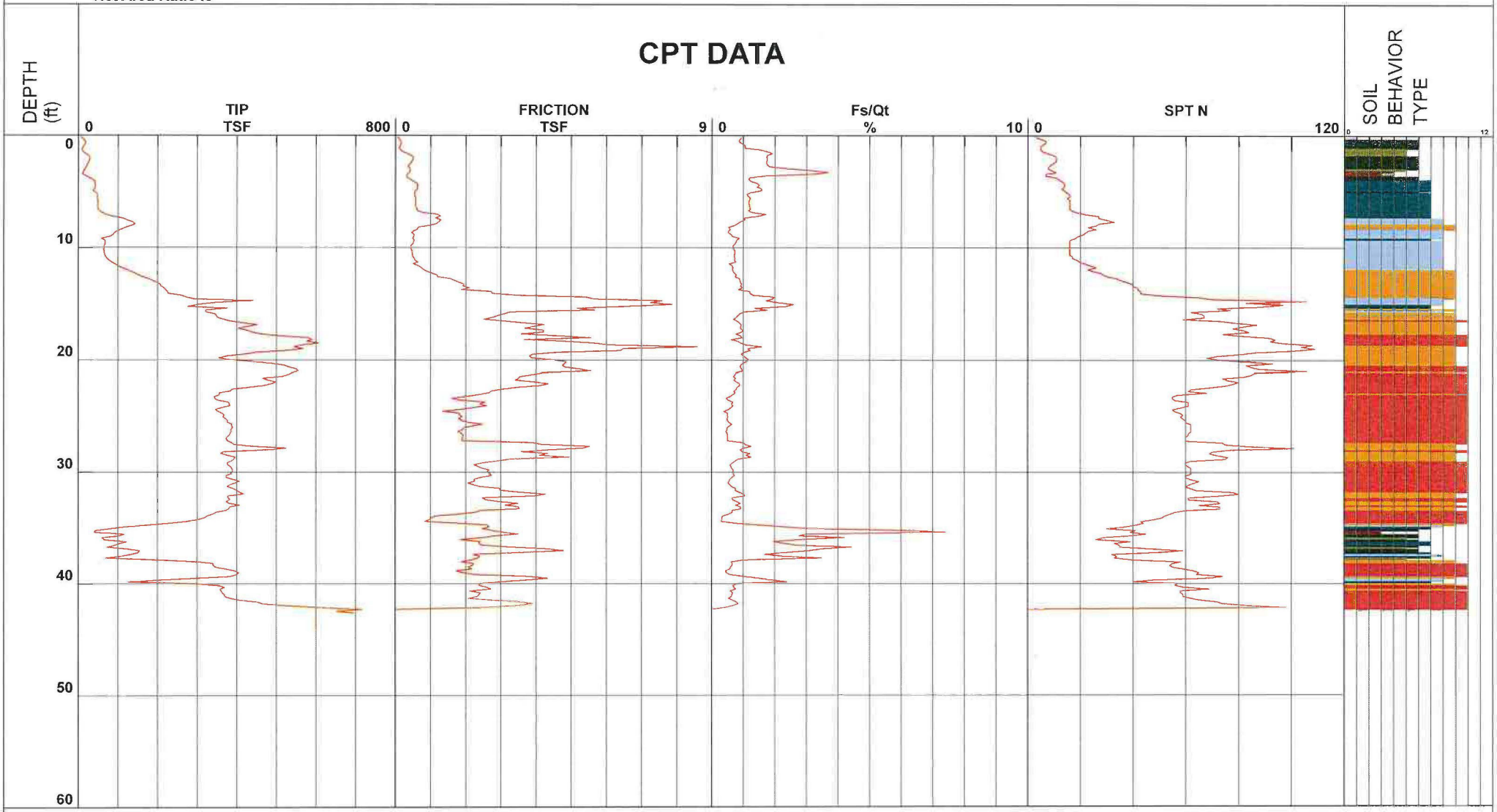
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union High School No.8	Operator	RC AS	Filename	SDF(036).cpt
Job Number	301953-001	Cone Number	DDG1448	GPS	
Hole Number	CPT-05	Date and Time	7/16/2018 3:07:16 PM	Maximum Depth	42.65 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 15cm squared

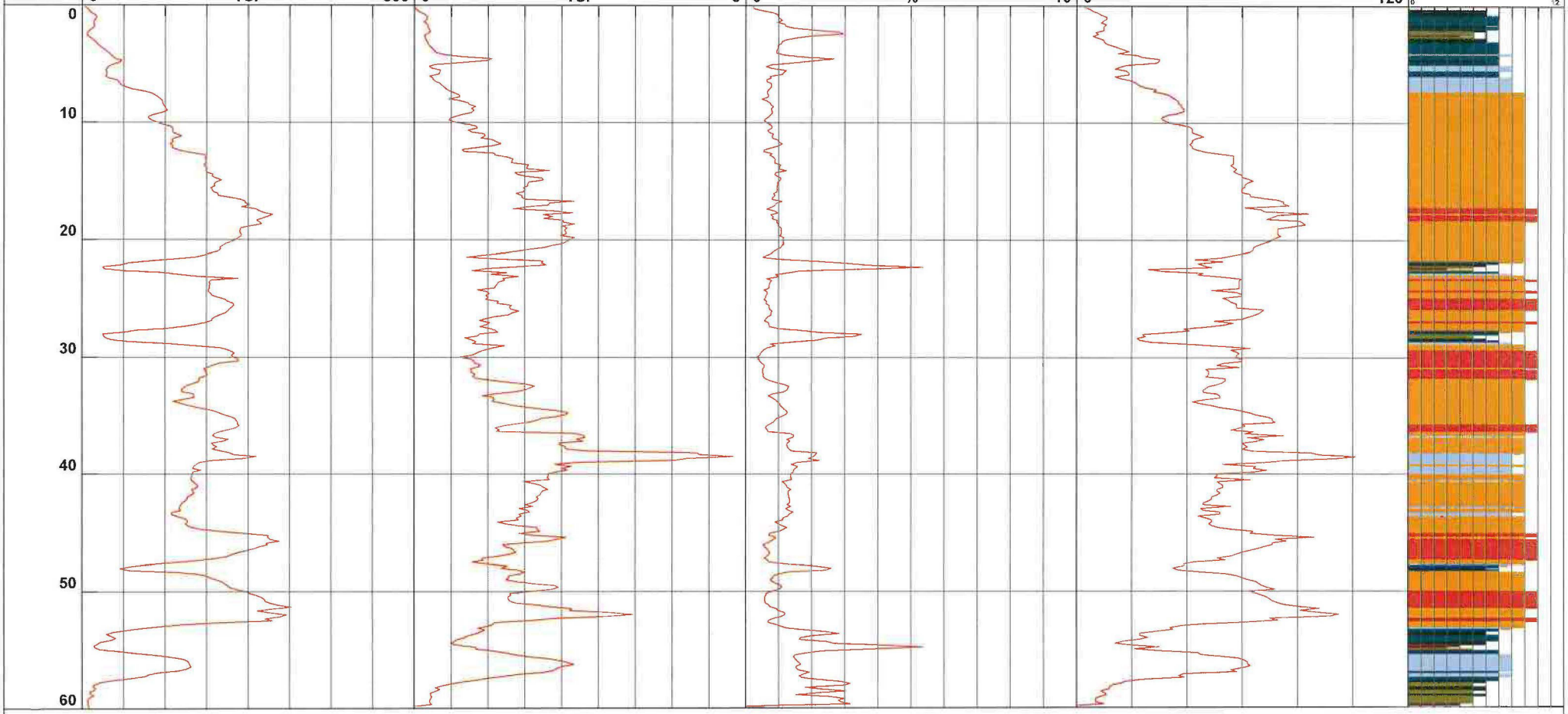
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union High School No.8	Operator	RC AS	Filename	SDF(034).cpt
Job Number	301953-001	Cone Number	DDG1448	GPS	
Hole Number	CPT-06A	Date and Time	7/16/2018 2:15:03 PM	Maximum Depth	60.20 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 15cm squared

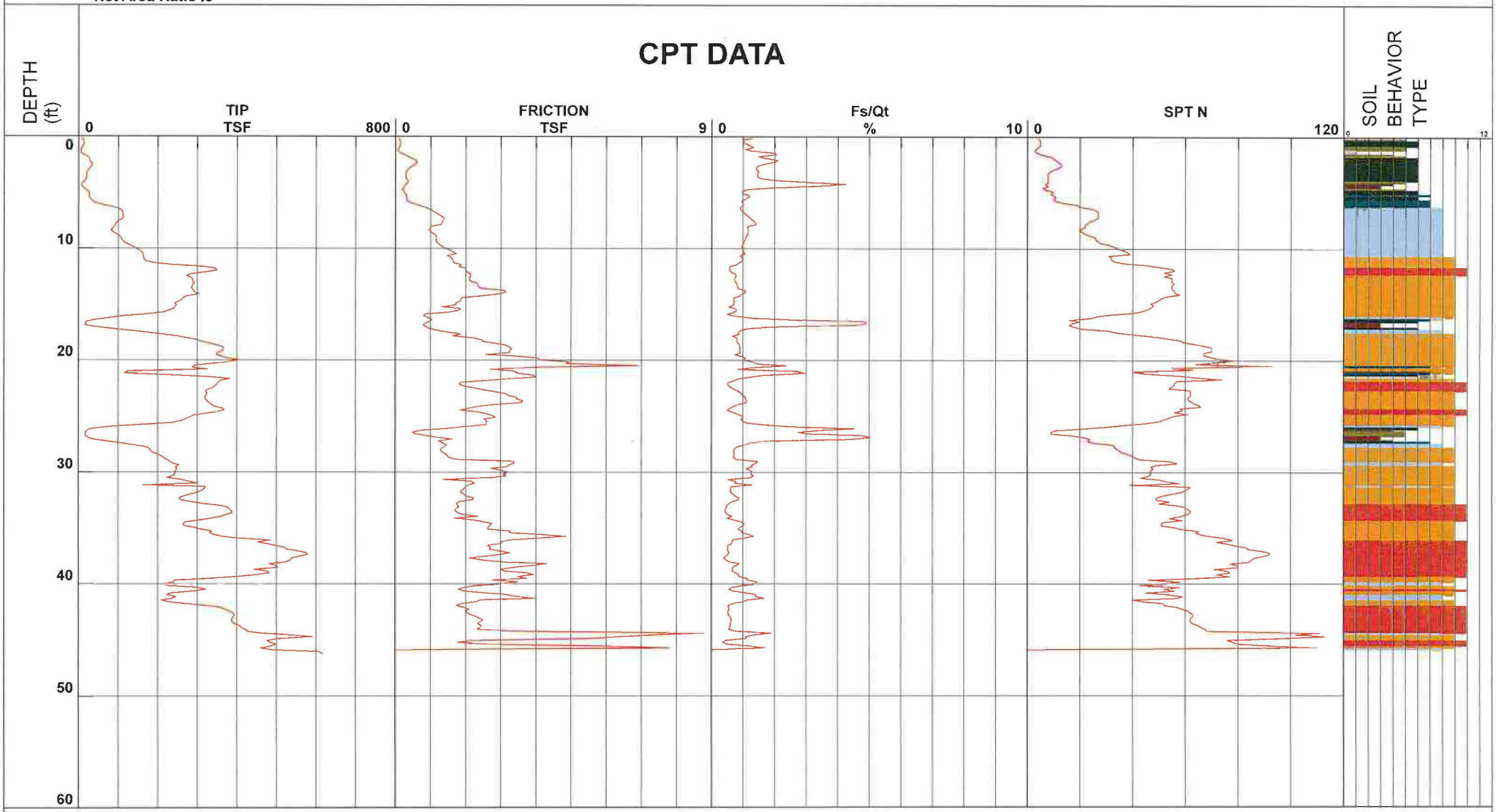
S*Soil behavior type and SPT based on data from UBC-1983

Earth Systems

Project	Oxnard Union High School No.8	Operator	RC AS	Filename	SDF(032).cpt
Job Number	301953-001	Cone Number	DDG1448	GPS	
Hole Number	CPT-07	Date and Time	7/16/2018 1:22:10 PM	Maximum Depth	46.26 ft
EST GW Depth During Test		15.00 ft			

Net Area Ratio .8

CPT DATA



1 - sensitive fine grained
2 - organic material
3 - clay
4 - silty clay to clay
5 - clayey silt to silty clay
6 - sandy silt to clayey silt
7 - silty sand to sandy silt
8 - sand to silty sand
9 - sand
10 - gravelly sand to sand
11 - very stiff fine grained (*)
12 - sand to clayey sand (*)

Cone Size 15cm squared

S*Soil behavior type and SPT based on data from UBC-1983

Appendix B

Laboratory Testing

Appendix B
Laboratory Testing

A laboratory test program is designed for each project to evaluate the physical and mechanical properties of the soil and bedrock materials encountered at the site during our field exploration program. Laboratory tests were conducted on representative samples for the purpose of classification and determining their properties for use in analyses and evaluations. The most common laboratory tests include moisture-density, Atterberg limits, grain-size analyses (sieve and hydrometer analyses), sand equivalent, direct shear, consolidation, compaction, expansion index, and *R*-values. The following descriptions of test methods are generic and may include methods not used on this project. Reference to the boring logs and test results on Plates attached to this appendix will show which tests were performed for this project. Laboratory testing is performed in general accordance with the most recent ASTM (most current) test designations available at the time of testing.

Classification Tests

Classification testing is performed to identify differences in material behavior and to correlate the results with shear strength and volume change characteristics of the materials. Classification testing includes unit weight (e.g., dry density), moisture content, Atterberg limits, grain size analyses (sieve and hydrometer), and sand equivalent.

Moisture-Density Test

Site soils were classified in the laboratory in accordance with the Unified Soil Classification System. Moisture contents are performed in general accordance with ASTM Test Designation D2216 and unit weights were determined in general accordance with ASTM Test Designation D2937. Field moisture contents and dry unit weights were determined for the ring samples obtained in the field. Field moisture contents and dry unit weights are shown on the boring logs in Appendix A.

Sieve Analysis

Sieve analysis tests were conducted on the on-site soils in general accordance with sieve analysis test procedure from ASTM Test Designation D422. This method covers the quantitative determination of the distribution of particle sizes in soils. If this test was performed, the results are presented on Plates attached to this appendix.

Hydrometer Test

Hydrometer tests were performed in general accordance with ASTM Test Designation D422. If this test was performed, the results are presented on Plates attached to this appendix. Samples with obviously little course material and a high percentage of fines were prepared with a wet method (ASTM Test Designation D2217) rather than air-drying the sample and pulverizing with a mortar and pedestal.

Shear Tests

Direct shear tests were performed in general accordance with ASTM D3080 to determine the shear strength parameters of undisturbed on-site soils or remolded soil specimens. The samples are usually tested in an artificially saturated condition. This is accomplished by soaking the specimens in a confined container for a period of one or 2 days, depending on the permeability of the material. The specimen, 1-inch-high and 2.4-inch-diameter, is placed in the shear device, and a vertical stress is applied to the specimen. The specimen is allowed to reach an equilibrium state (swell or consolidate). The specimen is then sheared under a constant rate of deformation. The rate of deformation for a slow test, sufficiently slow to presumably allow drainage, is selected from computed or measured consolidation rates to simulate full drainage (full dissipation of any tendency for pore water pressure changes) during shear. A rate of displacement of 0.005 inches per minute was used for the most tests. The process usually is repeated for 3 specimens, each under different vertical stresses. The results from the 3 tests are plotted on a diagram of shear stress and normal (vertical) stress at failure, and linear approximations are drawn of the failure curves to determine the angle of internal friction and cohesion. The first moisture content shown on the graphs (associated with peak values) is for either the in-situ condition or the remolded condition, and the second moisture content (associated with ultimate value) is for the soaked condition.

Consolidation Test

Consolidation tests were performed in general accordance with ASTM D2435 and D5333 on selected samples to evaluate the load-deformation characteristics of the earth soils. The tests were performed primarily on material that would be most susceptible to consolidation under anticipated foundation loading. The soil specimen, contained in a 2.4-inch-diameter, 1.0-inch-high sampling ring, is placed in a loading frame under a seating pressure of 0.1 ksf. Vertical loads are applied to the samples in several geometric increments, and the resulting deformations were recorded at selected time intervals. When the pressure reaches a preselected effective overburden pressure (often 2 ksf) and the specimen has consolidated under that pressure, the laboratory technician adds water to the test cell and records the vertical movement. After the specimen reaches equilibrium with the addition of water, the technician continues the loading process, usually up to a pressure of about 8 ksf. The specimen is then unloaded in increments, and the test is dismantled. The results of the test are presented in terms of percent volume change versus applied vertical stress. If this test was performed, the results are presented on Plates attached to this appendix.

Compaction Test

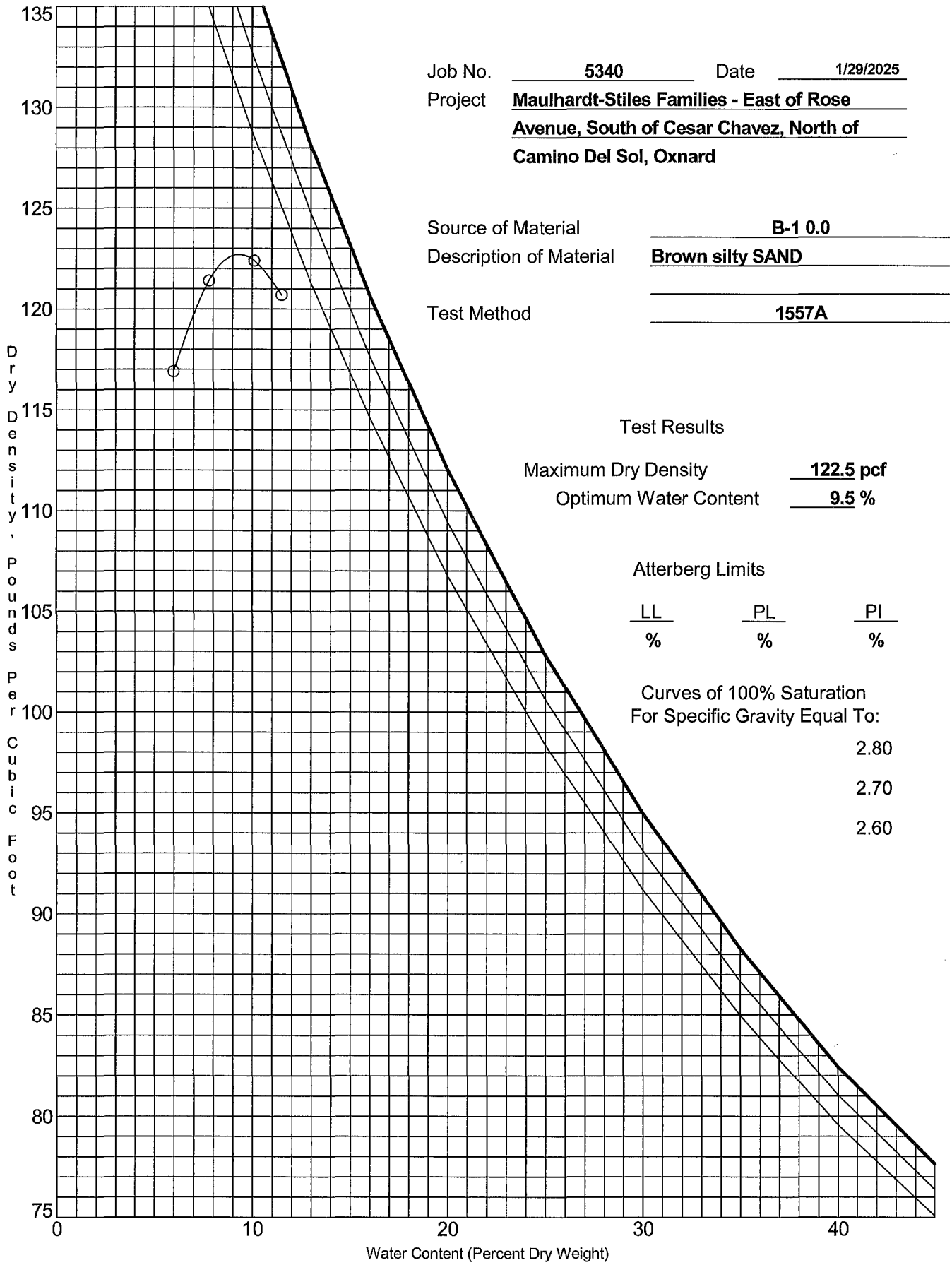
Compaction tests provide information on the relationship between moisture content and dry density of the soil compacted in a given manner. The maximum density is obtained for a given compaction effort at an optimum moisture content. Specifications for earthwork are in terms of the unit weight (or dry density) expressed as a percentage of the maximum density, and the moisture content compared to the optimum moisture content. Compaction tests were performed in general accordance with ASTM Test Designation D1557 to determine the maximum dry densities and optimum moisture contents of the on-site soils. If this test was performed, the results are presented on Plates attached to this appendix.

Expansion Index Test

The expansion index test provides an assessment of the potential for expansion or heave that could be detrimental to foundation or slab performance. Expansion Index tests are performed on shallow on-site soils in general accordance with expansion test procedures in ASTM D4829. In this test, a specimen is compacted at a degree of saturation between 45% and 55% in a 4.01-inch-diameter, 1.0-inch-high ring. The specimen is subjected to a seating pressure of 144 psf, water is added to the test cell, and swell is monitored until the expansion stops. The volume of swell is converted to an expansion index. Any test results are summarized on the boring logs in Appendix A.

Sample Remolding

In some cases remolded samples are used when performing direct shear tests and consolidation tests. Samples are remolded to a specified moisture and density by compacting the soil in a 2.42-inch-diameter sample ring. The specified moisture content is either at optimum or a few percentage points above optimum. The specified dry density is usually at a relative compaction of 90%. The required moisture is added to and mixed with dry soil, providing a homogeneous mixture. A 2.42-inch-diameter ring is placed in a 6-inch-diameter compaction mold, and soil is placed in the mold to above the ring. The soil is then compacted with a 5.5-pound hammer with a free-fall drop of 12 inches. The sample is trimmed, and the dry density is determined. If the dry density deviates more than about one pound per cubic foot from the specified dry density, the process is repeated with the number of blows altered to better achieve the specified dry density.



Job No. 5340 Date 1/29/2025

Project **Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, Oxnard**

Source of Material **B-1 0.0**

Description of Material **Brown silty SAND**

Test Method **1557A**

Test Results

Maximum Dry Density **122.5 pcf**

Optimum Water Content **9.5 %**

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation For Specific Gravity Equal To:

2.80

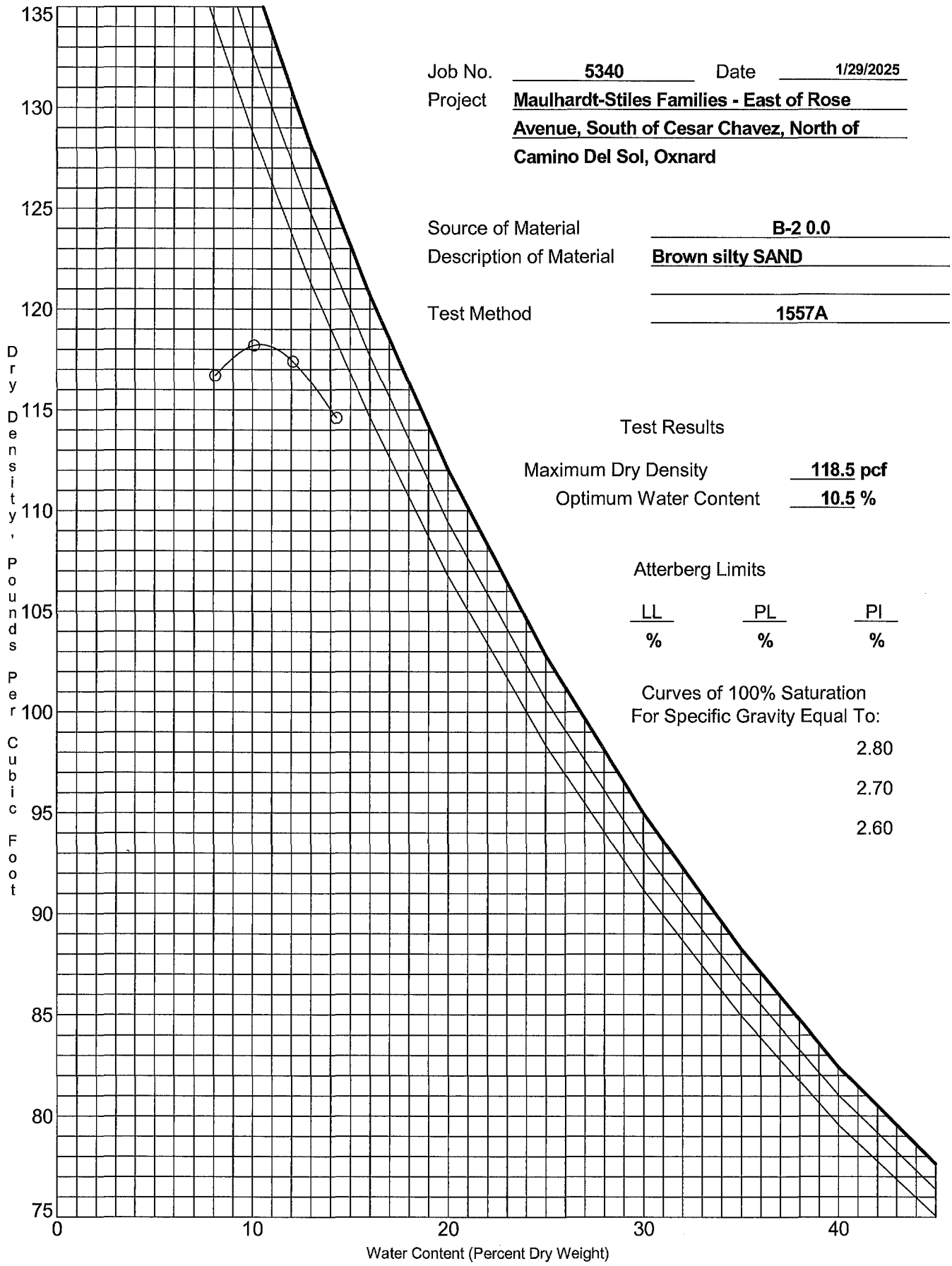
2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.

Plate B- 3



Job No. 5340 Date 1/29/2025

Project **Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, Oxnard**

Source of Material **B-2 0.0**

Description of Material **Brown silty SAND**

Test Method **1557A**

Test Results

Maximum Dry Density **118.5 pcf**

Optimum Water Content **10.5 %**

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation For Specific Gravity Equal To:

2.80

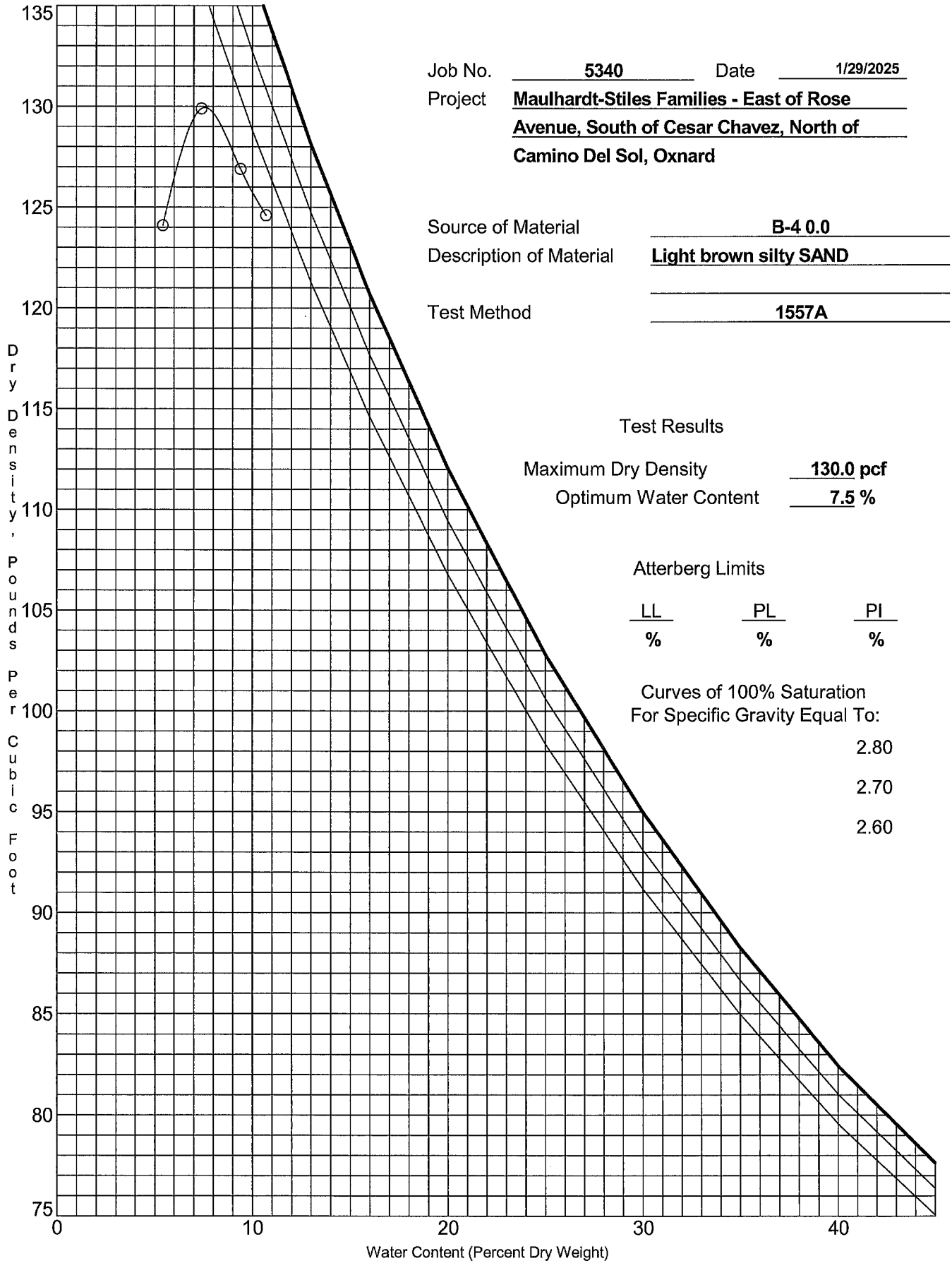
2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.

Plate B- 4



Job No. 5340 Date 1/29/2025

Project Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, Oxnard

Source of Material B-4 0.0

Description of Material Light brown silty SAND

Test Method 1557A

Test Results

Maximum Dry Density 130.0 pcf

Optimum Water Content 7.5 %

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation For Specific Gravity Equal To:

2.80

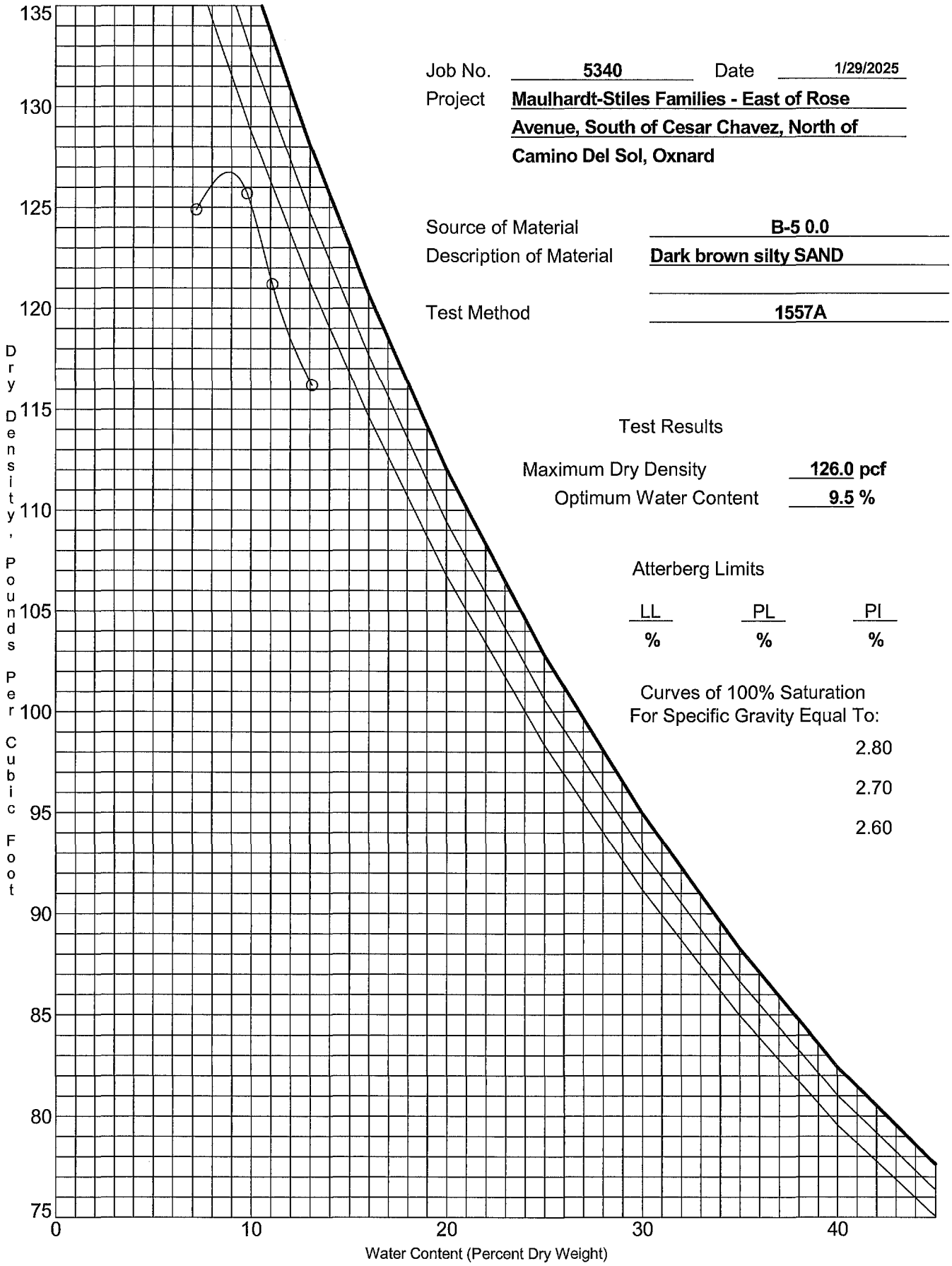
2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.

Plate B- 5



Job No. 5340 Date 1/29/2025

Project **Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, Oxnard**

Source of Material **B-5 0.0**

Description of Material **Dark brown silty SAND**

Test Method **1557A**

Test Results

Maximum Dry Density **126.0 pcf**

Optimum Water Content **9.5 %**

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation For Specific Gravity Equal To:

2.80

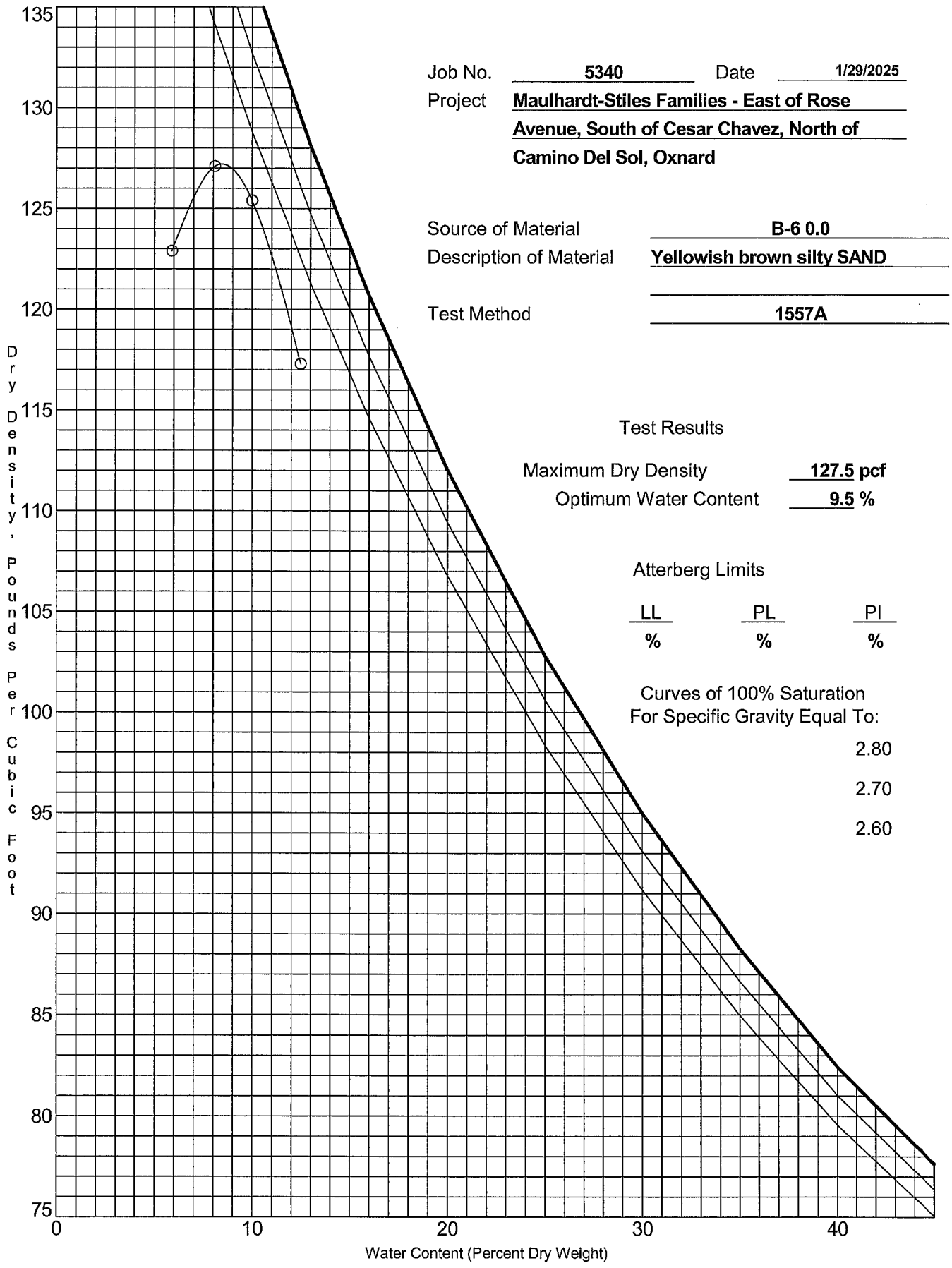
2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.

Plate B- 6



Job No. 5340 Date 1/29/2025

Project **Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, Oxnard**

Source of Material **B-6 0.0**

Description of Material **Yellowish brown silty SAND**

Test Method **1557A**

Test Results

Maximum Dry Density **127.5 pcf**

Optimum Water Content **9.5 %**

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation For Specific Gravity Equal To:

2.80

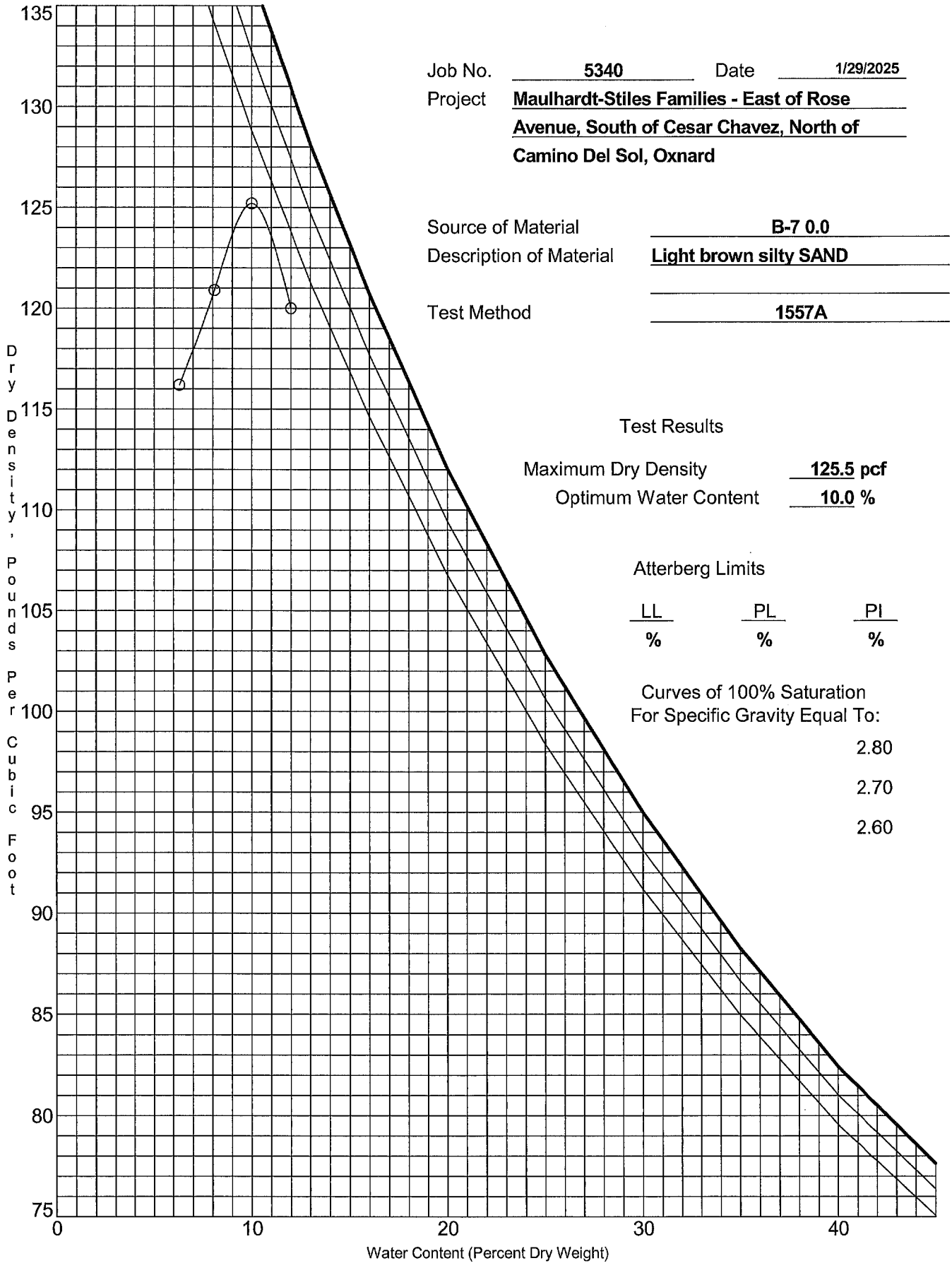
2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.

Plate B- 7



Job No. 5340 Date 1/29/2025

Project **Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, Oxnard**

Source of Material **B-7 0.0**

Description of Material **Light brown silty SAND**

Test Method **1557A**

Test Results

Maximum Dry Density **125.5 pcf**

Optimum Water Content **10.0 %**

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation For Specific Gravity Equal To:

2.80

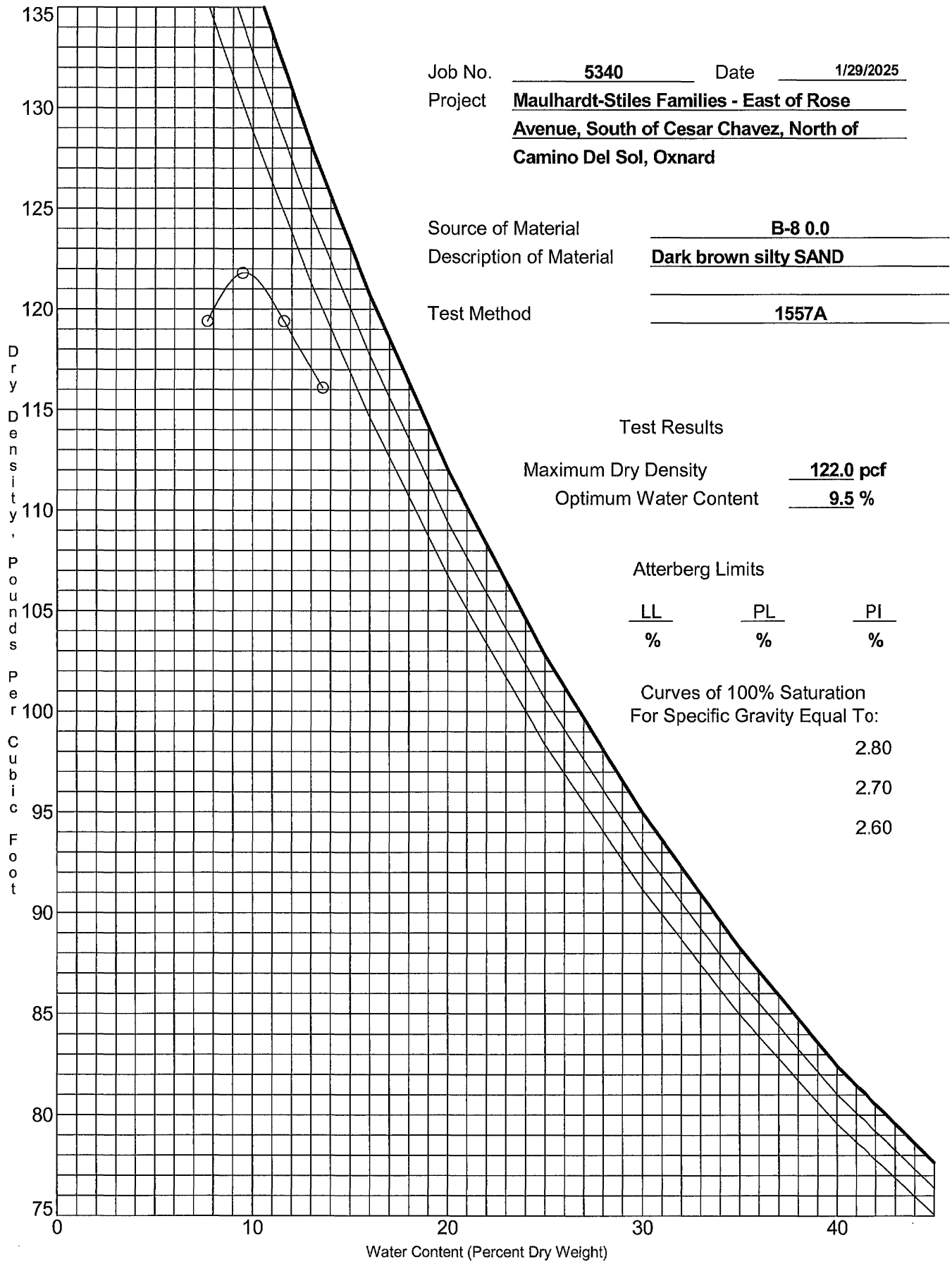
2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.

Plate B- 8



Job No. 5340 Date 1/29/2025

Project Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, Oxnard

Source of Material B-8 0.0

Description of Material Dark brown silty SAND

Test Method 1557A

Test Results

Maximum Dry Density 122.0 pcf

Optimum Water Content 9.5 %

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation For Specific Gravity Equal To:

2.80

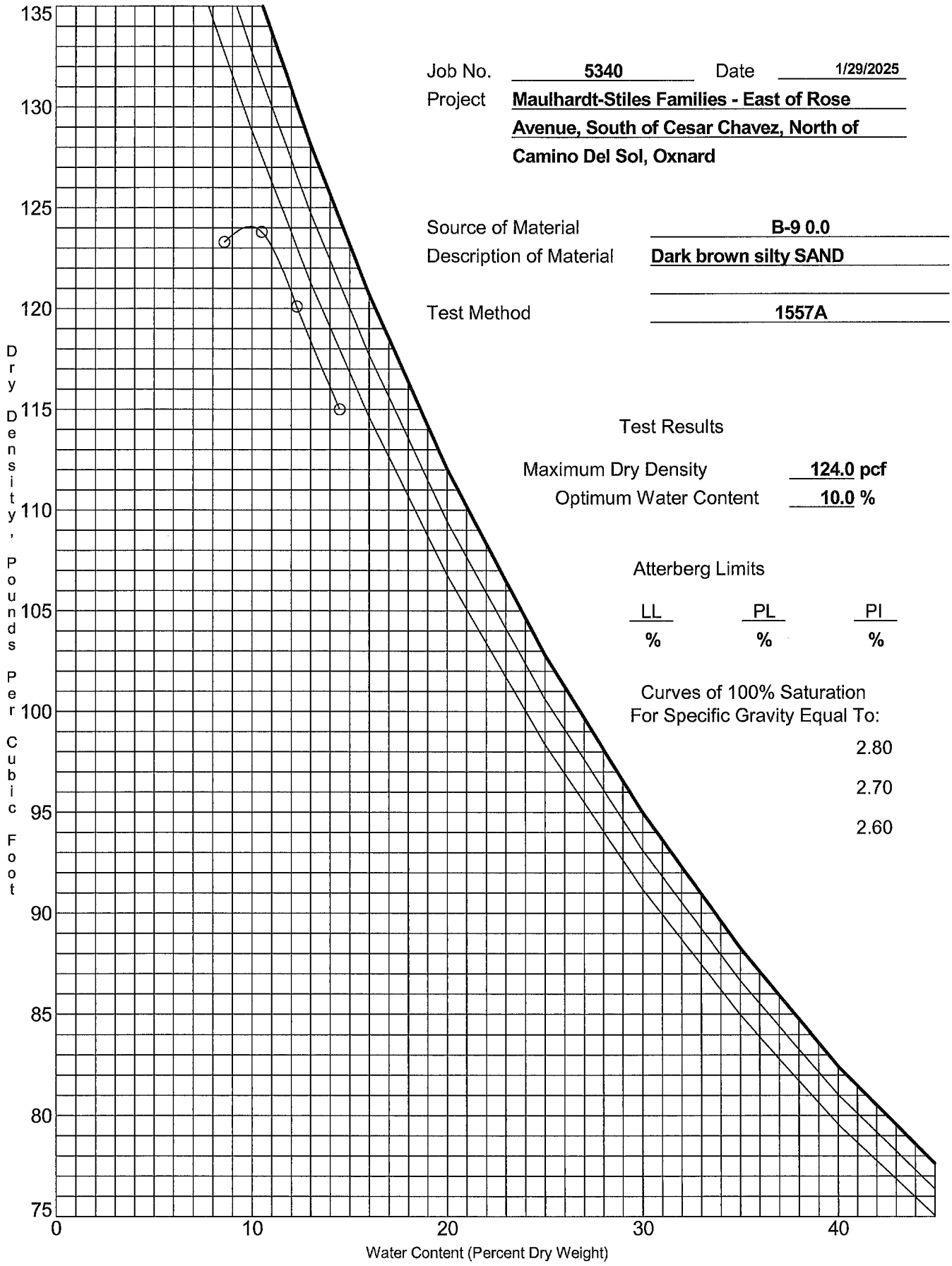
2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.

Plate B- 9



Job No. **5340** Date **1/29/2025**

Project **Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, Oxnard**

Source of Material **B-9 0.0**

Description of Material **Dark brown silty SAND**

Test Method **1557A**

Test Results

Maximum Dry Density **124.0 pcf**

Optimum Water Content **10.0 %**

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation For Specific Gravity Equal To:

2.80

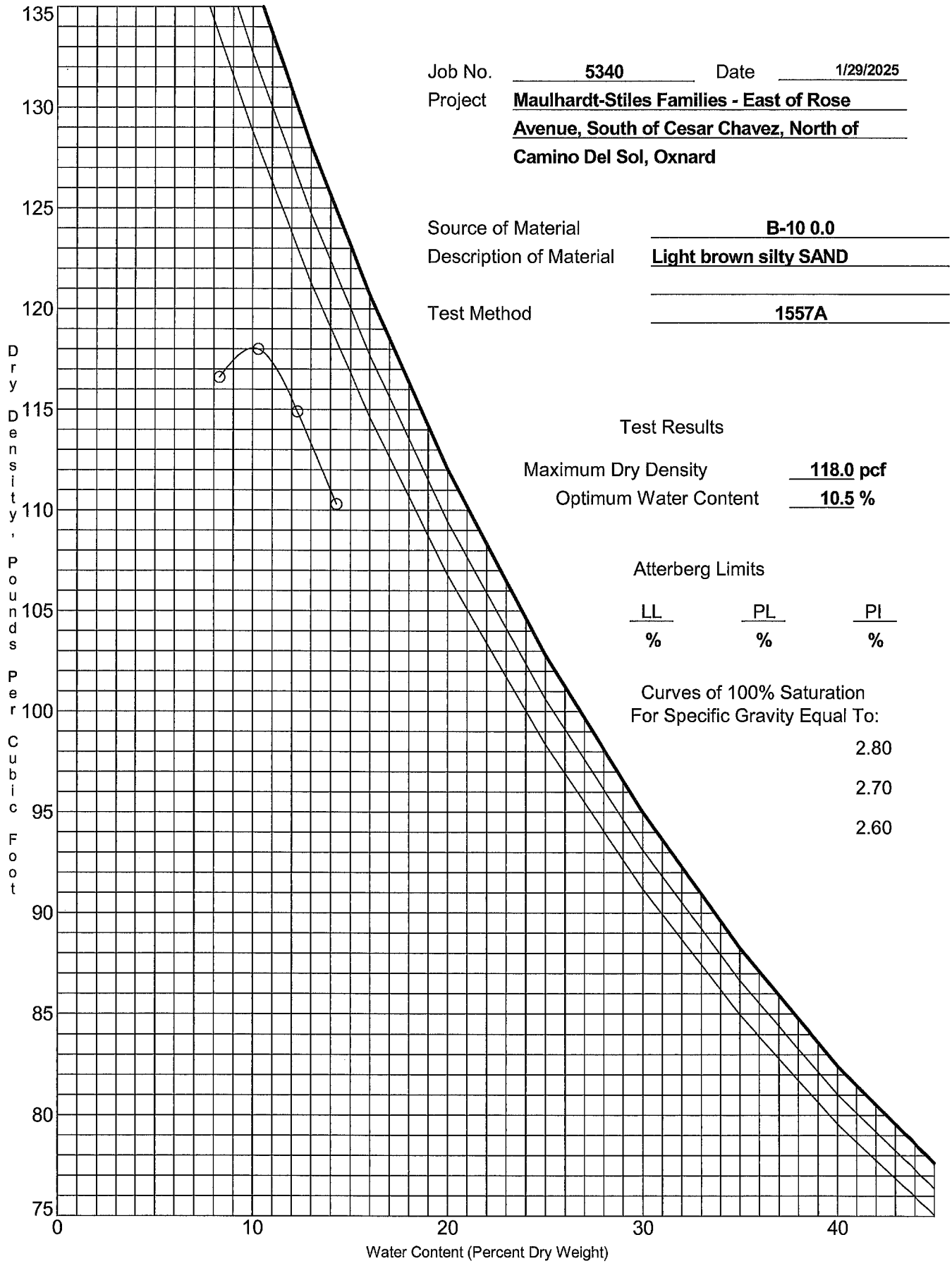
2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.

Plate B- 10



Job No. 5340 Date 1/29/2025

Project **Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, Oxnard**

Source of Material **B-10 0.0**

Description of Material **Light brown silty SAND**

Test Method **1557A**

Test Results

Maximum Dry Density **118.0 pcf**

Optimum Water Content **10.5 %**

Atterberg Limits

LL	PL	PI
%	%	%

Curves of 100% Saturation For Specific Gravity Equal To:

2.80

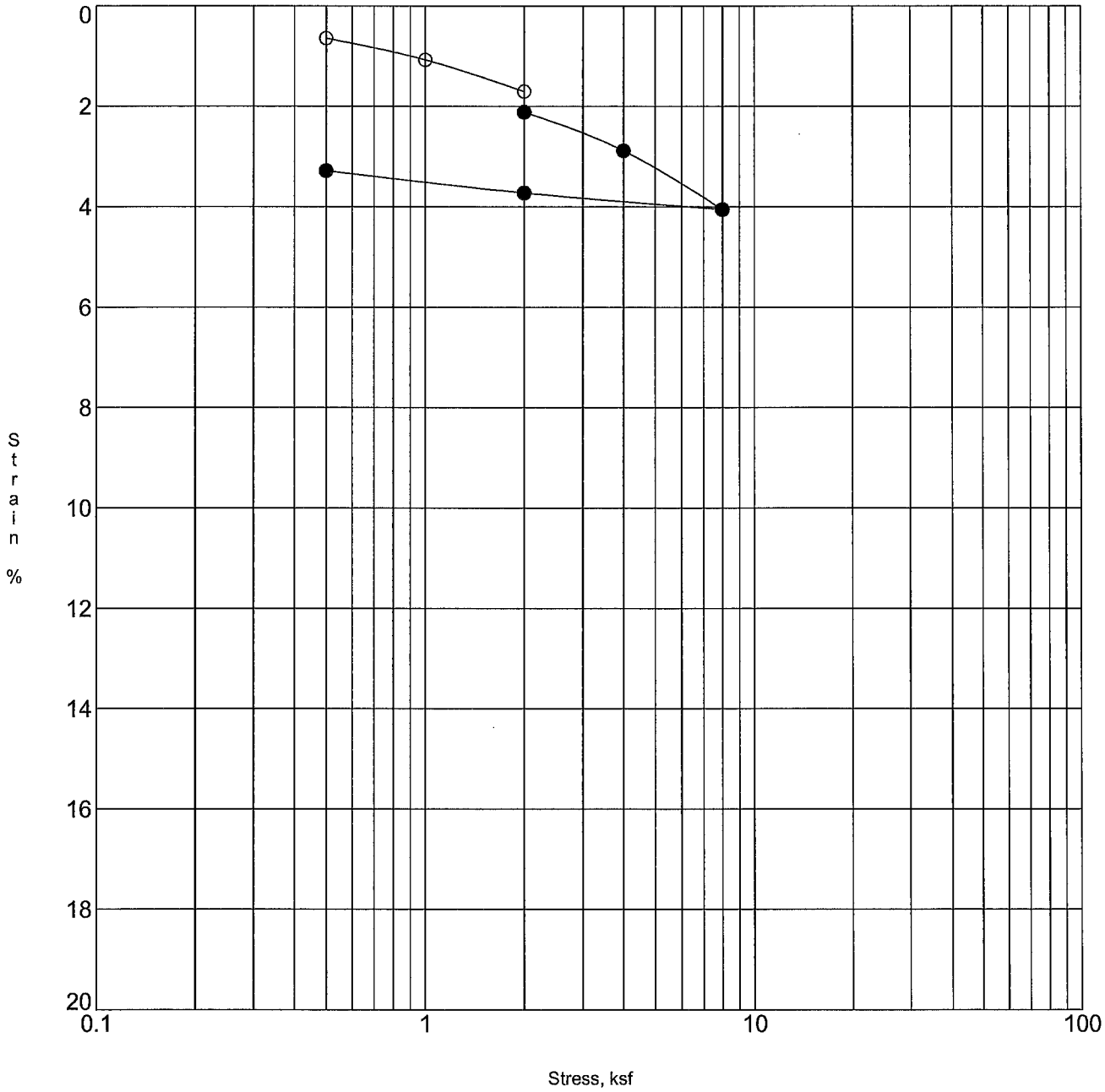
2.70

2.60

Moisture-Density Relationship

Advanced Geotechnical Services, Inc.

Plate B- 11



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-1	0.0	Brown silty SAND	110.2	9.5
●	B-1	0.0	REMOLDED	114.4	20.2

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, :nard

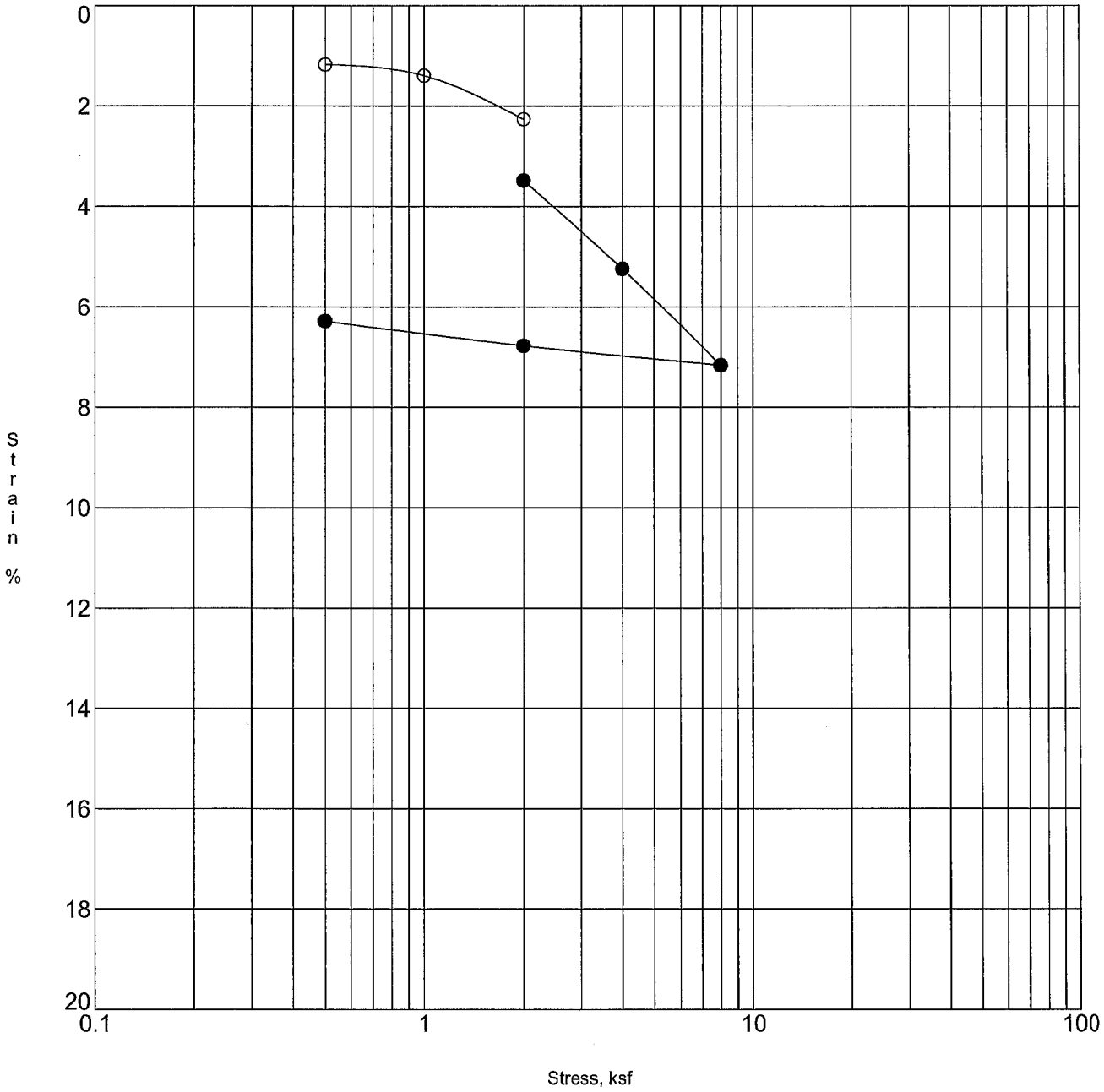
Client No. 5340

Date 1/29/25

Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 12



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-1	2.5	Yellowish brown SAND	88.4	10.1
●	B-1	2.5	UNDISTURBED	94.8	25.3

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

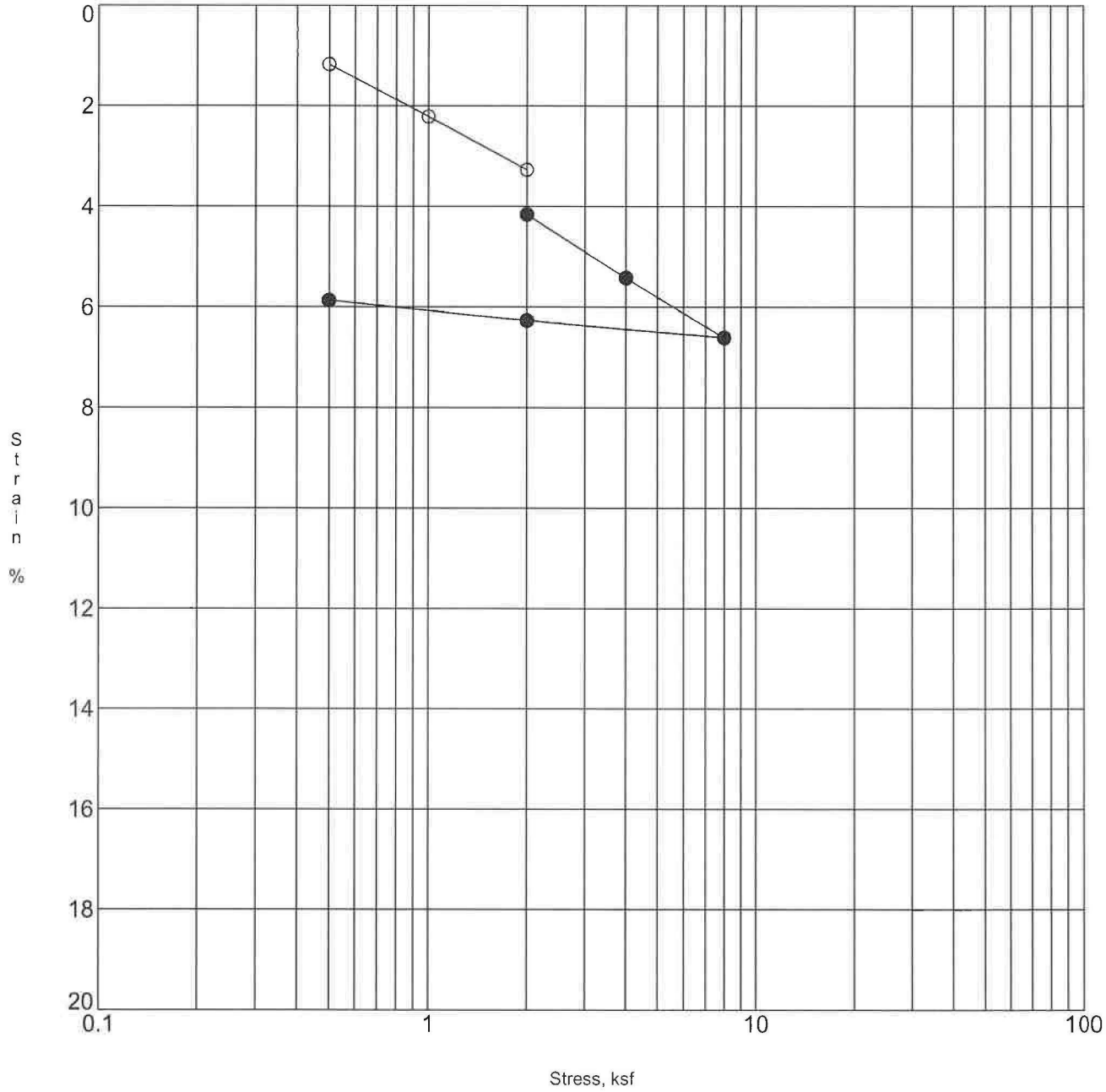
Client No. 5340

Date 1/29/25

Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 13



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-1	5.0	Yellowish brown SAND	86.9	7.8
●	B-1	5.0	UNDISTURBED	92.7	27.3

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

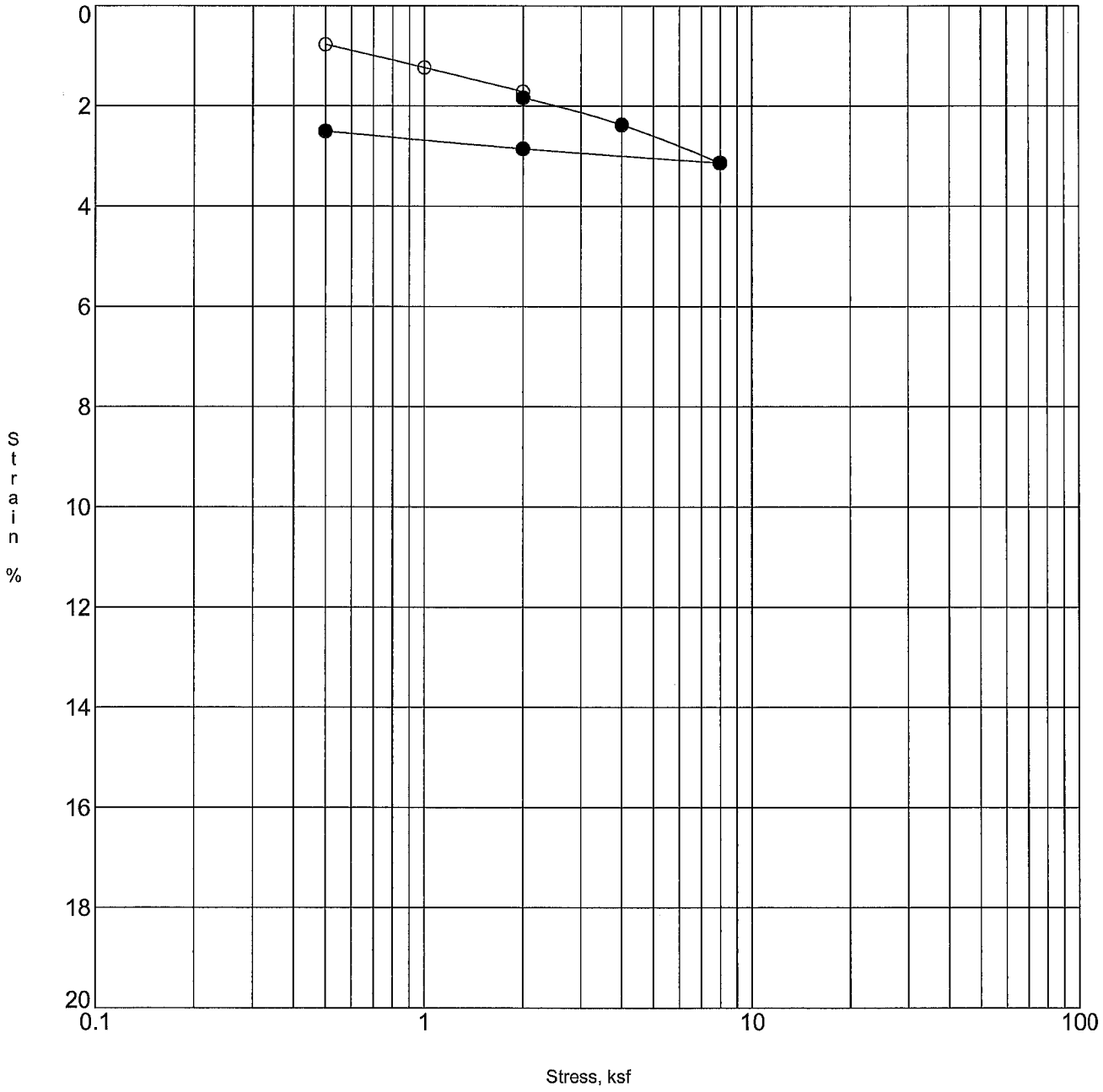
Client No. 5340

Date 1/29/25

Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 14



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-2	0.0	Brown silty SAND	106.3	10.8
●	B-2	0.0	REMOLDED	109.4	17.5

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

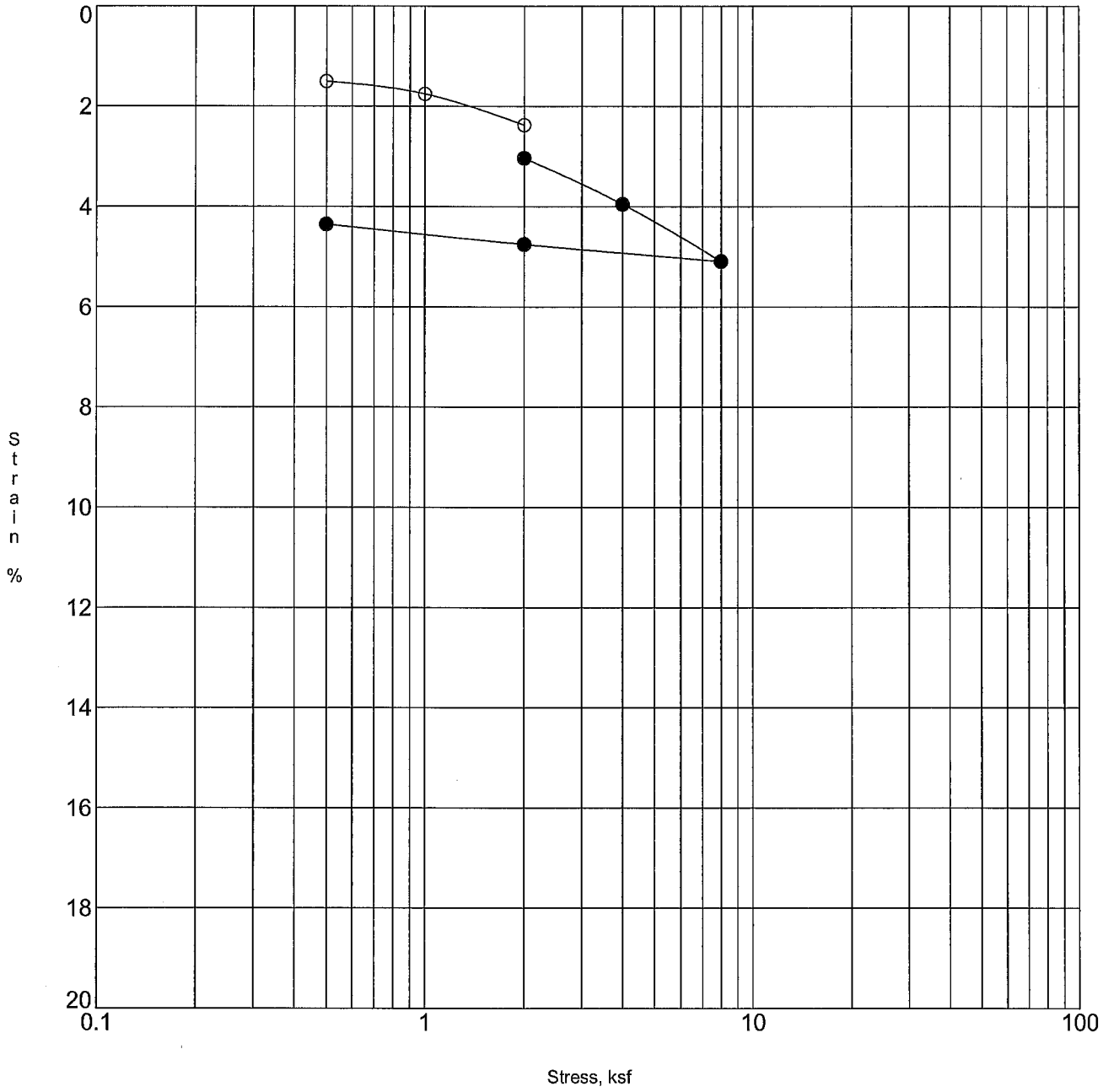
Client No. 5340

Date 1/29/25

Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 15



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-2	2.5	Yellowish brown SAND	94.0	5.5
●	B-2	2.5	UNDISTURBED	98.7	21.2

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, :nard

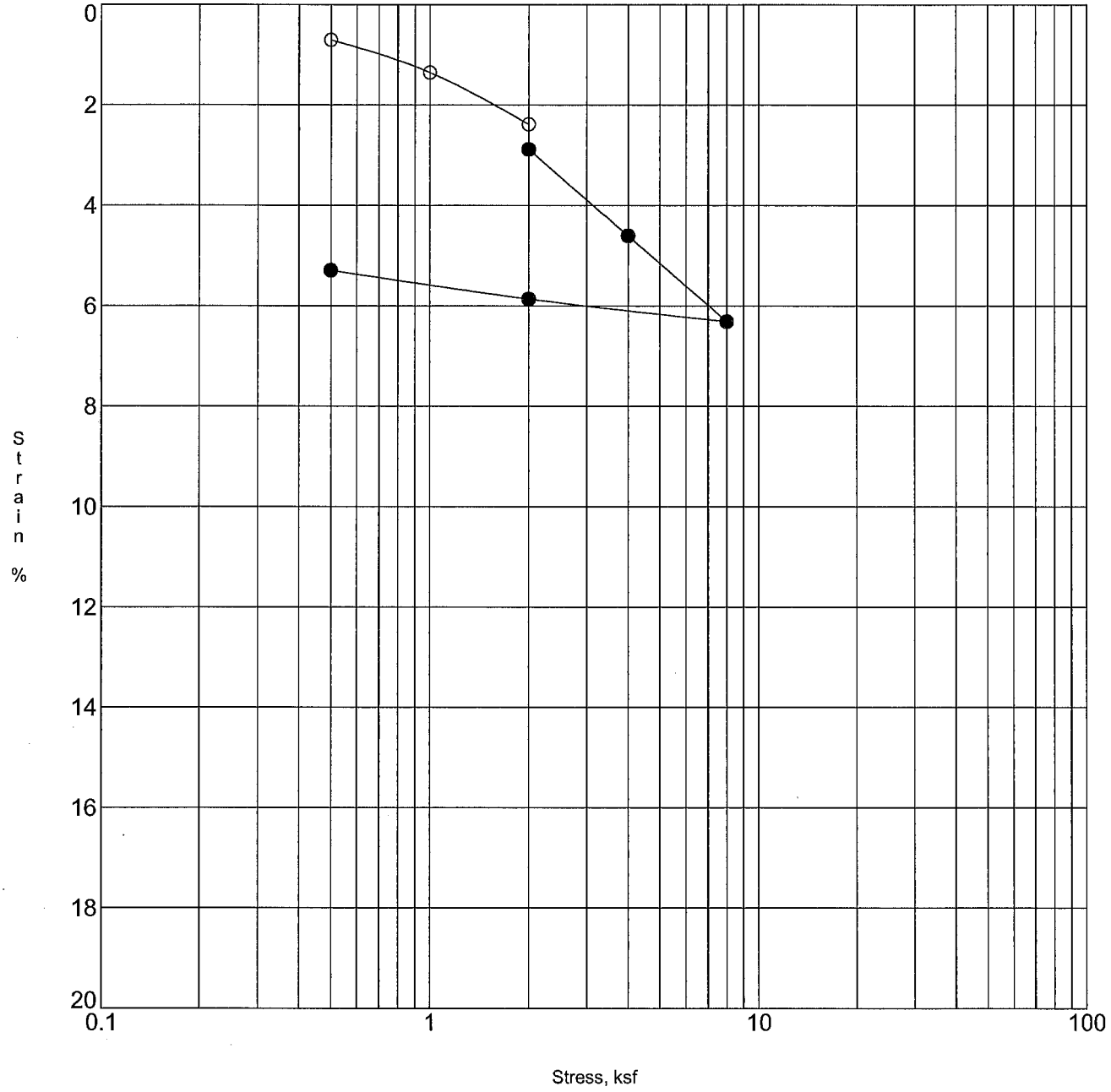
Client No. 5340

Date 1/29/25

Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 16



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-2	5.0	Olive brown silty SAND	86.2	16.8
●	B-2	5.0	UNDISTURBED	91.6	28.9

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

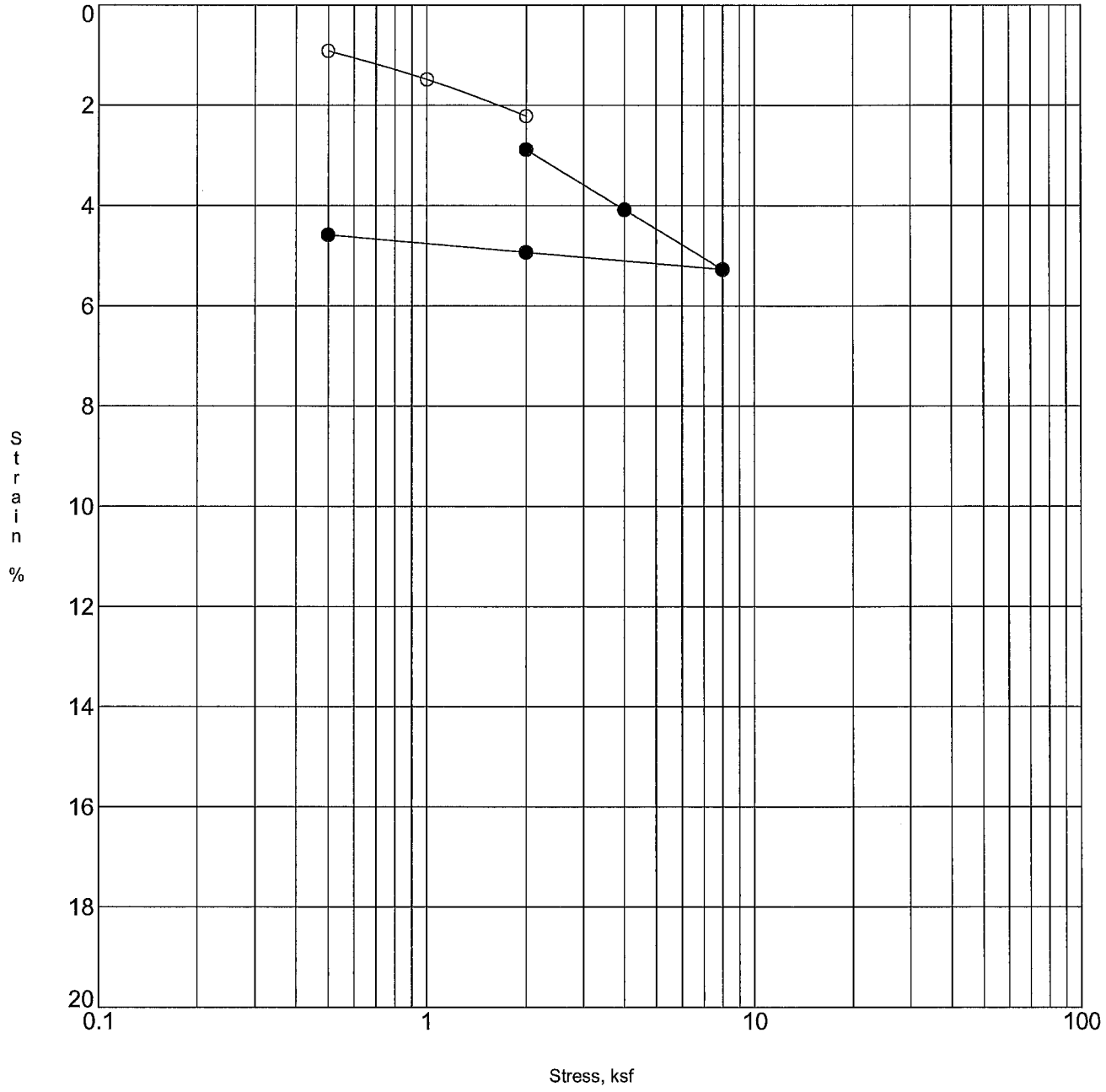
Client No. 5340

Date 1/29/25

Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 17



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-3	2.5	Dark yellowish brown SAND	103.0	7.1
●	B-3	2.5	UNDISTURBED	108.4	16.8

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

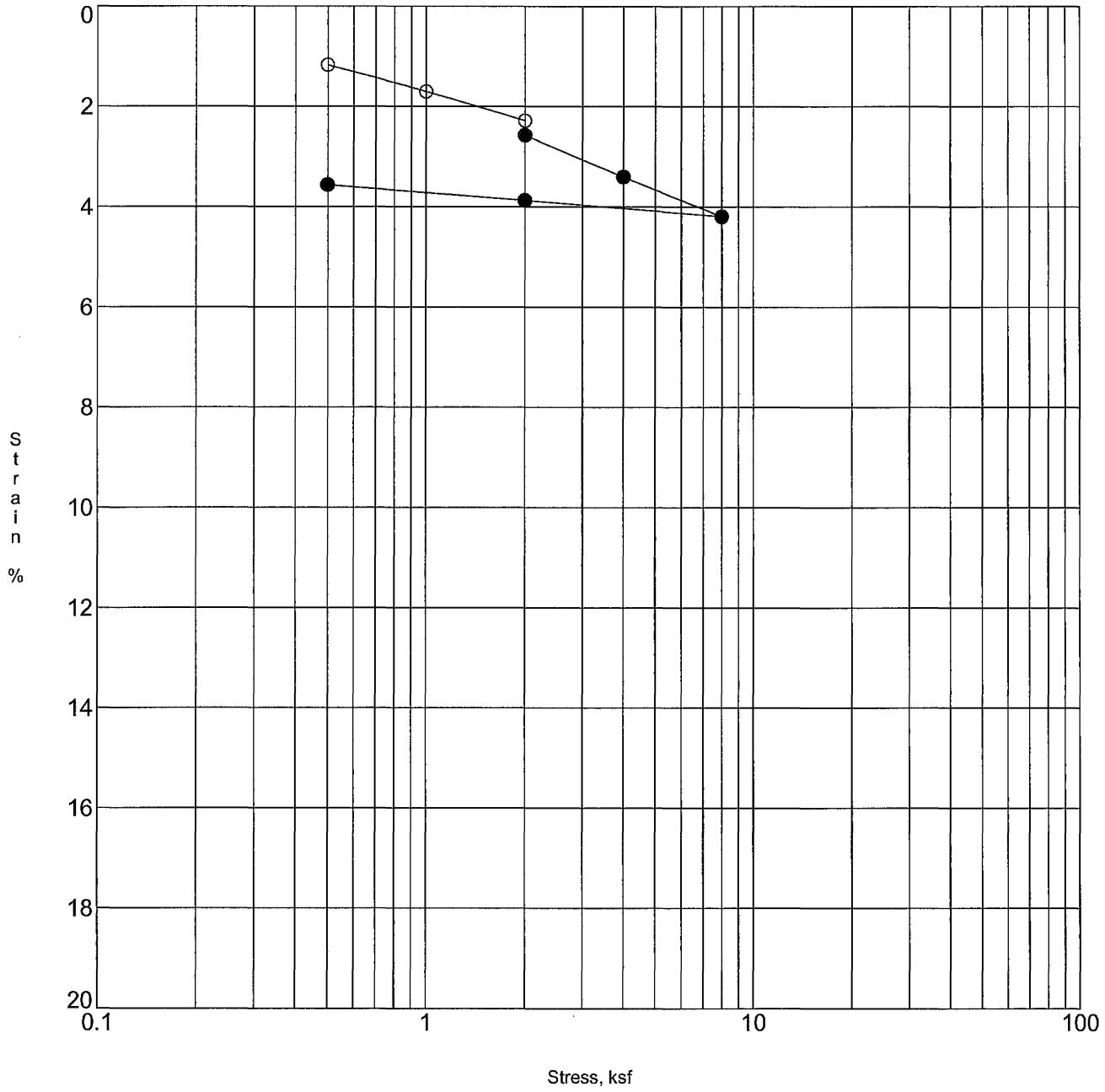
Client No. 5340

Date 1/29/25

Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 18



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-3	5.0	Yellowish brown SAND	93.0	16.5
●	B-3	5.0	UNDISTURBED	96.7	22.4

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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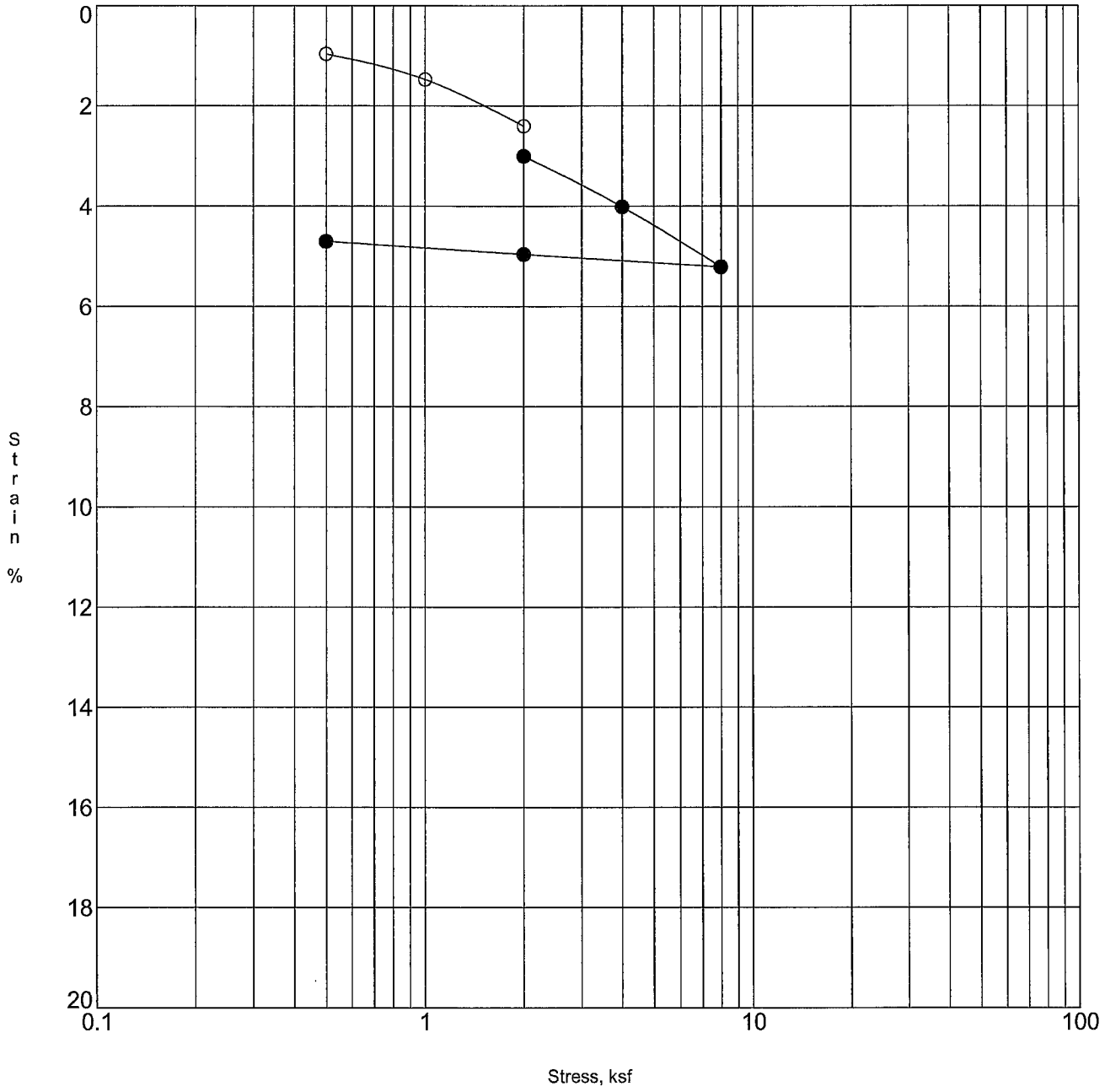
Plate B- 19



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-3	7.5	Yellowish brown SAND	99.5	4.1
●	B-3	7.5	UNDISTURBED	104.7	19.1

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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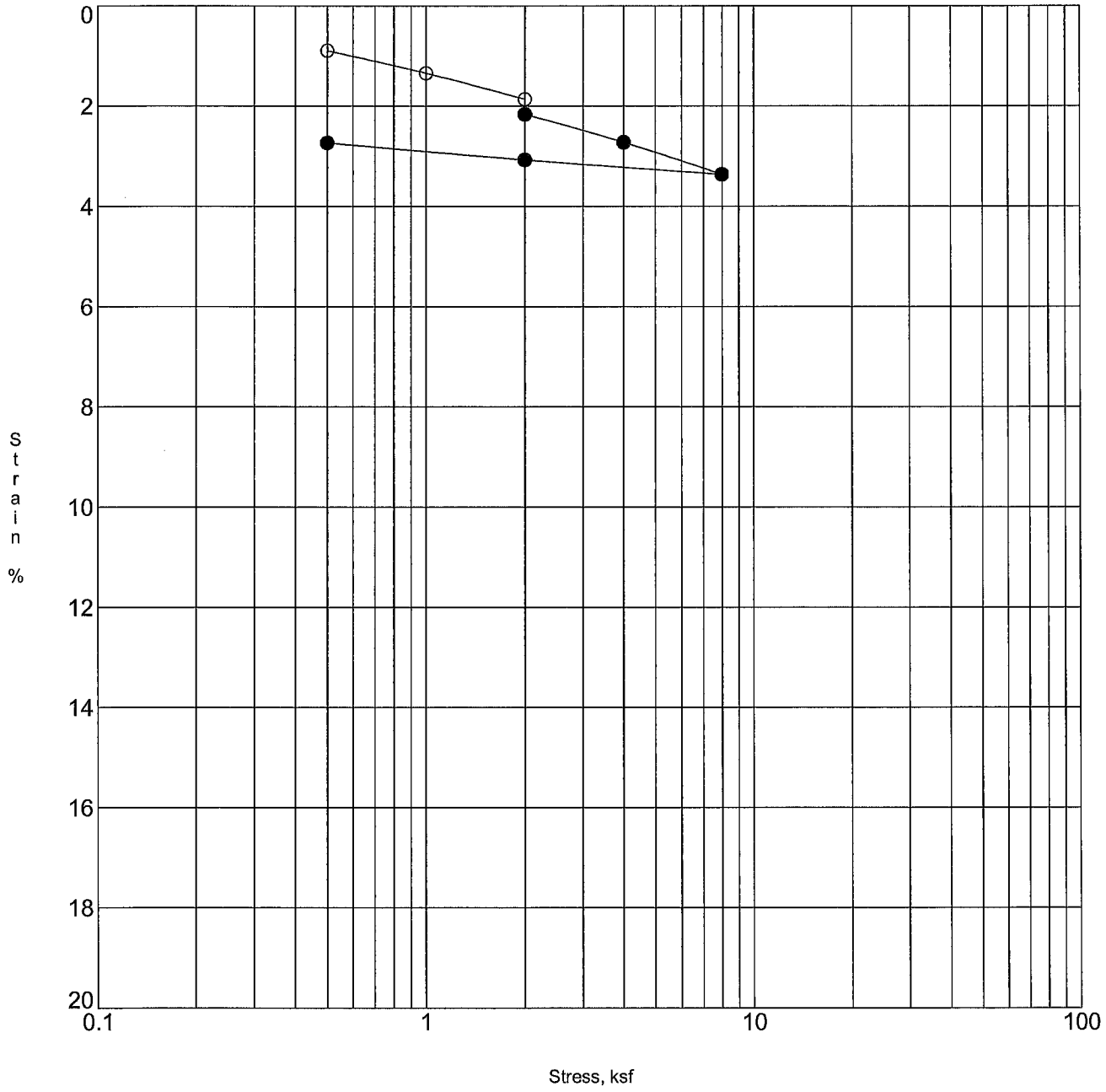
Plate B- 20



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-4	7.5	Brown SAND	112.1	3.8
●	B-4	7.5	UNDISTURBED	115.6	13.4

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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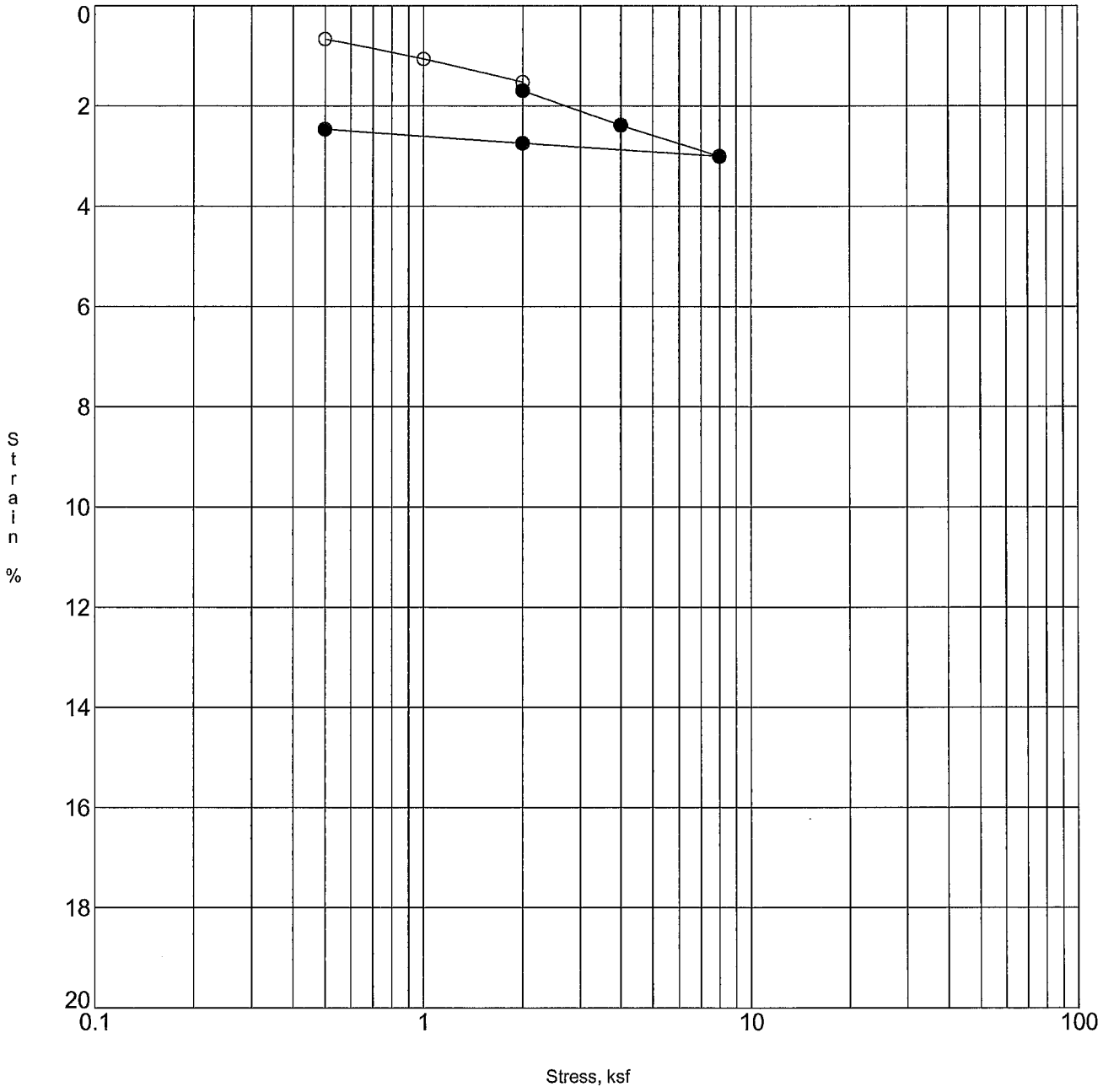
Plate B- 21



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-4	10.0	Olive brown SAND with trace gravels	111.7	3.7
●	B-4	10.0	UNDISTURBED	114.8	13.2

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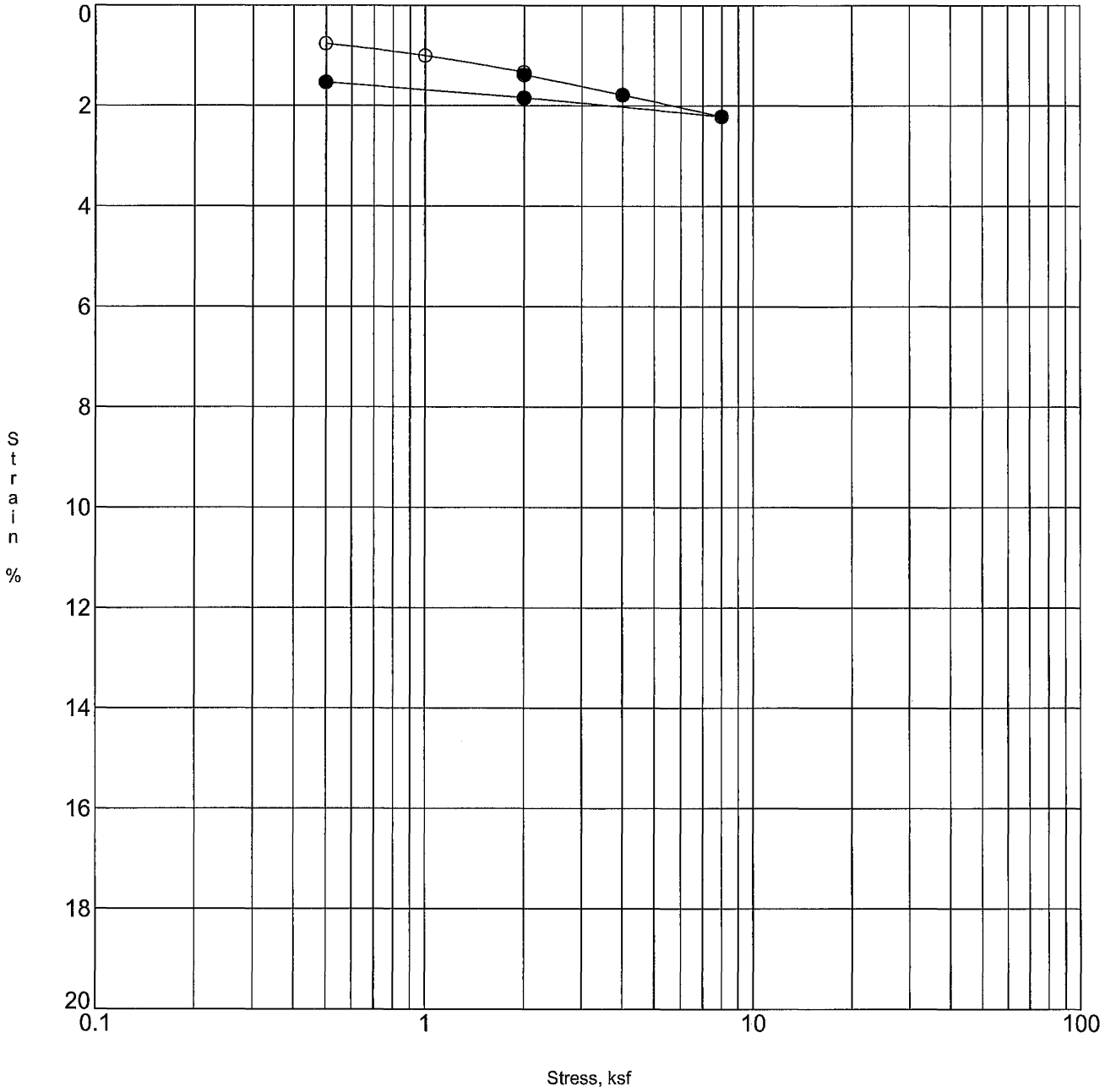
Plate B- 22



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-5	0.0	Dark brown silty SAND	113.4	9.9
●	B-5	0.0	REMOLDED	115.5	13.8

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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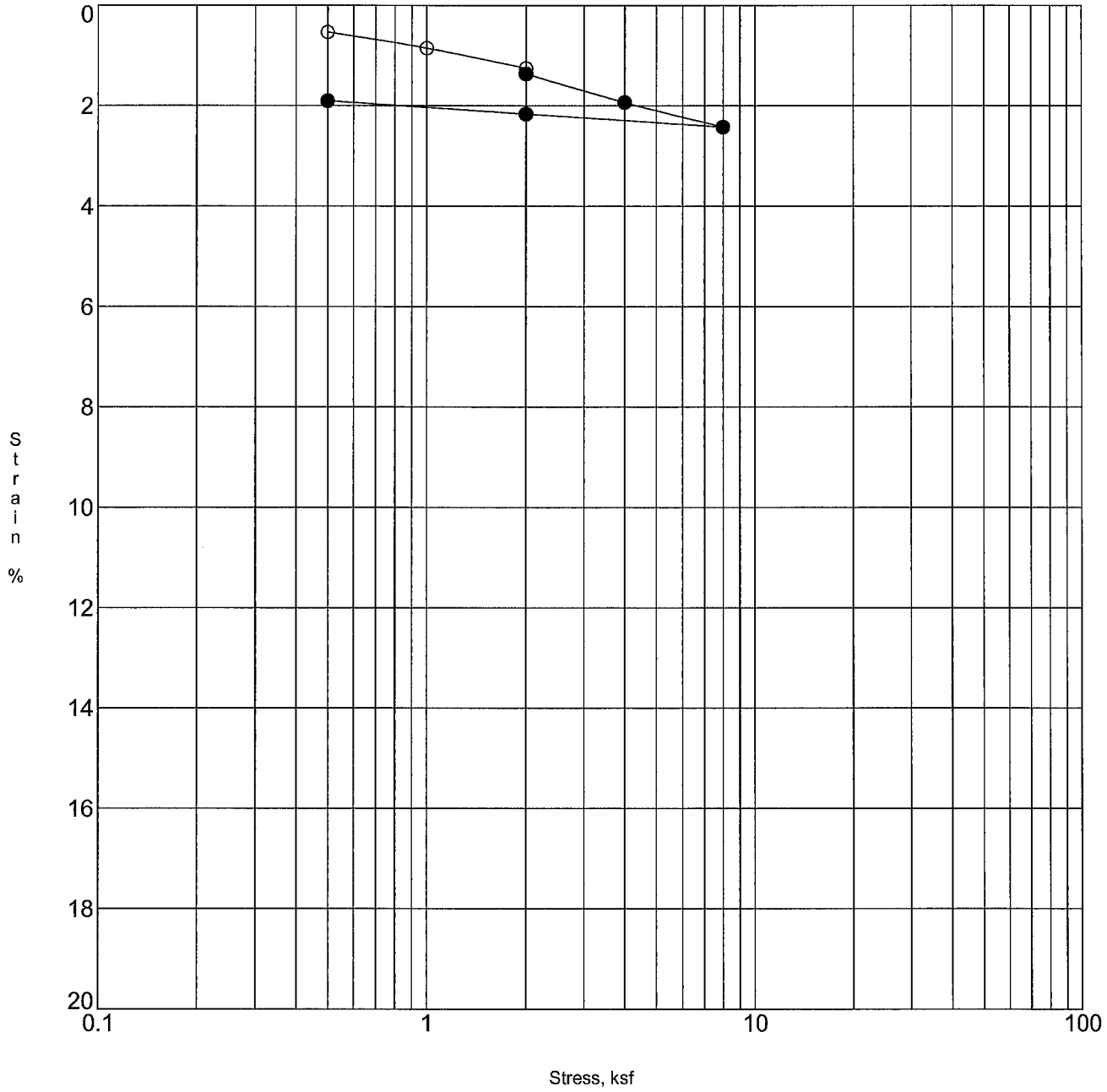
Advanced Geotechnical Services, Inc.

Plate B- 23



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-5	7.5	Brown SAND	103.0	3.8
●	B-5	7.5	UNDISTURBED	105.3	16.7

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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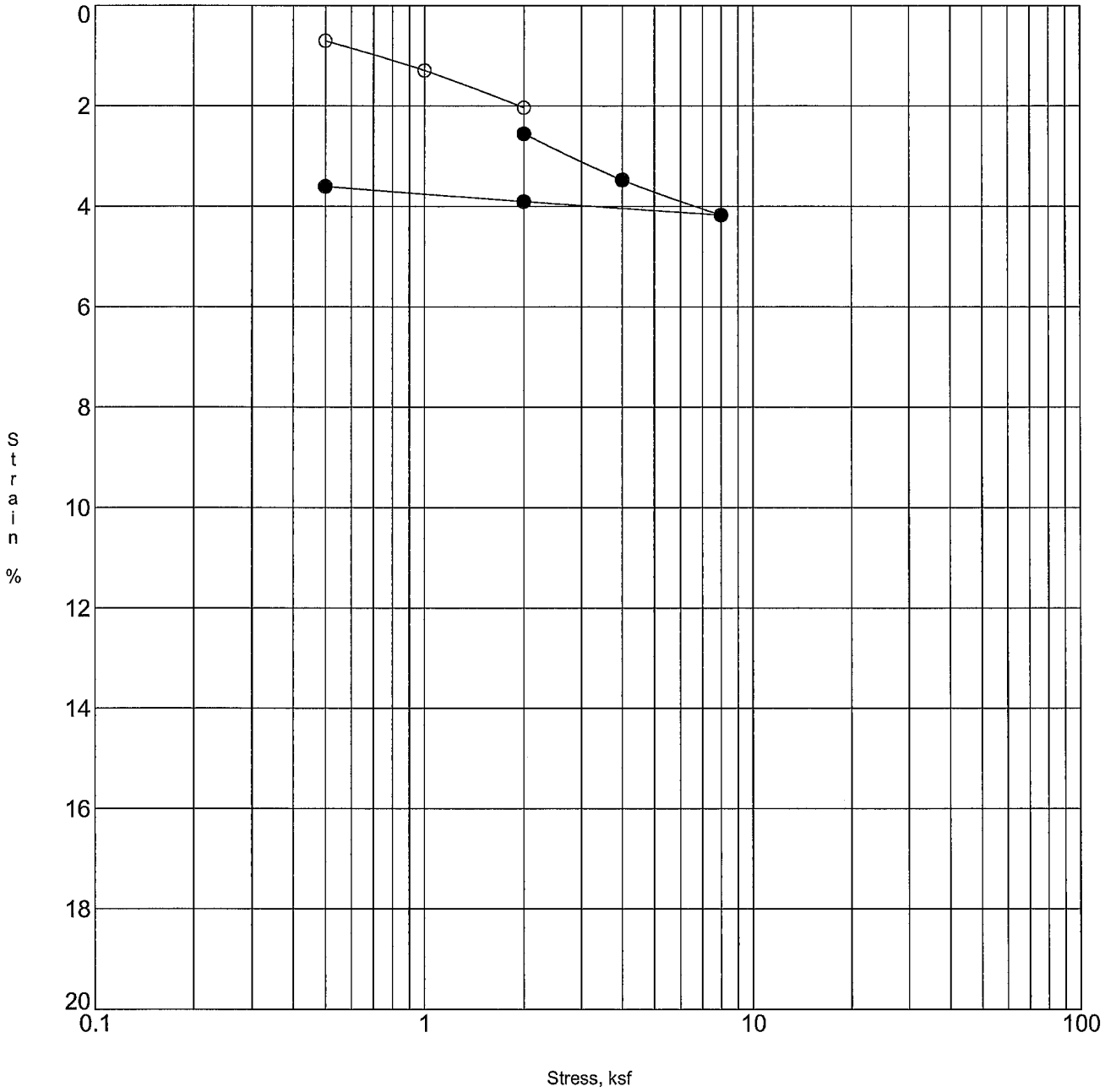
Plate B- 24



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-5	10.0	Brown SAND with trace gravels	97.2	4.7
●	B-5	10.0	UNDISTURBED	101.2	18.4

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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Consolidation Test

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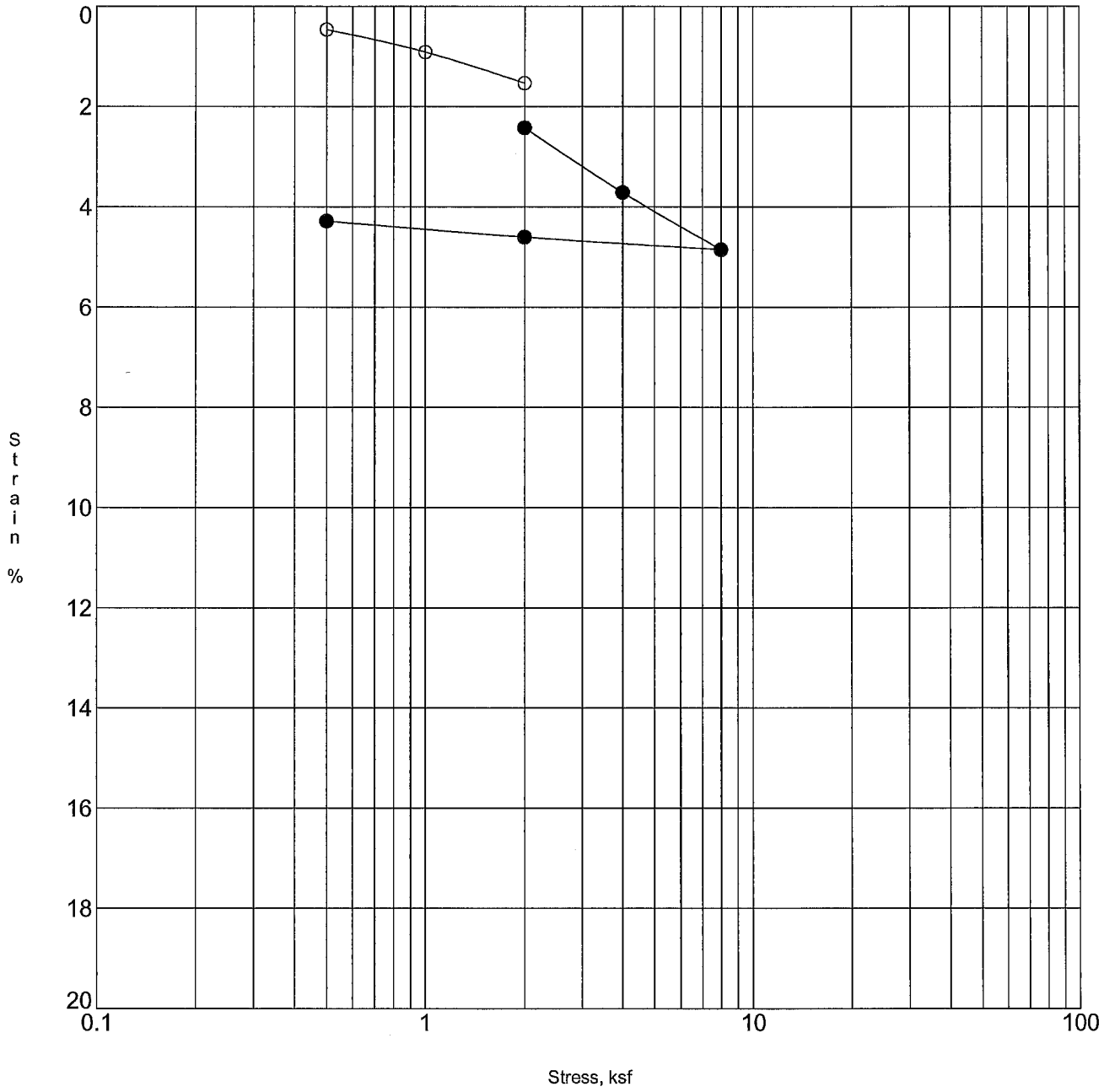
Plate B- 25



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-6	7.5	Olive brown SAND with few gravels	112.8	3.6
●	B-6	7.5	UNDISTURBED	118.2	12.5

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, :nard

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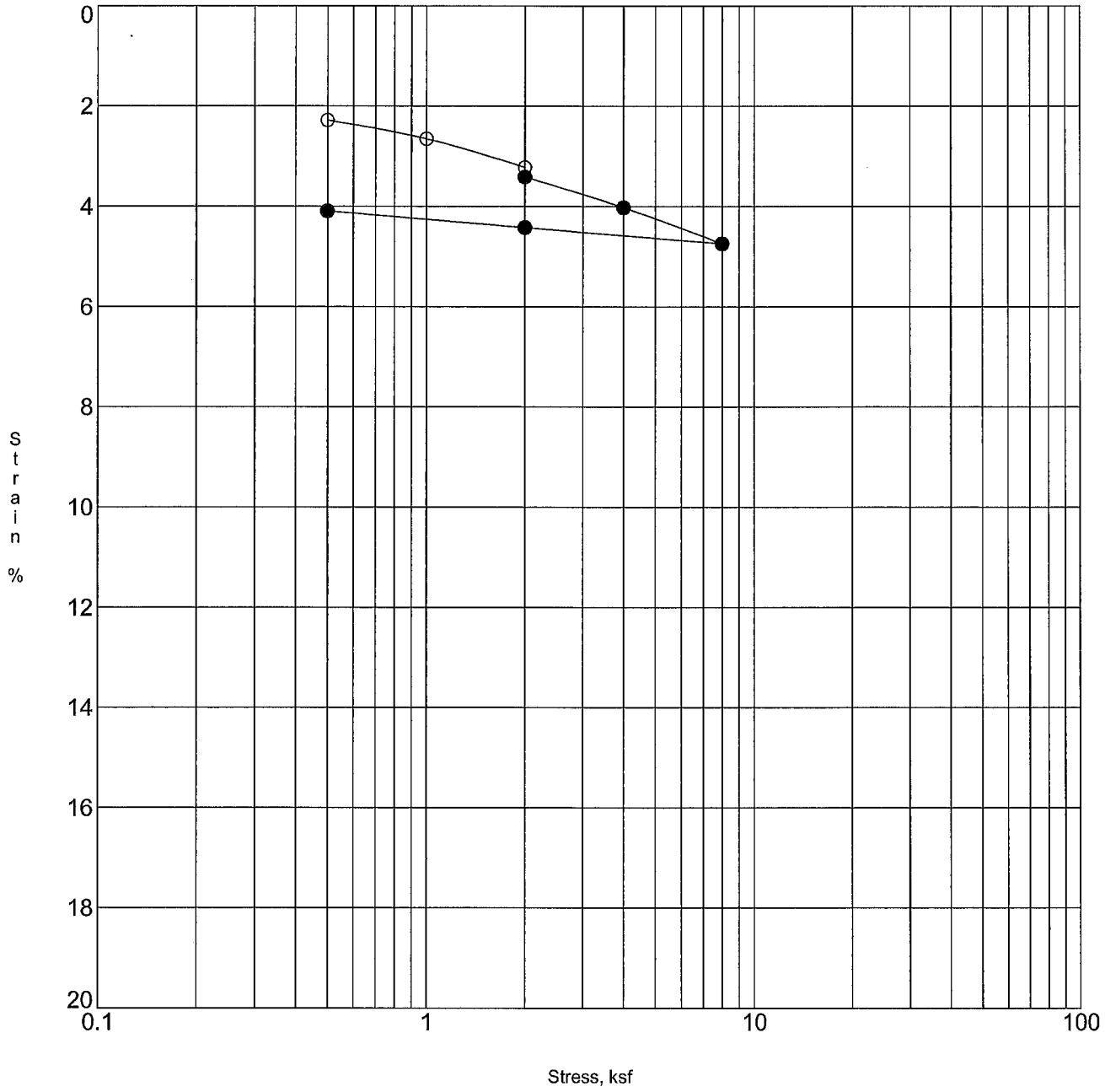
Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 26



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-6	10.0	Grayish brown SAND with trace gravels	97.9	4.9
●	B-6	10.0	UNDISTURBED	102.5	19.4

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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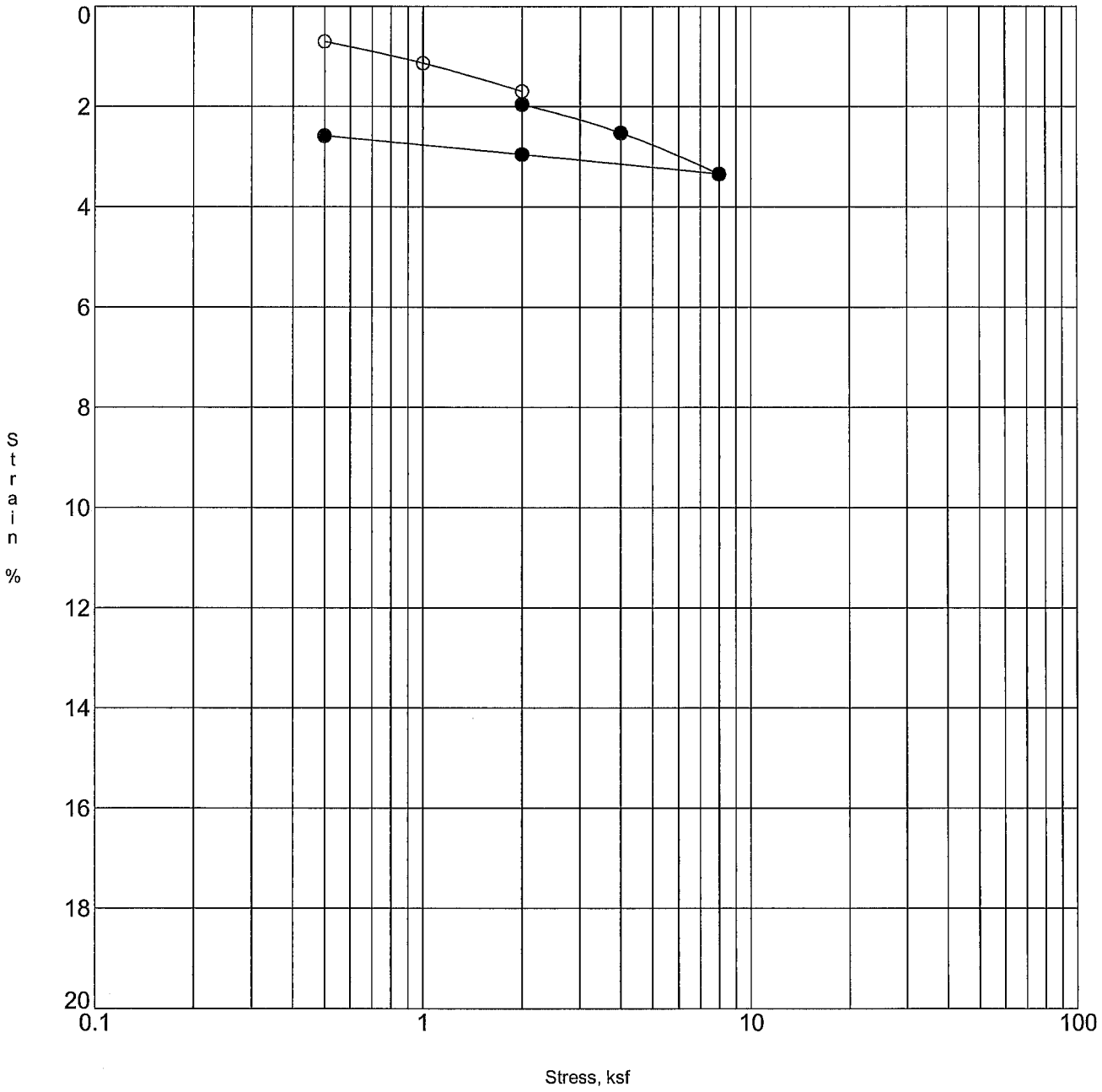
Advanced Geotechnical Services, Inc.

Plate B- 27



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-7	0.0	Light brown silty SAND	112.8	10.3
●	B-7	0.0	REMOLDED	116.2	14.5

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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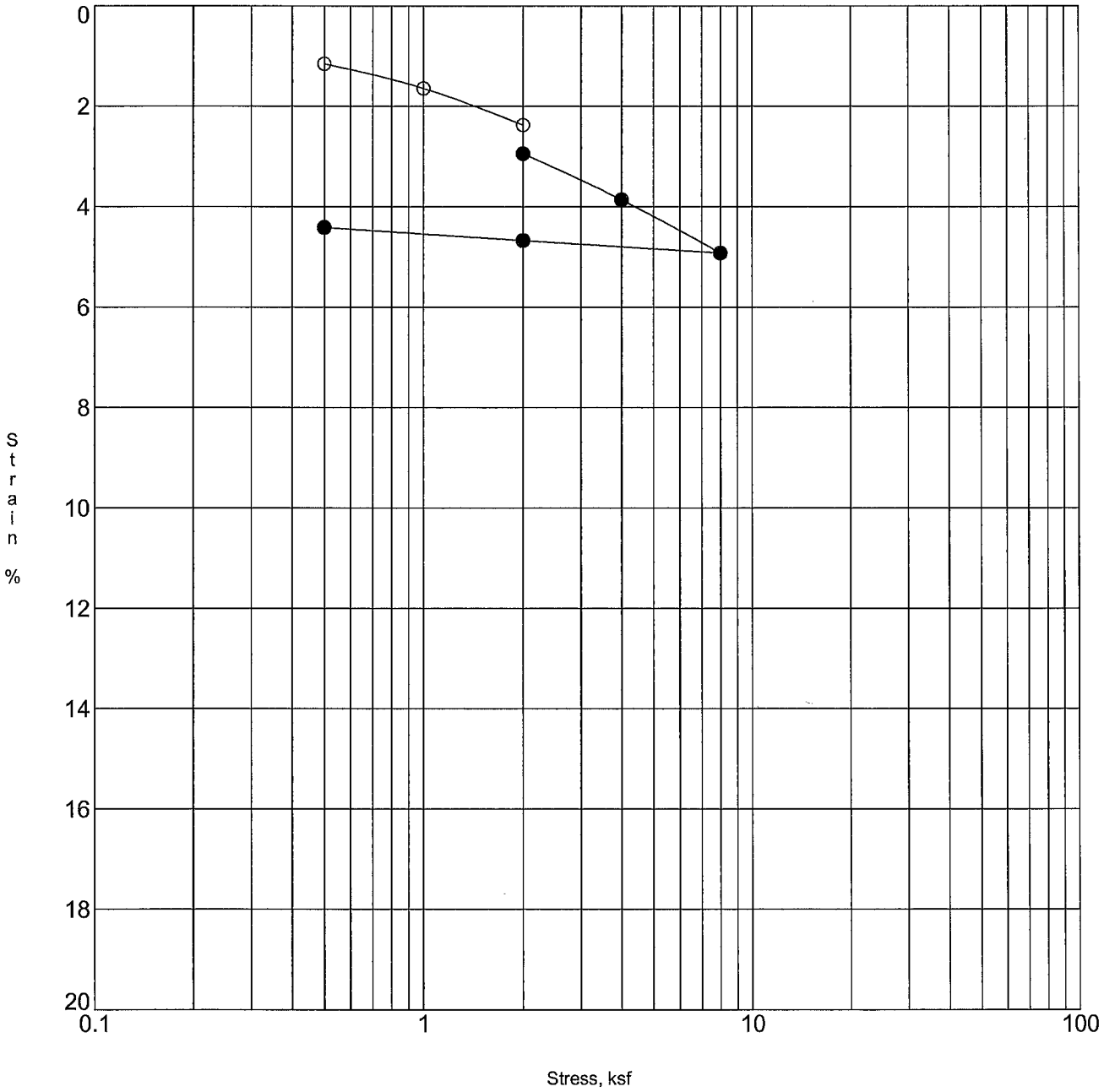
Advanced Geotechnical Services, Inc.

Plate B- 28



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-7	9.0	Olive brown SAND with trace gravels	109.1	3.8
●	B-7	9.0	UNDISTURBED	114.5	13.1

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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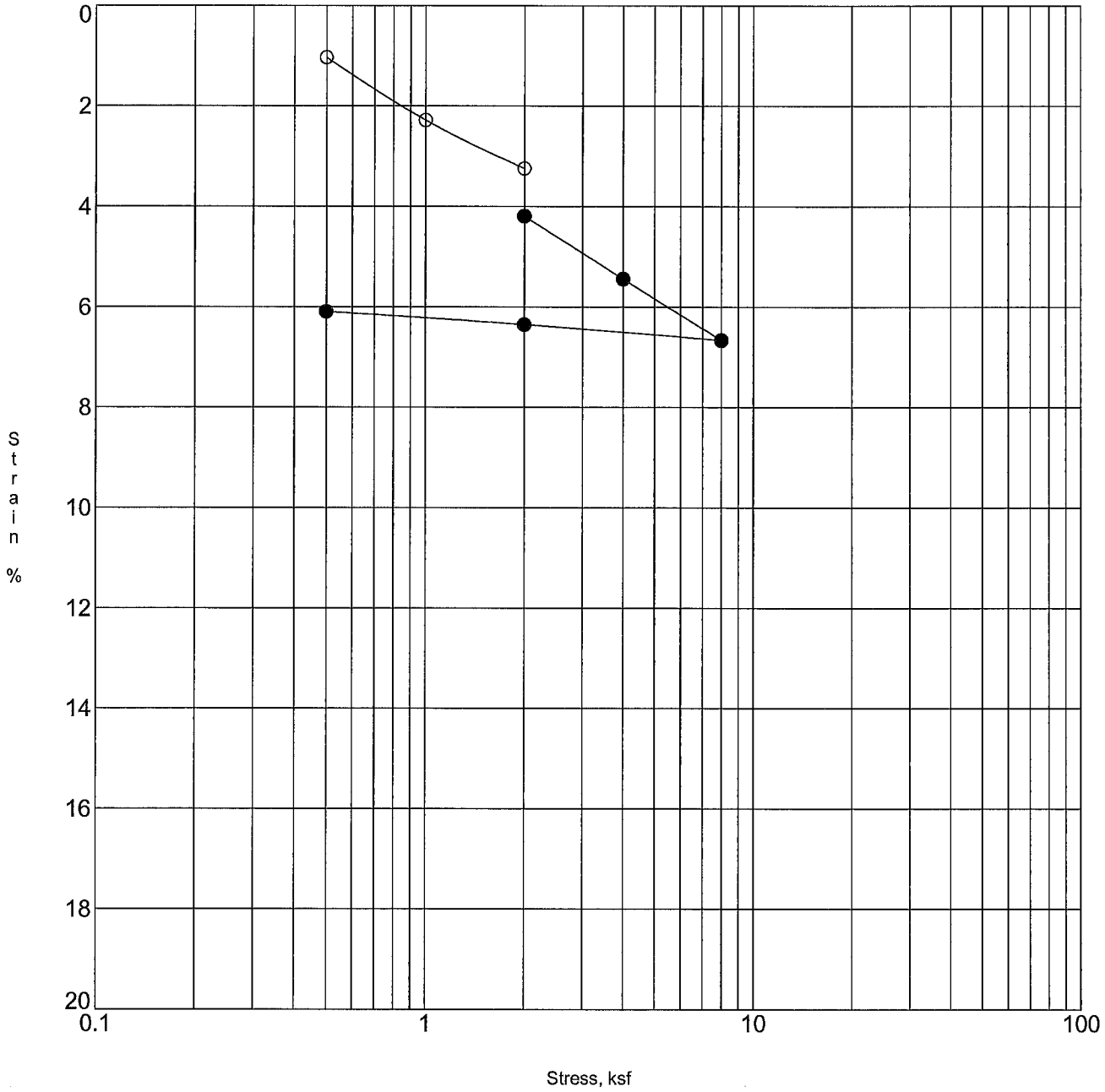
Advanced Geotechnical Services, Inc.

Plate B- 29



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-7	12.5	Olive brown SAND with trace gravel	105.9	4.0
●	B-7	12.5	UNDISTURBED	113.1	14.4

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, :nard

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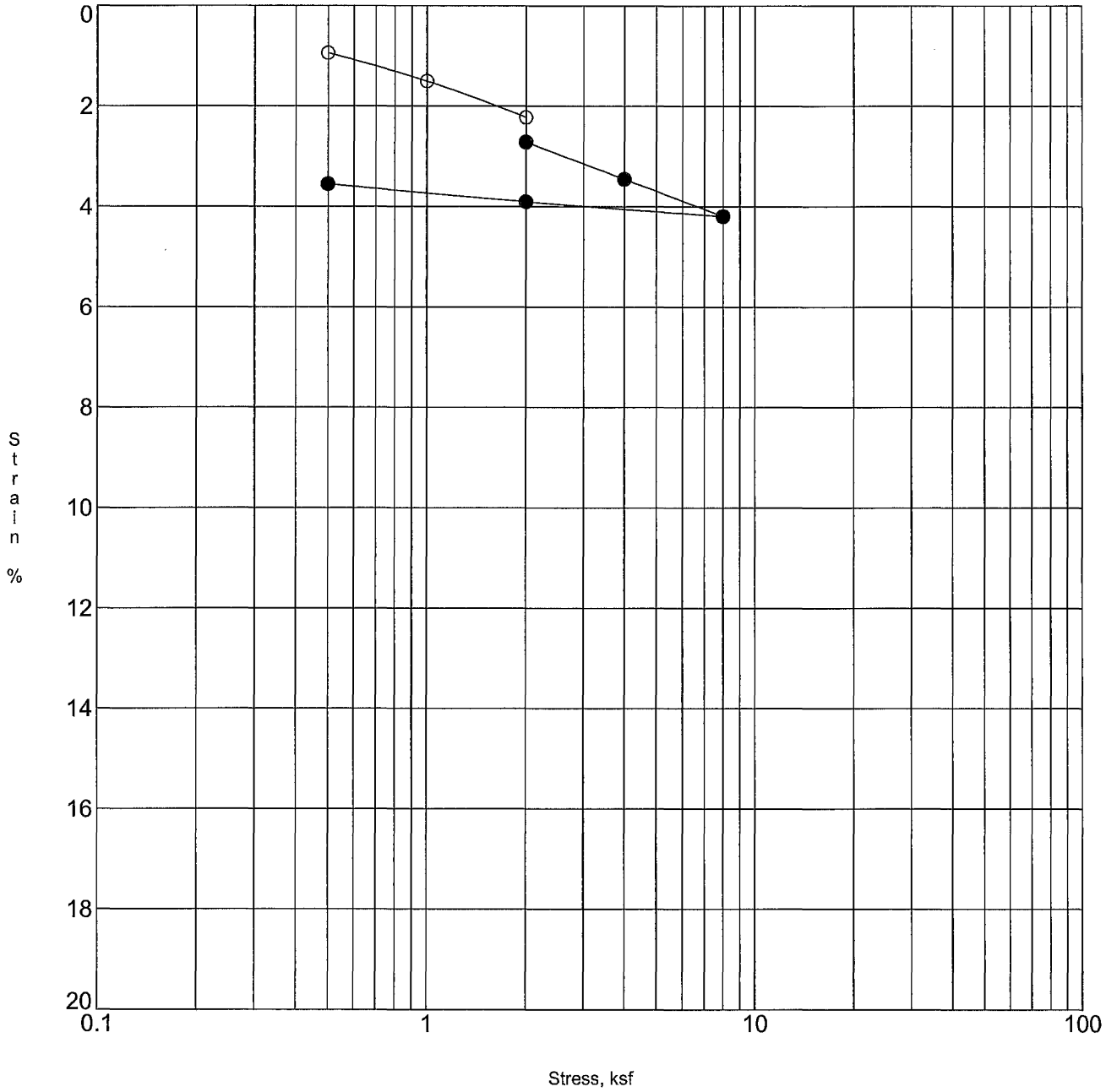
Advanced Geotechnical Services, Inc.

Plate B- 30



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-8	7.5	Light brownish gray SAND with trace gravels	93.8	3.1
●	B-8	7.5	UNDISTURBED	97.6	23.0

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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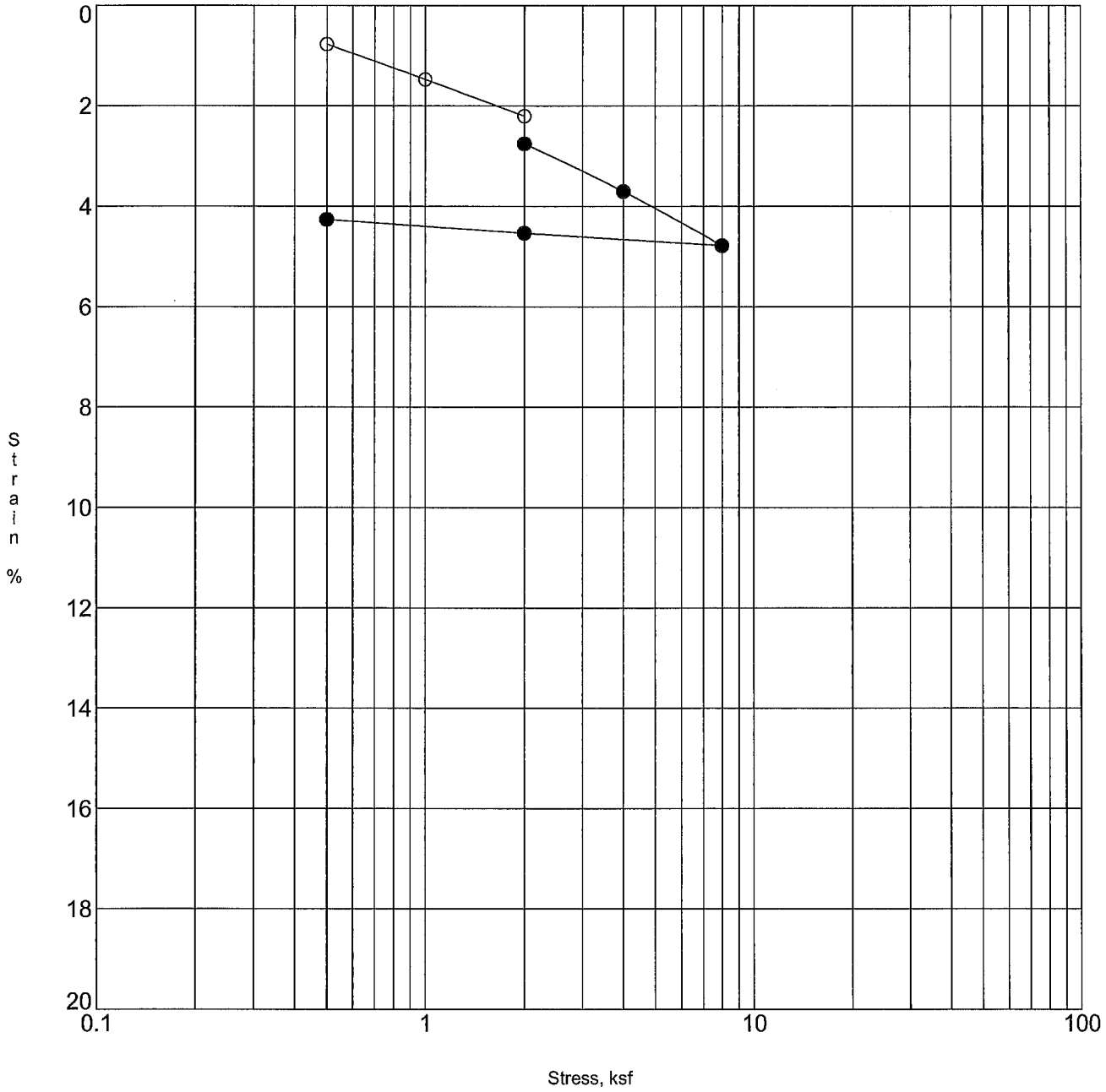
Advanced Geotechnical Services, Inc.

Plate B- 31



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-9	7.5	Light olive brown SAND with FeOx coloring	101.6	3.4
●	B-9	7.5	UNDISTURBED	106.5	15.8

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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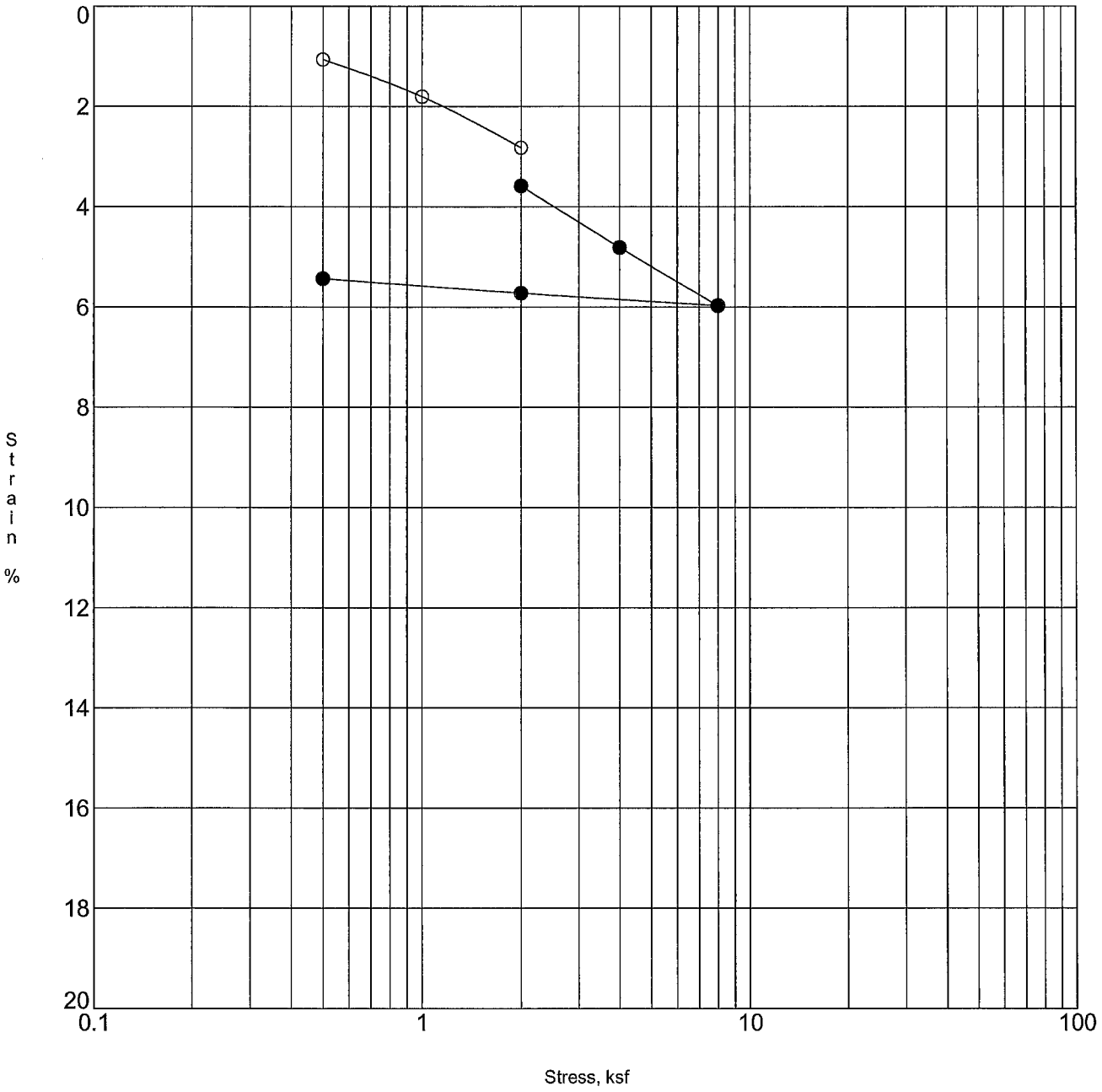
Plate B- 32



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-9	12.5	Light olive brown SAND with trace gravels	100.6	3.1
●	B-9	12.5	UNDISTURBED	106.7	17.3

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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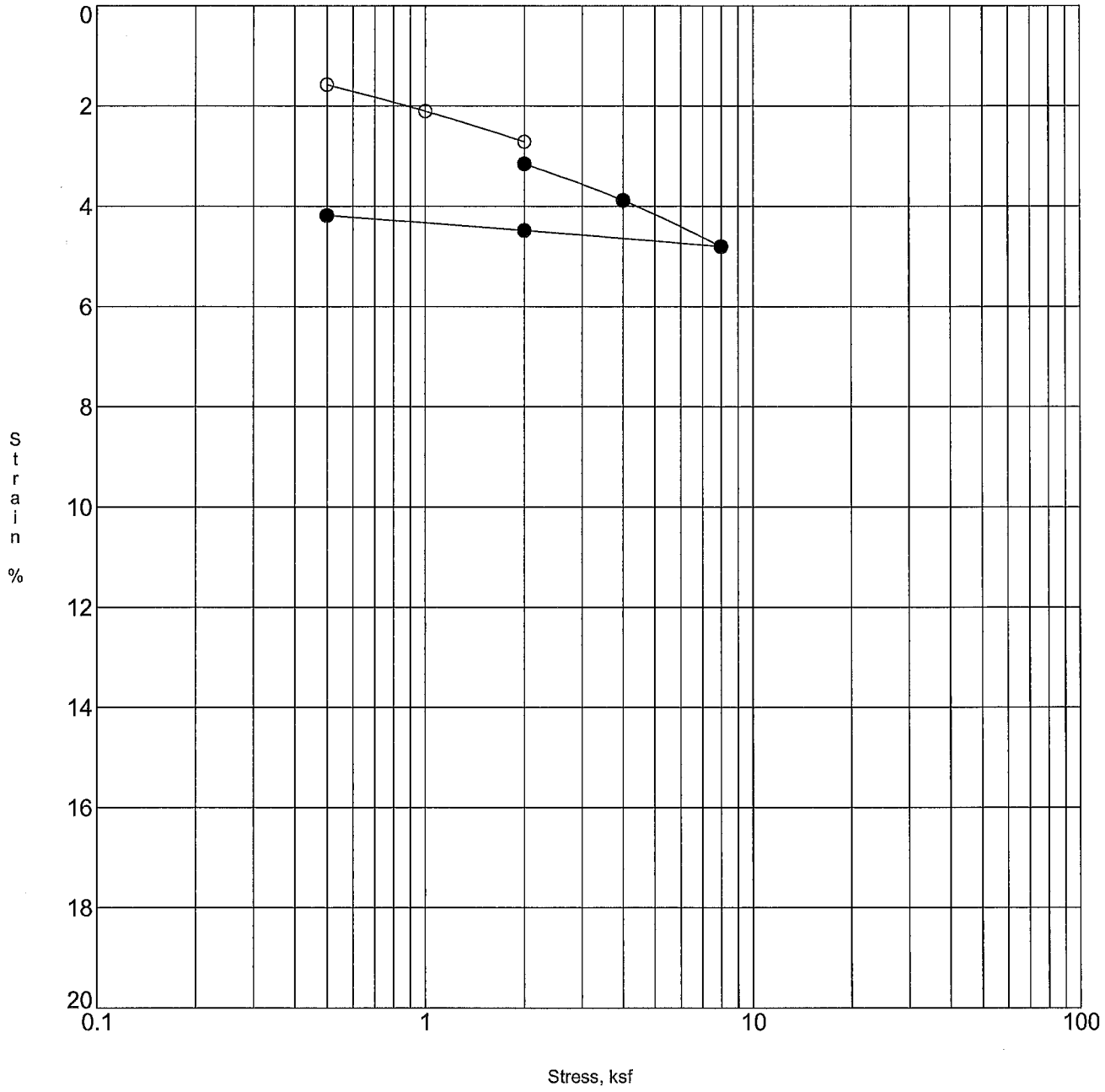
Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 33



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

	Specimen Identification		Classification	DD	MC%
○	B-10	7.5	Pale brown SAND with FeOx coloring	90.8	3.4
●	B-10	7.5	UNDISTURBED	95.0	24.7

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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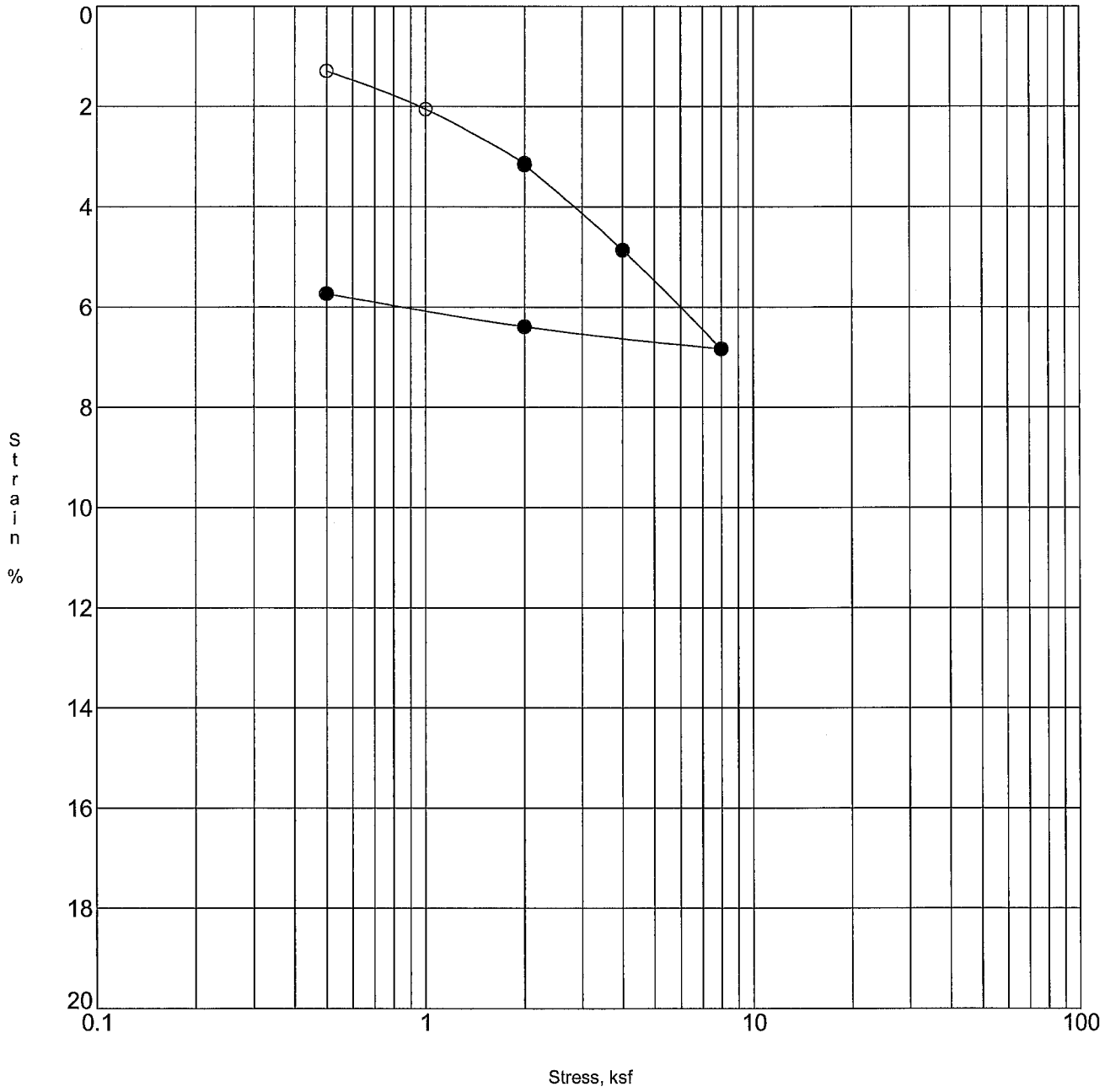
Advanced Geotechnical Services, Inc.

Plate B- 34



Open Symbol At Field Moisture, Solid Symbol After Submersion in Water

Specimen Identification			Classification	DD	MC%
○	B-10	10.0	Brown sandy SILT	93.5	27.0
●	B-10	10.0	UNDISTURBED	99.9	25.5

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, :nard

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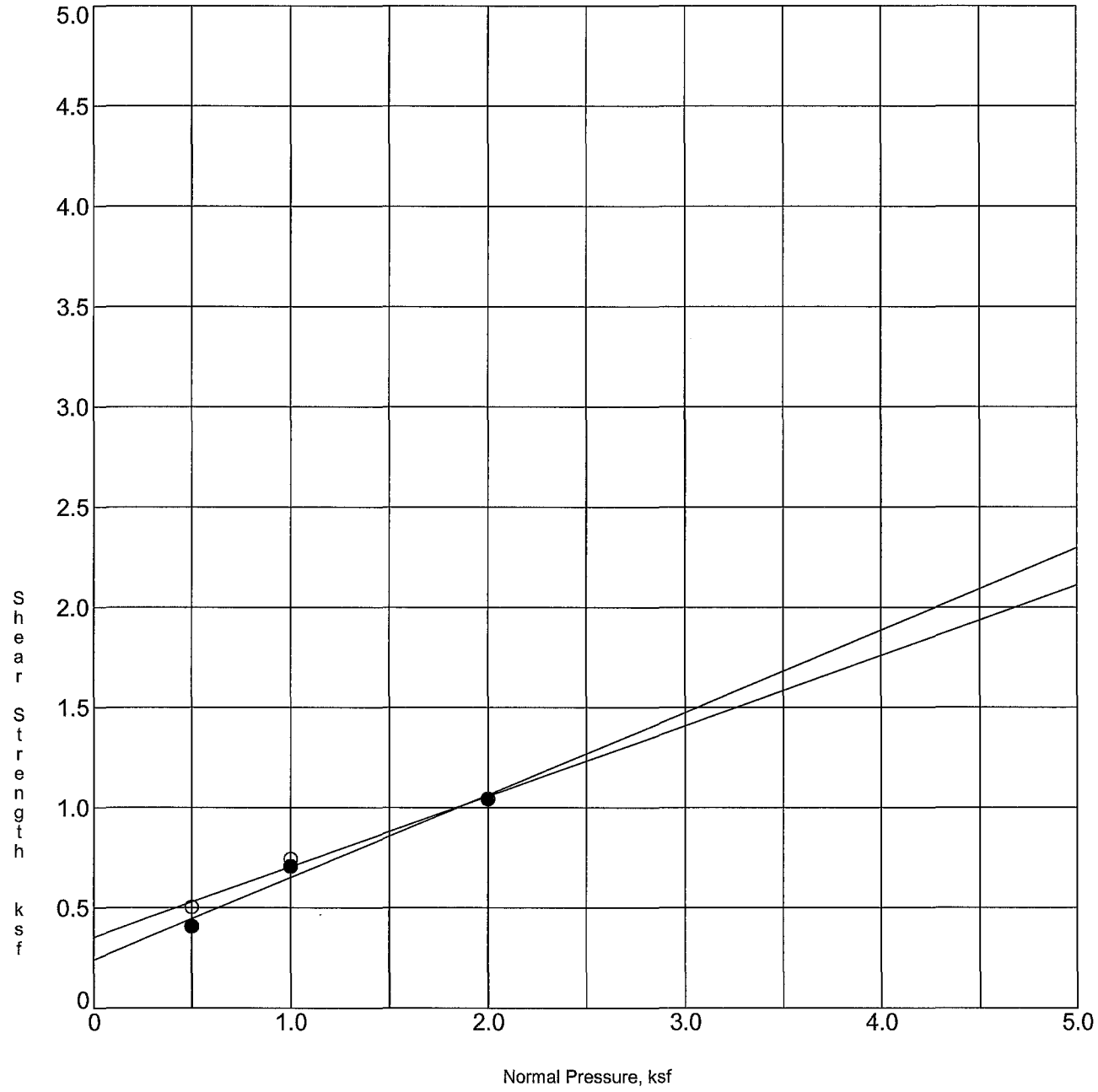
Consolidation Test

Advanced Geotechnical Services, Inc.

Plate B- 35



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-1	0.0	Brown silty SAND	110.0	9.6	0.35	19
●	B-1	0.0	REMOLDED	110.0	15.8	0.24	22

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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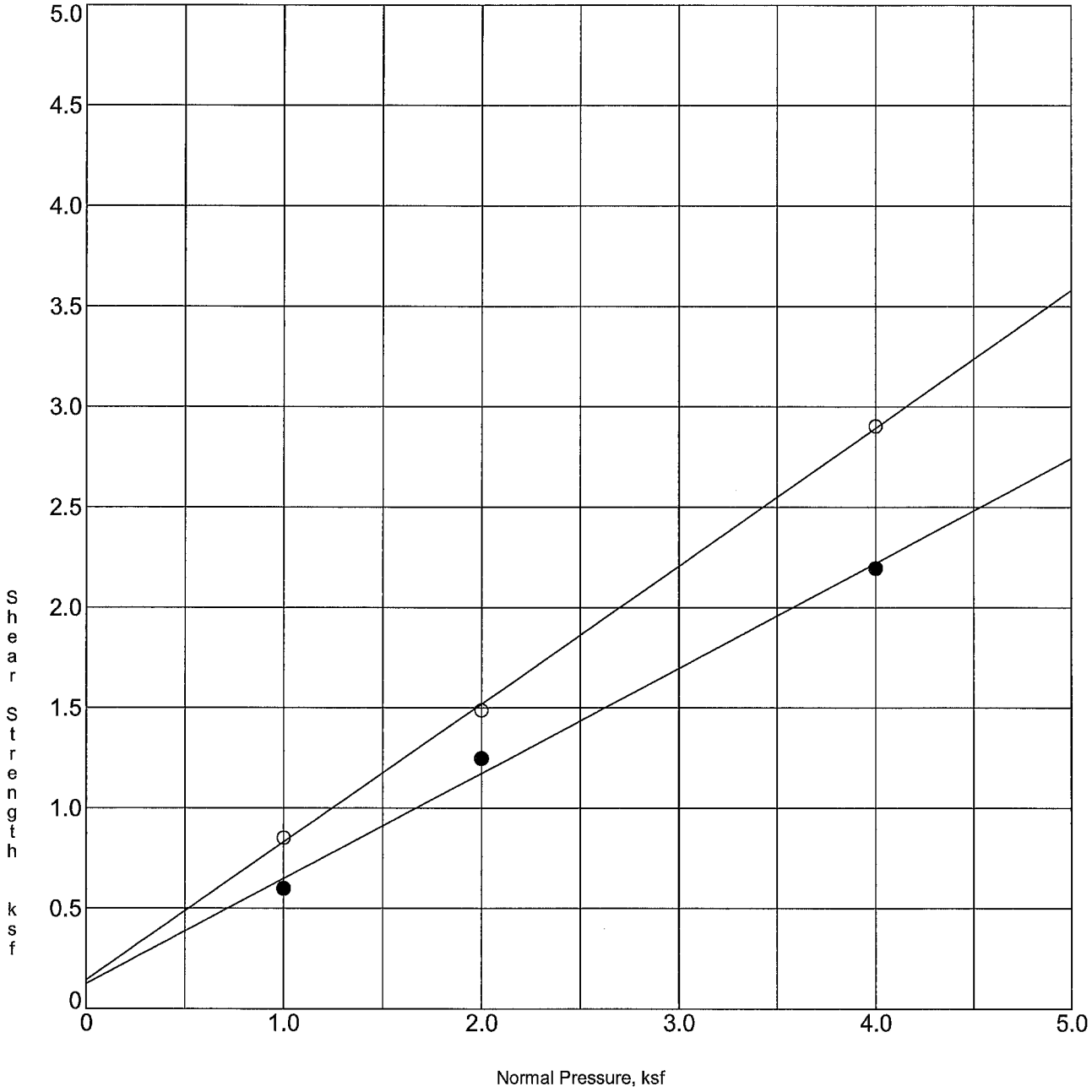
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 36



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-1	12.5	Light olive brown SAND	90.4	13.0	0.14	35
●	B-1	12.5	UNDISTURBED	90.4	30.7	0.13	28

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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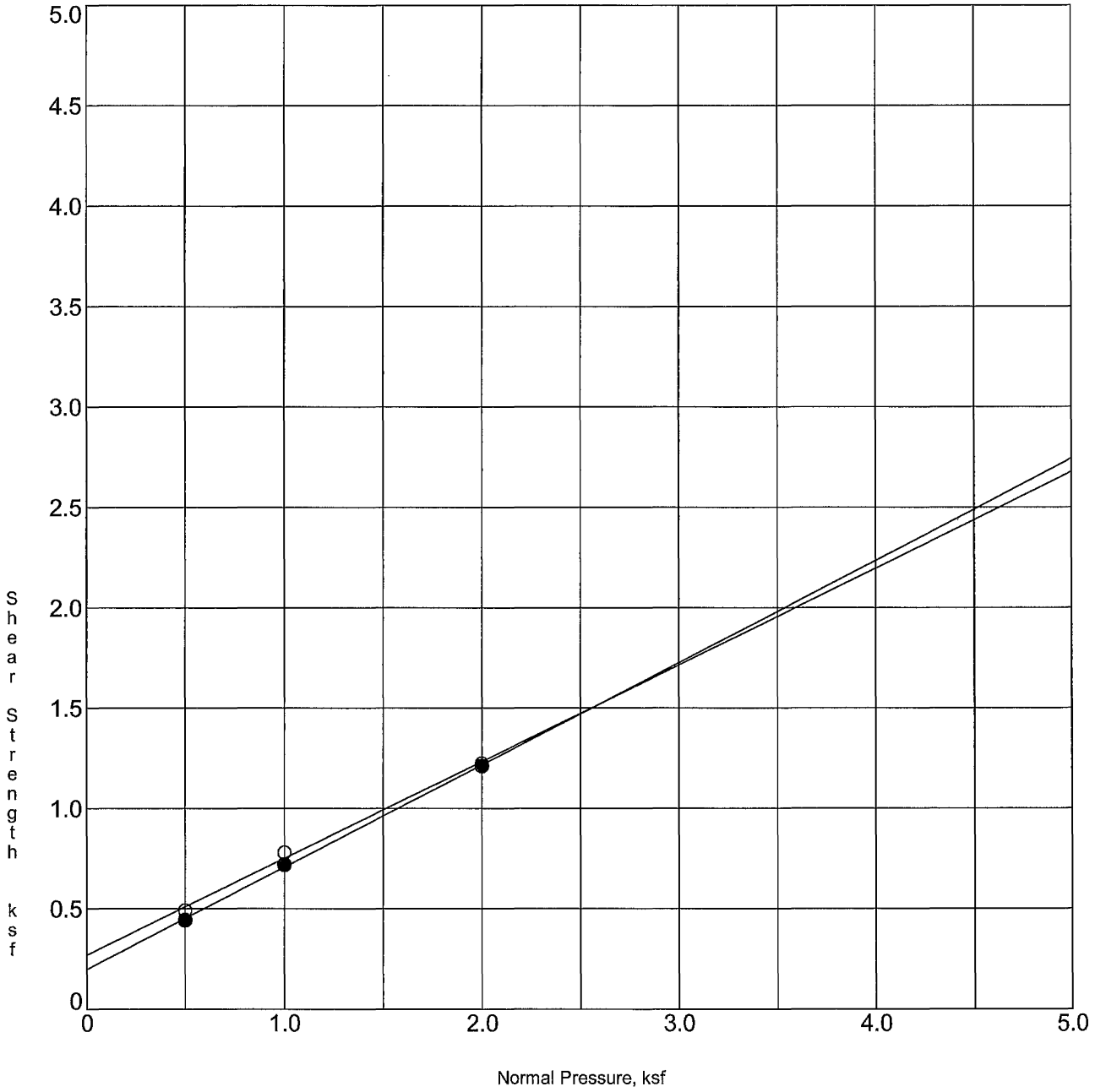
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 37



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-2	0.0	Brown silty SAND	106.6	10.4	0.27	26
●	B-2	0.0	REMOLDED	106.6	16.9	0.20	27

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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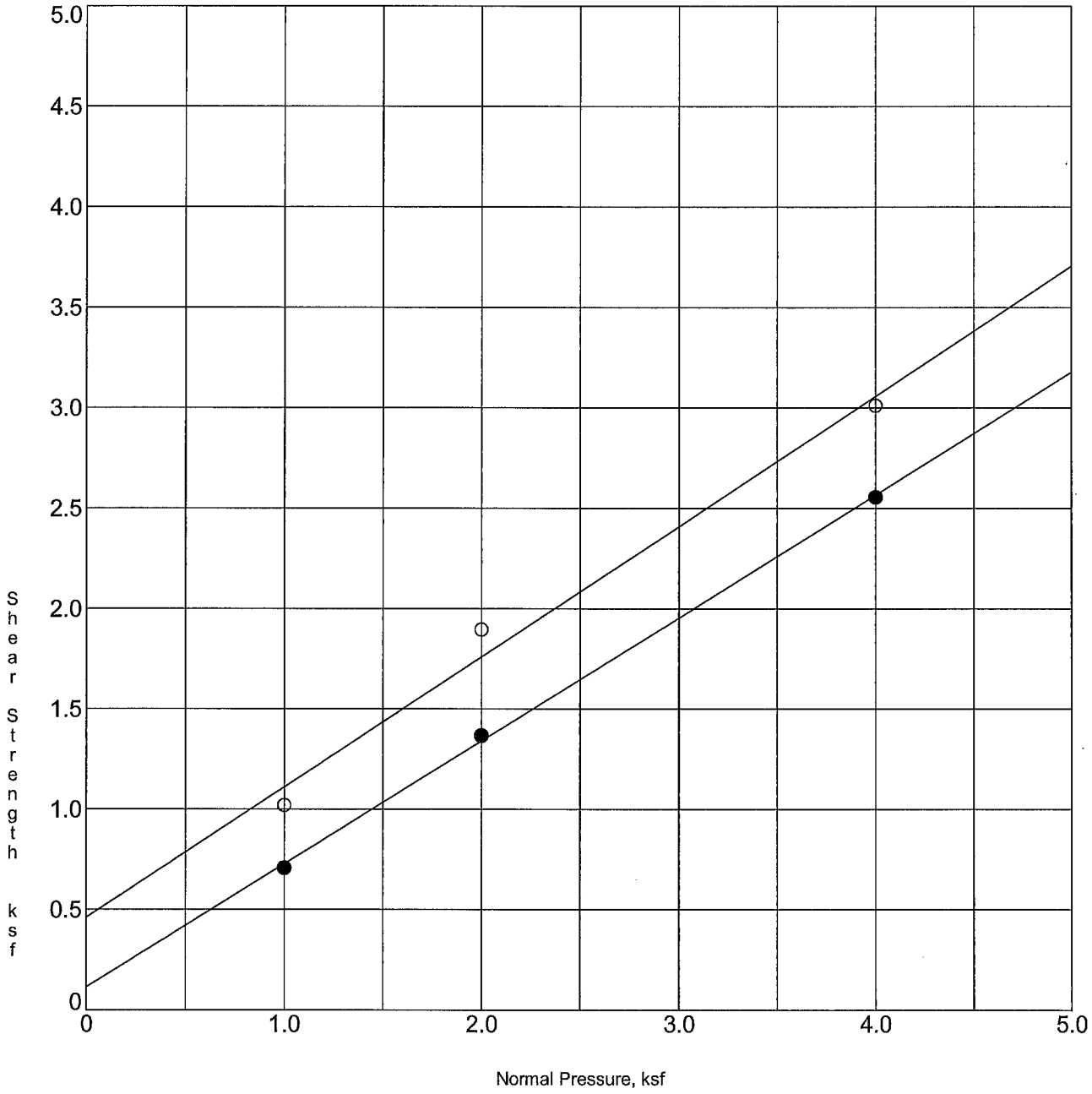
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 38



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-2	12.5	Olive brown SAND with few gravels	91.6	12.3	0.46	33
●	B-2	12.5	UNDISTURBED	91.6	28.6	0.11	32

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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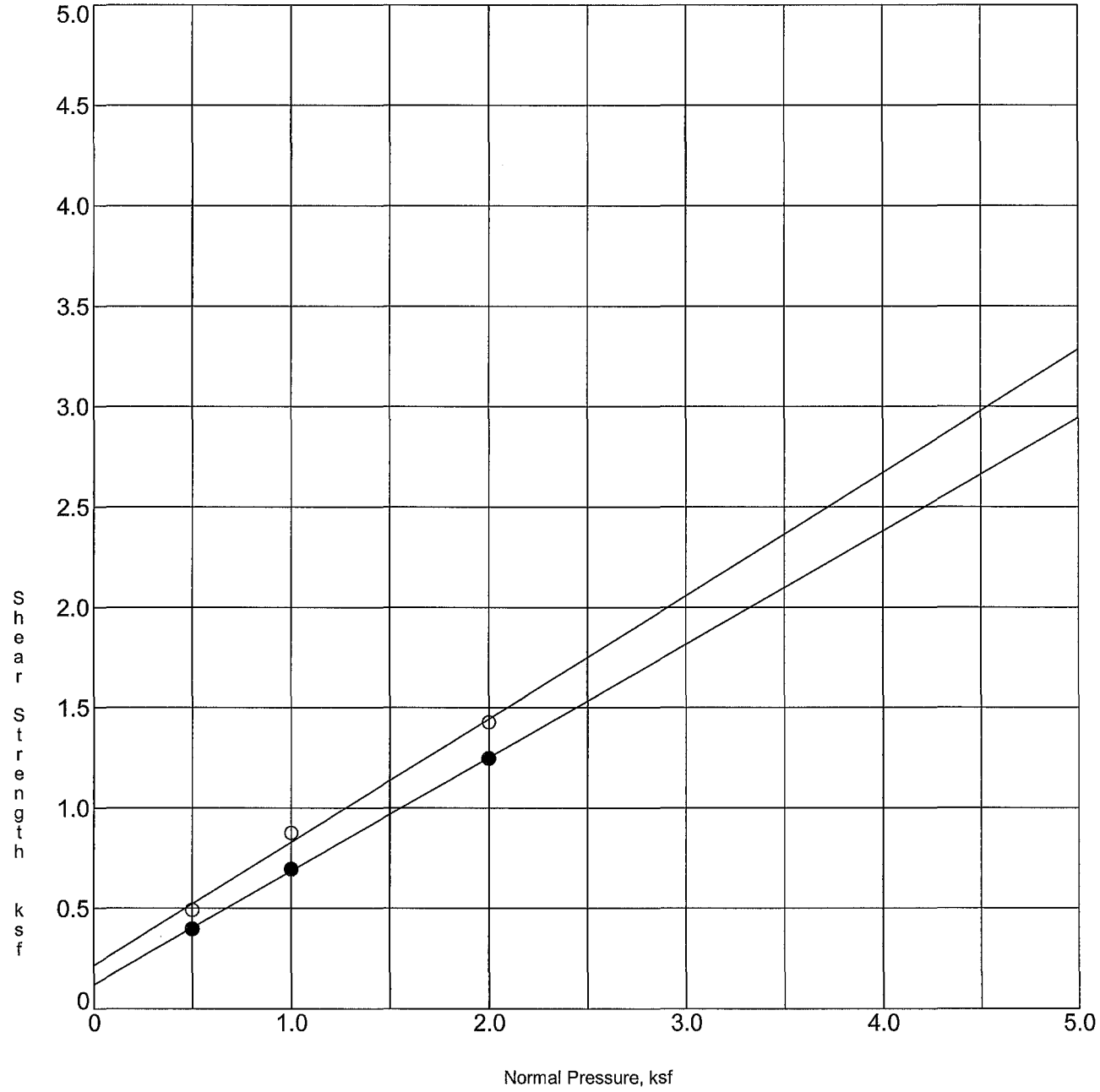
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 39



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-4	5.0	Light brownish gray SAND	94.0	9.7	0.22	32
●	B-4	5.0	UNDISTURBED	94.0	26.0	0.12	29

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, :nard

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Shear Test Diagram

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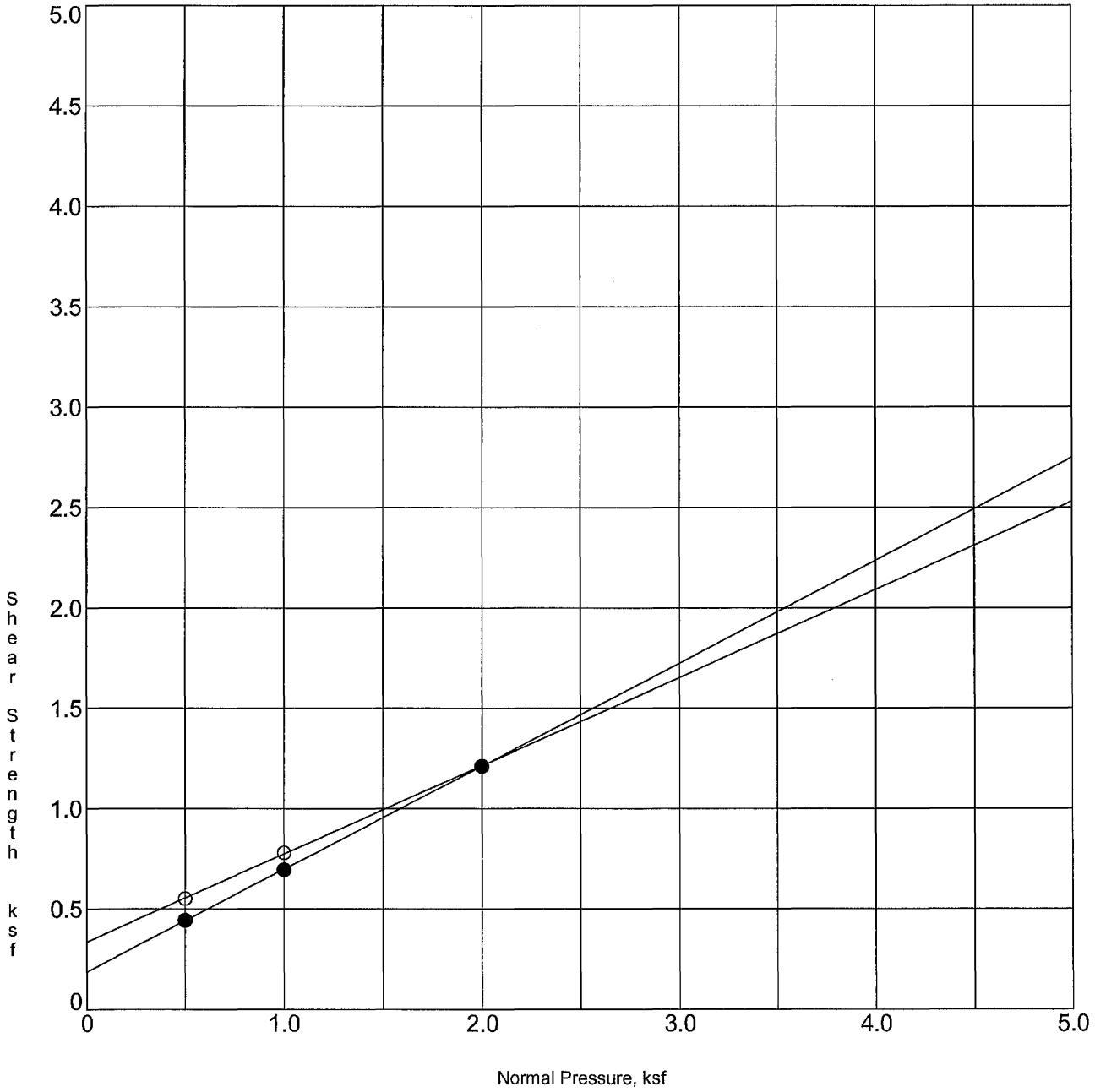
Plate B- 40



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-5	0.0	Dark brown silty SAND	112.9	10.2	0.34	24
●	B-5	0.0	REMOLDED	112.9	14.9	0.19	27

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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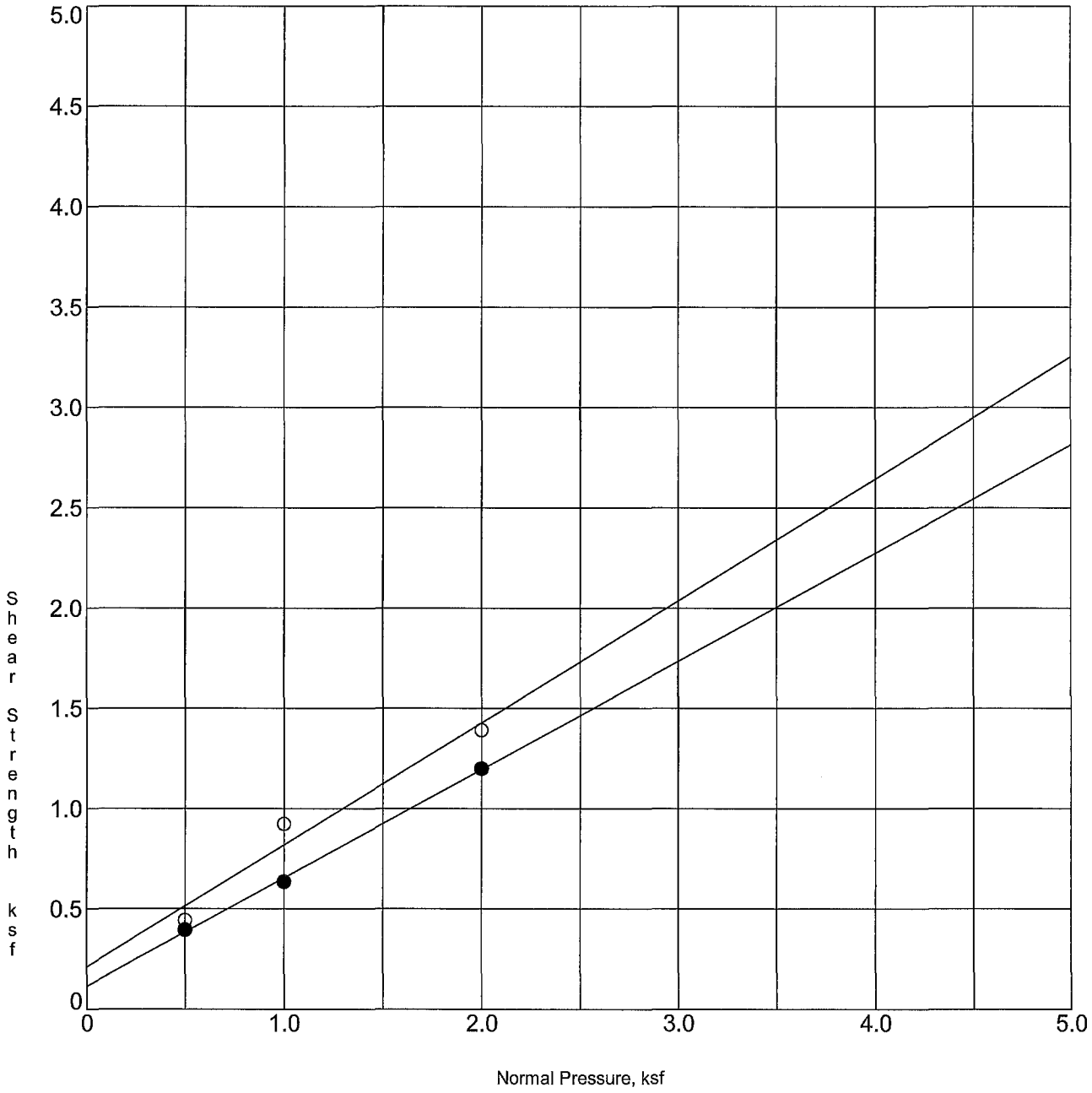
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 41



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-5	5.0	Brown SAND	97.0	11.7	0.21	31
●	B-5	5.0	UNDISTURBED	97.0	24.6	0.11	28

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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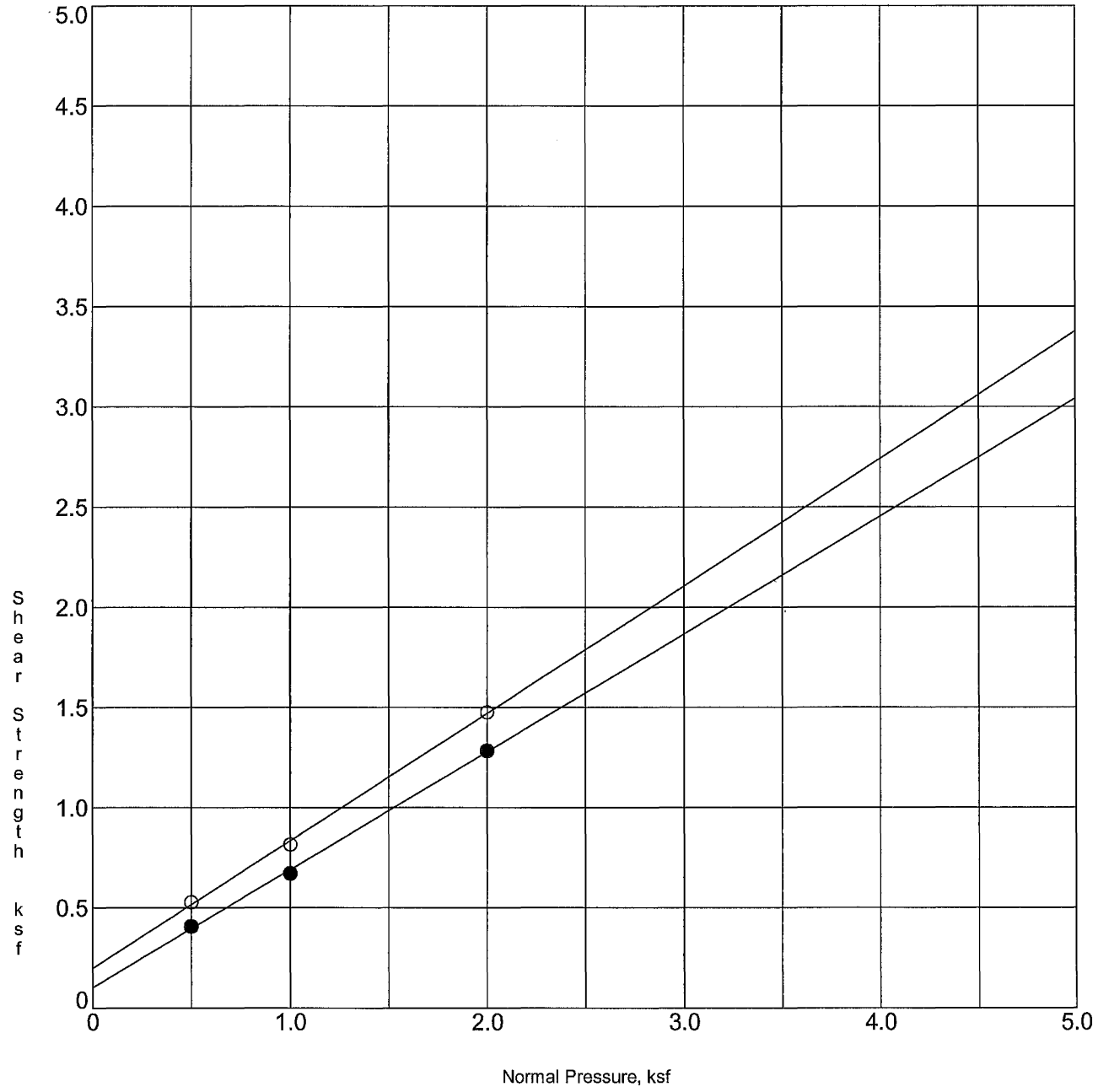
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 42



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-6	0.0	Yellowish brown silty SAND	114.5	8.6	0.20	32
●	B-6	0.0	REMOLDED	114.5	14.3	0.10	30

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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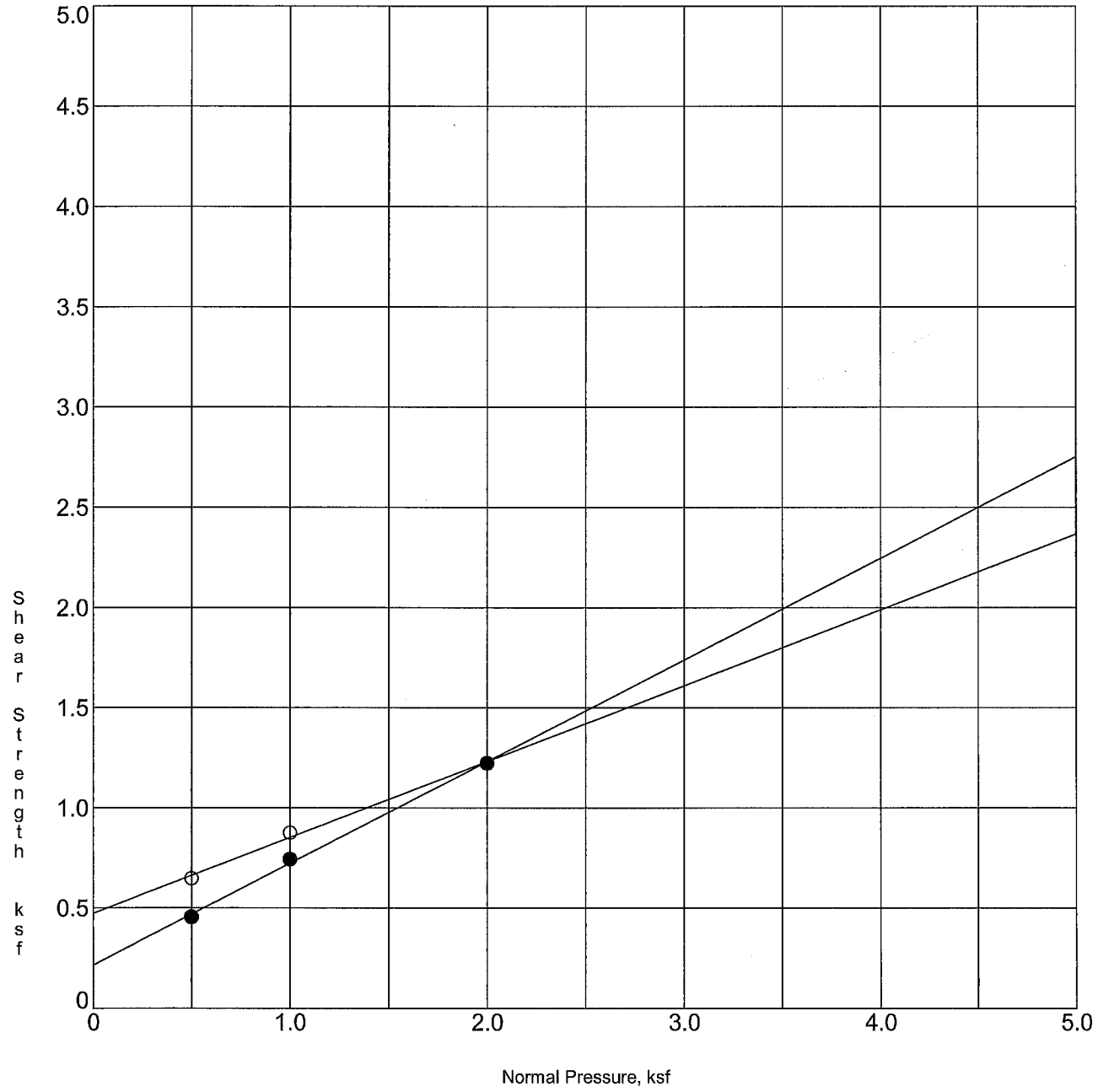
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 43



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-7	0.0	Light brown silty SAND	112.9	10.0	0.47	21
●	B-7	0.0	REMOLDED	112.9	14.6	0.22	27

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

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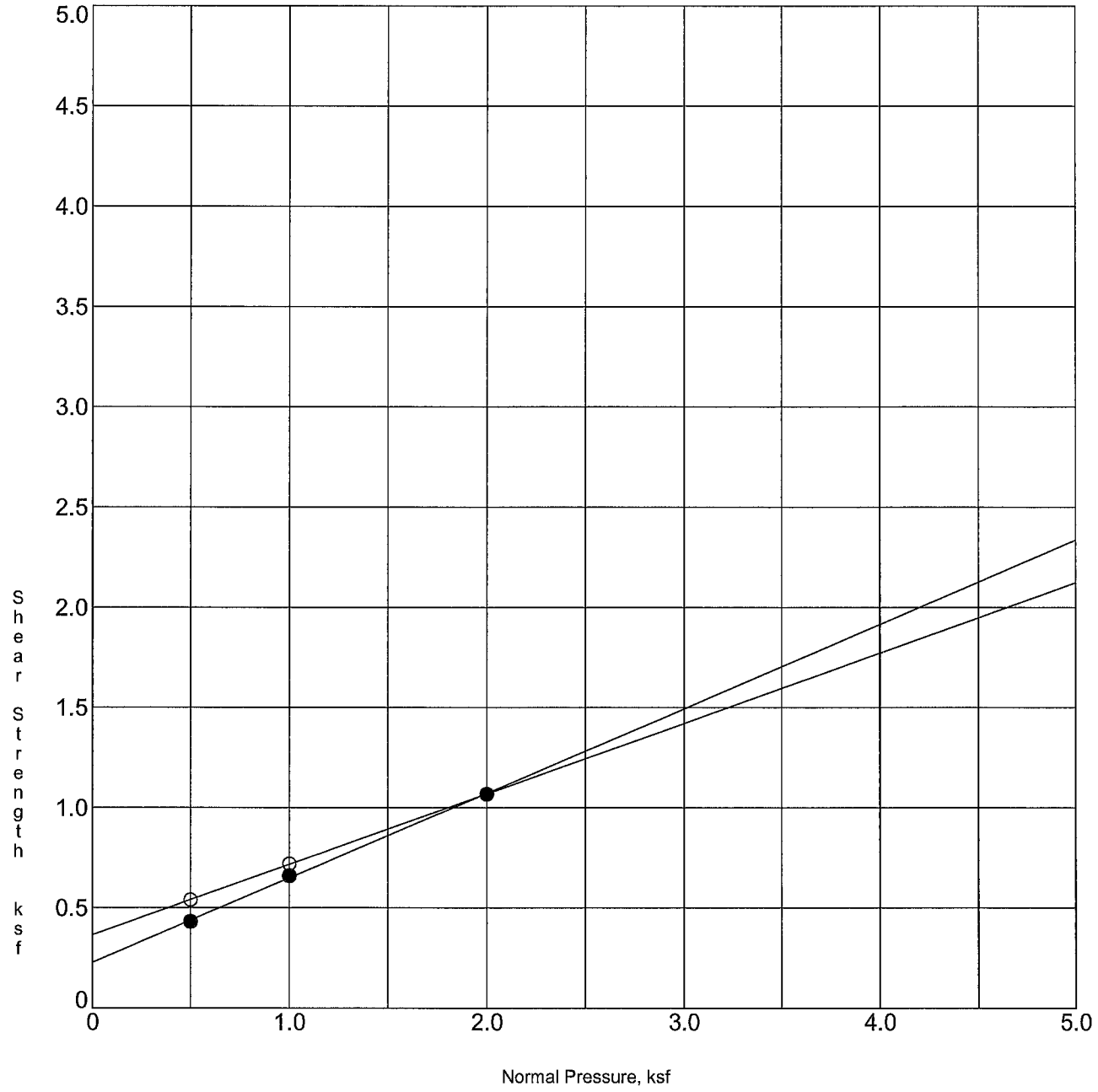
Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 44



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-8	5.0	Olive brown sandy CLAY	88.8	29.4	0.37	19
●	B-8	5.0	UNDISTURBED	88.8	32.9	0.23	23

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, .nard

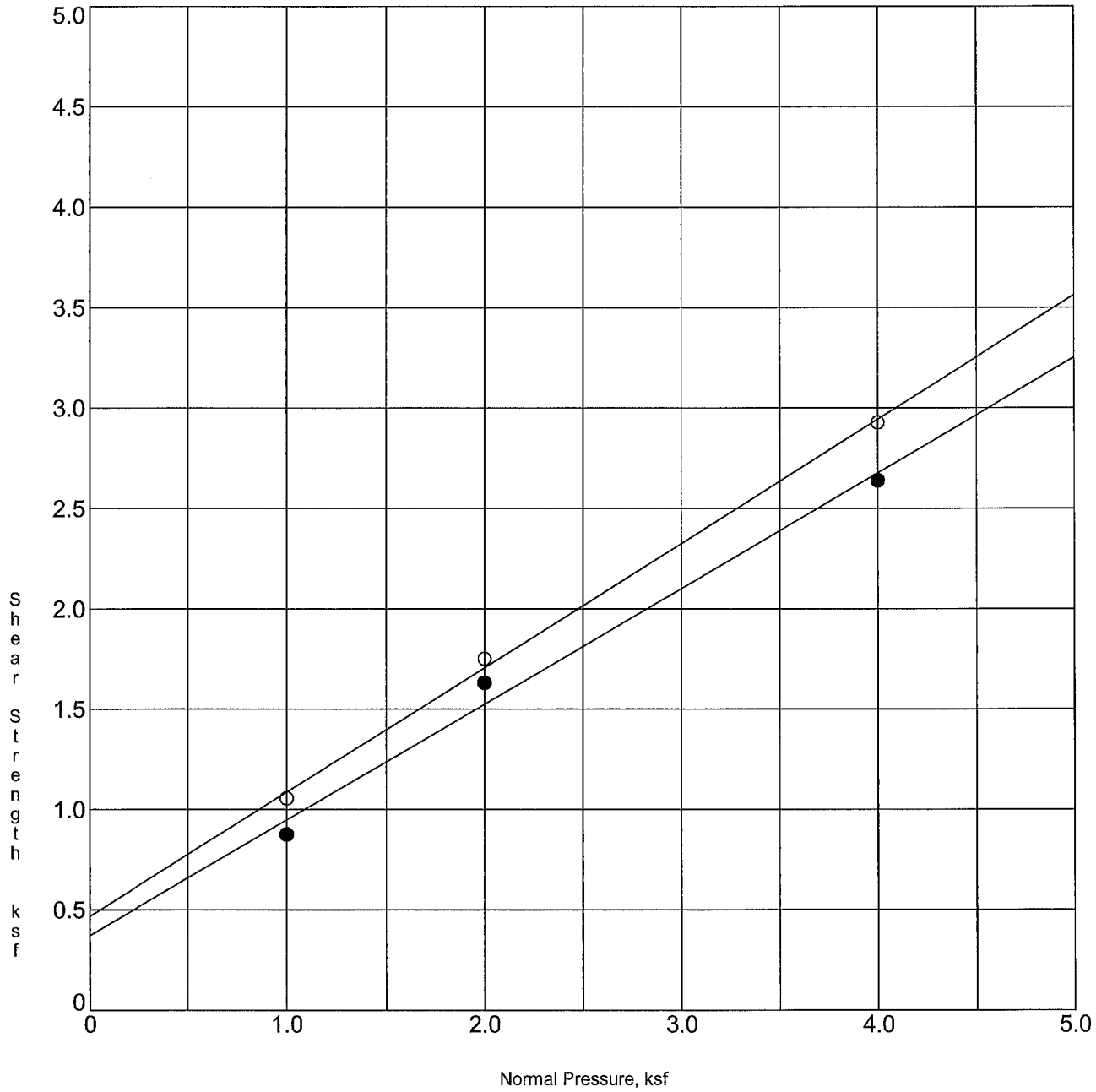
Client No.: 5340

Date: 1/29/25

Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 45



○ - Peak Shear ● - Ultimate Shear △ - Residual Shear

	Specimen Identification		Classification	DD	MC%	c, ksf	phi
○	B-8	18.0	Yellowish brown clayey SAND with few gravels	100.0	11.6	0.47	32
●	B-8	18.0	UNDISTURBED	100.0	22.4	0.37	30

Project Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

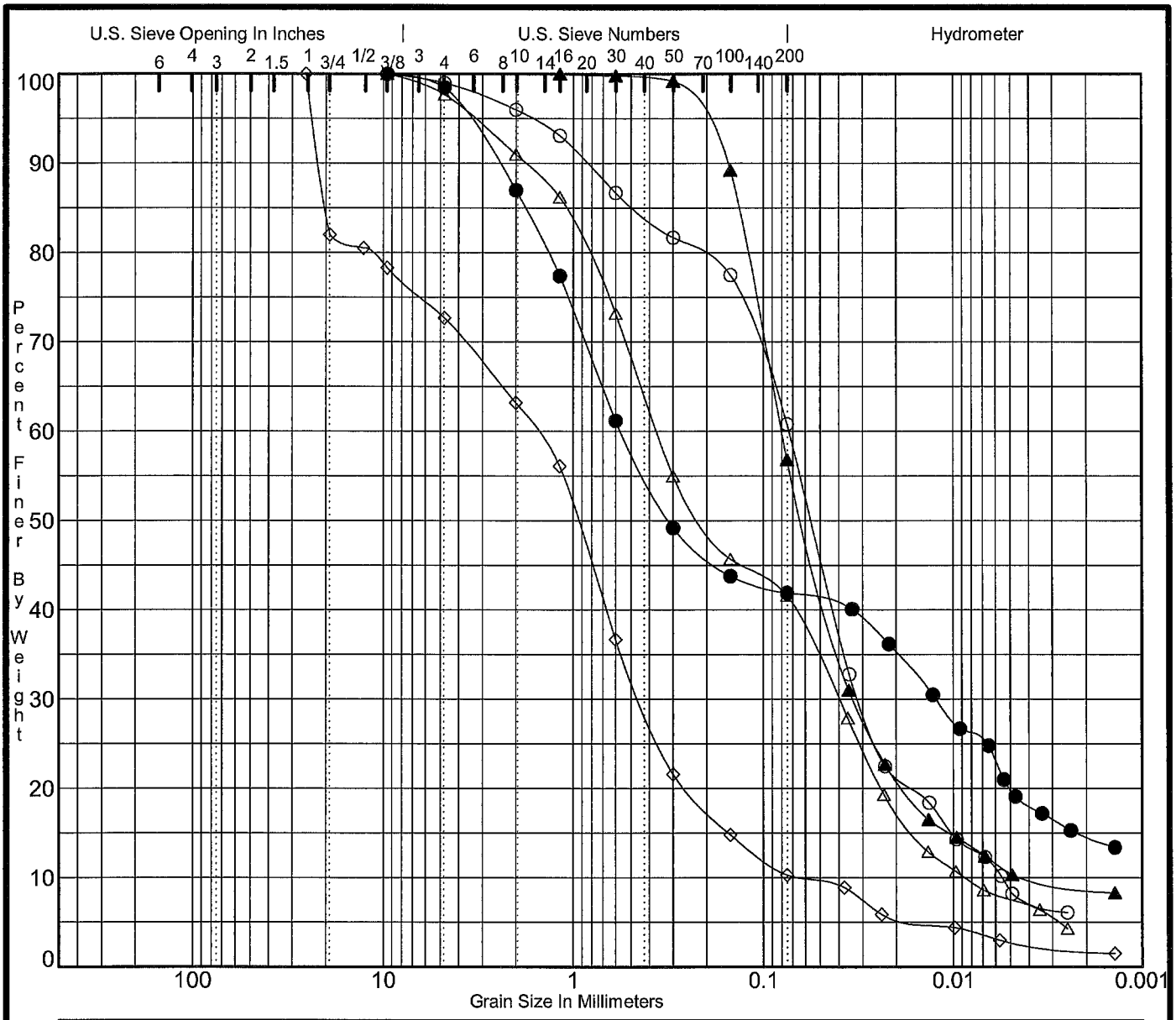
Client No. 5340

Date 1/29/25

Shear Test Diagram

Advanced Geotechnical Services, Inc.

Plate B- 46



Cobbles	Gravel		Sand			Silt Or Clay
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
○	B-2	30.0	Black sandy SILT		NP	NP	NP		
●	B-2	33.0	Dark olive gray clayey SAND		36	16	20		
△	B-2	44.0	Dark olive gray silty SAND		NP	NP	NP		
▲	B-4	47.5	Black sandy SILT		NP	NP	NP		
◇	B-5	24.5	Olive brown well graded SAND with silt and gravel						

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	B-2	30.0	9.50				1.0	38.2	52.3	8.5
●	B-2	33.0	9.50				1.5	56.6	22.0	19.9
△	B-2	44.0	9.50				2.3	56.1	34.0	7.6
▲	B-4	47.5	1.18				0.0	43.2	46.4	10.4
◇	B-5	24.5	25.40				27.3	62.4	7.4	2.9

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

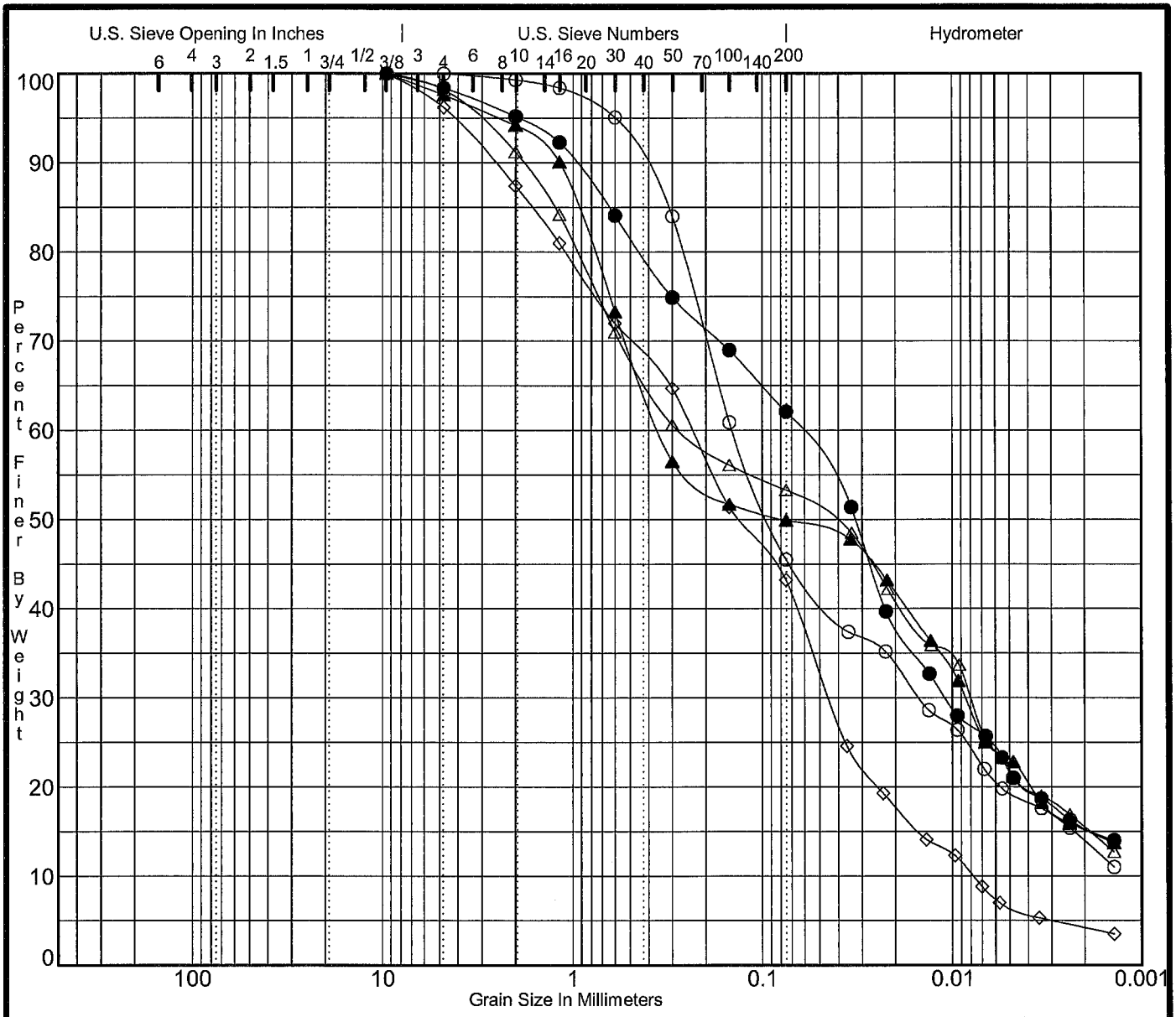
Client No. 5340

Date 1/29/25

Gradation Curves

Advanced Geotechnical Services, Inc.

Plate B- 47



Cobbles	Gravel		Sand			Silt Or Clay
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
○	B-6	27.5	Olive gray silty SAND		NP	NP	NP		
●	B-7	27.5	Olive brown sandy lean CLAY		36	18	18		
△	B-8	16.5	Dark yellowish brown sandy lean CLAY		45	4	41		
▲	B-8	22.5	Grayish brown clayey SAND		40	21	19		
◇	B-8	25.0	Grayish brown silty SAND		NP	NP	NP		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	B-6	27.5	4.75				0.0	54.5	26.1	19.4
●	B-7	27.5	9.50				1.6	36.3	40.4	21.7
△	B-8	16.5	9.50				1.8	44.9	31.6	21.7
▲	B-8	22.5	9.50				2.4	47.7	26.8	23.1
◇	B-8	25.0	9.50				3.8	53.0	36.7	6.5

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

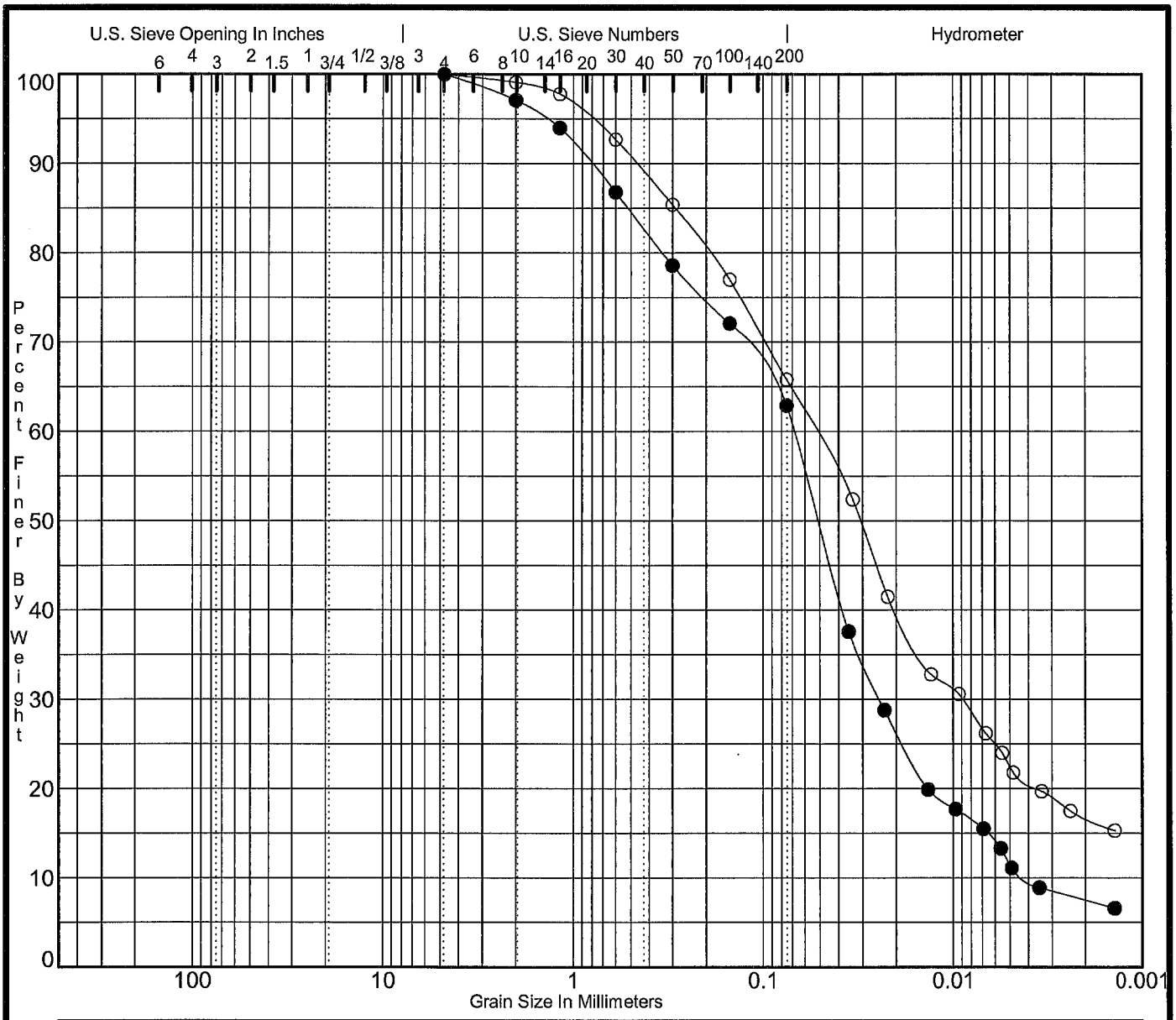
Client No. 5340

Date 1/29/25

Gradation Curves

Advanced Geotechnical Services, Inc.

Plate B- 48



Cobbles	Gravel		Sand			Silt Or Clay
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
○	B-10	30.5	Dark grayish brown sandy SILT		21	18	3		
●	B-9	38.5	Dark grayish brown sandy SILT						

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
○	B-10	30.5	4.75				0.0	34.2	43.3	22.5
●	B-9	38.5	4.75				0.0	37.1	51.5	11.4

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

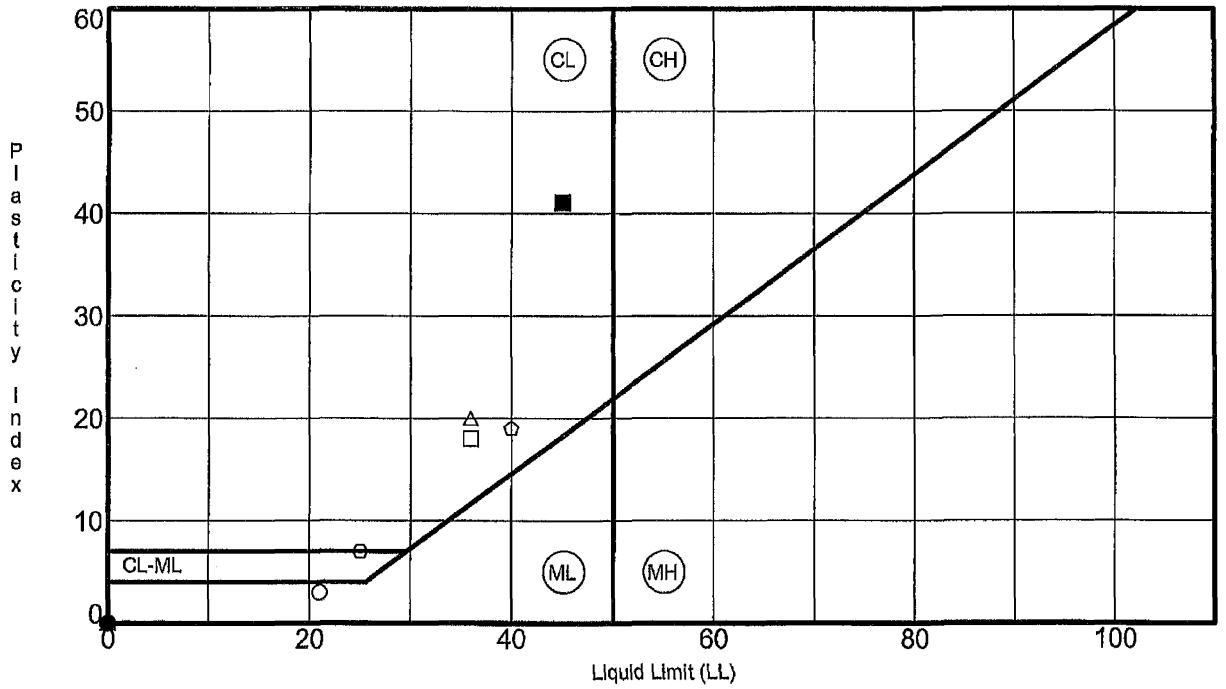
Client No.: 5340

Date: 1/29/25

Gradation Curves

Advanced Geotechnical Services, Inc.

Plate B- 49



Specimen Identification			LL	PL	PI	Fines	Classification
○	B-10	30.5	21	18	3		Dark grayish brown sandy SILT
●	B-2	30.0	NP	NP	NP		Black sandy SILT
△	B-2	33.0	36	16	20		Dark olive gray lean CLAY
▲	B-2	44.0	NP	NP	NP		Dark olive gray silty SAND
◇	B-4	47.5	NP	NP	NP		Black sandy SILT
◆	B-6	27.5	NP	NP	NP		Olive gray silty SAND
□	B-7	27.5	36	18	18		Olive brown sandy lean CLAY
■	B-8	16.5	45	4	41		Dark olive brown sandy lean CLAY
⬠	B-8	22.5	40	21	19		Grayish brown clayey SAND
⬟	B-8	25.0	NP	NP	NP		Grayish brown silty SAND
⬡	B-9	35.0	25	18	7		Dark grayish brown sandy lean CLAY

Project: Maulhardt-Stiles Families - East of Rose Avenue, South of Cesar Chavez, North of Camino Del Sol, nard

Client No. 5340

Date 1/29/25

Atterberg Limits' Results

Advanced Geotechnical Services, Inc.

Plate B- 50

Resistance Value Data Summary

1/17/2025

Caltrans CT301

Client AGS

Address Advanced Geotechnical Services, Inc.
5251 Verdugo Way
Suite L
Camarillo CA, 93031

Date Tested 1/3/2025
Sample Rec. Date 12/13/2024
Date Sampled 12/13/2024

Sampled By Client
Sampl Id 42M

Client Reference No On Call Testing
Project No 0110
Project AGS - On-Call Master Agreement
Material Source B-1 @ 0-5' (AGS Job 5340)
Material Description Sandy Silt (ML); brown to dark brown, moist
Location Detail PROJECT: Lab Testing DETAIL: B-1 @ 0-5' (AGS Job 5340)

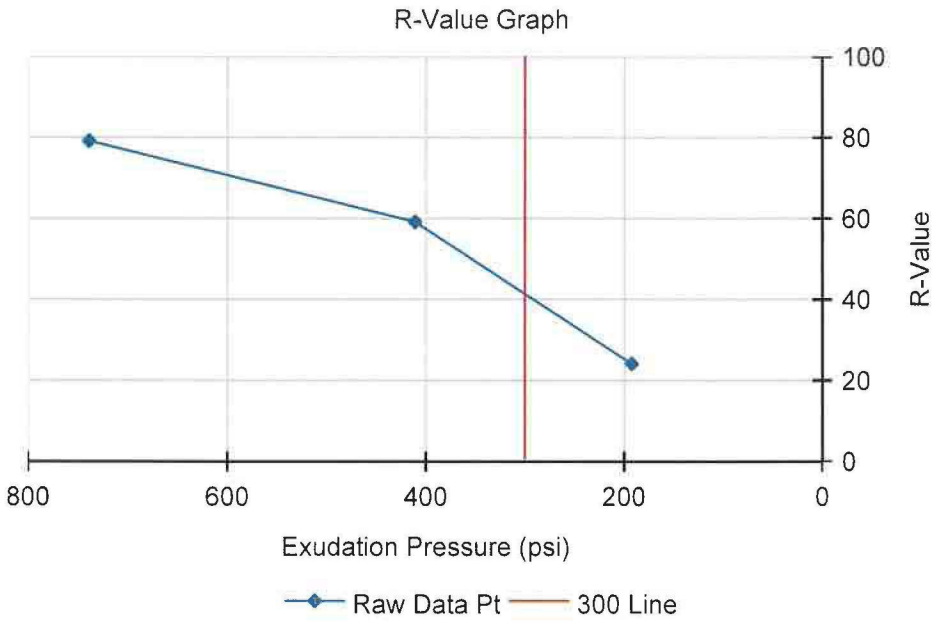
Initial Moisture Content: 5.4%

Dry Unit Weight (PCF)	Water Content (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
116.7	10.0%	739	0	79
119.2	10.5%	411	0	59
117.0	12.1%	192	0	24

R-value at Exudation Pressure of 300 psi: 41

Grading Analysis

Sieve Size	As Received	As Used
2"	100%	100%
1.5"	100%	100%
1"	100%	100%
3/4"	100%	100%
1/2"	100%	100%
3/8"	100%	100%
No. 4	100%	100%



Remarks

Technician Job Sanchez
Digital Signature By User Login

Manager Adam Sinutko
Digital Signature By User Login

Test results relate only to the sample tested. This test report shall not reproduced, except in full, without the prior written approval of the agency.

Lab Address 2247 Statham Blvd. Oxnard CA, 93033
System Link http://umt.vahalo.com/assignments/85335B50-2D74-4D12-33E5-A2E9BCED113D
System Path AGS - On-Call Master Agreement / SOILS / AGGREGATE LAB / 0110 - 5340 Rvalue B1

Union MATERIALS TESTING

Resistance Value Data Summary

1/17/2025

Caltrans CT301

Client AGS

Address Advanced Geotechnical Services, Inc.
5251 Verdugo Way
Suite L
Camarillo CA, 93031

Date Tested 1/8/2025
Sample Rec. Date 12/13/2024
Date Sampled 12/13/2024

Sampled By Client
Sampl Id 42N

Client Reference No On Call Testing
Project No 0110
Project AGS - On-Call Master Agreement
Material Source B-2 @ 0-5' (AGS Job 5340)
Material Description Sandy Silt (ML); dark brown, moist
Location Detail PROJECT: Lab Testing DETAIL: B-2 @ 0-5' (AGS Job 5340)

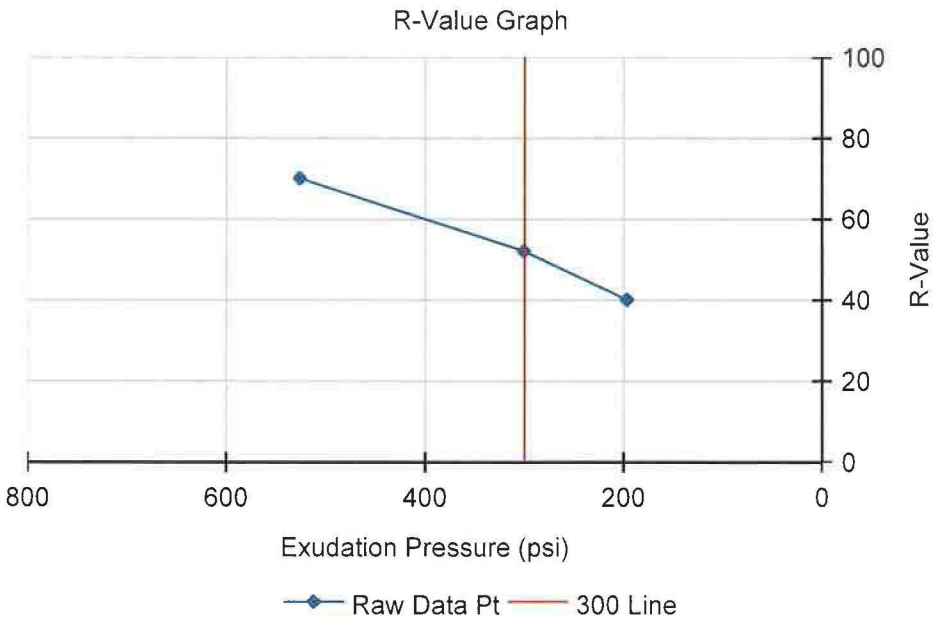
Initial Moisture Content: 6.9%

Dry Unit Weight (PCF)	Water Content (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
116.2	11.9%	527	0	70
114.2	12.6%	301	0	52
113.4	13.6%	197	0	40

R-value at Exudation Pressure of 300 psi: 52

Grading Analysis

Sieve Size	As Received	As Used
2"	100%	100%
1.5"	100%	100%
1"	100%	100%
3/4"	100%	100%
1/2"	100%	100%
3/8"	100%	100%
No. 4	100%	100%



Remarks

Technician Job Sanchez
Digital Signature By User Login

Manager Adam Sinutko
Digital Signature By User Login

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Lab Address 2247 Statham Blvd. Oxnard CA, 93033
System Link http://umt.vahalo.com/assignments/42DDB9A1-8E0C-4485-B2C0-5CA2C08A6C13
System Path AGS - On-Call Master Agreement / SOILS / AGGREGATE LAB / 0110 - 5340 Rvalue B2

Resistance Value Data Summary

1/17/2025

Client AGS
Address Advanced Geotechnical Services, Inc.
5251 Verdugo Way
Suite L
Camarillo CA, 93031

Client Reference No On Call Testing
Project No 0110
Project AGS - On-Call Master Agreement
Material Source B-4 @ 0-5' (AGS Job 5340)
Material Description Silty Sand (SM); brown, moist
Location Detail PROJECT: Lab Testing DETAIL: B-4 @ 0-5' (AGS Job 5340)

Date Tested 1/8/2025
Sample Rec. Date 12/20/2024
Date Sampled 12/20/2024

Sampled By Client
Sampl Id 458

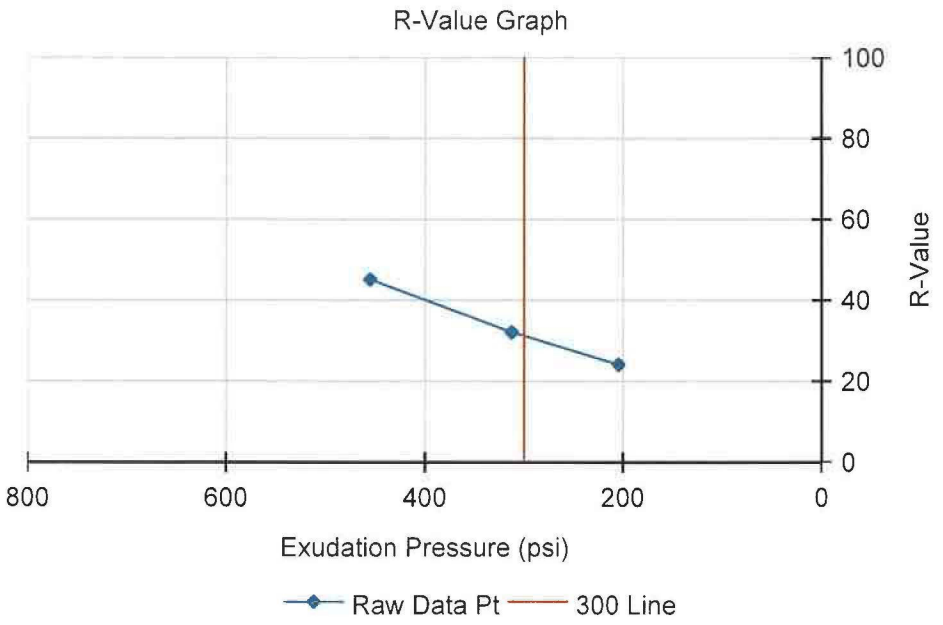
Initial Moisture Content: 3.3%

Dry Unit Weight (PCF)	Water Content (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
124.2	9.4%	456	0	45
124.2	9.7%	312	0	32
124.0	10.4%	204	0	24

R-value at Exudation Pressure of 300 psi: 31

Grading Analysis

Sieve Size	As Received	As Used
2"	100%	100%
1.5"	100%	100%
1"	100%	100%
3/4"	100%	100%
1/2"	100%	100%
3/8"	100%	100%
No. 4	100%	100%



Remarks

Technician Job Sanchez
Digital Signature By User Login

Manager Adam Sinutko
Digital Signature By User Login

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Lab Address 2247 Statham Blvd. Oxnard CA, 93033
System Link http://umt.vahalo.com/assignments/42AAEF02-C898-4511-0796-834C2F0DCF52
System Path AGS - On-Call Master Agreement / SOILS / AGGREGATE LAB / 0110 - 5340 Rvalue B4

Union MATERIALS TESTING

Resistance Value Data Summary

1/17/2025

Caltrans CT301

Client AGS

Address Advanced Geotechnical Services, Inc.
5251 Verdugo Way
Suite L
Camarillo CA, 93031

Date Tested 1/9/2025
Sample Rec. Date 12/20/2024
Date Sampled 12/20/2024

Sampled By Client
Sampl Id 459

Client Reference No On Call Testing
Project No 0110
Project AGS - On-Call Master Agreement
Material Source B-5 @ 0-5' (AGS Job 5340)
Material Description Silty Sand (SM); dark reddish brown, moist
Location Detail PROJECT: Lab Testing DETAIL: B-5 @ 0-5' (AGS Job 5340)

Initial Moisture Content: 5.8%

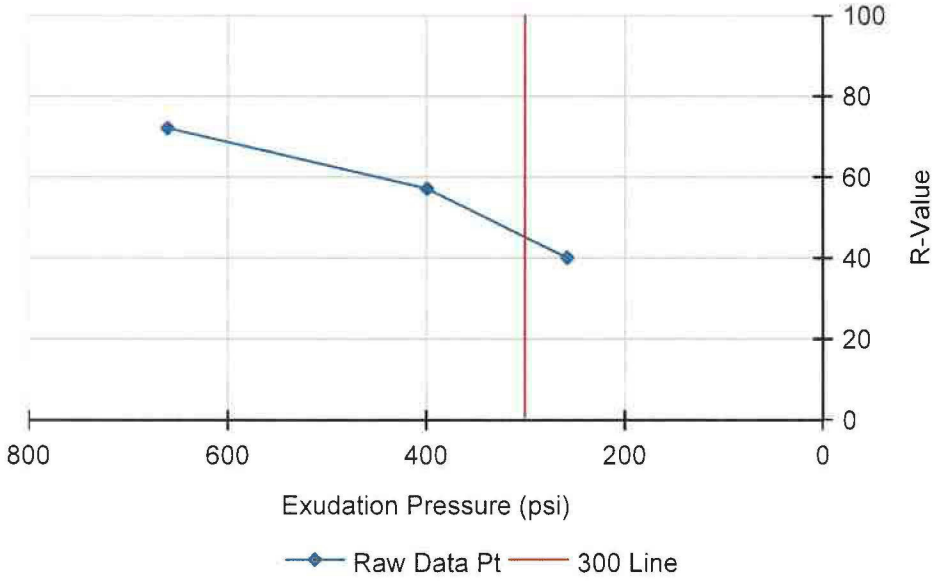
Dry Unit Weight (PCF)	Water Content (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
121.4	9.8%	660	0	72
121.2	10.4%	399	0	57
121.1	10.9%	258	0	40

R-value at Exudation Pressure of 300 psi: 45

Grading Analysis

Sieve Size	As Received	As Used
2"	100%	100%
1.5"	100%	100%
1"	100%	100%
3/4"	100%	100%
1/2"	100%	100%
3/8"	100%	100%
No. 4	100%	100%

R-Value Graph



Remarks

Technician Adam Sinutko
Digital Signature By User Login

Manager Adam Sinutko
Digital Signature By User Login

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Lab Address 2247 Statham Blvd. Oxnard CA, 93033
System Link http://umt.vahalo.com/assignments/6BB13BE7-F4B0-4D96-5634-D13DC5239978
System Path AGS - On-Call Master Agreement / SOILS / AGGREGATE LAB / 0110 - 5340 Rvalue B5

Union MATERIALS TESTING

Resistance Value Data Summary

1/17/2025

Caltrans CT301

Client AGS
Address Advanced Geotechnical Services, Inc.
5251 Verdugo Way
Suite L
Camarillo CA, 93031

Date Tested 1/10/2025
Sample Rec. Date 12/31/2024
Date Sampled 12/27/2024

Sampled By Client
Sampl Id 45Z

Client Reference No On Call Testing
Project No 0110
Project AGS - On-Call Master Agreement
Material Source B-6 @ 0-5' (AGS Job 5340)
Material Description Silty Sand with trace gravel (SM); dark brown, moist
Location Detail PROJECT: Lab Testing DETAIL: B-6 @ 0-5' (AGS Job 5340)

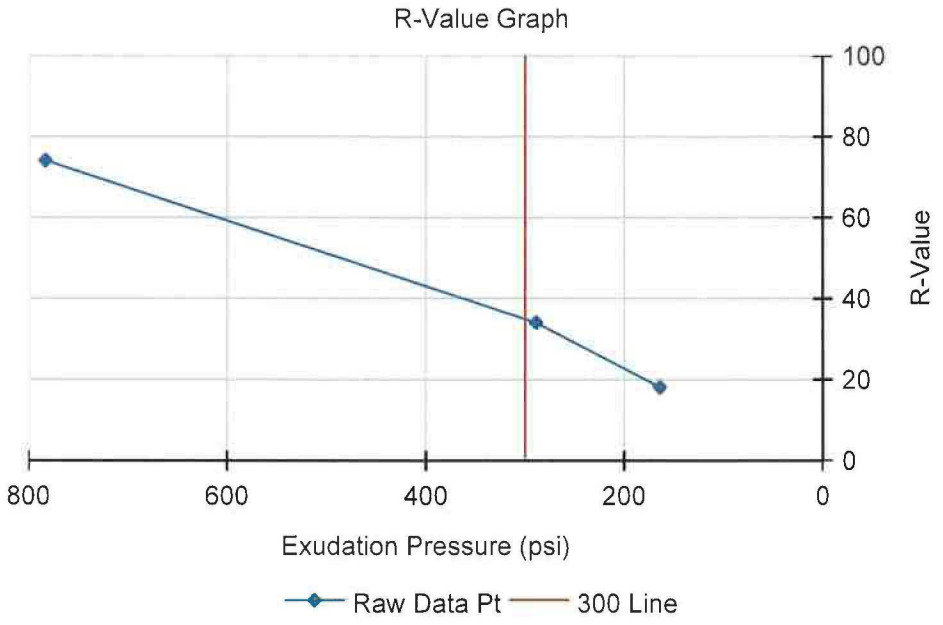
Initial Moisture Content: 6.2%

Dry Unit Weight (PCF)	Water Content (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
123.2	9.6%	783	0	74
129.1	10.3%	289	0	34
116.8	11.3%	164	0	18

R-value at Exudation Pressure of 300 psi: 35

Grading Analysis

Sieve Size	As Received	As Used
2"	100%	100%
1.5"	100%	100%
1"	100%	100%
3/4"	100%	100%
1/2"	99%	99%
3/8"	98%	98%
No. 4	95%	95%



Remarks

Technician Adam Sinutko
Digital Signature By User Login

Manager Adam Sinutko
Digital Signature By User Login

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Lab Address 2247 Statham Blvd. Oxnard CA, 93033
System Link http://umt.vahalo.com/assignments/A6C8F105-DF63-4F2E-279C-B4401D878165
System Path AGS - On-Call Master Agreement / SOILS / AGGREGATE LAB / 0110 - 5340 Rvalue B6

Resistance Value Data Summary

1/17/2025

Caltrans CT301

Client AGS

Address Advanced Geotechnical Services, Inc.
5251 Verdugo Way
Suite L
Camarillo CA, 93031

Date Tested 1/13/2025
Sample Rec. Date 12/31/2024
Date Sampled 12/27/2024

Sampled By Client
Sampl Id 460

Client Reference No On Call Testing
Project No 0110
Project AGS - On-Call Master Agreement
Material Source B-7 @ 0-5' (AGS Job 5340)
Material Description Sandy Slit (ML); brown, moist
Location Detail PROJECT: Lab Testing DETAIL: B-7 @ 0-5' (AGS Job 5340)

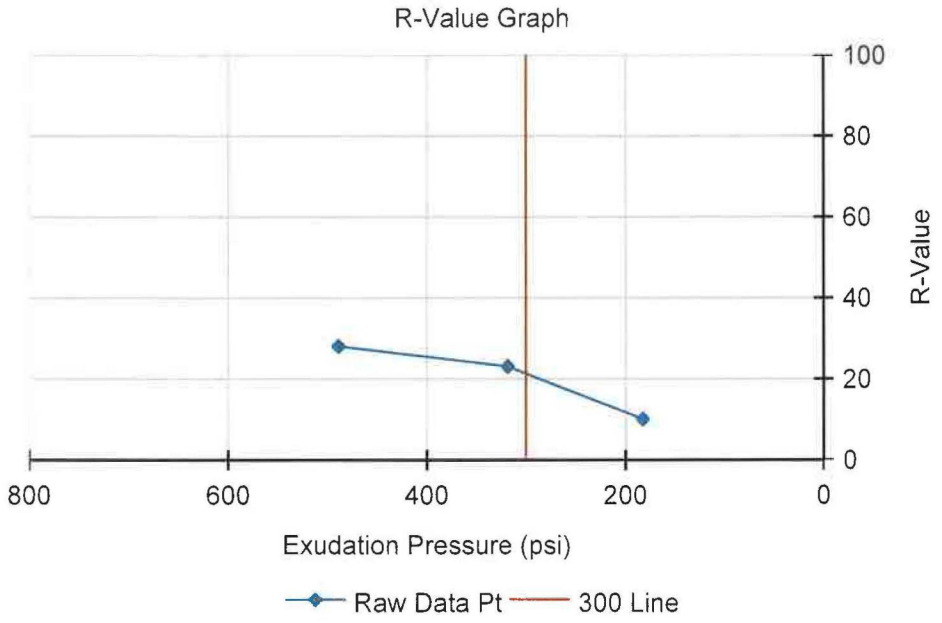
Initial Moisture Content: 5.7%

Dry Unit Weight (PCF)	Water Content (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
121.2	11.7%	489	0	28
117.3	12.7%	318	0	23
116.3	13.7%	183	0	10

R-value at Exudation Pressure of 300 psi: 21

Grading Analysis

Sieve Size	As Received	As Used
2"	100%	100%
1.5"	100%	100%
1"	100%	100%
3/4"	100%	100%
1/2"	100%	100%
3/8"	100%	100%
No. 4	100%	100%



Remarks

Technician Adam Sinutko
Digital Signature By User Login

Manager Adam Sinutko
Digital Signature By User Login

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Resistance Value Data Summary

1/17/2025

Caltrans CT301

Client AGS

Address Advanced Geotechnical Services, Inc.
5251 Verdugo Way
Suite L
Camarillo CA, 93031

Date Tested 1/14/2025
Sample Rec. Date 12/31/2024
Date Sampled 12/27/2024

Sampled By Client
Sampl Id 461

Client Reference No On Call Testing
Project No 0110
Project AGS - On-Call Master Agreement
Material Source B-8 @ 0-5' (AGS Job 5340)
Material Description Sandy Silt (ML); brown, moist
Location Detail PROJECT: Lab Testing DETAIL: B-8 @ 0-5' (AGS Job 5340)

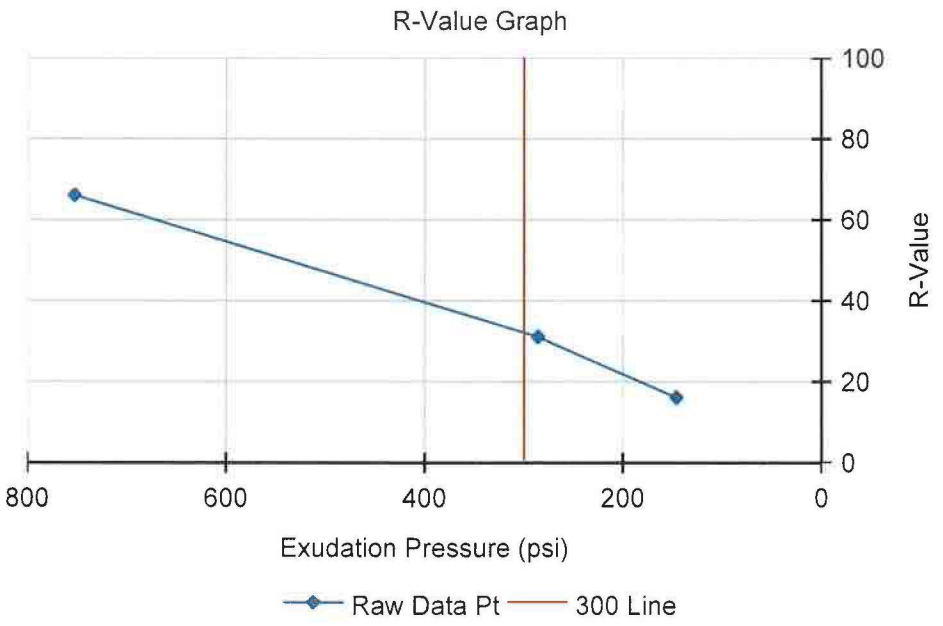
Initial Moisture Content: 5.3%

Dry Unit Weight (PCF)	Water Content (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
116.3	11.3%	753	0	66
115.9	12.3%	286	0	31
119.1	14.2%	146	0	16

R-value at Exudation Pressure of 300 psi: 32

Grading Analysis

Sieve Size	As Received	As Used
2"	100%	100%
1.5"	100%	100%
1"	100%	100%
3/4"	100%	100%
1/2"	100%	100%
3/8"	100%	100%
No. 4	100%	100%



Remarks

Technician Adam Sinutko
Digital Signature By User Login

Manager Adam Sinutko
Digital Signature By User Login

Test results relate only to the sample tested. This test report shall not reproduced, except in full, without the prior written approval of the agency.

Lab Address 2247 Statham Blvd. Oxnard CA, 93033
System Link http://umt.vahalo.com/assignments/12969B0F-24ED-471F-E711-1D80DFEC5740
System Path AGS - On-Call Master Agreement / SOILS / AGGREGATE LAB / 0110 - 5340 Rvalue B8

Resistance Value Data Summary

1/17/2025

Caltrans CT301

Client AGS

Address Advanced Geotechnical Services, Inc.
5251 Verdugo Way
Suite L
Camarillo CA, 93031

Date Tested 1/15/2025
Sample Rec. Date 12/31/2024
Date Sampled 12/27/2024

Sampled By Client
Sampl Id 462

Client Reference No On Call Testing
Project No 0110
Project AGS - On-Call Master Agreement
Material Source B-9 @ 0-5' (AGS Job 5340)
Material Description Silty Sand (SM); light brown to brown, moist
Location Detail PROJECT: Lab Testing DETAIL: B-9 @ 0-5' (AGS Job 5340)

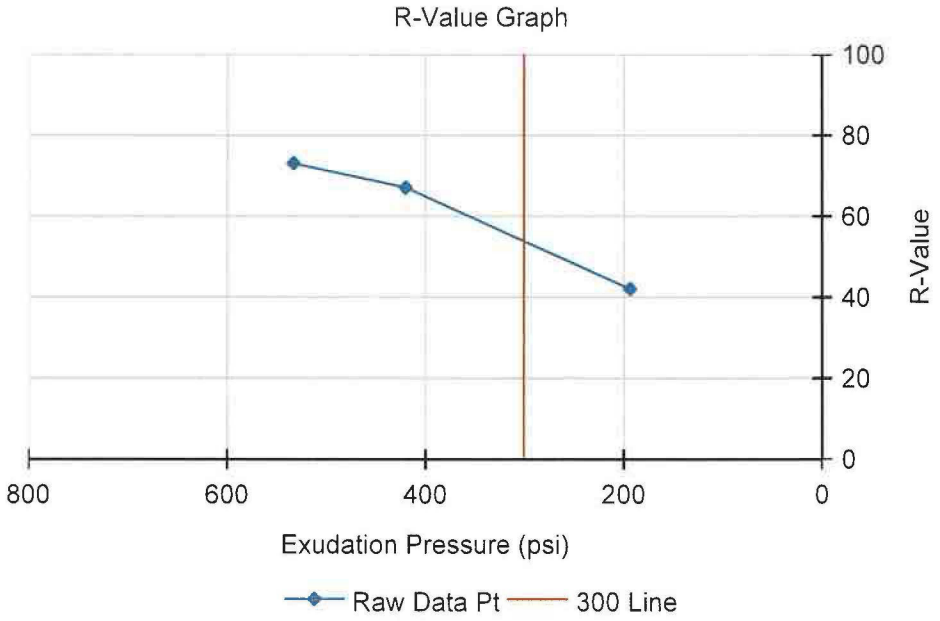
Initial Moisture Content: 6.7%

Dry Unit Weight (PCF)	Water Content (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
124.5	9.7%	534	0	73
122.8	10.7%	421	0	67
120.3	11.8%	194	0	42

R-value at Exudation Pressure of 300 psi: 54

Grading Analysis

Sieve Size	As Received	As Used
2"	100%	100%
1.5"	100%	100%
1"	100%	100%
3/4"	100%	100%
1/2"	100%	100%
3/8"	100%	100%
No. 4	100%	100%



Remarks

Technician Adam Sinutko
Digital Signature By User Login

Manager Adam Sinutko
Digital Signature By User Login

Test results relate only to the sample tested. This test report shall not reproduced, except in full, without the prior written approval of the agency.

Lab Address 2247 Statham Blvd. Oxnard CA, 93033
System Link http://umt.vahalo.com/assignments/E44000F3-900A-423A-409C-80D15280A831
System Path AGS - On-Call Master Agreement / SOILS / AGGREGATE LAB / 0110 - 5340 Rvalue B9

Resistance Value Data Summary

1/17/2025

Caltrans CT301

Client AGS
Address Advanced Geotechnical Services, Inc.
5251 Verdugo Way
Suite L
Camarillo CA, 93031

Date Tested 1/15/2025
Sample Rec. Date 12/31/2024
Date Sampled 12/27/2024

Sampled By Client
Sampl Id 463

Client Reference No On Call Testing
Project No 0110
Project AGS - On-Call Master Agreement
Material Source B-10 @ 0-5' (AGS Job 5340)
Material Description Silty Sand (SM); brown, moist
Location Detail PROJECT: Lab Testing DETAIL: B-10 @ 0-5' (AGS Job 5340)

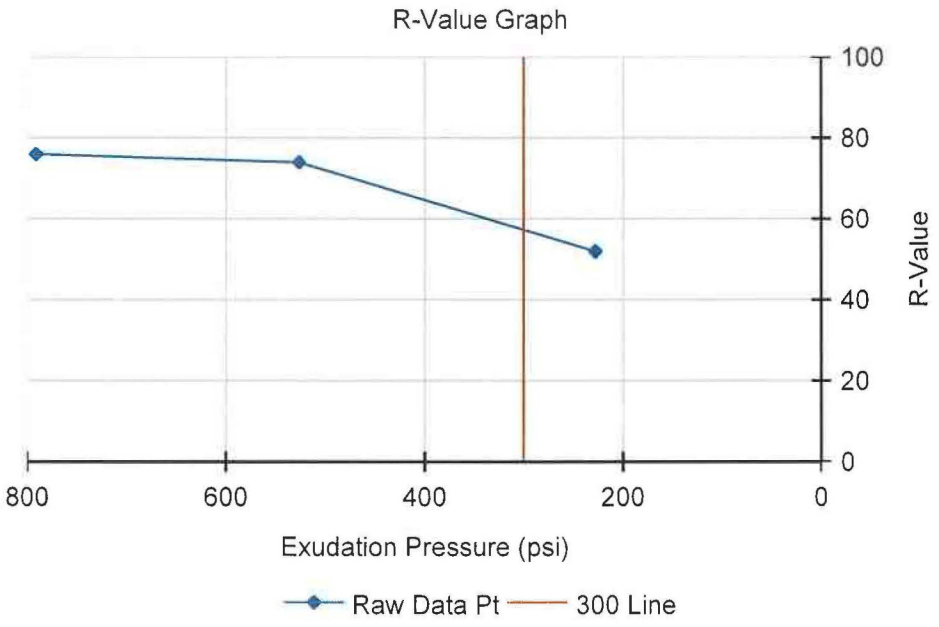
Initial Moisture Content: 4.1%

Dry Unit Weight (PCF)	Water Content (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
117.9	10.1%	791	0	76
119.5	11.0%	527	0	74
115.5	11.6%	228	0	52

R-value at Exudation Pressure of 300 psi: 57

Grading Analysis

Sieve Size	As Received	As Used
2"	100%	100%
1.5"	100%	100%
1"	100%	100%
3/4"	100%	100%
1/2"	100%	100%
3/8"	100%	100%
No. 4	100%	100%



Remarks

Technician Adam Sinutko
Digital Signature By User Login

Manager Adam Sinutko
Digital Signature By User Login

Test results relate only to the sample tested. This test report shall not reproduced, except in full, without the prior written approval of the agency.
Lab Address 2247 Statham Blvd. Oxnard CA, 93033
System Link http://umt.vahalo.com/assignments/8A941770-7BA5-42E0-24B6-F496A3E4FA65
System Path AGS - On-Call Master Agreement / SOILS / AGGREGATE LAB / 0110 - 5340 Rvalue B10

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California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

Prepared for: Advanced Geotechnical Services
5251 Verdugo Way, Suite L
Camarillo, CA 93012
Attn: Jim Bruss/Brett Wanner

Report Date: December 19, 2024
Laboratory Number: 241909
Purchase Order No: 4698-5340
Project Name: Maulhardt 5340 Lab 1698
Sampled by: Jim Bruss

Enclosed are the analysis results for samples received December 16, 2024 with the Chain of Custody document. The samples were received in good condition, at 19.1°C, and they were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
B-1@0-5'	241909-01
B-2@0-5'	241909-02

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Anahit Aivazyan

Anahit Aivazyan, MS.
Technical Manager

If you have any further questions or concerns, please contact me at your convenience.
This report consists of 3 pages excluding the cover letter and the Chain of Custody.

This report shall not be reproduced except in full without the written approval of CAS. The test results reported represent only the item being tested and may not represent the entire material from which the sample was taken.

CERTIFICATE OF ANALYSIS

Client: Advanced Geotechnical Services
CAS LAB NO: 241909-01
Sample ID: B-1@0-5'
Analyst: Gloria

Date Sampled: 12/16/24
Date Received: 12/16/24
Sample Matrix: Soil

WET CHEMISTRY SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)**	8.1	S.U.	1	---	9045	12/18/24
Resistivity*	3700	Ohms-cm	1	---	SM 120.1M	12/18/24
Chloride	24	mg/Kg	1	0.3	300.0M	12/18/24
Sulfate	190	mg/Kg	1	0.6	300.0M	12/18/24

*Sample was extracted using a 1:3 ratio of soil and DI water.
**Sample was extracted using 1:1 ratio with DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms(ppm)

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CERTIFICATE OF ANALYSIS

Client: Advanced Geotechnical Services
CAS LAB NO: 241909-02
Sample ID: B-2@0-5'
Analyst: Gloria

Date Sampled: 12/16/24
Date Received: 12/16/24
Sample Matrix: Soil

WET CHEMISTRY SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)**	8.2	S.U.	1	---	9045	12/18/24
Resistivity*	5100	Ohms-cm	1	---	SM 120.1M	12/18/24
Chloride	8.4	mg/Kg	1	0.3	300.0M	12/18/24
Sulfate	105	mg/Kg	1	0.6	300.0M	12/18/24

*Sample was extracted using a 1:3 ratio of soil and DI water.
**Sample was extracted using 1:1 ratio with DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms(ppm)

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Quality Control Report

Client:	Advanced Geotechnical Services	Date Sampled:	12/16/24
Sample ID:		Date Received:	12/16/24
CAS LAB NO:	241909	Date Analyzed:	12/18/24
Sample Matrix:	SOIL	Analyst:	GP

Sample Name	Qualifier	Sample Result	QC Result	Unit	Spike Level	%REC	Control Limits
Chloride (by EPA 300)							
Method Blank			BQL	mg/L			
Lab Control Sample			29.58	mg/L	30	99	90-110
241909-02 Matrix Spike		2.79	32.45	mg/L	30	99	80-120
241909-02 Matrix Spike Duplicate		2.79	32.32	mg/L	30	98	80-120
Sulfate (by EPA 300)							
Method Blank			BQL	mg/L			
Lab Control Sample			29.32	mg/L	30	98	90-110
241909-02 Matrix Spike		35.12	63.62	mg/L	30	95	80-120
241909-02 Matrix Spike Duplicate		35.12	64.21	mg/L	30	97	80-120

*ALL QC SAMPLES ARE PREPARED IN LIQUID PHASE

mg/L: Milligrams/Liter (ppm)

%Rec: Percent Recovered

BQL: Below Practical Quantitation Limit

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CHAIN OF CUSTODY RECORD

CAPCO Analytical Services

241909

2978 Seaborg Ave., Unit 4, Ventura, CA., 93003
Tel 805 644 1095 ♦ Fax 805 644 9947

CLIENT NAME:	PROJECT:	
Advanced Geotechnical Services	MaulHardt 5340 Lab 1698	
ADDRESS:	PHONE:	805.388.6162
5251 Verdugo Way, Suite L	FAX:	805.388.6167
Camarillo, Calif 93012	EMAIL:	jbruss@advancedgeotechnical.com
PROJECT MANAGER: Brett Wanner	SAMPLER: Jim Bruss	

Turn around Time

- ☐ Same Day Rush
- ☐ 24 Hour Rush
- ☐ 48 Hour Rush
- ☐ 72 Hour Rush
- ☑ Standard TAT
- ☐
- ☐

12/23
12/30

LAB ID	DATE SAMPLED	TIME SAMPLED	SMPL TYPE	SAMPLE IDENTIFICATION	# OF CONT.	ANALYSES REQUESTED: Ph	Resistivity	Chloride	Sulfate
01	12/16/24	11:00am	SO	B-1 @0-5'	1	X	X	X	X
02	12/16/24	11:00am	SO	B-2 @0-5'	1	X	X	X	X

RELINQUISHED BY	DATE / TIME	RECEIVED BY
[signature]	12/16/24 12:00pm	[signature] 12/16/24 1200
RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY

Comments

SAMPLE TYPE CODE:
AQ=Aqueous
NA= Non Aqueous
SL = Sludge
DW = Drinking Water
WW = Waste Water
RW = Rain Water
GW = Ground Water
SO = Soil
SW = Solid Waste
OL = Oil
OT = Other Matrix

SPECIAL REQUIREMENTS / BILLING INFORMATION

P.O. Number 1698-5340

COC version 042707

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Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

Prepared for: Advanced Geotechnical Services
5251 Verdugo Way, Suite L
Camarillo, CA 93012
Attn: Jim Bruss

Report Date: January 8, 2025
Laboratory Number: 241938
Purchase Order No: 1698-5340
Project Name: Maulhardt 5340 Lab 1698
Sampled by: Jim Bruss

Enclosed are the analysis results for samples received December 23, 2024 with the Chain of Custody document. The samples were received in good condition, at 18.8°C, and they were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
B-4@0-5'	241938-01
B-5@0-5'	241938-02

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Anahit Aivazyan

Anahit Aivazyan, MS.
Technical Manager

If you have any further questions or concerns, please contact me at your convenience.
This report consists of 3 pages excluding the cover letter and the Chain of Custody.

This report shall not be reproduced except in full without the written approval of CAS. The test results reported represent only the item being tested and may not represent the entire material from which the sample was taken.

CERTIFICATE OF ANALYSIS

Client: Advanced Geotechnical Services
CAS LAB NO: 241938-01
Sample ID: B-4@0-5'
Analyst: Gloria

Date Sampled: 12/20/24
Date Received: 12/23/24
Sample Matrix: Soil

WET CHEMISTRY SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)**	8.2	S.U.	1	---	9045	12/23/24
Resistivity*	5600	Ohms-cm	1	---	SM 120.1M	12/23/24
Chloride	5.0	mg/Kg	1	0.3	300.0M	01/02/25
Sulfate	120	mg/Kg	1	0.6	300.0M	01/02/25

*Sample was extracted using a 1:3 ratio of soil and DI water.
**Sample was extracted using 1:1 ratio with DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms(ppm)

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CERTIFICATE OF ANALYSIS

Client: Advanced Geotechnical Services
CAS LAB NO: 241938-02
Sample ID: B-5@0-5'
Analyst: Gloria

Date Sampled: 12/20/24
Date Received: 12/23/24
Sample Matrix: Soil

WET CHEMISTRY SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)**	8.0	S.U.	1	---	9045	12/23/24
Resistivity*	3200	Ohms-cm	1	---	SM 120.1M	12/23/24
Chloride	9.5	mg/Kg	1	0.3	300.0M	01/02/25
Sulfate	280	mg/Kg	1	0.6	300.0M	01/02/25

*Sample was extracted using a 1:3 ratio of soil and DI water.
**Sample was extracted using 1:1 ratio with DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms(ppm)

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Quality Control Report

Client:	Advanced Geotechnical Services	Date Sampled:	12/20/24
Sample ID:		Date Received:	12/23/24
CAS LAB NO:	241938	Date Analyzed:	01/02/25
Sample Matrix:	SOIL	Analyst:	GP

Sample Name	Qualifier	Sample Result	QC Result	Unit	Spike Level	%REC	Control Limits
Chloride (by EPA 300)							
Method Blank			BQL	mg/L			
Lab Control Sample			29.73	mg/L	30	99	90-110
241938-01 Matrix Spike		1.65	31.01	mg/L	30	98	80-120
241938-01 Matrix Spike Duplicate		1.65	31.28	mg/L	30	99	80-120
Sulfate (by EPA 300)							
Method Blank			BQL	mg/L			
Lab Control Sample			29.56	mg/L	30	99	90-110
241938-01 Matrix Spike		39.68	69.23	mg/L	30	99	80-120
241938-01 Matrix Spike Duplicate		39.68	70.03	mg/L	30	101	80-120

*ALL QC SAMPLES ARE PREPARED IN LIQUID PHASE

mg/L:Milligrams/Liter(ppm)

%Rec:Percent Recovered

BQL:Below Practical Quantitation Limit

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CHAIN OF CUSTODY RECORD

CAPCO Analytical Services

2978 Seaborg Ave., Unit 4, Ventura, CA., 93003
Tel 805 644 1095 ♦ Fax 805 644 9947

241938

1/3 1/4

CLIENT NAME:	PROJECT:	
Advanced Geotechnical Services	MaulHardt 5340 Lab 1698	
ADDRESS:	PHONE:	805.388.6162
5251 Verdugo Way, Suite L	FAX:	805.388.6167
Camarillo, Calif 93012	EMAIL:	jbruss@advancedgeotechnical.com
PROJECT MANAGER: Brett Wanner	SAMPLER: Jim Bruss	

Turn around Time

- ☐ Same Day Rush
- ☐ 24 Hour Rush
- ☐ 48 Hour Rush
- ☐ 72 Hour Rush
- ☑ Standard TAT
- ☐
- ☐

LAB ID	DATE SAMPLED	TIME SAMPLED	SMPL TYPE	SAMPLE IDENTIFICATION	# OF CONT.	Ph	Resistivity	Chloride	Sulfate
01	12/20/24	12:30pm	SO	B-4 @0-5'	1	X	X	X	X
02	12/20/24	12:30pm	SO	B-5 @0-5'	1	X	X	X	X

RELINQUISHED BY	DATE / TIME	RECEIVED BY
Pablo Gutierrez	9:30 12/23/24	Natalie Hunter
RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY

Comments

SAMPLE TYPE CODE:
AQ=Aqueous
NA= Non Aqueous
SL = Sludge
DW = Drinking Water
WW = Waste Water
RW = Rain Water
GW = Ground Water
SO = Soil
SW = Solid Waste
OL = Oil
OT = Other Matrix

SPECIAL REQUIREMENTS / BILLING INFORMATION

P.O. Number 1698-5340

COC version 042707

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Prepared for: Advanced Geotechnical Services
5251 Verdugo Way, Suite L
Camarillo, CA 93012
Attn: Jim Bruss

Report Date: January 15, 2025
Laboratory Number: 241974
Purchase Order No: 1698-5340
Project Name: Maulhardt 5340 Lab 1698
Sampled by: Jim Bruss

Enclosed are the analysis results for samples received December 31, 2024 with the Chain of Custody document. The samples were received in good condition, at 18.1°C, and they were identified and assigned the laboratory ID numbers listed below:

SAMPLE DESCRIPTION	CAS LAB NUMBER ID
B6, (0-5)	241974-01
B7, (0-5)	241974-02
B8, (0-5)	241974-03
B9, (0-5)	241974-04
B10, (0-5)	241974-05

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Anahit Aivazyan

Anahit Aivazyan, MS.
Technical Manager

If you have any further questions or concerns, please contact me at your convenience.
This report consists of 6 pages excluding the cover letter and the Chain of Custody.

This report shall not be reproduced except in full without the written approval of CAS. The test results reported represent only the item being tested and may not represent the entire material from which the sample was taken.

CERTIFICATE OF ANALYSIS

Client: Advanced Geotechnical Services
CAS LAB NO: 241974-01
Sample ID: B6,(0-5)
Analyst: Gloria

Date Sampled: 12/31/24
Date Received: 12/31/24
Sample Matrix: Soil

WET CHEMISTRY SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)**	8.2	S.U.	1	---	9045	01/06/25
Resistivity*	3000	Ohms-cm	1	---	SM 120.1M	01/06/25
Chloride	7.9	mg/Kg	1	0.3	300.0M	01/06/25
Sulfate	330	mg/Kg	1	0.6	300.0M	01/06/25

*Sample was extracted using a 1:3 ratio of soil and DI water.
**Sample was extracted using 1:1 ratio with DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms(ppm)

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CERTIFICATE OF ANALYSIS

Client: Advanced Geotechnical Services
CAS LAB NO: 241974-02
Sample ID: B7,(0-5)
Analyst: Gloria

Date Sampled: 12/31/24
Date Received: 12/31/24
Sample Matrix: Soil

WET CHEMISTRY SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)**	8.6	S.U.	1	---	9045	01/06/25
Resistivity*	7500	Ohms-cm	1	---	SM 120.1M	01/06/25
Chloride	2.2	mg/Kg	1	0.3	300.0M	01/06/25
Sulfate	59	mg/Kg	1	0.6	300.0M	01/06/25

*Sample was extracted using a 1:3 ratio of soil and DI water.
**Sample was extracted using 1:1 ratio with DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms(ppm)

2978 Seaborg Ave. Unit #4, Ventura, California 93003 Ph: (805)644-1095 FAX: (805)644-9947
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CERTIFICATE OF ANALYSIS

Client: Advanced Geotechnical Services
CAS LAB NO: 241974-03
Sample ID: B8,(0-5)
Analyst: Gloria

Date Sampled: 12/31/24
Date Received: 12/31/24
Sample Matrix: Soil

WET CHEMISTRY SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)**	7.6	S.U.	1	---	9045	01/06/25
Resistivity*	7500	Ohms-cm	1	---	SM 120.1M	01/06/25
Chloride	2.8	mg/Kg	1	0.3	300.0M	01/06/25
Sulfate	26	mg/Kg	1	0.6	300.0M	01/06/25

*Sample was extracted using a 1:3 ratio of soil and DI water.
**Sample was extracted using 1:1 ratio with DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms(ppm)

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CERTIFICATE OF ANALYSIS

Client: Advanced Geotechnical Services
CAS LAB NO: 241974-04
Sample ID: B9,(0-5)
Analyst: Gloria

Date Sampled: 12/31/24
Date Received: 12/31/24
Sample Matrix: Soil

WET CHEMISTRY SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)**	8.0	S.U.	1	---	9045	01/06/25
Resistivity*	4000	Ohms-cm	1	---	SM 120.1M	01/06/25
Chloride	4.0	mg/Kg	1	0.3	300.0M	01/06/25
Sulfate	220	mg/Kg	1	0.6	300.0M	01/06/25

*Sample was extracted using a 1:3 ratio of soil and DI water.
**Sample was extracted using 1:1 ratio with DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms(ppm)

2978 Seaborg Ave. Unit #4, Ventura, California 93003 Ph: (805)644-1095 FAX: (805)644-9947
www.capcoenv.com

CERTIFICATE OF ANALYSIS

Client: Advanced Geotechnical Services
CAS LAB NO: 241974-05
Sample ID: B10,(0-5)
Analyst: Gloria

Date Sampled: 12/31/24
Date Received: 12/31/24
Sample Matrix: Soil

WET CHEMISTRY SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)**	7.5	S.U.	1	---	9045	01/06/25
Resistivity*	2800	Ohms-cm	1	---	SM 120.1M	01/06/25
Chloride	7.2	mg/Kg	1	0.3	300.0M	01/06/25
Sulfate	380	mg/Kg	1	0.6	300.0M	01/06/25

*Sample was extracted using a 1:3 ratio of soil and DI water.
**Sample was extracted using 1:1 ratio with DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms(ppm)

2978 Seaborg Ave. Unit #4, Ventura, California 93003 Ph: (805)644-1095 FAX: (805)644-9947
www.capcoenv.com

Quality Control Report

Client:	Advanced Geotechnical Services	Date Sampled:	12/31/24
Sample ID:		Date Received:	12/31/24
CAS LAB NO:	241974	Date Analyzed:	01/06/25
Sample Matrix:	SOIL	Analyst:	GP

Sample Name	Qualifier	Sample Result	QC Result	Unit	Spike Level	%REC	Control Limits
Chloride (by EPA 300)							
Method Blank			BQL	mg/L			
Lab Control Sample			29.64	mg/L	30	99	90-110
241974-05 Matrix Spike		2.39	32.24	mg/L	30	100	80-120
241974-05 Matrix Spike Duplicate		2.39	32.17	mg/L	30	99	80-120
Sulfate (by EPA 300)							
Method Blank			BQL	mg/L			
Lab Control Sample			29.26	mg/L	30	98	90-110
241974-05 Matrix Spike		127.52	157.19	mg/L	30	99	80-120
241974-05 Matrix Spike Duplicate		127.52	156.50	mg/L	30	97	80-120

*ALL QC SAMPLES ARE PREPARED IN LIQUID PHASE
mg/L:Milligrams/Liter(ppm)
%Rec:Percent Recovered
BQL:Below Practical Quantitation Limit

2978 Seaborg Ave. Unit 4, Ventura, California 93003 Ph: (805)644-1095 FAX: (805)644-9947
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CHAIN OF CUSTODY RECORD

241974 1|8 1|9

CAPCO Analytical Services

2978 Seaborg Ave., Unit 4, Ventura, CA., 93003
Tel 805 644 1095 ♦ Fax 805 644 9947

CLIENT NAME:	PROJECT:
Advanced Geotechnical Services	MaulHardt 5340 Lab 1698
ADDRESS:	PHONE: 805.388.6162
5251 Verdugo Way, Suite L	FAX: 805.388.6167
Camarillo, Calif 93012	EMAIL: jbruss@advancedgeotechnical.com
PROJECT MANAGER: Brett Wanner	SAMPLER: Jim Bruss

Turn around Time

- ☐ Same Day Rush
- ☐ 24 Hour Rush
- ☐ 48 Hour Rush
- ☐ 72 Hour Rush
- ☑ Standard TAT
- ☐
- ☐

LAB ID	DATE SAMPLED	TIME SAMPLED	SMPL TYPE	SAMPLE IDENTIFICATION	# OF CONT.	Ph	Resistivity	Chloride	Sulfate
-1	12/31/24	8:45 AM	SO	B6,(0-5)	1	X	X	X	X
-2	12/31/24	8:50 AM	SO	B7,(0-5)	1	X	X	X	X
-3	12/31/24	9:00 AM	SO	B8,(0-5)	1	X	X	X	X
-4	12/31/24	9:10 AM	SO	B9,(0-5)	1	X	X	X	X
-5	12/31/24	9:20 AM	SO	B10,(0-5)	1	X	X	X	X

RELINQUISHED BY	DATE / TIME	RECEIVED BY
[illegible]	12/31/24 10:43	[illegible]
RELINQUISHED BY	DATE / TIME	RECEIVED BY
RELINQUISHED BY	DATE / TIME	RECEIVED BY

Comments

SAMPLE TYPE CODE:
AQ=Aqueous
NA= Non Aqueous
SL = Sludge
DW = Drinking Water
WW = Waste Water
RW = Rain Water
GW = Ground Water
SO = Soil
SW = Solid Waste
OL = Oil
OT = Other Matrix

SPECIAL REQUIREMENTS / BILLING INFORMATION
P.O. Number 1698-5340

COC version 042707

Appendix C

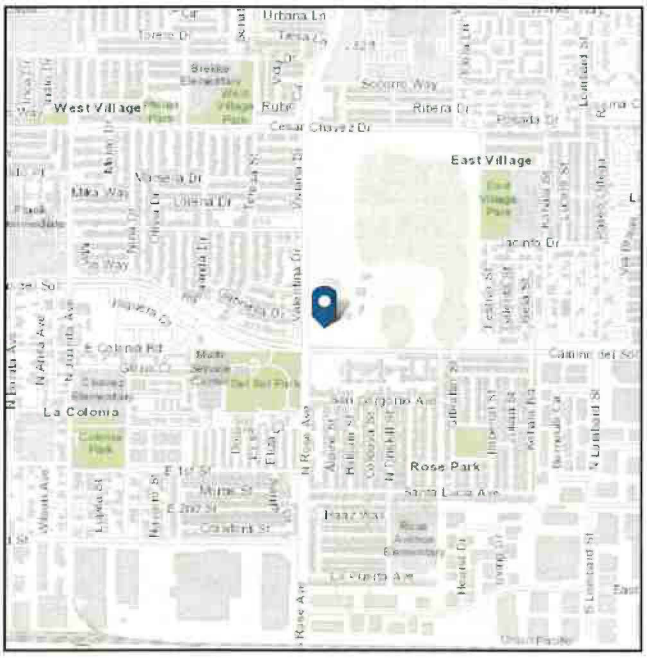
Seismicity Study

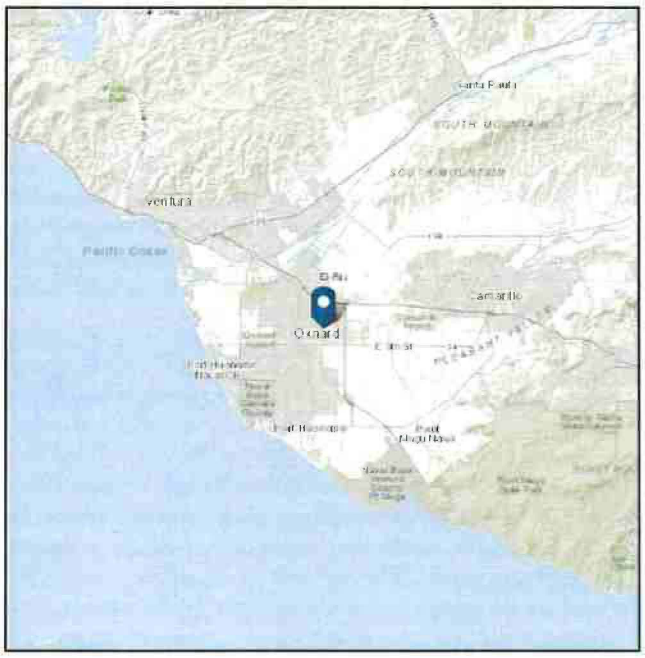
ASCE Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Latitude: 34.207
Longitude: -119.159
Elevation: 61.333525610966724 ft (NAVD 88)





ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Seismic

Site Soil Class: D - Stiff Soil

Results:

S_S :	1.744	S_{D1} :	N/A
S_1 :	0.645	T_L :	8
F_a :	1	PGA :	0.764
F_v :	N/A	PGA_M :	0.84
S_{MS} :	1.744	F_{PGA} :	1.1
S_{M1} :	N/A	I_e :	1
S_{DS} :	1.163	C_v :	1.449

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Mon Nov 25 2024

Date Source: USGS Seismic Design Maps

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE Hazard Tool.

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Please also see the new USGS Earthquake Hazard Toolbox for access to the most recent NSHMs for the conterminous U.S. and Hawaii.

Input

Edition

Dynamic: Conterminous U.S. 2014 (u...

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

34.207

Time Horizon

Return period in years

2475

Longitude

Decimal degrees, negative values for western longitudes

-119.159

Site Class

259 m/s (Site class D)

Hazard Curve

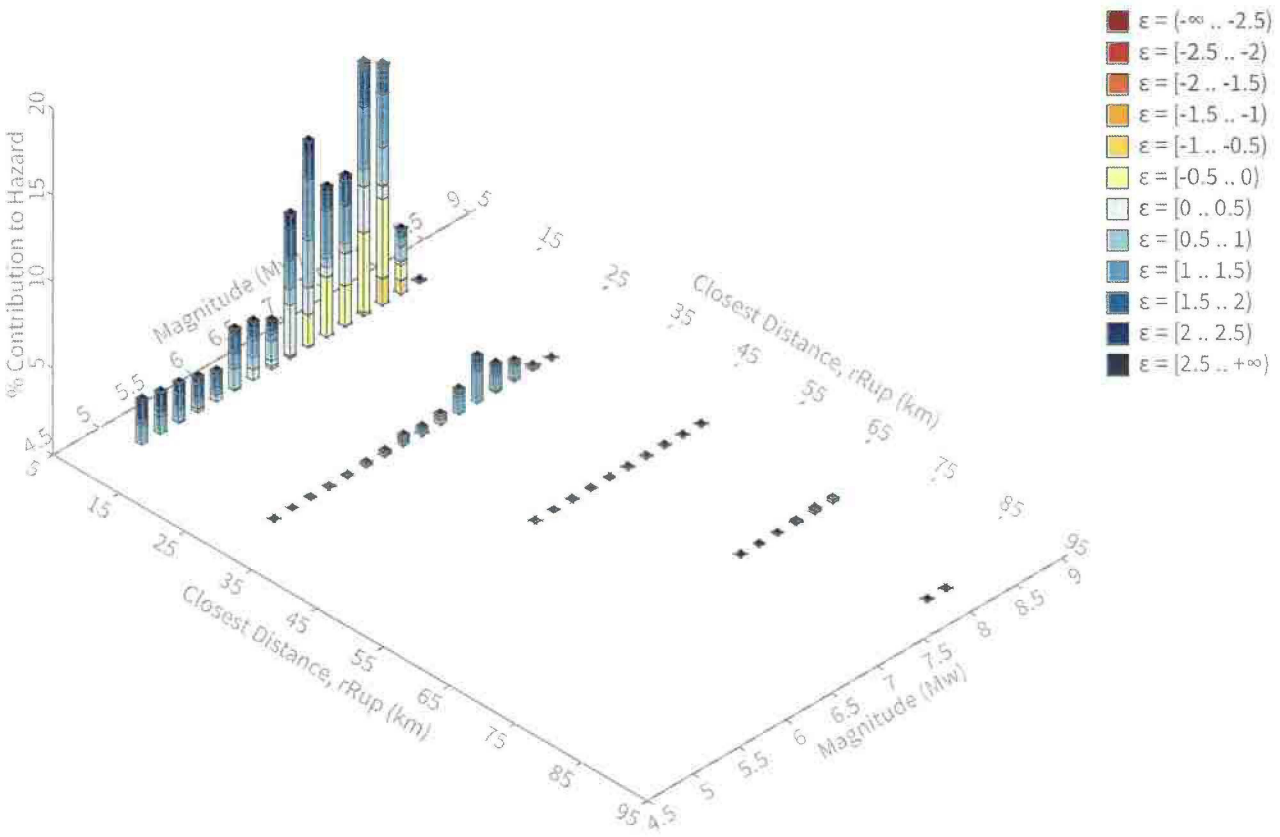
Please select “Edition”, “Location” & “Site Class” above to compute a hazard curve.

Compute Hazard Curve

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.97780446 g

Recovered targets

Return period: 2818.2266 yrs
Exceedance rate: 0.00035483307 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.09 %

Mean (over all sources)

m: 6.99
r: 10.8 km
ε_0: 0.94 σ

Mode (largest m-r bin)

m: 7.53
r: 9.23 km
ε_0: 0.57 σ
Contribution: 14.57 %

Mode (largest m-r-ε_0 bin)

m: 7.54
r: 7.69 km
ε_0: -0.27 σ
Contribution: 4.6 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM32	System							42.36
Simi-Santa Rosa [6]		5.92	6.98	0.62	119.102°W	34.222°N	71.99	9.57
Oak Ridge (Onshore) [0]		6.66	7.36	0.51	119.177°W	34.259°N	343.86	9.52
Oak Ridge (Offshore) [5]		10.81	6.87	1.01	119.273°W	34.240°N	289.40	5.29
Ventura-Pitas Point [3]		10.07	7.51	0.59	119.195°W	34.290°N	340.10	3.62
Oak Ridge (Onshore) [1]		10.01	7.55	0.63	119.113°W	34.285°N	25.96	3.62
Red Mountain [0]		20.54	7.13	1.41	119.304°W	34.347°N	319.57	1.78
Malibu Coast (Extension) alt 2 [3]		15.17	7.54	1.00	119.179°W	34.070°N	186.81	1.42
Ventura-Pitas Point [2]		10.07	7.18	0.76	119.195°W	34.290°N	340.10	1.05
UC33brAvg_FM31	System							39.27
Simi-Santa Rosa [6]		5.92	7.01	0.61	119.102°W	34.222°N	71.99	10.35
Oak Ridge (Onshore) [0]		6.66	7.43	0.48	119.177°W	34.259°N	343.86	9.66
Ventura-Pitas Point [3]		10.07	7.58	0.55	119.195°W	34.290°N	340.10	4.28
Oak Ridge (Onshore) [1]		10.01	7.65	0.59	119.113°W	34.285°N	25.96	3.40
Red Mountain [0]		20.54	7.23	1.35	119.304°W	34.347°N	319.57	2.00
Ventura-Pitas Point [2]		10.07	6.71	1.00	119.195°W	34.290°N	340.10	1.57
Channel Islands Thrust [0]		16.06	6.87	1.48	119.265°W	34.044°N	208.31	1.54
Malibu Coast (Extension) alt 1 [5]		15.16	7.32	1.10	119.172°W	34.068°N	184.43	1.12
UC33brAvg_FM31 (opt)	Grid							9.25
PointSourceFinite: -119.159, 34.238		6.03	5.70	1.31	119.159°W	34.238°N	0.00	1.42
PointSourceFinite: -119.159, 34.238		6.03	5.70	1.31	119.159°W	34.238°N	0.00	1.42
PointSourceFinite: -119.159, 34.256		7.21	5.72	1.43	119.159°W	34.256°N	0.00	1.06
PointSourceFinite: -119.159, 34.256		7.21	5.72	1.43	119.159°W	34.256°N	0.00	1.06
UC33brAvg_FM32 (opt)	Grid							9.11
PointSourceFinite: -119.159, 34.238		6.03	5.70	1.31	119.159°W	34.238°N	0.00	1.44
PointSourceFinite: -119.159, 34.238		6.03	5.70	1.31	119.159°W	34.238°N	0.00	1.44
PointSourceFinite: -119.159, 34.256		7.21	5.72	1.43	119.159°W	34.256°N	0.00	1.06
PointSourceFinite: -119.159, 34.256		7.21	5.72	1.43	119.159°W	34.256°N	0.00	1.06

Appendix D

Percolation Testing by Others

INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-1
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	3.6
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.3
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	1.60	2.45	27.60	17.40	10.20	20.40	1.67	0.80
2	30.00	1.60	2.42	27.60	17.76	9.84	19.68	1.59	0.76
3	30.00	1.60	2.40	27.60	18.00	9.60	19.20	1.55	0.74
4	30.00	1.60	2.40	27.60	18.00	9.60	19.20	1.55	0.74
5	30.00	1.60	2.39	27.60	18.12	9.48	18.96	1.53	0.73
6	30.00	1.60	2.38	27.60	18.24	9.36	18.72	1.50	0.72
7	30.00	1.60	2.38	27.60	18.24	9.36	18.72	1.50	0.72
8	30.00	1.60	2.37	27.60	18.36	9.24	18.48	1.48	0.71
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-2
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	13.1
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	11.10	13.10	24.00	0.00	24.00	144.00	20.57	9.82
2	10.00	11.10	13.10	24.00	0.00	24.00	144.00	20.57	9.82
3	10.00	11.10	12.95	24.00	1.80	22.20	133.20	17.88	8.54
4	10.00	11.10	12.90	24.00	2.40	21.60	129.60	17.05	8.14
5	10.00	11.10	12.85	24.00	3.00	21.00	126.00	16.26	7.76
6	10.00	11.10	12.80	24.00	3.60	20.40	122.40	15.49	7.40
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-3
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	2.8
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	0.80	2.40	24.00	4.80	19.20	115.20	14.05	6.71
2	10.00	0.80	1.50	24.00	15.60	8.40	50.40	4.62	2.21
3	10.00	0.80	1.39	24.00	16.92	7.08	42.48	3.78	1.81
4	10.00	0.80	1.37	24.00	17.16	6.84	41.04	3.64	1.74
5	10.00	0.80	1.35	24.00	17.40	6.60	39.60	3.49	1.67
6	10.00	0.80	1.33	24.00	17.64	6.36	38.16	3.34	1.60
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-4
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	5.0
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	3.00	4.80	24.00	2.40	21.60	129.60	17.05	8.14
2	10.00	3.00	4.70	24.00	3.60	20.40	122.40	15.49	7.40
3	10.00	3.00	4.55	24.00	5.40	18.60	111.60	13.37	6.38
4	10.00	3.00	4.47	24.00	6.36	17.64	105.84	12.32	5.88
5	10.00	3.00	4.36	24.00	7.68	16.32	97.92	10.98	5.24
6	10.00	3.00	4.29	24.00	8.52	15.48	92.88	10.17	4.86
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-5
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	16.2
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	14.20	16.05	24.00	1.80	22.20	133.20	17.88	8.54
2	10.00	14.20	15.97	24.00	2.76	21.24	127.44	16.57	7.91
3	10.00	14.20	15.98	24.00	2.64	21.36	128.16	16.73	7.99
4	10.00	14.20	16.02	24.00	2.16	21.84	131.04	17.38	8.30
5	10.00	14.20	16.00	24.00	2.40	21.60	129.60	17.05	8.14
6	10.00	14.20	15.99	24.00	2.52	21.48	128.88	16.89	8.06
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-6
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	4.9
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	2.90	4.79	24.00	1.32	22.68	136.08	18.56	8.86
2	10.00	2.90	4.53	24.00	4.44	19.56	117.36	14.47	6.91
3	10.00	2.90	4.40	24.00	6.00	18.00	108.00	12.71	6.07
4	10.00	2.90	4.28	24.00	7.44	16.56	99.36	11.21	5.35
5	10.00	2.90	4.28	24.00	7.44	16.56	99.36	11.21	5.35
6	10.00	2.90	4.26	24.00	7.68	16.32	97.92	10.98	5.24
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-7
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	4.9
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.4
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	2.90	3.25	28.20	24.00	4.20	25.20	1.79	0.86
2	30.00	2.90	3.95	28.20	15.60	12.60	25.20	2.11	1.01
3	30.00	2.90	3.85	28.20	16.80	11.40	22.80	1.86	0.89
4	30.00	2.90	3.75	28.20	18.00	10.20	20.40	1.63	0.78
5	30.00	2.90	3.70	28.20	18.60	9.60	19.20	1.51	0.72
6	30.00	2.90	3.65	28.20	19.20	9.00	18.00	1.40	0.67
7	30.00	2.90	3.60	28.20	19.80	8.40	16.80	1.29	0.62
8	30.00	2.90	3.61	28.20	19.68	8.52	17.04	1.31	0.63
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-8
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	4.9
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	2.90	3.95	24.00	11.40	12.60	25.20	2.56	1.22
2	30.00	2.90	3.87	24.00	12.36	11.64	23.28	2.31	1.10
3	30.00	2.90	3.80	24.00	13.20	10.80	21.60	2.10	1.00
4	30.00	2.90	3.78	24.00	13.44	10.56	21.12	2.04	0.97
5	30.00	2.90	3.76	24.00	13.68	10.32	20.64	1.98	0.95
6	30.00	2.90	3.74	24.00	13.92	10.08	20.16	1.92	0.92
7	30.00	2.90	3.71	24.00	14.28	9.72	19.44	1.84	0.88
8	30.00	2.90	3.68	24.00	14.64	9.36	18.72	1.76	0.84
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-9
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	5.1
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.2
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	3.10	3.50	26.40	21.60	4.80	9.60	0.74	0.35
2	30.00	3.10	3.43	26.40	22.44	3.96	7.92	0.60	0.29
3	30.00	3.10	3.42	26.40	22.56	3.84	7.68	0.58	0.28
4	30.00	3.10	3.40	26.40	22.80	3.60	7.20	0.54	0.26
5	30.00	3.10	3.40	26.40	22.80	3.60	7.20	0.54	0.26
6	30.00	3.10	3.38	26.40	23.04	3.36	6.72	0.50	0.24
7	30.00	3.10	3.37	26.40	23.16	3.24	6.48	0.48	0.23
8	30.00	3.10	3.35	26.40	23.40	3.00	6.00	0.45	0.21
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-10
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	14.6
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	12.60	14.10	24.00	6.00	18.00	36.00	4.24	2.02
2	30.00	12.60	14.11	24.00	5.88	18.12	36.24	4.28	2.04
3	30.00	12.60	14.08	24.00	6.24	17.76	35.52	4.15	1.98
4	30.00	12.60	14.04	24.00	6.72	17.28	34.56	3.98	1.90
5	30.00	12.60	14.01	24.00	7.08	16.92	33.84	3.86	1.84
6	30.00	12.60	13.97	24.00	7.56	16.44	32.88	3.70	1.77
7	30.00	12.60	13.93	24.00	8.04	15.96	31.92	3.54	1.69
8	30.00	12.60	13.90	24.00	8.40	15.60	31.20	3.43	1.64
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-11
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	4.8
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	2.80	4.71	24.00	1.08	22.92	45.84	6.31	3.01
2	10.00	2.80	3.78	24.00	12.24	11.76	70.56	7.01	3.35
3	10.00	2.80	3.73	24.00	12.84	11.16	66.96	6.56	3.13
4	10.00	2.80	3.64	24.00	13.92	10.08	60.48	5.77	2.76
5	10.00	2.80	3.56	24.00	14.88	9.12	54.72	5.10	2.44
6	10.00	2.80	3.52	24.00	15.36	8.64	51.84	4.78	2.28
7	10.00	2.80	3.48	24.00	15.84	8.16	48.96	4.47	2.13
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-12
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	5.1
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.1
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	3.10	3.87	25.20	15.96	9.24	18.48	1.64	0.78
2	30.00	3.10	3.50	25.20	20.40	4.80	9.60	0.77	0.37
3	30.00	3.10	3.48	25.20	20.64	4.56	9.12	0.73	0.35
4	30.00	3.10	3.47	25.20	20.76	4.44	8.88	0.71	0.34
5	30.00	3.10	3.45	25.20	21.00	4.20	8.40	0.67	0.32
6	30.00	3.10	3.43	25.20	21.24	3.96	7.92	0.63	0.30
7	30.00	3.10	3.41	25.20	21.48	3.72	7.44	0.59	0.28
8	30.00	3.10	3.39	25.20	21.72	3.48	6.96	0.55	0.26
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-13
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	9.1
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	20.00	7.10	9.10	24.00	0.00	24.00	72.00	10.29	4.91
2	30.00	7.10	8.80	24.00	3.60	20.40	40.80	5.16	2.47
3	30.00	7.10	8.70	24.00	4.80	19.20	38.40	4.68	2.24
4	30.00	7.10	8.65	24.00	5.40	18.60	37.20	4.46	2.13
5	30.00	7.10	8.55	24.00	6.60	17.40	34.80	4.02	1.92
6	30.00	7.10	8.53	24.00	6.84	17.16	34.32	3.94	1.88
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-14
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	8.3
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	6.30	7.30	24.00	12.00	12.00	72.00	7.20	3.44
2	10.00	6.30	7.20	24.00	13.20	10.80	64.80	6.29	3.00
3	10.00	6.30	7.05	24.00	15.00	9.00	54.00	5.02	2.40
4	10.00	6.30	7.01	24.00	15.48	8.52	51.12	4.70	2.25
5	10.00	6.30	7.03	24.00	15.24	8.76	52.56	4.86	2.32
6	10.00	6.30	7.01	24.00	15.48	8.52	51.12	4.70	2.25
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-15
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	8.3
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	6.30	7.60	24.00	8.40	15.60	93.60	10.29	4.91
2	10.00	6.30	7.60	24.00	8.40	15.60	93.60	10.29	4.91
3	10.00	6.30	7.53	24.00	9.24	14.76	88.56	9.51	4.54
4	10.00	6.30	7.45	24.00	10.20	13.80	82.80	8.67	4.14
5	10.00	6.30	7.40	24.00	10.80	13.20	79.20	8.16	3.90
6	10.00	6.30	7.36	24.00	11.28	12.72	76.32	7.77	3.71
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-16
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	18.8
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	16.80	18.50	24.00	3.60	20.40	122.40	15.49	7.40
2	10.00	16.80	18.52	24.00	3.36	20.64	123.84	15.80	7.54
3	10.00	16.80	18.50	24.00	3.60	20.40	122.40	15.49	7.40
4	10.00	16.80	18.51	24.00	3.48	20.52	123.12	15.64	7.47
5	10.00	16.80	18.50	24.00	3.60	20.40	122.40	15.49	7.40
6	10.00	16.80	18.50	24.00	3.60	20.40	122.40	15.49	7.40
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-17
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	8.3
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	6.30	8.25	24.00	0.60	23.40	140.40	19.64	9.38
2	10.00	6.30	8.14	24.00	1.92	22.08	132.48	17.71	8.46
3	10.00	6.30	8.03	24.00	3.24	20.76	124.56	15.95	7.61
4	10.00	6.30	7.95	24.00	4.20	19.80	118.80	14.76	7.05
5	10.00	6.30	7.90	24.00	4.80	19.20	115.20	14.05	6.71
6	10.00	6.30	7.85	24.00	5.40	18.60	111.60	13.37	6.38
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Appendix E

Liquefaction and Dynamic Dry Settlement Evaluation

(SEPARATE DOCUMENT)

Appendix F
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Appendix G

Report Figures and Plates

Reference: Google Earth 2025

N

No Scale

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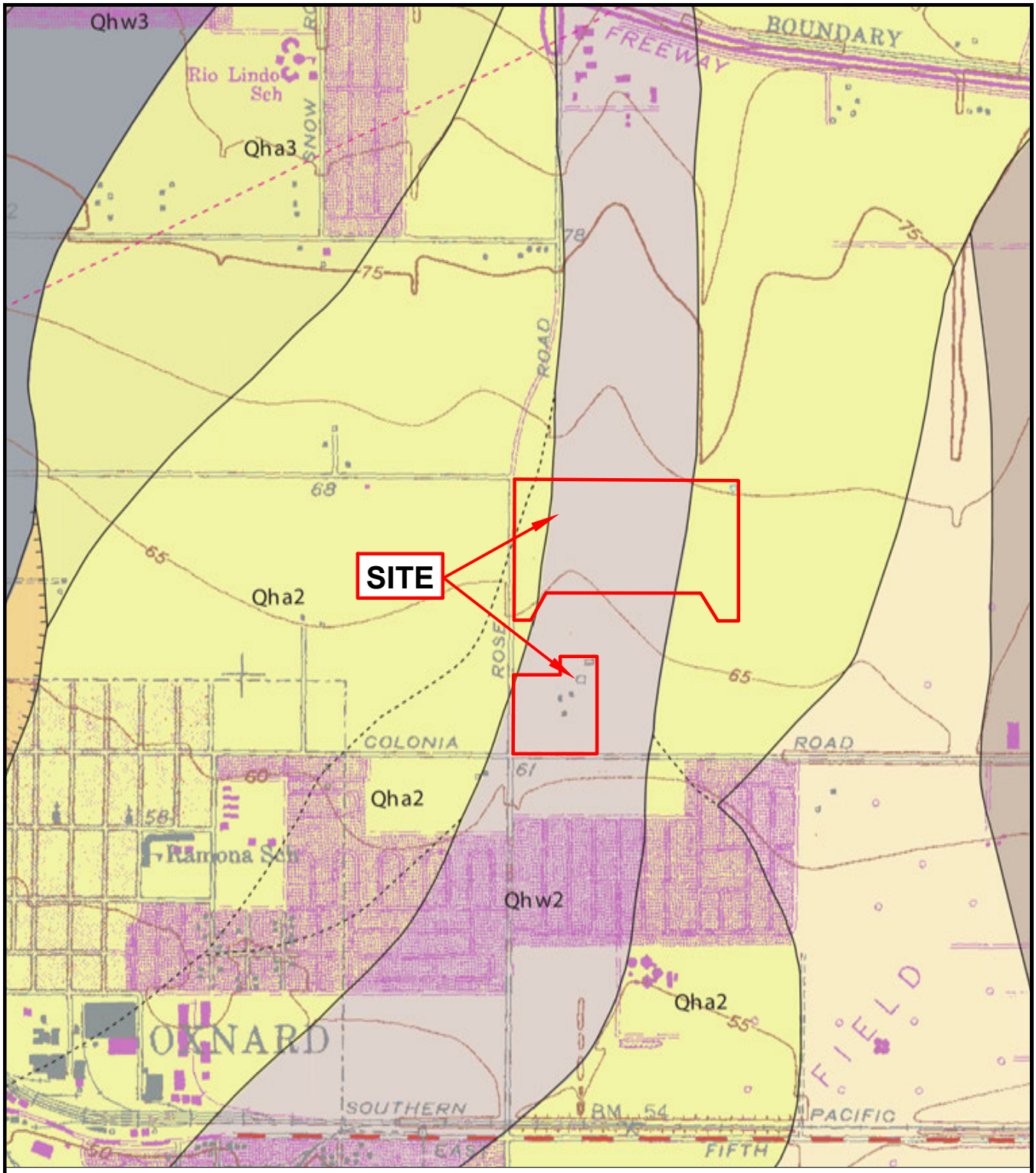
SITE LOCATION MAP

Maulhardt - Stiles
Proposed Tentative Tract 6059
Oxnard, California

Client # 5340
Report # 11337

FIGURE 1



Reference: USGS (2003), Geologic Map of the Oxnard 7.5-Minute Quadrangle, Ventura County, California

N

Scale: 1" = $\frac{1}{4}$ mile

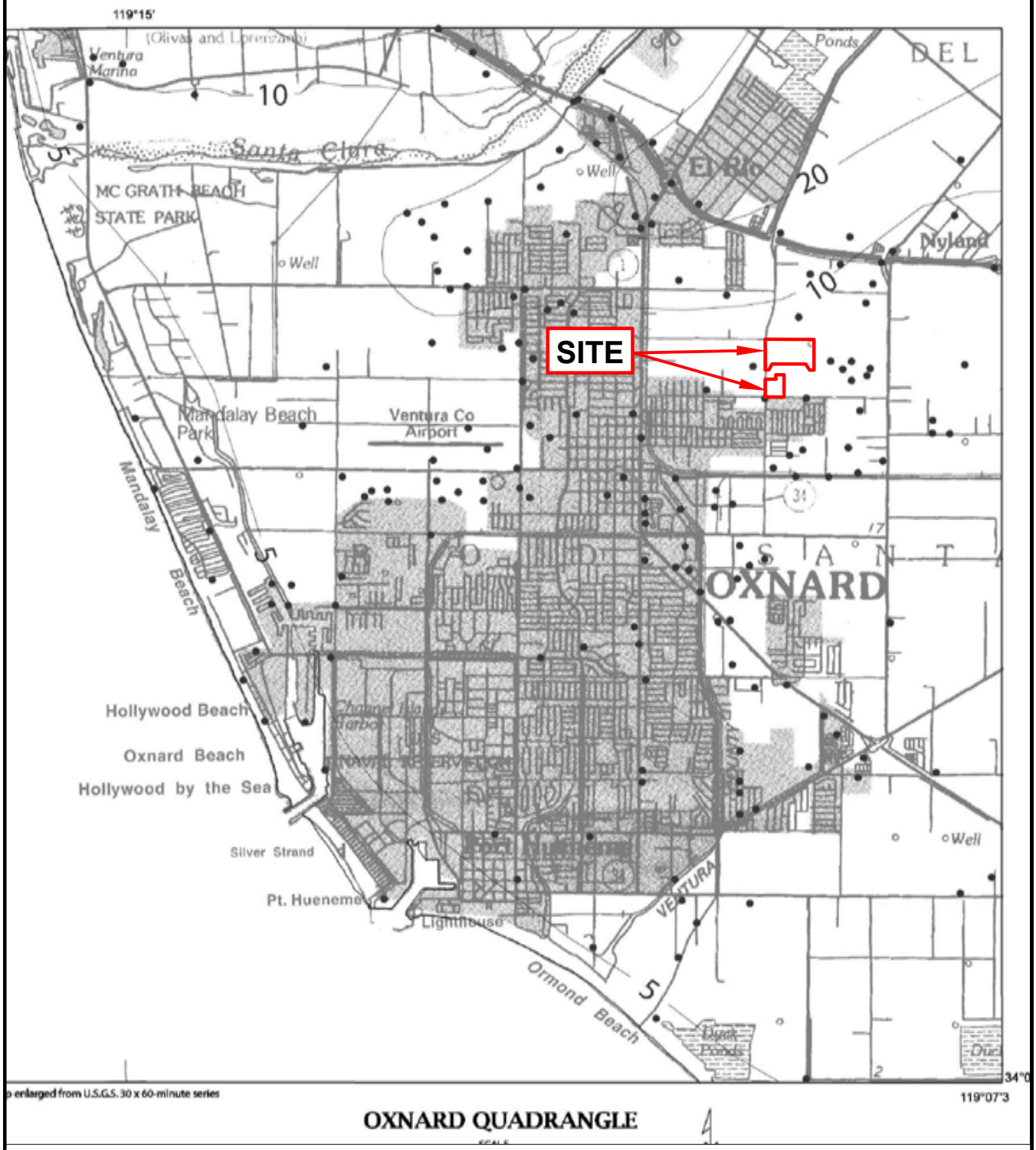
Advanced Geotechnical Services

USGS REGIONAL GEOLOGICAL MAP

Maulhardt - Stiles
Proposed Tentative Tract 6059
Oxnard, California

Client # 5340
Report # 11337

FIGURE 2



OXNARD QUADRANGLE

Reference: CGS (2002), Seismic Hazard Zone Report SHZR 052

Scale: 1" = 1 mile

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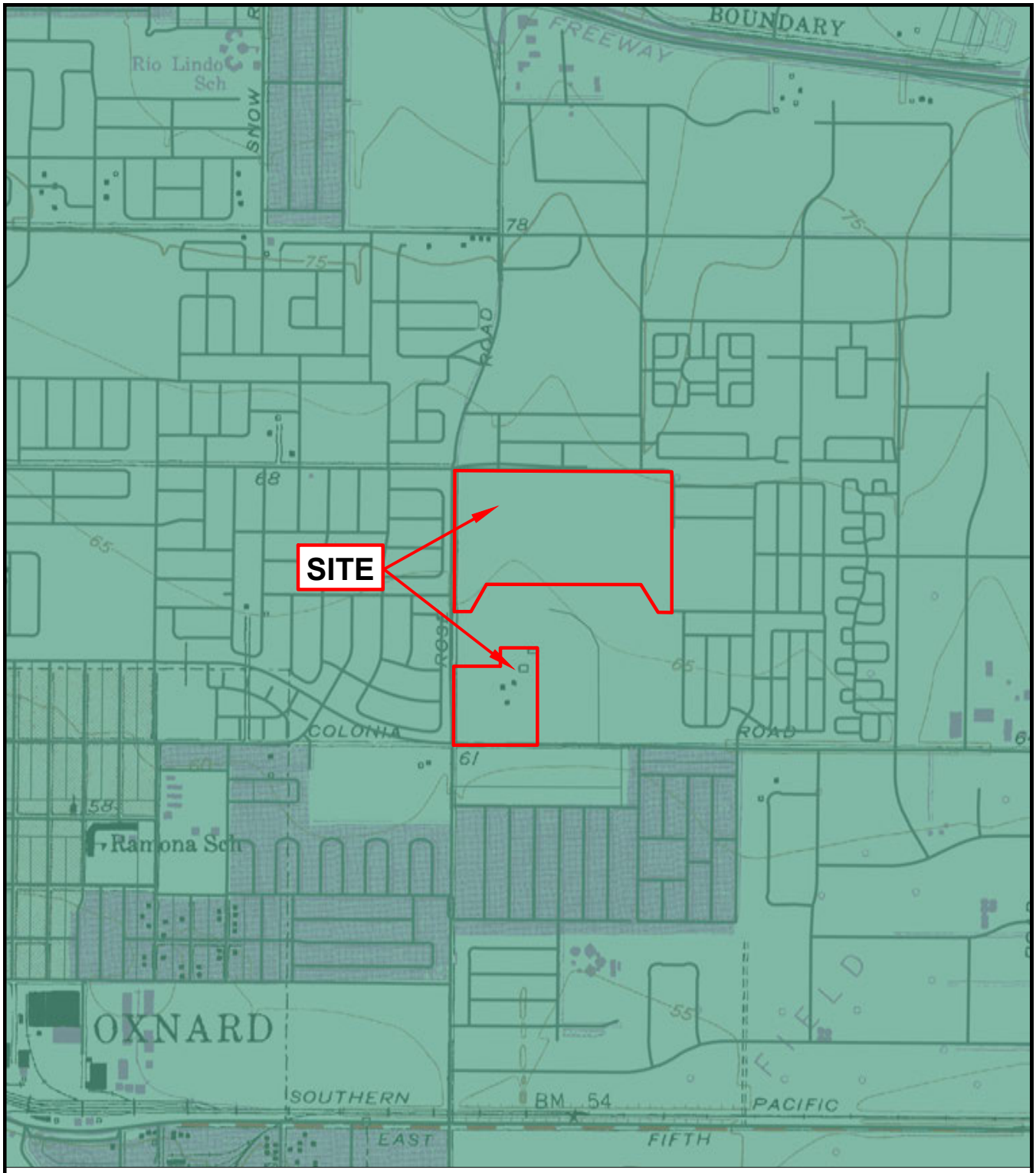
DEPTH TO HISTORICALLY HIGH GROUNDWATER MAP

Maulhardt - Stiles
Proposed Tentative Tract 6059
Oxnard, California

Client # 5340
Report # 11337

FIGURE 3



Reference: CGS (2002), State of California Seismic Hazard Zones Map of the Oxnard 7.5 Minute Quadrange, Ventura County, California

N

Scale: 1" = $\frac{1}{4}$ mile

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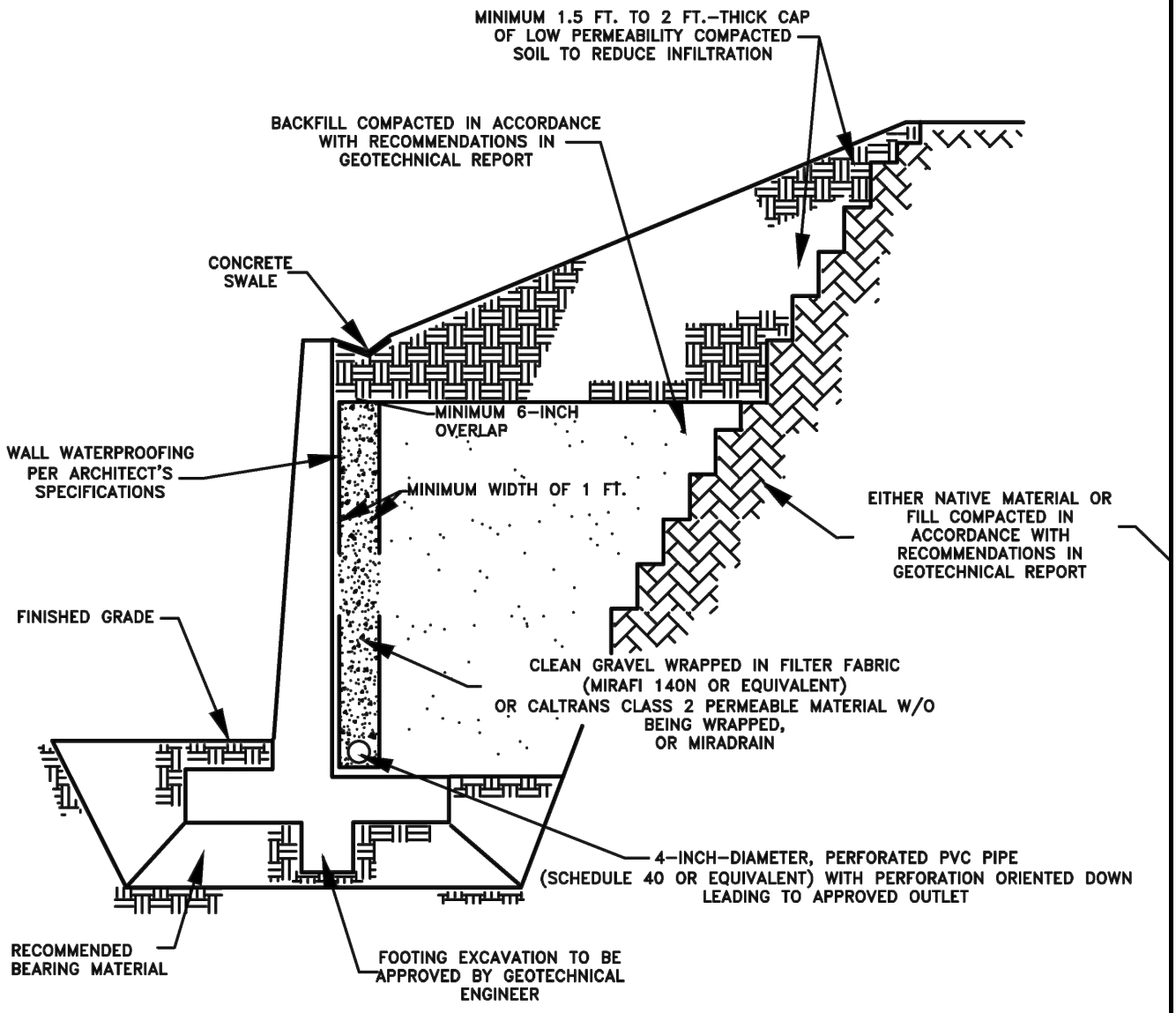
EARTHQUAKE FAULT AND SEISMIC HAZARD ZONES MAP

Maulhardt - Stiles
Proposed Tentative Tract 6059
Oxnard, California

Client # 5340
Report # 11337

FIGURE 4



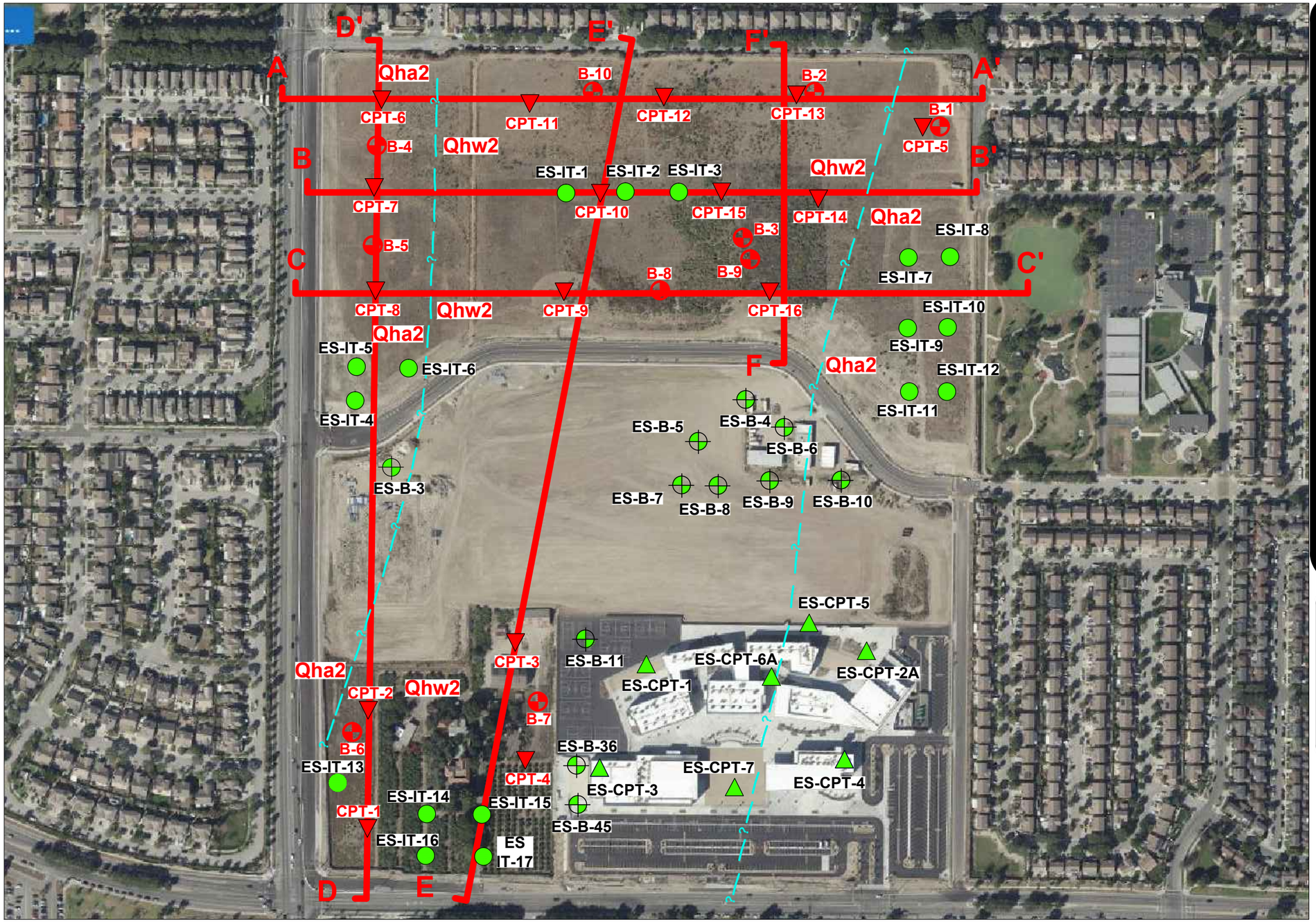
Advanced Geotechnical Services

TYPICAL RETAINING WALL DRAINAGE DETAIL

Maulhardt - Stiles
Proposed Tentative Tract 6059
Oxnard, California

Client # 5340
Report # 11337

FIGURE 5



Reference: Google Earth Image (2025)

HISTORICAL SITE PLAN
January 2023

300' 0' 300' 600'

SCALE: 1" = 300'

EXPLANATION

- CPT-16 — Approximate Location of CPT Sounding (AGS 2024)
- B-10 — Approximate Location of Small Diameter Hollow-Stem Auger Boring (AGS 2024)
- ES-B-45 — Approximate Location of Small Diameter Hollow-Stem Auger Boring (Earth Systems 2018)
- ES-IT-17 — Approximate Location of Small Diameter Percolation Test Boring (Earth Systems, 2022)
- ES-CPT-7 — Approximate Location of CPT (Earth Systems, 2018)
- Qhw2 — Quaternary Holocene Wash Deposits
- Qha2 — Quaternary Holocene Alluvial Deposits
- Geologic Contact – dashed where approximate; queried where uncertain
- F F' — Geotechnical Cross Section

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Camarillo, California 93012
Office (805) 388-6162/Fax (805) 388-6167

MAULHARDT-STILES FAMILIES

Preliminary Geotechnical Feasibility Study
Proposed Tentative Tract No. 6059
Oxnard, California

Client No.	5340	PLATE
Report No.	11337	1
Date	2/5/2025	
Drawing No.	11337cn5340	

EXPLANATION

- CPT-16 — Approximate Location of CPT Sounding (AGS 2024)
- B-10 — Approximate Location of Small Diameter Hollow-Stem Auger Boring (AGS 2024)
- ES-B-45 — Approximate Location of Small Diameter Hollow-Stem Auger Boring (Earth Systems 2018)
- ES-IT-17 — Approximate Location of Small Diameter Percolation Test Boring (Earth Systems, 2022)
- ES-CPT-7 — Approximate Location of CPT (Earth Systems, 2018)
- Qhw2 — Quaternary Holocene Wash Deposits
- Qha2 — Quaternary Holocene Alluvial Deposits
- -?— —?— — Geologic Contact – dashed where approximate; queried where uncertain
- F F' — Geotechnical Cross Section

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MAULHARDT-STILES FAMILIES

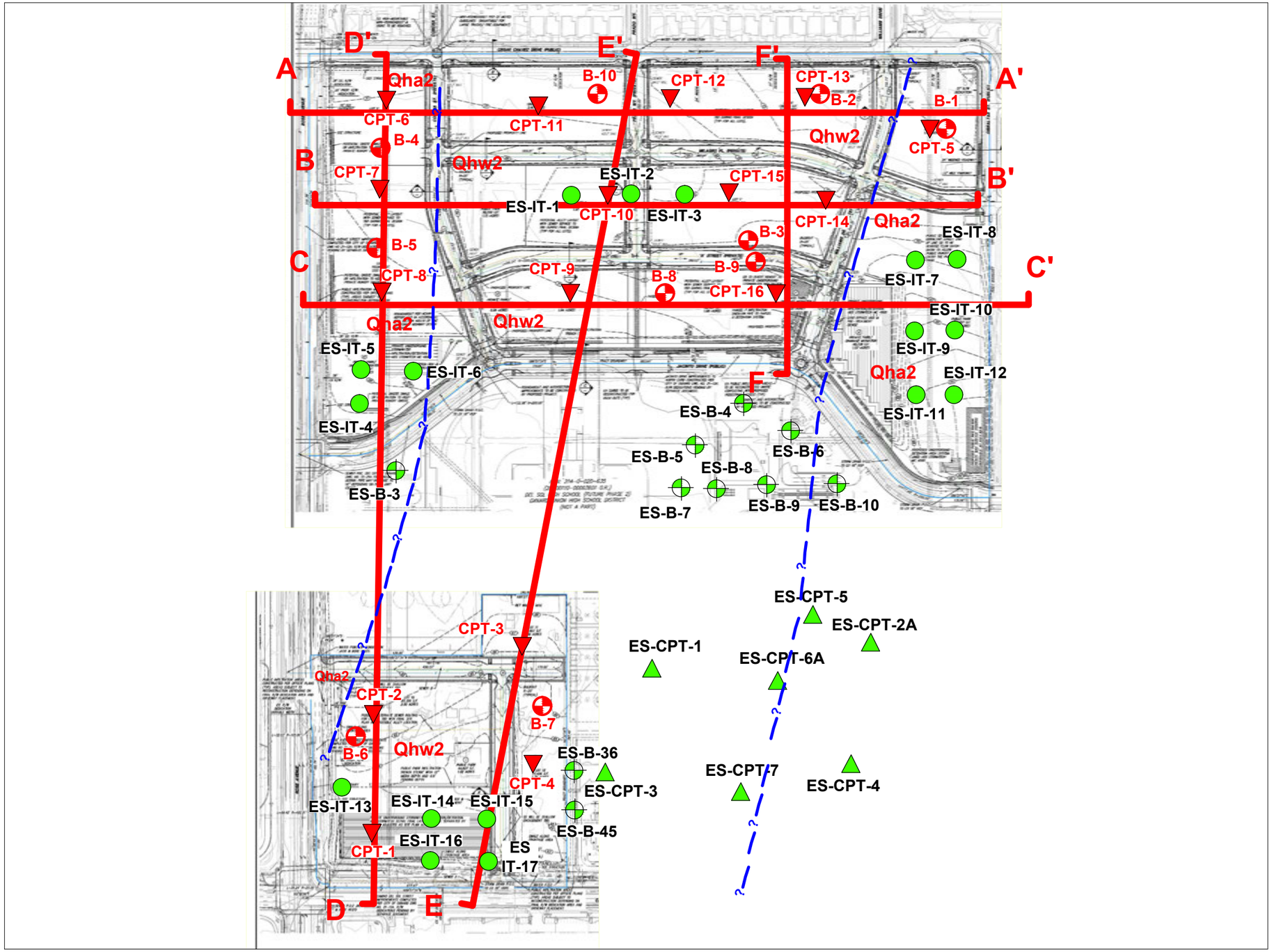
Preliminary Geotechnical Feasibility Study
Proposed Tentative Tract No. 6059
Oxnard, California

Reference: Parkstone Companies, Received September 10, 2024

PROPOSED SITE PLAN

300' 0' 300' 600'
SCALE: 1" = 300'

Client No.	5340	PLATE 2
Report No.	11337	
Date	2/5/2025	
Drawing No.	11337cn5340	



Reference: Jensen Design & Survey, Inc., Tentative Tract 6059 Preliminary Grading Plan, Dated April 8, 2024

PROPOSED GRADING PLAN

300' 0' 300' 600'

SCALE: 1" = 300'

EXPLANATION

- CPT-16 — Approximate Location of CPT Sounding (AGS 2024)
- B-10 — Approximate Location of Small Diameter Hollow-Stem Auger Boring (AGS 2024)
- ES-B-45 — Approximate Location of Small Diameter Hollow-Stem Auger Boring(Earth Systems 2018)
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- Qhw2 — Quaternary Holocene Wash Deposits
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- F F' — Geotechnical Cross Section

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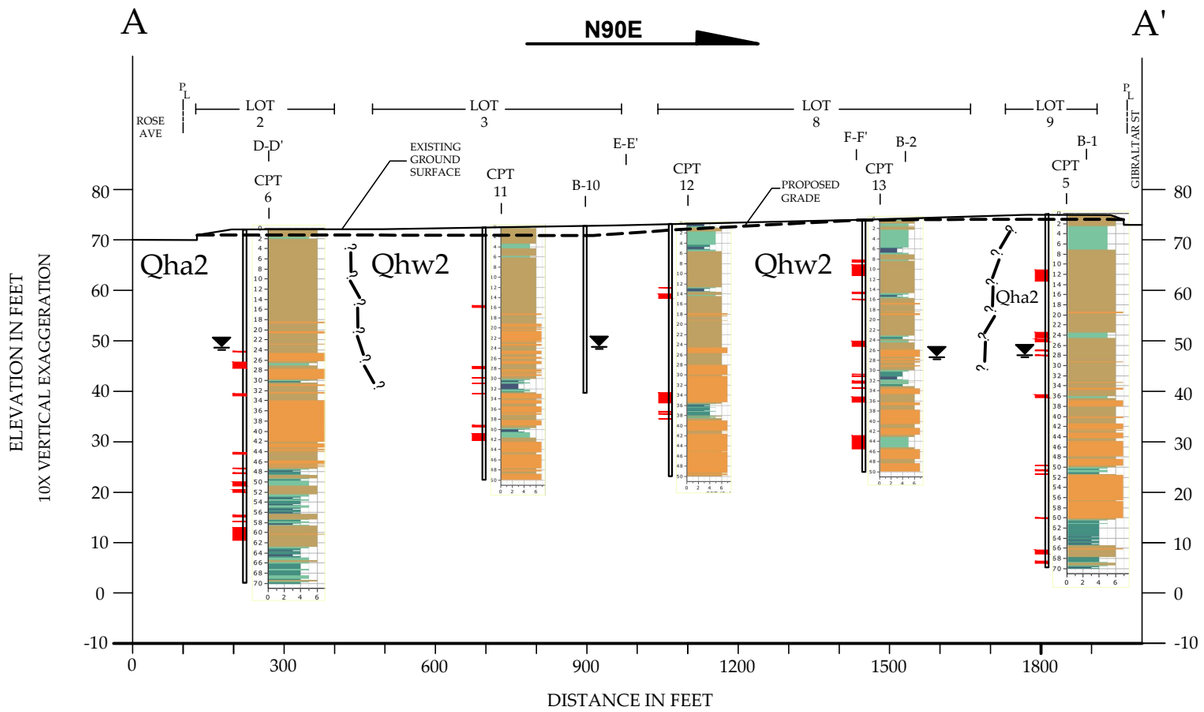
MAULHARDT-STILES FAMILIES

Preliminary Geotechnical Feasibility Study
Proposed Tentative Tract No. 6059
Oxnard, California

Client No.	5340	PLATE 3
Report No.	11337	
Date	2/5/2025	
Drawing No.	11337cn5340	



CROSS SECTIONS
A-A' & B-B'

300' 0' 300' 600'

HORIZONTAL SCALE: 1" = 300'

EXPLANATION

Qhw2 — Quaternary Holocene Wash Deposit

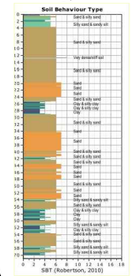
Qha2 — Quaternary Holocene Alluvial Deposits

Geologic Contact – dashed where approximate; queried where uncertain

Thickness of Liquefiable Layers

Groundwater Surface encountered at time of exploration

CPT 16



Cone Penetrometer Test (CPT) sounding (AGS, 2024) Soil Behavior Type Profile

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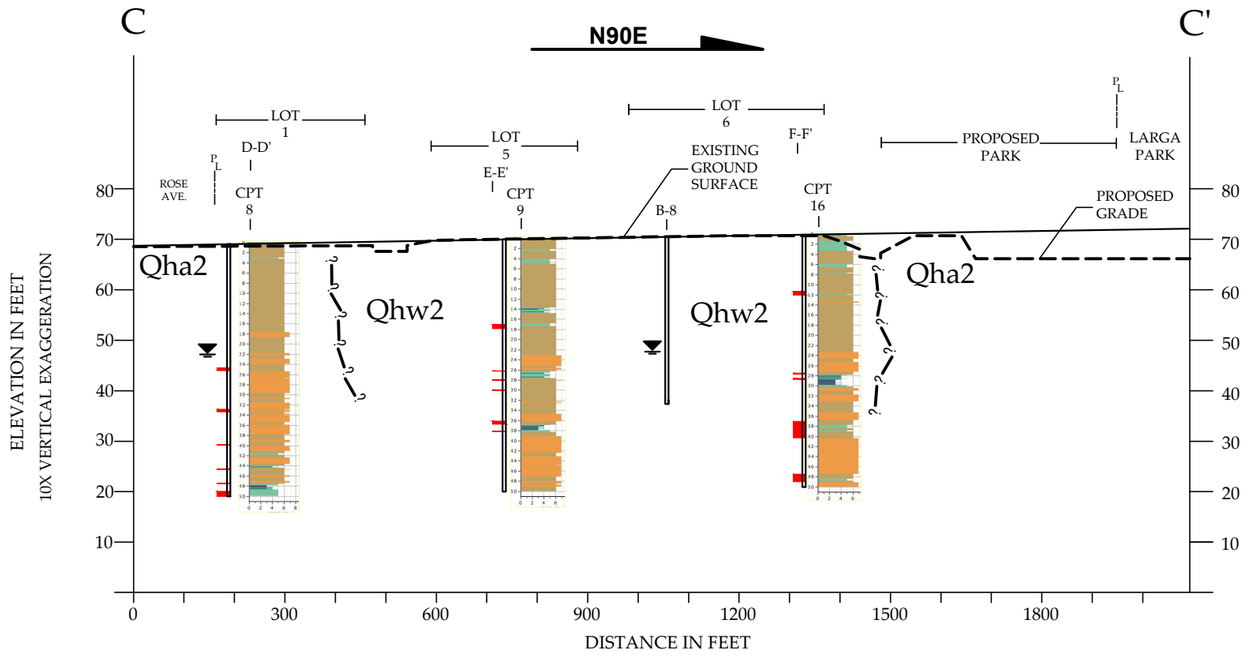
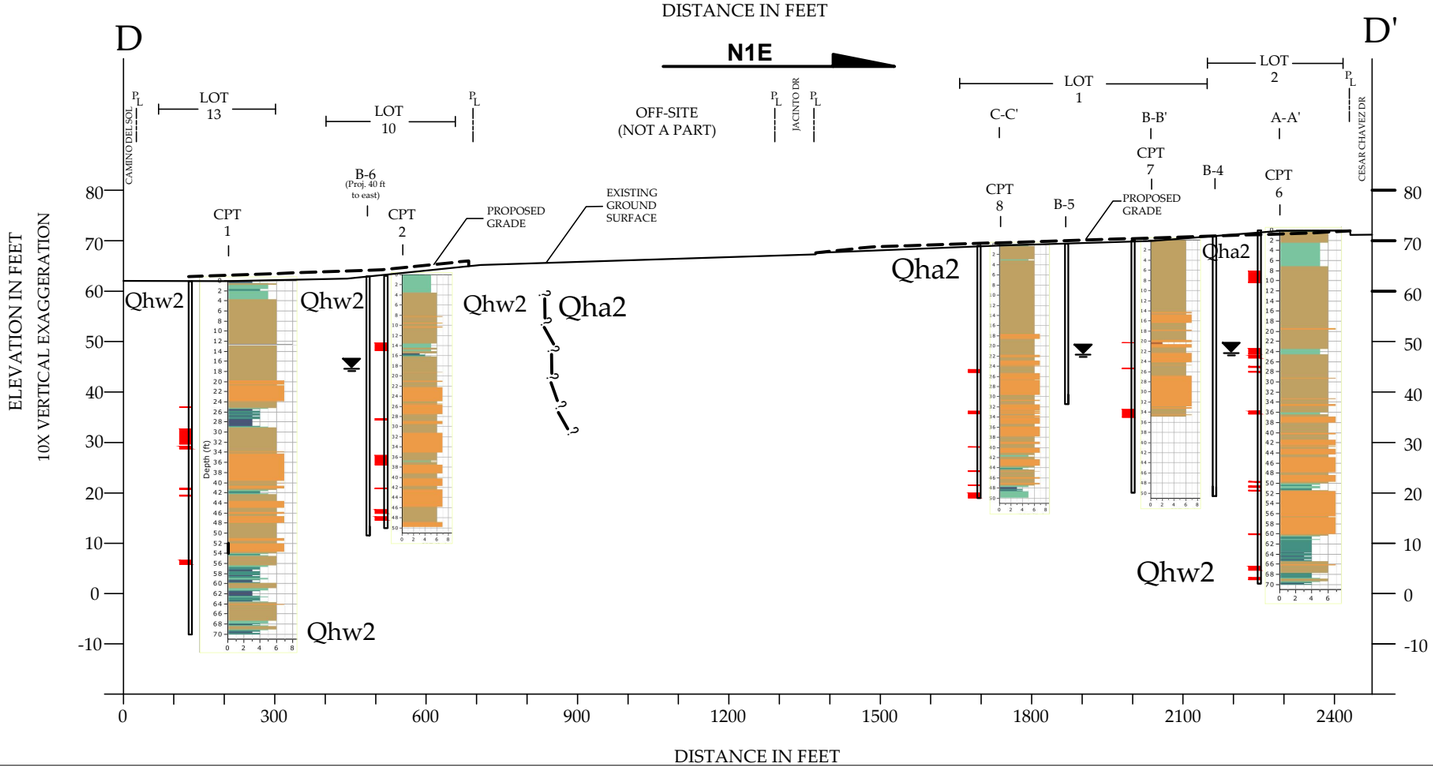
MAULHARDT-STILES FAMILIES

Preliminary Geotechnical Feasibility Study
Proposed Tentative Tract No. 6059
Oxnard, California

Client No.	5340
Report No.	11337
Date	2/5/2025
Drawing No.	11337cn5340

PLATE 4





CROSS SECTIONS
C-C' & D-D'

300' 0' 300' 600'

HORIZONTAL SCALE: 1" = 300'

EXPLANATION

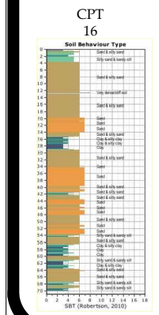
Qhw2 Quaternary Holocene Wash Deposit

Qha2 Quaternary Holocene Alluvial Deposits

Geologic Contact – dashed where approximate; queried where uncertain

Thickness of Liquefiable Layers

Groundwater Surface encountered at time of exploration



Cone Penetrometer Test (CPT) sounding (AGS, 2024) Soil Behavior Type Profile

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MAULHARDT-STILES FAMILIES

Preliminary Geotechnical Feasibility Study
Proposed Tentative Tract No. 6059
Oxnard, California

Client No.	5340	PLATE 5
Report No.	11337	
Date	2/5/2025	
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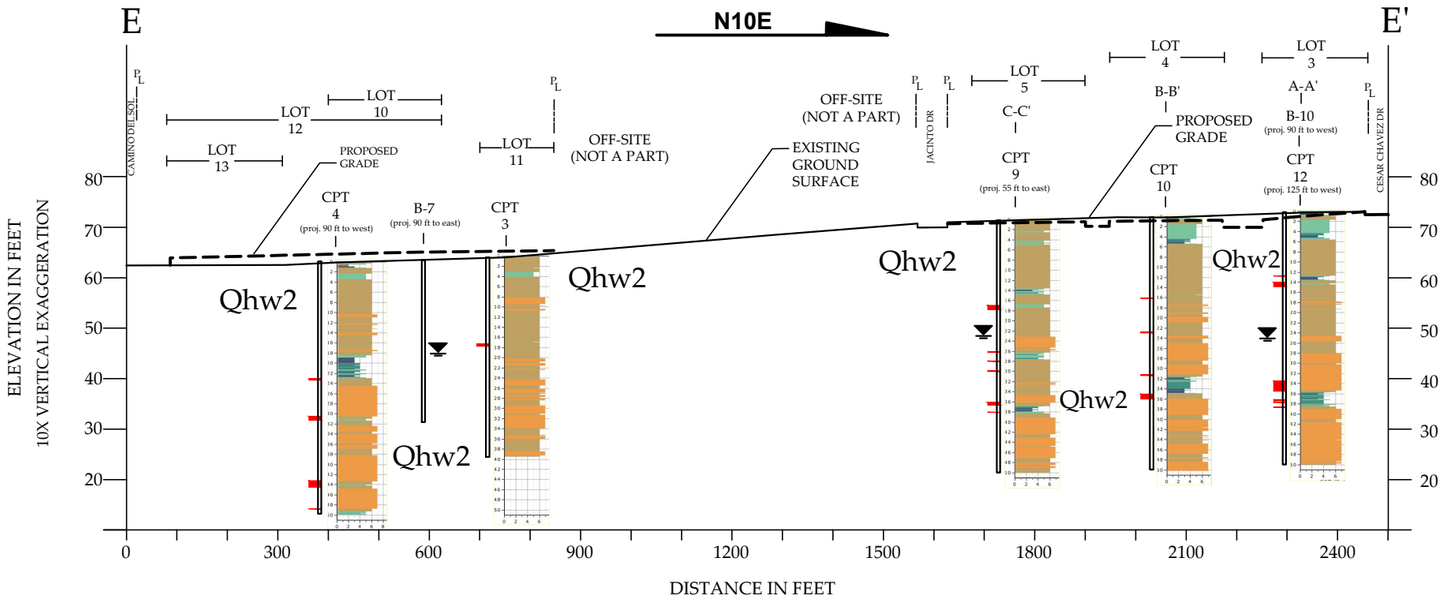
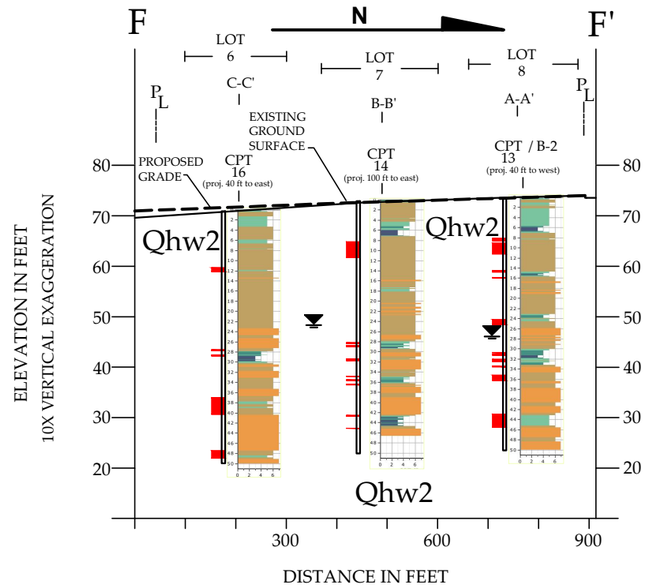




CROSS SECTIONS
E-E' & F-F'

300' 0' 300' 600'

HORIZONTAL SCALE: 1" = 300'

EXPLANATION

Qhw2 Quaternary Holocene Wash Deposit

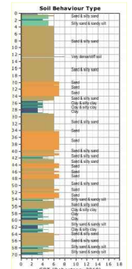
Qha2 Quaternary Holocene Alluvial Deposits

Geologic Contact – dashed where approximate; queried where uncertain

Thickness of Liquefiable Layers

Groundwater Surface encountered at time of exploration

CPT 16



Cone Penetrometer Test (CPT) sounding (AGS, 2024) Soil Behavior Type Profile

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MAULHARDT-STILES FAMILIES

Preliminary Geotechnical Feasibility Study
Proposed Tentative Tract No. 6059
Oxnard, California

Client No.	5340
Report No.	11337
Date	2/5/2025
Drawing No.	11337cn5340

PLATE 6

APPENDIX M

Evaluation of Risk Potential

EVALUATION OF RISK POTENTIAL

Maulhardt Stiles Property
Camino Del Sol
Oxnard, California

Prepared For:

Parkstone Companies
860 Hampshire Road, Suite U
Westlake Village, California 91361

Prepared By:

TRAK Environmental Group, Inc.
1595 E. Thompson Boulevard
Ventura, California 93001

January 24, 2025

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Robert Cashier MS, CPSS — January 24, 2025

Date

Bradford S. Newman PG, CHG — January 24, 2025

Date

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A Analytical Detections, OCP Analytes
B Estimated Risks (Maximum Concentrations)
C Estimated Risks (95% UCL)
D EDR Radius Map Report

TABLES

1 Soil Analytical Results (OCP)
2 Soil Analytical Results (Arsenic)

FIGURES

1 Site Location Map
2 Soil Sample Locations
3 Composite Soil Sample Locations, Toxaphene Concentrations
4 Discrete Soil Sample Locations, Arsenic Concentrations

APPENDICES

Appendix A Standard Operating Procedures
Appendix B Laboratory Reports and Chain of Custody Documentation
Appendix C ProUCL Documentation
Appendix D EDR Radius Map Report

1.0 INTRODUCTION

This Evaluation of Risk Potential (Report) has been prepared by TRAK Environmental Group, Inc., (TRAK) on behalf of Parkstone Companies for the Maulhardt Stiles Property located on Camino Del Sol in Oxnard, California.

1.1 Objective and Investigation Overview

The objective of this investigation was to evaluate site data to determine if there is a potential for a significant hazard to the public due to existing contamination of soil or groundwater. The investigation included evaluation of. previous assessments conducted at the High School and Ranch Complex sites, as well as additional soil sampling conducted at the North Parcel site (APN 214-0-020-615) to augment the previous sampling results, as well as an updated records search to confirm the subject sites are not included as a hazardous materials site on available environmental databases that could indicate the presence of a significant hazard to the public or environment.

1.2 Organization of the Report

This Report is organized in the following manner:

- Section 1 – Introduction
- Section 2 – Evaluation of Previous Assessment
- Section 3 – North Parcel Soil Sampling, Risk Characterization
- Section 4 – Environmental Database Review
- Section 5 – Discussion
- Section 6 – References

The Report includes several figures and tables. Figures 1 and 2 provide site vicinity, depiction of site features and sample locations, Figure 3 depicts composite soil sample locations with annotated sample results (toxaphene), and Figure 4 depicts discrete soil sample locations with annotated sample results (arsenic). Table 1 provides the soil analytical results for organochlorine pesticide (OCP) analytes, and Table 2 for arsenic. Tables A through C are included in text of the Report, and include: Analytical Detections (Table A), Estimated Risks, Maximum Concentrations (Table B), and Estimated Risks, 95% upper confidence limit (UCL; see Table C).

Additional information is presented in several appendices. Appendix A is Standard Operating Procedures, Appendix B includes the laboratory analytical results and chains of custody, Appendix C includes ProUCL Documentation, and Appendix D includes copy of EDR Radius Map Report.

1.3 Site Location and Description

The Maulhardt Stiles Property comprises an approximately 108-acre parcel located on the east side of N. Rose Avenue, between Cesar Chavez Drive (north) and Camino del Sol (south), in Oxnard, California (Figure 1). The property, as currently configured, is comprised of three parcels, including the Del Sol High School parcel (52.52 acres) located at 1975 Camino Del Sol (designated as the High School site), the Maulhardt Ranch residential and farmyard parcel (11.31 acres) in southwest quadrant of property at corner of N. Rose Avenue and Camino Del Sol (designated as the Ranch Complex site, and the undeveloped parcel (44.21 acres) north of the High School site (designated as the North Parcel site).

2.0 EVALUATION OF PREVIOUS SITE ASSESSMENT

This section provides a brief overview of assessment conducted previously at the High School site in 2018 and 2019, and at the Ranch Complex site in 2018. There are no previous assessment data for the North Parcel.

2.1 High School Site

Investigation at the High School site was conducted in 2018 and 2019 by Tetra Tech, Inc., with results presented in several reports, including:

- *Final Phase I Environmental Site Assessment Proposed Oxnard High School No, 8 APN 214-002-059 on North Rose Avenue, Oxnard, California 93030*. March 2, 2018.
- *Draft Preliminary Environmental Assessment High School No. 8. APN 214-002-059 on North Rose Avenue, Oxnard California.* November 9, 2018.
- *Supplemental Site Investigation, Proposed High School No. 8 APN 214-002-059, on North Rose Avenue, Oxnard, California 93030.* March 19, 2019.

2.1.1 Phase I Environmental Site Assessment

The Phase I Environmental Site Assessment (ESA) identified a Recognized Environmental Condition (REC) regarding potential soil impacts from former pesticide applications associated with former agricultural land use practices. The property had been farmed since at least 1869, and legal pesticides, including organochlorine pesticides (OCP) or heavy metals, had been commonly used for crop production from the 1940s through the 1960s, and had been detected in soil samples collected on property that was formerly part of the Maulhardt Ranch. The Phase I ESA identified the potential for soil impacts associated with OCPs and heavy metals from pesticides, and also possibility for soil impacts from smudge-pot fuel oil in areas formerly planted in citrus. It was recommended that a Preliminary Environmental Assessment (PEA) be performed under DTSC oversight to evaluate the RECs.

2.1.2 Draft PEA

The Draft PEA was completed in November 2018, including the collection of surface soil samples from 60 locations at depths of 0 to 0.5 feet below ground surface (bgs) to assess potential OCPs. In regard to OCPs, the Draft PEA (Tetra Tech, 2018) found:

- OCPs were detected at concentrations exceeding the Draft PEA screening levels at 34 sample locations including toxaphene in all 34 locations and dieldrin at three locations.
- Human health screening evaluation found that assumed exposures resulted in a maximum cumulative carcinogenic risk estimate (8×10^{-6}) that exceeds the target risk level of 1×10^{-6} for potential residential receptors.
- Estimated cumulative cancer risk associated with potential exposures to soil based on 95% UCLs for pesticide is 4×10^{-6}, which is within the low end of the USEPA target risk range of 10^{-4} to 10^{-6} and exceeds the target risk level of 1×10^{-6} for potential residential receptors.
- Concluded that surface soil sampling had adequately defined the lateral extent of OCP-impacted soil at concentrations exceeding screening levels, and recommended additional sampling be conducted to assess the depth of OCP-impacted soil with concentrations exceeding screening levels (specifically toxaphene and dieldrin).

Draft PEA findings in regard to other potential concerns included:

- Soil vapor not impacted by potential emissions from Oxnard Oil Field, and/or petroleum products that may have been released from ASTs and USTs formerly located at adjacent Maulhardt Ranch farm maintenance yard.
- No significant impacts from arsenic in surface soil were identified.
- Surface soils do not appear to have been significantly impacted by smudge pot fuel.
- Subsurface soil, and groundwater, does not appear to have been significantly impacted by VOCs, TPHg and TPHd from petroleum products that may have been released from ASTs and USTs and farm maintenance activities

DTSC approved the Draft PEA March 12, 2019.

2.1.3 Supplemental Site Investigation

The Supplemental Site Investigation (SSI) was conducted in February 2019 to delineate the vertical extent of OCPs in soil at concentrations that exceeded the screening levels, and subsurface soil samples were collected from the PEA surface soil sample locations with the 10 highest surface soil OCP concentrations previously reported. Samples were collected from the 10 locations at depths of 1.0 feet bgs, 1.5 feet bgs, and 2.0 feet bgs, and analyzed for OCPs. Toxaphene was detected at concentrations greater than screening levels (490 ug/kg) at depths of 1.0 feet (9 locations) and 1.5 feet (2 locations). It was concluded that the maximum depth of OCP-impacted soil at concentrations exceeding screening levels had been defined and is between approximately 1.5 and 2.0 feet bgs.

Risk characterization was conducted for potential residential and school-based student receptors using the ratio of soil concentrations (maximum detected and also 95% UCL) to applicable screening levels, and findings included:

- Estimated cumulative risks for residential scenario based on maximum detected concentrations indicate that toxaphene levels detected in soil result in estimated risk that exceed the residential target risk level (1×10^{-6}).
- Estimated cumulative risks for school-based student scenario (range from 2×10^{-7} to 4×10^{-7}) were well below the student target risk level (1×10^{-6}).
- Estimated cumulative risks for school-based teacher scenario (range from 7×10^{-7} to 2×10^{-6}) were well below the teacher target risk level (1×10^{-5}).
- The estimated risks based on the 95% UCL concentrations and modified soil screening level for toxaphene were equal to, or lower than the low end of the USPEA target risk range of 1×10^{-4} to 1×10^{-6}.
- Concluded that human health risk evaluation indicated that it is unlikely that the chemicals of potential concern (COPCs) detected in soil gas and soil are present at levels that would be expected to result in adverse health effects under the school-based scenarios evaluated, and a determination of No Further Action recommended.

DTSC (April 26, 2019) concurred with the SSI conclusions and recommendation for No Further Action determination, and approved the SSI.

2.2 Ranch Complex Site

Based on recommendation of the Phase I ESA (Tetra Tech, Inc., 2018), soil investigation at the Ranch Complex site was conducted in 2018 by Applied Environmental Technologies Inc (AET), with results presented in the report, *Limited Phase II Environmental Site Assessment Maulhardt/OUHSD Property on North Rose Avenue, Oxnard, California.* May 17, 2018.

2.2.1 Limited Phase II ESA

The Phase II investigation was completed in April 2018, and included four borings to depths of 20 feet bgs at locations of former USTs and ASTs, and six soil samples (0.5 feet bgs) collected in the vicinity of a workshop and former pesticide mixing area in the maintenance yard. Investigation findings included:

- No detections of TPH (gasoline or diesel) or VOCs were identified at UST locations to depths of 20 feet bgs, and only low-level TPH oil-range hydrocarbons detected at one location at 5 feet bgs.
- No detections of TPH or herbicides were identified at AST locations to depths of 3 feet.
- Two OCP analytes were detected at concentrations greater than commercial DTSC-SL, including dieldrin in one sample (202 ug/kg) and toxaphene in two samples (1,710 and 3,230 ug/kg).

2.2.2 Risk Characterization, Ranch Complex Site

The Limited Phase II ESA report (AET, 2018) did not include risk characterization. In order to better evaluate the Limited Phase II sampling results in comparison to data of the PEA and SSI, risk characterization was conducted using the same methodology as used for the Draft PEA and SSI. Assumptions included use of DTSC-SL (commercial land uses) as screening criteria for COPCs (dieldrin and toxaphene), and estimation of risk in regard to maximum concentration detected, and also for 95% UCL. Findings of risk characterization are summarized:

- Estimated cumulative risks for commercial scenario based on maximum detected concentrations indicate that toxaphene and dieldrin levels detected in soil result in estimated risk of about 4.9×10^{-6}.
- Estimated cumulative risks for commercial scenario based on 95% UCL concentrations indicate that toxaphene and dieldrin levels detected in soil result in estimated risk of about 3.4×10^{-6}.
- The estimated cumulative risks at the Ranch Complex site are within the low end of the USEPA target risk range of 1×10^{-4} to 1×10^{-6}, similar to risks estimated for the High School site.

Because of similarity in characterized risk, the conclusion applicable to the High School site can also be applied to the Ranch Complex site, being that it is unlikely that COPCs detected in soil are present at levels that would be expected to result in adverse health effects under the scenarios evaluated, and determination of No Further Action warranted.

3.0 NORTH PARCEL SOIL SAMPLING, RISK CHARACTERIZATION

This section provides discussion of soil sampling plan, workscope, sampling results (OCP and arsenic), and risk characterization.

3.1 Soil Sampling, North Parcel

3.1.1 Soil Sampling Plan

Soil sampling was conducted on the North Parcel site (APN 214-0-020-615) to augment previous sampling results for the High School site. Soil sampling at the High School site identified elevated concentrations of OCP analytes associated with historical pesticide application in areas of crop production (row crops and citrus) formerly on the property. Because the North Parcel had been in crop production similar to that of the High School site, soil sampling of the North Parcel was conducted using a grid-based sampling array on the same spacing as that utilized for the High School site. Soil sampling was conducted in general accordance with guidelines of the *Interim Guidance for Sampling Agricultural Properties (Third Revision)*, California Department of Toxic Substances Control (August 7, 2008), for OCPs and arsenic.

The sampling grid was designed with 5 rows (east-west) and 10 columns (north-south) on the main rectangular portion of the North Parcel, with samples collected at each node providing for 50 samples. For the southwestern and southeastern segments that extend further south along the curved roadway alignment, additional sample locations were sited, filling in the gridded nodes not sampled in the previous High School site investigation, including 2 sample locations in the southwest segment, and 3 locations in the southeast segment. A total of 55 locations were demarcated, as shown in Figure 2.

Soil samples were collected from each location, at a depth of 0.5 feet bgs. For analysis of OCPs, the analytical laboratory was instructed to prepare one composite sample from every four of the soil samples, for a total of 14 composite samples. Each of the composite samples was assigned an alphanumeric identity corresponding to the four-sample cell from which composited, as shown in Figure 3 (composite C14 was composited from only three samples). For analysis of arsenic, one discrete soil sample from each cell of four sample locations was selected, primarily the southeast location in each cell, as shown in Figure 4.

3.1.2 Soil Sampling Workscope

1. Conducted operations in accordance with a site-specific Health and Safety Plan (HASP), and in conformance with TRAK Standard Operating Procedures (SOP), a copy of which is included in Appendix A.

2. Sampling protocols were conducted in general accordance with guidelines of the *Interim Guidance for Sampling Agricultural Properties (Third Revision)*, California Department of Toxic Substances Control (August 7, 2008).

3. Demarcated grid for sample locations, generally corresponding to sample grid employed for soil sampling on south-adjoining High School site. Grid was comprised of 5 rows (east- west) and 10 columns (north-south) on the main rectangular portion of the subject property, with samples collected at each node providing for 50 samples. For the southwestern and

southeastern segments that extend further south along the curved roadway alignment, additional sample locations were sited, filling in the gridded nodes not sampled in the previous PEA investigation, including 2 sample locations in the southwest segment, and 3 locations in the southeast segment. A total of 55 locations were demarcated (Figure 2).

4. Collected soil samples at depths of 0.5 feet in each of the locations, utilizing stainless steel sampling equipment. The soil samples were capped, sealed, labeled, and chilled prior to transportation to Eurofins Calscience, a California state certified laboratory under chain-of-custody procedures.

5. The laboratory was instructed to prepare one composite sample from every four of the soil samples, for analysis of organochlorine pesticides, for a total of 14 composite samples (one composite was comprised of 3 samples). On the chain of custody, each of the four soil samples from each cell to be composited was identified by the composite sample number (e.g., C1, C2, etc..) to ensure the proper samples were composited. The chain of custody also identified which discrete sample, of each 4-sample cell, to be analyzed for arsenic.

6. Sample analysis of each composite sample was conducted for organochlorine pesticides (OCP) by EPA Method 8081A. Sample analysis of each discrete sample was conducted for arsenic by EPA Method 6010B.

7. Decontamination rinsate water from the sampling activities was stored temporarily in appropriate containers pending receipt of analytical results, for transport to an appropriate recycling/disposal facility.

8. At the conclusion of each day of field operations a project professional evaluated all pertinent field data including Chains-of-Custody, field reports, soil sampling procedures, and equipment calibration documentation to ensure strict adherence to established field protocol and provide overall project quality control.

3.2 Soil Sampling Results

3.2.1 Summary of Soil Analytical Results (OCP Analytes)

Soil sample analytical results (OCP) are tabulated in Table 1, and laboratory analytical reports with chains of custody included in Appendix B.

Soil sample results indicate detections of three DDT compounds (DDT, metabolites DDE and DDD) in generally all samples, including 4,4'-DDT (18 – 200 ug/kg), 4,4'-DDE (23 – 160 ug/kg), and 4,4'-DDD (1.2J – 28 ug/kg). Toxaphene was detected in all samples (65 – 740 ug/kg). Trace to low detections of alpha-Chlordane (3 samples), Dieldrin (6 samples), Endosulfan I (1 sample) and Endosulfan II (3 samples) were also noted.

For those samples with detections of selected OCP analytes, the locations, depths and detections are listed in Table A on following page. For comparison to appropriate screening criteria, the applicable DTSC-modified Screening Levels (DTSC-SLs), USEPA Region 9 Regional Screening Levels (RSLs), and RWQCB S.F. Bay Region Environmental Screening Levels (ESLs) are listed, for Residential and Commercial exposure. For samples and depths with no result shown, this indicates no detectable analyte reported at that location or depth. Detected concentrations shown in bold indicate exceedance of DTSC-SL criterion.

Analytical Detections, Soil Samples (OCP Analytes)

Table A: Analytical Detections, OCP Analytes

ID	Depth (ft)	alpha-Chlordane (ug/kg)	4,4'-DDD (ug/kg)	4,4'-DDE (ug/kg)	4,4'-DDT (ug/kg)	Dieldrin (ug/kg)	Toxaphene (ug/kg)	Endosulfan I (ug/kg)	Endosulfan II
C1	0.5		2.0J	24	18	0.69J	65 *p*		
C2	0.5		2.7J	35	31		110 *p*		5.0 *p*
C3	0.5		4.6J	45	50		180 *p*		9.4
C4	0.5			62	78	4.1J	340 *p*		
C5	0.5	1.03J p	23	160	200	9.5	**650** *p*		
C6	0.5		1.2J *p*	23	18		81 *p*		
C7	0.5		3.1J	30	25		90 *p*		
C8	0.5		4.1J	36	38		150 *p*		
C9	0.5		10	55	66	3.3J	260 *p*		
C10	0.5		28	160	190	9.5	**740** *p*		16
C11	0.5		2.9J	23	23		80 *p*		
C12	0.5		6	47	26	0.73J *p*	150 *p*		
C13	0.5	1.8J	25	110	130		440 *p*	1.4J	
C14*	0.5	2.5J	15	53	39		180 *p*		
DTSC-SL									
Residential Soil			1,900	2,000	1,900	34	**450**/1,900 *w*	4.5E+05	4.5E+05
Industrial Soil			6,200	9,300	7,100	93	1,200/16,000 *w*	6.0E+06	6.0E+06
RSL									
Residential Soil		3.6E+04	2,300	2,000	1,900	34	490/1,900 *w*	4.7E+05	4.7E+05
Industrial Soil		5.0E+05	9,600	9,300	8,500	140	2,100/25,000 *w*	7.0E+06	7.0E+06
ESL									
Direct Exposure (residential)			2,700	1,800	1,900	37	510	4.2E+05	4.2E+05
Direct Exposure (commercial)			12,000	8,300	8,500	160	2,200	5.8E+06	5.8E+06

Notes:
J = Estimated concentration; result is less than Reporting Limit (RL), but greater than Method Detection Limit (MDL).
p = The %RPD between the primary and confirmation column/detector is >40%; the lower value has been reported.
w = Toxaphene SI and RSL includes value for product, and also for weathered product (indicated by w)..
** = Composite of 3 samples only.*

For discussion of analyte concentrations in regard to regulatory screening criteria, the detected analytes are grouped into three categories, as follow.

DDD, DDE, DDT

For OCP analytes, 4,4'-DDT (18 – 200 ug/kg), 4,4'-DDE (23 – 160 ug/kg), and 4,4'-DDD (1.2J – 28 ug/kg), all concentrations are significantly less than the most conservative screening criteria, the DTSC-SL for residential setting.

alpha-Chlordane, Dieldrin, Endosulfan I, Endosulfan II

For OCP analytes, alpha-Chlordane (1.03J – 2.5J ug/kg), Dieldrin (0.69J – 9.5 ug/kg), Endosulfan I (1.4 ug/kg), and Endosulfan II (5.0 – 16 ug/kg), all concentrations are significantly less than the most conservative screening criteria, the DTSC-SL for residential setting.

Toxaphene

Toxaphene concentrations in two samples slightly exceeded the most conservative screening criteria, the DTSC-SL for residential setting (450 ug/kg), including sample C5 (650 ug/kg) and C10 (740 ug/kg). Given that toxaphene use was banned in 1990, it is likely that the toxaphene detected in North Parcel soils is weathered residual of application prior to 1990. Due to the long-time persistence of toxaphene in soil, the DTSC-SL (residential setting) is also provided for the weathered compound (1,900 ug/kg), being an order of magnitude greater than DTSC-SL for unweathered chemical. The maximum detection of toxaphene (740 ug/kg) in location C10, is significantly less than the DTSC-SL (residential soil) for weathered toxaphene.

3.2.2 Summary of Soil Analytical Results (Arsenic)

Soil sample analytical results (arsenic) are tabulated in Table 2, and laboratory analytical reports with chains of custody included in Appendix B.

Soil sample results indicate detections of arsenic in all samples, in the concentration range of 3.5 mg/kg to 5.9 mg/kg. These concentrations are within the range of concentrations typically associated with natural background conditions in Southern California, and significantly less than the California upper-range of average background concentrations (12 mg/kg).

3.3 Risk Characterization

3.3.1 Risk Characterization Procedure

Risk characterization was conducted for OCP analytes detected in soils of the North Parcel site. Risks were estimated for potential residential receptors using similar methodology to that used in the Draft PEA and SSI for the High School site, using the ratio of concentrations detected in North Parcel soils to the DTSC-SLs applicable for each of the detected OCP analytes. The analysis used the maximum detected concentration as an exposure point concentration (EPC) in accordance with DTSC PEA guidance, and also using an EPC based on the 95% upper confidence limit (95% UCL) of the arithmetic mean for each of the detected OCP analytes.

Carcinogenic risks were calculated utilizing the following ratio:

$$\text{Risk} = \frac{\text{EPC}}{\text{DTSC-SL (carcinogenic)}} \times 10^{-6}$$

Noncarcinogenic hazard estimates were calculated utilizing the following ratio:

$$\text{Hazard Quotient (HQ)} = \frac{\text{EPC}}{\text{DTSC-SL (noncarcinogenic)}}$$

The index numbers for each OPC analyte with carcinogenic risk were summed to calculate estimated cumulative risk, and index numbers for each OPC analyte with noncarcinogenic hazard were summed to calculate estimated cumulative Hazard Index (HI).

Statistical analysis regarding the 95% UCL was conducted using USEPA developed software ProUCL (Version 5.1.00 May 2016). ProUCL was chosen because it was specifically developed to evaluate environmental data, and it calculates multiple types of confidence limits.

The ProUCL analysis was conducted for five OPC analytes, including 4,4-DDD, 4,4-DDE, 4,4-DDT, dieldrin, and toxaphene. The analytical result for each analyte was utilized; for samples with non-detect results, a surrogate value equal to one-half the MDL was used. The ProUCL analysis output includes the mean and median concentrations, standard deviation, and the 95UCL. The ProUCL printouts showing the statistical results, including 95UCL for each of the analytes, are included in Appendix C.

For each of the five OPC analytes evaluated by ProUCL analysis, the estimated 95UCL concentrations for North Parcel soils are listed as follow:

4,4-DDD:	17.6 ug/kg
4,4-DDE:	91.4 ug/kg
4,4-DDT:	108.7 ug/kg
Dieldrin:	6.04 ug/kg
Toxaphene:	398.6 ug/kg

3.3.2 Estimated Risks, OPC Analytes

Estimated cancer risk and noncarcinogenic HI for each of the detected OPC analytes, and the cumulative values, based on maximum detected concentrations of OCP analytes, are summarized in following Table B.

Table B: Estimated Risks (Maximum Concentrations)

Analyte	Maximum Concentration (ug/kg)	DTSC-SL (Residential) (ug/kg)		Risk Screen	
		Carcinogenic	Noncarcinogenic	Estimated Risk	Estimated HQ
4,4-DDD	28	2,300	1,900	1.2E-08	1.5E-02
4,4-DDE	160	2,000	23,000	8.0E-08	7.0E-03
4,4-DDT	200	1,900	37,000	1.1E-07	5.4E-03
Dieldrin	9.5	34	3,200	2.8E-07	3.0E-03
Toxaphene	740	450	5,700	1.6E-07	1.3E-01
Estimated Cumulative Risk and Hazard Index				2.1E-06	1.6E-01

As shown in Table B, the cumulative estimated cancer risk is 2.1 x 10^{-6}, which is at the low end of the USEPA target risk range of 10^{-4} to 10^{-6}, and only slightly exceeds the target risk level for residential receptors (10^{-6}). The maximum estimated noncarcinogenic HI is 0.16, which is well below the target HI of 1.

Estimated cancer risk and noncarcinogenic HI for each of the detected OPC analytes, based on 95% UCL of OCP analytes, are summarized in following Table C.

Table C: Estimated Risks (95% UCL)

Analyte	95% UCL (ug/kg)	DTSC-SL (Residential) (ug/kg)		Risk Screen	
		Carcinogenic	Noncarcinogenic	Estimated Risk	Estimated HQ
4,4-DDD	17.6	2,300	1,900	7.7E-09	9.3E-03
4,4-DDE	91.4	2,000	23,000	4.6E-08	4.0E-03
4,4-DDT	108.7	1,900	37,000	5.7E-08	2.9E-03
Dieldrin	6.04	34	3,200	1.8E-07	1.9E-03
Toxaphene	398.6	450	5,700	8.9E-07	7.0E-02
Estimated Cumulative Risk and Hazard Index				1.2E-06	8.8E-02

As shown in Table C, the cumulative estimated cancer risk is 1.2×10^{-6}, which is the low end of the USEPA target risk range of 10^{-4} to 10^{-6}, and at the target risk level for residential receptors (10^{-6}). Maximum estimated noncarcinogenic HI is 0.09, which is well below the target HI of 1.

Cumulative estimated cancer risks and HI associated with North Parcel site soils are lower than the values estimated for the High School site. The conclusions applicable to the High School site regarding risk can also be applied to the North Parcel site, being that it is unlikely that OPC analytes detected in soil are present at levels that would be expected to result in adverse health effects under the scenarios evaluated, and determination of No Further Action warranted.

3.3.3 Estimated Risks, Arsenic

Arsenic concentrations in North Parcel site soils are within the range of concentrations typically associated with natural background conditions in Southern California, are significantly less than the California upper-range of average background concentrations (12 mg/kg), and not expected to result in adverse health effects under the scenarios evaluated.

4.0 ENVIRONMENTAL DATABASE REVIEW

4.1 Updated Environmental Database Search

A previous environmental database review (*EDR Radius Map™ Report with GeoCheck®*, dated September 21, 2017) was conducted for the Phase I Environmental Site Assessment completed in 2018 (Tetra Tech, Inc., 2018). To update the environmental database review, a governmental agency database search was ordered from Environmental Data Resources, Inc. (EDR) of Southport, Connecticut. The database search, *EDR Radius Map™ Report with GeoCheck®*, dated October 28, 2024 was completed for North Parcel outline, with target address of 1853 Camino Del Sol, Oxnard, California. A copy of the current EDR database search is included in Appendix D.

4.2 Review of Environmental Database

The 2017 EDR database search (Tetra Tech, Inc., 2018) included two references for the site address of 1853 Camino Del Sol, with listings for Eclipse Berry Ranch (FINDS), and Maulhardt Farms (VENTURA CO. BWT, and HAZNET). There were no references associated with the site for Cortese or Historic Cortese listings.

The current EDR database search included seven references for the site address of 1853 Camino Del Sol, with listings for Eclipse Berry Ranch (FINDS), Maulhardt Farms (FINDS, ECHO, HWTS, HAZNET, RCRA NonGen / NLR), and Oxnard Union Hich SD (ENVIROSTOR, SCH, CERS). There were no references associated with the site for Cortese or Historic Cortese listings.

Environmental database review verifies that the site is not on any Cortese lists.

5.0 DISCUSSION

5.1 Summary

The objective of this investigation was to evaluate site data to determine if there is a potential for a significant hazard to the public due to existing contamination of soil or groundwater. The investigation included evaluation of previous assessment of the High School site and the Ranch Complex site, soil sampling of the North Parcel site (APN 214-0-020-615) to augment previous sampling results, and verification that the property is not a hazardous materials site that would create a significant hazard to the public of environment. Investigation findings are summarized:

- Previous assessment of the High School site, including human health risk evaluation, indicated that it is unlikely that the chemicals of potential concern (COPCs) detected in soil vapor and soil are present at levels that would be expected to result in adverse health effects under the school-based scenarios evaluated, groundwater is not impacted, and a determination of No Further Action recommended. DTSC (April 26, 2019) concurred with the assessment conclusions and recommendation for No Further Action determination.

- Previous assessment of the Ranch Complex site, because of similarity in characterized risk to that of the High School site, can support a conclusion similar to that of the High School site, being that it is unlikely that COPCs detected in soil are present at levels that would be expected to result in adverse health effects under the scenarios evaluated, and determination of No Further Action warranted.

- Based on soil sampling results and risk characterization for the North Parcel site, cumulative estimated cancer risks and HI associated with North Parcel site soils are verified to be lower than the values estimated for the High School site, and no significant impacts from arsenic in surface soil were identified. The conclusions applicable to the High School site regarding risk can also be applied to the North Parcel site, being that it is unlikely that OPC analytes and arsenic detected in soil are present at levels that would be expected to result in adverse health effects under the scenarios evaluated, and determination of No Further Action warranted.

- Environmental database review verifies that the site is not on any Cortese lists.

5.2 Conclusions

This investigation has verified that there is a very low potential for a significant hazard to the public due to existing contamination of soil or groundwater. Risk assessment results verify that estimated risks are at the low end of the USEPA target risk range of $1x10^{-4}$ to $1x10^{-6}$, and demonstrate that the potential human health risk at the three parcel sites is less than significant.

6.0 REFERENCES

AET, 2018, Limited Phase II Environmental Site Assessment Maulhardt/OUHSD Property on North Rose Avenue, Oxnard, California. May 17.

Environmental Data Resources, Inc., 2024, The EDR Radius Map with GeoCheck®, 1621 Grand Avenue, Santa Barbara, CA 93103, December 16.

Tetra Tech, Inc., 2018a, Final Phase I Environmental Site Assessment Proposed Oxnard High School No, 8 APN 214-002-059 on North Rose Avenue, Oxnard, California 93030. March 2.

Tetra Tech, Inc., 2018b, Draft Preliminary Environmental Assessment High School No. 8. APN 214-002-059 on North Rose Avenue, Oxnard California. November 9.

Tetra Tech, Inc., 2019, Supplemental Site Investigation, Proposed High School No. 8 APN 214-002-059, on North Rose Avenue, Oxnard, California 93030. March 19.

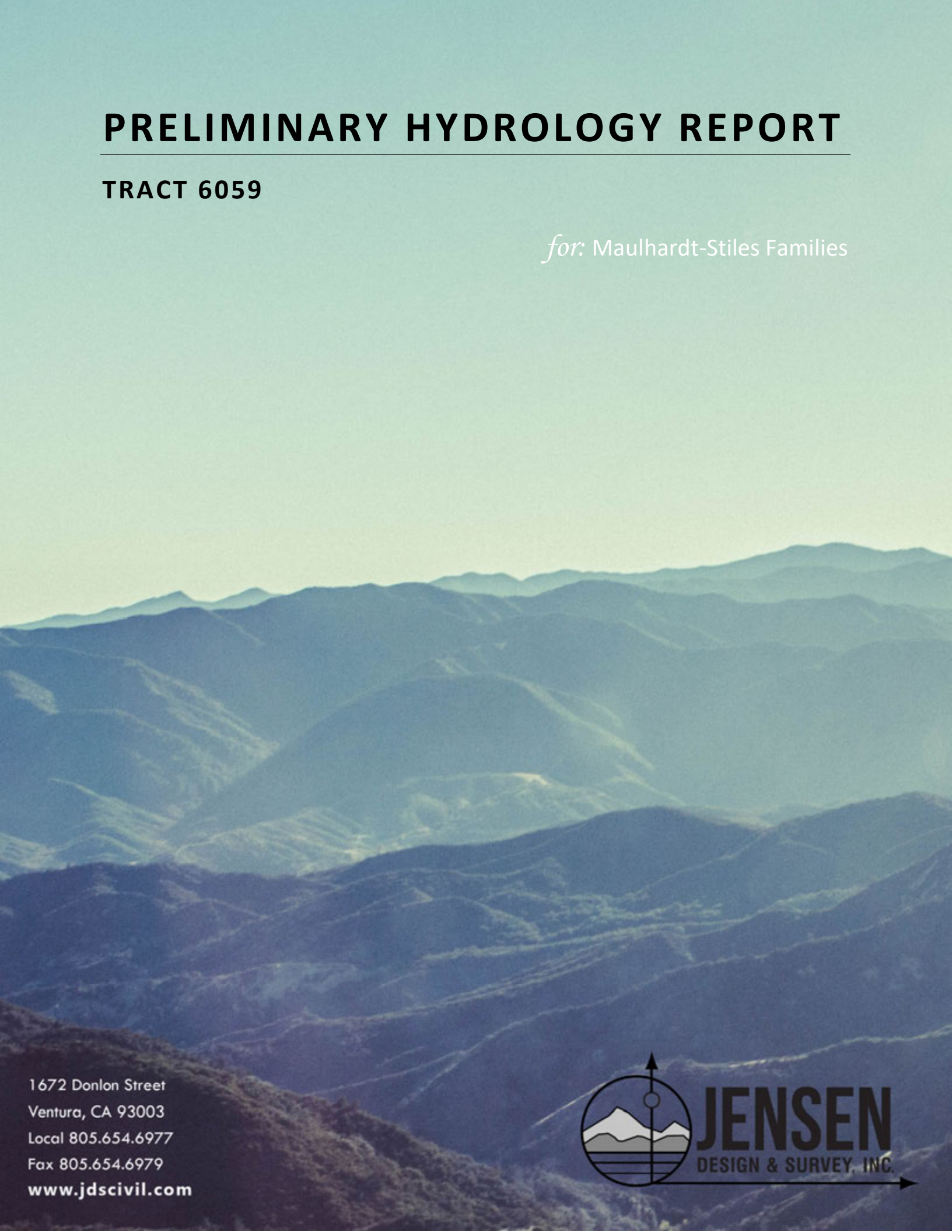
APPENDIX N

Preliminary Hydrology Report

PRELIMINARY HYDROLOGY REPORT

TRACT 6059

for: Maulhardt-Stiles Families



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PRELIMINARY HYDROLOGY REPORT

TRACT 6059

MAULHARDT RANCH

APNS 214-0-020-610 & -620

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1.0 PROJECT OVERVIEW

1.1. PROJECT DESCRIPTION & LOCATION

Tract 6059 is situated in the Northeast Specific Plan area of Oxnard. This site, historically known as the Maulhardt Ranch, is on the corner of Rose Avenue and Camino del Sol. The Maulhardt-Stiles Families recently sold the center portion, about 50 acres, to Oxnard Union High School District for construction of the new Del Sol High School. Tract 6059 represents the remaining two parcels still retained by the Maulhardt-Stiles Families. The northerly Planning Area A encompasses 45 acres of now fallow agricultural land. Planning area C, at the southwest corner of the property, is almost 13 acres and is the site of the Ranch dwellings.

1.2. SITE CONDITIONS

Construction of Del Sol HS campus area was completed and opened to students in August 2023. A large offsite improvement effort is also underway and will be completed in March of 2024. Remaining work includes final road widening and median construction on Rose Avenue and Camino del Sol. Maulhardt Planning Area A will remain fallow agricultural land until Tract 6059 begins construction. Planning Area C will remain as the Ranch Home site until the Tract 6059 development.

1.2.1. EXISTING DRAINAGE PATTERNS

The entire 100 acre site drains toward Camino del Sol on the South edge. The High School project has completed construction of Jacinto Drive. Runoff from the north parcel will drain to temporary desilting basins that will connect to the public SD system. The Ranch site also drains to Camino del Sol through small farm ditches and several inlets. The two City RCB main lines in Camino del Sol are outlined in the Maulhardt Property Hydrology Report (called “Overall Report” in subsequent discussions), submitted with the Del Sol High School Offsite improvement plans. The Overall Report exhibit is included in Appendix A.

1.2.2. PROPOSED DRAINAGE PATTERNS

As the first project in construction, the Del Sol High School plans include offsite improvements for Rose Avenue, Jacinto Drive, Camino del Sol, and Jaguar Way that account for storm drain extensions up to the north parcel. The extended Rose Avenue SD drains into the westerly City RCB, while Jaguar Way on the east drains to the easterly RCB. The north portion of Tract 6059 will split drainage to one of these new storm drains. The south Ranch site, Lots 10-13, will tie to the westerly RCB at Camino del Sol.

1.3. REPORT OBJECTIVE

The intent of this report is to show that the project can meet the current City of Oxnard and Ventura County requirements. The City will review treatment methodology and calculations to ensure the project meets MS Permit requirements. The Ventura County Watershed Protection District has an agreement with the City that this property can discharge only 1 cfs/ac to the Rice Road Drain. Both the RCB lines drain into the Rice Road Drain at its beginning point on Camino del Sol. This report will show that the developed Tract 6059 can meet these requirements and hold to the discharge amounts outlined in the Overall Hydrology Report. Certain design parameters will be addressed more fully during final design.

In-situ infiltration testing is required for the design of the private and public treatment areas. Testing has been completed and the data is included for reference. However, the City of Oxnard also requires another set of infiltration testing after grading. All infiltration design, private and public, must be

recalculated during construction. This preliminary report will establish a system that works for the assumed values. Systems will be revised for final design and then verified again during construction. Specific design details for inverts, water surface elevations, and bypass functions will be determined during final design. This report will confirm that the project has adequate area reserved for stormwater infiltration, with the final layouts and sizing to be adjusted during the design and construction process.

2.0 POST CONSTRUCTION STOMWATER QUALITY

2.1. STATEWIDE TRASH AMENDMENT COMPLIANCE

In order to comply with the California Statewide Trash Program, the public storm drain system must be protected from receiving trash and debris. The SWRCB has published the Certified Full Capture System List of Trash Treatment Control Devices. There are three pubic SD mains that serve the Tract 6059 site. The West SD line will serve Lots 10-13and the westerly subareas from Planning Area A. The East SD line will serve the easterly side of Tract 6059. The third system is an existing SD line in Cesar Chavez Drive that will serve only public runoff from the Cesar Chavez right-of-way. All public catch basins that do not drain to the in-tract infiltration/detention systems will be fitted with one of the approved devices to protect the outlet pipe. For private storm drain connections, outlet pipes will be fitted with one of the approved devices prior to discharging to the public system. The certified device list can be found at the following links. The CASQA link provides live links to each manufacturer. Products subject to change based on current SWRCB approvals at the time of final design.

CA SWRCB Microsoft Word - certified_fcsdevicelist_16Feb2021 (ca.gov)

CASQA Certified Full Capture System Trash Treatment Control Devices | CASQA - California Stormwater Quality Association

2.2. PUBLIC STORMWATER TREATMENT

Public stormwater treatment for Rose Avenue and Camino del Sol is outlined and designed per the Offsite Improvement Plans and Overall Hydrology Report for the Del Sol HS project. Along Jacinto Drive, the offsite plans call for temporary infiltration basins. Tract 6059 grading will remove the temporary systems and install final infiltration facilities. Cesar Chavez Drive parkways will also be designed for infiltration of public street runoff. The East Village Park expansion area provides 5.3 acres of additional public park space. An MS4 compliant surface infiltration area will provide treatment for the public park area only.

As City staff reviewed the offsite plans, it was determined that the public street areas require bio-infiltration within the parkways. Also, per City comment, Staff has requested that public stormwater enter the parkways through curb cuts and drain into the lowered bio-infiltration area. A standard catch basin, with a trash capture device, will be constructed at the downstream end of the subarea to accept overflow runoff during large storm events. The ponding depth above grade will be limited to 4" with a media layer and gravel depths to be determined during final design. Subareas W11, W4, E6 and E7 from the offsite report account for the Maulhardt property street areas along Jacinto Drive. The following summary of Bio-Infiltration calculations for the subareas is shown below. The Stormwater Quality Design Volume (SQDV) per acre and Bio-infiltration Length per acre values are used to establish the required treatment for each subarea. The largest two subareas (W11 & E7) are 0.81 acres. The

SQDV for E7 is 1,739 cf and would require approximately 340 feet of bio-infiltration length. If any parkway area is found to have low infiltration rates during the construction testing, the bio-infiltration will be technically infeasible. These areas would be redesigned for typical grass bioswales or bio-infiltration with underdrains.

Public Stormwater Treatment Summary					
Jacinto Drive	Area (ac)	SQDV (cf)	SQDV per Acre	Bio-infiltration Length for 5' wide trench per acre	Bio-infiltration Length per Acre
W11	0.81	1,739	2,147	339	419
W4	0.71	1,524	2,146	334	470
E6	0.56	1,202	2,146	235	420
E7	0.81	1,739	2,147	339	419
Average			**2,147**		**432**
Cesar Chavez Typical Area	0.19	408		82	

The subareas along Jacinto Drive were originally established without the Tract 6059 intersection locations. These subareas and ultimate infiltration areas will be determined at final design. A typical section of the bio-infiltration used for the Del Sol High School construction is included in Appendix B. The detail is taken from the Offsite Improvement Plans and reflects the latest City comments for design.

The expanded East Village Park, Subarea A3, will be dedicated to the City of Oxnard as a public park. This subarea will also require detention and infiltration. The SQDV and required area calculations are included herein. Since there is ample room within the park area, details for this system will be analyzed during final design.

Tract 6059 will be required to provide stormwater infiltration per the Ventura County MS4 Permit and Technical Guidance Manual. Infiltration testing has been completed for the specific project area per Earth Systems Pacific 2022 Project No. 305135-001 Report, included as Appendix D. A summary for each area is shown below based on the testing locations from the infiltration report. Subareas A-4 (average of tests DRI-104 & 105) and A-5 (test DRI-104) along Jacinto Drive used current information from the DSHS Offsite Construction Infiltration Testing. Just an excerpt from that report is attached for reference.

Infiltration Area	Soils Testing	Infiltration Rate	LA County Reduction Factor=2
A1 South West	IT-4	4.86	2.43
	IT-5	8.06	4.03
	IT-6	5.24	2.62
A3-East Park	IT-7	0.63	0.32
	IT-8	0.84	0.42
	IT-9	0.21	0.10

	IT-10	1.64	0.82
	IT-11	2.13	1.06
	IT-12	0.26	0.13
A4-Jacinto SW		1.27	0.63
A5-Jacinto SE		2.27	1.13

This infiltration rate will be factored down using Technical Guidance Manual Worksheet 6.4 for each subarea. Infiltration is provided for the onsite areas. Street frontage, from the adjacent street C/L to the R/W, are considered offsite areas and are not included in the infiltration calculations. They will be considered for stormwater detention, as discussed in Section 3.0.

Underground infiltration chambers with pre-treatment vaults will be utilized for the two main systems in the northerly Planning Area A and one in the southwest Planning Area C. Pre-treatment devices such as Contech CDS and Hydro International Downstream Defenders have been shown to treat 80% of 50-micron particles per City of Oxnard requirements. Each storm drain inlet pipe directly upstream of the infiltration chambers will pass through one of these devices for pre-treatment. Historical high groundwater is assumed to be 9 feet below existing ground per the "2002 Seismic Hazard Zone Report for the Oxnard Quadrangle" (excerpt included in the 2022 ESP report, Appendix D) to ensure the bottom elevation of the infiltration structures are set accordingly. This document is used for seismic liquefaction potential and is conservative compared to the average high seasonal groundwater as required by the Ventura County Technical Guidance Manual. Final soils recommendations will be taken into account during the construction document phase.

South Ranch – Planning Area C (Lots 10-13)

Lots 10-13 are being considered as one large subarea for stormwater infiltration. The Overall Report designates this Subarea M-S with 10.5 net acres. The full area is considered to be 95% impervious. The required subarea infiltration summary is below. Within the 10.5 acres, a 1 acre public park will have a separate public infiltration and possible small detention system.

South Ranch – Planning Area C Summary Lots 10-13

Subarea	Area (ac)	SQDV (cf)	Total Basin Volume (ac-ft)
A	9.5	23,407	2.91
A1 (Public Park)	1	1,552	0.037
*Basin is ADS DC780. Req'd bottom area=25,304 sf. Provided area = 50,494 sf.			

This system is oversized for infiltration purposes but is necessary for the detention requirements. The final site layout may also require that subareas been broken up and separated into different infiltration areas. Infiltration areas onsite along the roadway frontages may also be required depending on final site grading.

North Parcel – Planning Area A (Lots 1-9)

The north parcel layout includes Lots 1-9 Three main infiltration areas are proposed as shown in the attached exhibit (Appendix A). Subareas A1 and A2 drain to the southwest corner at Jacinto Drive and Rose Avenue. Subarea A3 is the public park area and will have a separate infiltration area. Subarea A7

will drain to the private park area on the east. Subarea A8 utilizes a smaller, public park for infiltration purposes only. Detention for Subarea A8 will be pushed to the large underground system in Subarea A7. Due to utility cover and grading, three smaller areas, A4-A6, along Jacinto Drive could not drain to one of these three larger systems. Each lot containing subareas A4, A5 or A6 will be responsible to provide infiltration on the lot area, along the Jacinto Drive frontage. The largest of these subareas, A6, is 0.63 acres and will be used to size all of the systems. The table below summarizes the infiltration systems for the North Parcel (Planning Area A).
All subareas assume 90% impervious area and worksheets can be found in Appendix B.

North Ranch – Planning Area A Infiltration Summary

Subarea	Area (ac)	SQDV (cf)	Infiltration System Type & Size	Bottom Area Required (sf)	Bottom Area Provided (sf)
A1 + A2 (West)	19.50	43,745	11 MC4500 Chambers at 150 feet	14,596	17,062
A3 Public Park	5.3	5,961	Infiltration Trench: d1=2, dp=0.2	9,666	9,710
A7 (East)	12.5	27,298	19 MC4500 Chambers at 285 feet	44,266	49,523
A8 (East Parcel F)	1.61	3,770	Infiltration Trench: d1=2, dp=0.2	6,113	6,412
A6	0.63	1,475	Infiltration Trench: dt=2, dp=0 (subsurface)		
A4	0.25		Subareas A4-A6:		
A5	0.55		7' wide x 231' long trench		
Total*	40.4	Difference shown is the Cesar Chavez public street area currently assumed into onsite Subareas. These public areas will be separated out at Final Design.			

The ADS Stormtech Chambers will be installed with Isolator rows. These rows will provide containment for any sediments that enter, protecting the rest of the system. Access manholes and inspection ports will be determined at final design.

Both the private and public infiltration systems on the east side, Subareas A7, A8, and A3, are situated where soils testing had lower infiltration rates. If locations are shifted during final design, additional soils testing may yield better results. Construction infiltration testing may determine that the locations fall into the technically infeasible category. The Technical Guidance Manual outlines the options when full infiltration is infeasible. Subarea A8 and the public park surface infiltration can be changed to bioretention with an underdrain. Calculations for this infeasibility are included with the infiltration trench design worksheets. Subarea A7 will be more difficult to accommodate for infeasibility. The surface area required for bio-infiltration overlaps the shallow detention system. Options include deeper excavations or amended soils for higher infiltration rates, an increased depth to groundwater (shifting the detention system lower and possibly providing room for infiltration), or other alternative

designs. The options should be reviewed in detail with the City Staff, Developer, and Engineer early in the design process to agree up on alternative options.

3.0 DETENTION

3.1. DETENTION REQUIREMENTS

The Overall Hydrology Report for Maulhardt / Del Sol High School (Jensen Design May 2023) outlines the allowable discharge from each site. Not only is each property held to 1 cfs/acre peak flow, but the discharge to the east and west RCB systems is also critical for overall design.

Overall Flow Summary (all values cfs)

	East	West	Total	
	21.8	89.8	111.6	Overall Hydro Report
MAU	12.8	42.4	Back-Calc Allowable MAU West (89.8-47.4)	
DSHS	9	47.4	Table 5 DSHS Report Routed Discharge to West RCB	

MAU East Breakdown		
MAU North East Public Streets (E6 & E7)	4.1	cfs
Onsite MAU NE Undetained (A6)	1.9	cfs
MAU North East Allowable Basin Discharge	6.8	cfs
	12.8	**cfs**

MAU West Breakdown		
MAU South Allowable Discharge	12.9	cfs
MAU North Allowable Discharge (42.4-12.9)	29.5	cfs
MAU N Offsite Areas (W10, W11, W4)	10.3	cfs
Onsite MAU NW Undetained (A4-A5)	2.5	cfs
Discharge from Undetained, North Offsite Areas (10.3cfs+2.5cfs)	12.8	cfs
Remaining = MAU NW Allowable Basin Discharge (29.5 cfs-12.8 cfs)	16.7	cfs
Total MAU West Allowable Discharge (12.9 cfs+12.8cfs+16.7cfs)	**42.4**	cfs
Total MAU Allowable Discharge (East + West)	**55.2**	cfs

Lots 10- 13 on the South Ranch (Planning Area C), drain to the westerly RCB and runoff is a simple balance of offsite, undetained, and detained discharge. On the North Parcel (Planning Area A), East Village Park will be expanded on the Tract 6059 property east edge. The new park area will be split for public and private portions to separate stormwater treatment and detention. The total easterly tributary area of 20.1 onsite acres, will discharge far less than 1 cfs/ac (11.4 cfs total). This is due to the existing East RCB capacity requirements. The balance of discharge is transferred to the north subareas tributary to the west RCB, where 20.3 onsite acres will be able to release slightly more than 1

cfs/ac (26.1 cfs). However, West RCB Maulhardt discharge is less than the allowable 42.4 cfs. The total site discharge of 49.9 cfs, all of which drains to the Rice Road Drain, is also within the allowable of 1 cfs/ac. The table below summarizes the onsite and offsite areas as well as undetained, bypassed, detained, and total discharge rates.

The public park area A3 will have a surface infiltration area that then feeds to an underground detention system. The surface and underground portions may not overlap since the underground chambers would impede the natural infiltration. Final layout and grading will be updated during final design to accommodate City desired park layout and meet these stormwater requirements. Public Park hydrology has been taken from the VCRat files from the DSHS Subarea B45. This DSHS Subarea is the soccer field that drains to Rose Avenue. The flow rate generation for the park area is less than a neighborhood developed flow and is 2.74 cfs/ac in the Q100. The Hydraflow printout outlines the public park data in line items 22-26.

Area	Offsite Acreage	Onsite Acreage	RCB	Allowable Discharge (cfs)	Undetained Discharge (cfs)[2]	Undetained Tract 6059 Areas (A4-A6) (cfs)	Basin Bypass Discharge (cfs)	Detained Discharge (cfs)[1]	Total Discharge (cfs)[3]
South	2.37	10.5	West	12.9	9.3		0.8	2.5	12.6
North (A1, A2, A4, A5)	3.47	20.3	West	29.6	10.3	2.50	11.0	2.3	26.1
North (A3, A6-A8)	1.37	20.1	East	12.8	4.1	1.90		5.4	11.1
Total	**7.2**	**50.9**	**58.1**	**55.2**					**49.9**

[1]From Hydraflow Summary Page

[2]From Offsite Area

[3]Routed flow from Hydraflow may not equal the sum of undetained and detained peaks.

From the table above, the NW and NE drainage areas total 45.2 acres, which includes the offsite areas taken to the CL of adjacent streets. The total discharge from the combined north areas is 26.1 cfs + 11.1 cfs = 37.2 cfs, which is less than the 1 cfs/ac allowable.

For the South Ranch (Planning Area C), VCRat output files were taken from the South Campus East drainage area of 9.6 acres, since it was similar in size and impervious area (10.5 acres and 95% impervious). The hydrograph was factored up for routing the entire parcel. On the North Parcel (Planning Area A), VCRat was run using the first assumed tributary areas for east and west. All hydrographs were factored based on final areas. VCRat and Hydraflow results are included in Appendix C. Summary tables are shown below for the both North and South Basin diversions and release rates. The systems are oversized since there is volume left in the tops of the chambers. The Q100 Basin volumes shown below assume free outlet with no tailwater. However, the existing RCB systems are under pressure and flap gates will be needed on each outlet structure. Basins can accommodate the full Q100 flow. At final design, the chambers may be downsized if proven to follow these preliminary discharges and volumes.

South Ranch Summary

Subarea	Area (ac)	SQDV (cf)	Total Basin Volume (ac-ft)	Q100 Basin Volume (ac-ft)	Q100 (cfs)	Q Bypass (cfs)	Q Det. Outlet (cfs)	Total Discharge (cfs)
A	9.5	23,407	2.91	2.85*	37.5	0.8	2.19	3
A1 (Public Park)	1	1552	0.037	Infiltration Trench		0.5	Design for 0.2	Allowable 0.7

*Basin is ADS SC740. Req'd bottom area=25,304 sf. Provided area = 34,9225

North Ranch To West RCB

Subarea	Area (ac)	SQDV (cf)	Total Basin Volume (ac-ft)	Q100 Basin Volume (ac-ft)	Q100 (cfs)	Q Bypass (cfs)	Q Det. Oulet (cfs)	Total Discharge (cfs)
A1 (West)	19.5	43,745	1.98	1.64	60.2	12.0	2.9	14.9
A4 (Undetained)	0.25	TBD	N/A	N/A	0.8	0.8	N/A	0.77
A5 (Undetained)	0.55	TBD	N/A	N/A	1.7	1.7	N/A	1.70
Total	20.3				62.7	14.5	2.9	17.4

North Ranch To East RCB								
Subarea	Area (ac)	SQDV (cf)	Total Basin Volume (ac-ft)	Q100 Basin Volume (ac-ft)	Q100 (cfs)	Q Bypass (cfs)	Q Det. outlet (cfs)	Total Discharge (cfs)
A7 (East)	12.5	27,298	10.82	5.47	38.9	0.0	2.7	2.7
A8 (East Parcel F)	1.61	3,770	To Basin in Subare a A7	N/A	5.0	0.0	N/A	0.0
A6 (Undetained)	0.63	1,583	N/A	N/A	1.9	1.9	N/A	1.9
A3 Public Park	5.34	5,961			14.7	0.0	2.4	2.4
Total	20	38,612			62	1.9	5.1	7.0

Gibraltar Street will remain a public road. A parkway infiltration trench can be added along the street, just upstream of a standard catch basin. In order to maintain the separation of public and private stormwater, this catch basin will flow through a public SD line and outlet into the public park. The end-of-line catch basin will be designed for reverse flow to discharge runoff into the public park. A small outfall area should be provided. Detailed design will be incorporated in the final construction plans.

Cesar Chavez Drive will also remain as a public road and has an existing storm drain system. The storm drain outlets into the existing housing tract's onsite basin, after passing through a treatment vault. Infiltration for

public stormwater along Cesar Chavez will be designed within parkway swales, similar to Rose Avenue and Jacinto Drive. Detention of this public runoff will also be necessary in order to negate any impact on the treatment and detention of the existing drainage system and basin. Detailed analysis and plans will be created during final design.

4.0 CONCLUSIONS

Given the analysis described above, Tract 6059 can infiltrate stormwater according to Ventura County standards. The underground systems can also meet the discharge rate requirements established by the City of Oxnard and County of Ventura Watershed Protection District for the Rice Road Drain watershed. Calculations should be updated with changes to the Tentative Map to ensure that the drainage requirements are maintained.

5.0 APPENDICES

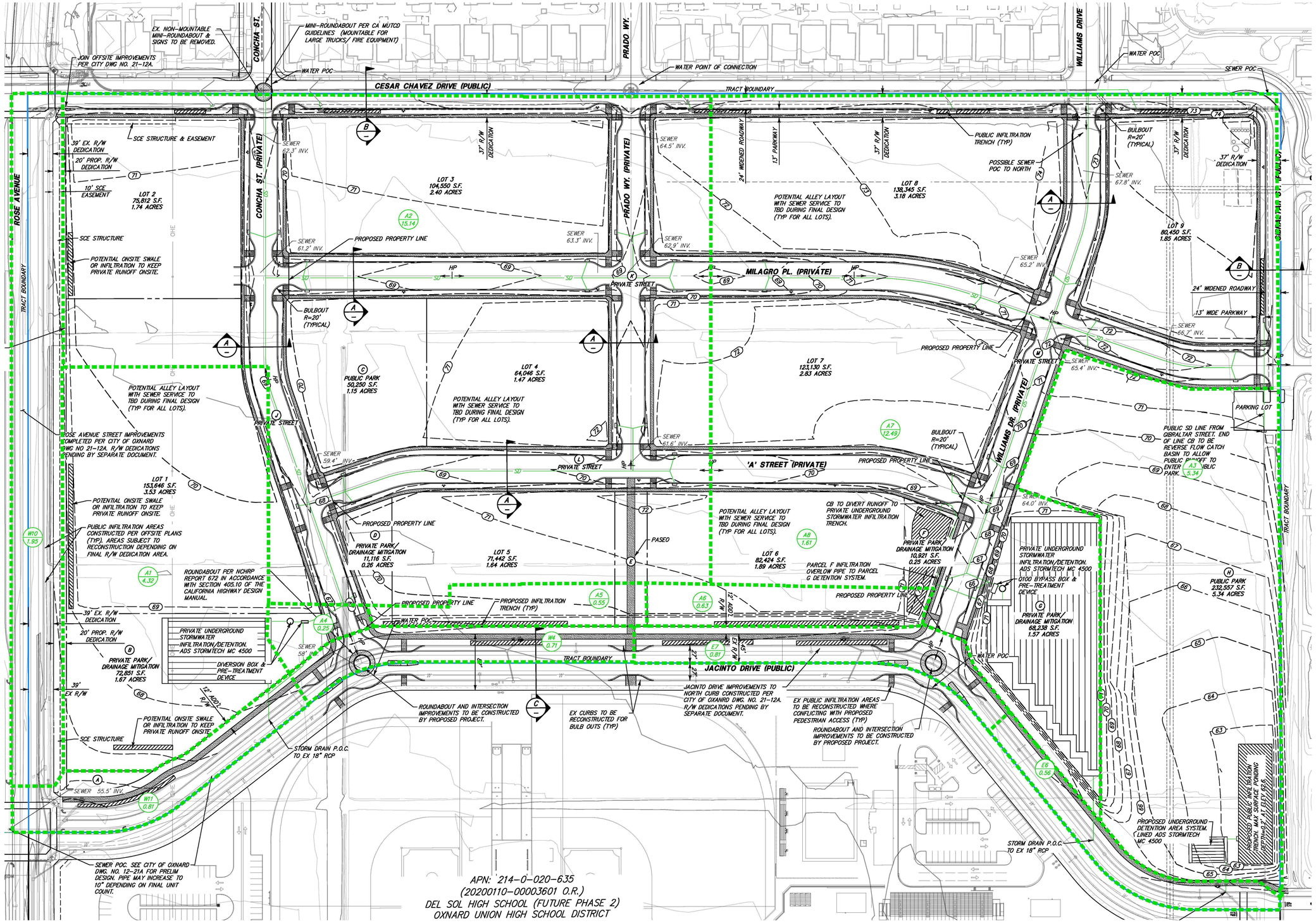
APPENDIX A: HYDROLOGY EXHIBITS

APPENDIX B: STORMWATER TREATMENT CALCULATIONS

APPENDIX C: DETENTION ANALYSES

APPENDIX D: INFILTRATION TESTING REPORT

APPENDIX A: HYDROLOGY EXHIBITS



60' 30' 0' 60' 120'

GRAPHIC SCALE: 1"=60'

North Ranch To West RCB

Subarea	Area (ac)	SQDV (cf)	Total Basin Volume (ac-ft)	Q100 Basin Volume (ac-ft)	Q100 (cfs)	Q Bypass (cfs)	Q Det. Oulet (cfs)	Total Discharge (cfs)
A1 (West)	19.5	43,745	1.98	1.64	60.2	11.0	2.3	13.3
A4 (Undetained)	0.25	TBD	N/A	N/A	0.8	0.8	N/A	0.77
A5 (Undetained)	0.55	TBD	N/A	N/A	1.7	1.7	N/A	1.70
Total	20.3				62.7	13.5	2.3	15.8

North Ranch To East RCB

Subarea	Area (ac)	SQDV (cf)	Total Basin Volume (ac-ft)	Q100 Basin Volume (ac-ft)	Q100 (cfs)	Q Bypass (cfs)	Q Det. Oulet (cfs)	Total Discharge (cfs)
A7 (East)	12.5	27,298	10.82	5.47	38.9	0.0	2.7	2.7
A8 (East Parcel F)	1.61	3,770	To Basin in Subarea A7	N/A	5.0	0.0	N/A	0.0
A6 (Undetainted)	0.63	1,583	N/A	N/A	1.9	1.9	N/A	1.9
A3 Public Park	5.34	5,961			16.5	0.0	2.4	2.4
Total	20.1	38,612			62	1.9	5.1	7.0

Overall Summary

Area	Offiste Acreage	Onsite Acreage	RCB	Allowable Discharge (cfs)[1]	Undetained Discharge (cfs)[3]	Undetained Tract 6059 Areas (A4-A6)	Basin Bypass Discharge (cfs)	Detained Discharge (cfs)[2]	Total Discharge (cfs)[4]
South	2.37	10.5	West	12.9	9.3		0.8	2.5	12.6
North West (A1, A2, A4, A5)	3.47	20.3	West	29.5	10.3	2.50	11.0	2.3	26.1
North East (A6-A8, A3)	1.37	20.1	East	12.8	4.1	1.90		5.1	11.1
Total	**7.2**	**50.9**	**58.1**	**55.2**					**49.9**

REGISTERED PROFESSIONAL ENGINEER
ALAN K. EDIGER
No. C075560
CIVIL
STATE OF CALIFORNIA

SUBDIVIDER/OWNER:

MAULHARDT / STILES FAMILY
C/O PARKSTONE COMPANIES
ATTN: MR. MIKE PENROD
860 HAMPSHIRE ROAD, SUITE U
WESTLAKE VILLAGE, CA 91361

LAND USE PLANNER & ENGINEER:

JENSEN DESIGN & SURVEY, INC
1672 DONLON STREET
VENTURA, CALIF. 93003
PHONE 805/654-6977
FAX 805/654-6979

MAULHARDT / STILES RANCH
TENTATIVE TRACT No. 6059
PRELIMINARY HYDROLOGY EXHIBIT

CITY OF OXNARD | COUNTY OF VENTURA | STATE OF CALIFORNIA

Legal Description (Portion): Part of Subdivision 26 of the Rancho El Rio De Santa Clara O'La Colonia, in the County of Ventura, State of California, as per Partition Map thereof filed in the Office of the County Clerk of said County. Please see Sheet 1 for complete legal description.

SCALE: 1"=60' | J.N.: PAR01.5808.006 | DATE: Jan 22, 2024

SHEET 1 OF 2

APN: 214-0-020-635
(20200110-00003601 O.R.)
DEL SOL HIGH SCHOOL (FUTURE PHASE 2)
OXNARD UNION HIGH SCHOOL DISTRICT
(NOT A PART)

RET WALL 4' MAX.

LOT 11
42,907 S.F.
0.99 ACRES

WATER POINT OF CONNECTION
JACK & BORE REQ'D.

PUBLIC INFILTRATION AREAS CONSTRUCTED PER OFFSITE PLANS (TYP.) AREAS SUBJECT TO RECONSTRUCTION DEPENDING ON FINAL R/W DEDICATION AREA AND DRIVEWAY PLACEMENT.

EX. R/W DEDICATION VARIABLE WIDTH

FINAL DEDICATION AREA WILL REDUCE ONSITE AND INCREASE OFFSITE DRAINAGE AREAS. TO BE REVIEWED AT FINAL DESIGN.

ROSE AVENUE STREET IMPROVEMENTS COMPLETED PER CITY OF OXNARD DWG NO. 21-12A. R/W DEDICATIONS PENDING BY SEPARATE DOCUMENT.

20' PROP. R/W DEDICATION

ROSE AVENUE

TRACT BOUNDARY

SCE STRUCTURE

SD WILL BE SHALLOW ENCASEMENT TBD.

BULBOUT R=20' (TYPICAL)

SEWER B

LOT 10
87,320 S.F.
2.00 ACRES

10' PROP. SCE ESMT

POSSIBLE ALTERNATE SEWER ROUTING FOR LOT 10. TBD WITH FINAL SITE PLAN AND POSSIBLE ALLEY LOCATION.

SWALE ALONG FRONTAGE AREA

PUBLIC PARK INFILTRATION TRENCH 5'X366' WITH 12" MEDIA DEPTH AND 0.6' PONDING DEPTH

PUBLIC PARK
44,627 S.F.
1.02 ACRES

LOT 12
77,426 S.F.
1.78 ACRES

DIVERSION BOX & PRE-TREATMENT DEVICE

PRIVATE UNDERGROUND STORMWATER INFILTRATION/DETENTION. ADS STORMTECH SC740. FINAL LAYOUT MAY BE SEPARATED BY LOT OR ADJUSTED AS SITE PLAN ALLOWS.

FINAL DEDICATION AREA WILL REDUCE ONSITE AND INCREASE OFFSITE DRAINAGE AREAS. TO BE REVIEWED AT FINAL DESIGN.

LOT 13
91,953 S.F.
2.11 ACRES

SCE STRUCTURE

SWALE ALONG FRONTAGE AREA

SEWER A

STORM DRAIN P.O.C. TO EX 18" HDPE

WATER P.O.C

PUBLIC INFILTRATION AREAS CONSTRUCTED PER OFFSITE PLANS (TYP). AREAS SUBJECT TO RECONSTRUCTION DEPENDING ON FINAL R/W DEDICATION AREA AND DRIVEWAY PLACEMENT.

CAMINO DEL SOL STREET IMPROVEMENTS COMPLETED PER CITY OF OXNARD DWG NO. 21-12A. R/W DEDICATIONS PENDING BY SEPARATE DOCUMENT.

SEWER P.O.C JACK & BORE REQ'D

EX. R/W DEDICATION VARIABLE WIDTH

CAMINO DEL SOL

SUB

60' 30' 0' 60' 120'
GRAPHIC SCALE: 1"=60'

Overall Summary

Area	Offsite Acreage[1]	Onsite Acreage	RCB	Allowable Discharge (cfs)[4]	Undetained Discharge (cfs)[2,3]	Undetained Tract 6059 Areas (A4-A6)	Basin Bypass Discharge (cfs)	Detained Discharge (cfs)[2]	Total Discharge (cfs)[4]
South	2.3	10.5	West	12.8	9.1		0.8	2.5	12.4
North West (A1, A2, A4, A5)	2.71	25.62	West	26.1	8	2.50	12.0	2.9	25.4
North East (A6-A8, A3)	1.18	16.17	East	12.7	3.5	1.90		5.4	10.8

[1]From Overall Hydrology Report
[2]From Hydraflow Summary Page
[3]From Offsite Area
[4]Routed flow from Hydraflow may not equal the sum of undetained and detained peaks.

South Ranch Summary Lots 10-13

Subarea	Area (ac)	SQDV (cf)	Total Basin Volume (ac-ft)	Q100 Basin Volume (ac-ft)	Q100 (cfs)	Q Bypass (cfs)	Q Det. Outlet (cfs)	Total Discharge (cfs)
A	9.5	23,342	2.91	2.85	37.5	0.8	2.19	3
A1 (Public Park)	1	1552	0.037			0.5	Design for 0.2	Allowable 0.7

SUBDIVIDER/OWNER:

MAULHARDT / STILES FAMILY
C/O PARKSTONE COMPANIES
ATTN: MR. MIKE PENROD
860 HAMPSHIRE ROAD, SUITE U
WESTLAKE VILLAGE, CA 91361

LAND USE PLANNER & ENGINEER:

JENSEN DESIGN & SURVEY, INC
1672 DONLON STREET
VENTURA, CALIF. 93003
PHONE 805/654-6977
FAX 805/654-6979

REGISTERED PROFESSIONAL ENGINEER
AYAK. EDIGER
No. C075560
CIVIL
STATE OF CALIFORNIA

MAULHARDT / STILES RANCH
TENTATIVE TRACT No. 6059
PRELIMINARY HYDROLOGY EXHIBIT

CITY OF OXNARD | COUNTY OF VENTURA | STATE OF CALIFORNIA

Legal Description (Portion): Part of Subdivision 26 of the Rancho El Rio De Santa Clara O'La Colonia, in the County of Ventura, State of California, as per Partition Map thereof filed in the Office of the County Clerk of said County. Please see Sheet 1 for complete legal description.

SCALE: 1"=60' | J.N.: PAR01.5808.006
DATE: Dec 08, 2023 | DWG. NAME:

SHEET 2 OF 2

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86.9 CFS — DENOTES CUMULATIVE FLOWS DISCHARGED FROM MAULHARDT OR DSHS SUBAREAS

473 CFS RCB — DENOTES CUMULATIVE FLOWS IN RCB SYSTEMS

M-N
45.20

M-N UNDETAINED
STREET Q100=4.7 CFS
STREET SUBAREAS W10

M-N UNDETAINED
STREET Q100=1.6
STREET SUBAREAS W4

M-N EAST UNDETAINED
STREET Q100=1.9 CFS
STREET SUBAREAS E7

M-N EAST ALLOWABLE
DISCHARGE= 9.2 CFS

M-N EAST UNDETAINED
Q100 =1.7 CFS
STREET SUBAREA E6

M-N WEST ALLOWABLE
DISCHARGE= 18.1 CFS

3.7 CFS

3.1 CFS

DSHS UNDETAINED
STREET Q100=1.5 CFS
STREET SUBAREAS W3

DSHS EAST UNDETAINED
STREET Q100=1.8 CFS
STREET SUBAREAS E8

M-N UNDETAINED STREET
Q100=1.7 CFS
STREET SUBAREAS W11

27.6 CFS

DSHS UNDETAINED
STREET Q100=1.6 CFS
STREET SUBAREAS W2

29.2 CFS

14.6 CFS

16.0 CFS

HS
53.59

DSHS EAST UNDETAINED
STREET Q100=1.4 CFS
STREET SUBAREAS E5

DSHS EAST UNDETAINED
STREET Q100=0.8 CFS
STREET SUBAREAS E3

17.6 CFS

DSHS EAST UNDETAINED
STREET Q100=0.8 CFS
STREET SUBAREAS E4

36.8 CFS

DSHS NORTH BASIN ROUTED
DISCHARGE Q100=4.3 CFS

DSHS NORTH BASIN ROUTED
DISCHARGE Q100=15.2 CFS
AND SOUTH CAMPUS WEST
BYPASS=9.3 CFS
TOTAL=24.5 CFS

UNDETAINED STREET
Q100=3.3 CFS
STREET SUBAREAS W1a
(DSHS) & W1b (M-S)

M-S
12.80

DSHS SOUTH BASIN ROUTED
DISCHARGE Q100=4.5 CFS

UNDETAINED WEST STREET
Q100=5.3 CFS
SUBAREAS W5 & W6

DSHS EAST UNDETAINED
STREET Q100=2.0 CFS
STREET SUBAREAS E2

MAULHARDT SOUTH WEST
Q100 ALLOWABLE=3.7 CFS

UNDETAINED DSHS WEST
SUBAREAS A17 & A18
Q100=1.6 CFS

M-S UNDETAINED
STREET Q100=5.6 CFS
STREET SUBAREAS W9a
& W9b

M-S UNDETAINED
STREET Q100=1.9 CFS
STREET SUBAREAS W8

UNDETAINED STREET
Q100=2.8 CFS
STREET SUBAREAS W7a
(DSHS) & W7b (M-S)

DSHS EAST UNDETAINED
STREET Q100=2.0 CFS
STREET SUBAREAS E1

86.8 CFS

21.7 CFS

473 CFS RCB

451.4 CFS RCB

42.6 CFS

48.0 CFS

75.3 CFS

76.9 CFS

WEST RCB

EAST RCB

339.5 CFS RCB

387.5 CFS RCB

414.8 CFS RCB

416.4 CFS RCB

426.2 CFS RCB

FROM OVERALL HYDROLOGY REPORT

West RCB		East RCB	
	Q100 (cfs)		Q100 (cfs)
M-N	26.2	M-N	12.7
M-S	12.7	DSHS	9.0
DSHS	47.8	Total	21.7
Total	**86.8**	Allowable	21.8
Allowable	**89.8**		

MINOR ROUNDING DIFFERENCES MAY OCCUR.

100' 0' 200'
SCALE: 1"=200'

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OVERALL HYDROLOGY
MAULHARDT/DSHS

SHEET 1 OF 1
Jul 20, 2022

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M–N
45.20

M–S
12.80

HS
53.59

HS–B
34.55

HS–A
12.62

W10
1.59

W3
0.49

W4
0.55

E7
0.62

E8
0.60

E6
0.56

W11
0.57

W2
0.55

E5
0.48

E3
0.27

E4
0.28

E2
0.53

E1
0.53

W1a
0.91

W1b
0.14

W9a
0.55

W9b
0.87

W8
0.49

W7b
0.24

W7a
0.47

W6
0.46

W5
0.88

1060 SF

933 SF

2605 SF

805 SF

UNDERGROUND INFILTRATION/ DETENTION AREA FOR MAULHARDT WEST TBD

UNDERGROUND INFILTRATION/ DETENTION AREA TBD

18.1 CFS ALLOWABLE TO EX WEST RCB FROM DETENTION SYSTEM + W10 & W11 (6.4 CFS)=24.5 CFS

W3 & W4 = 3.1 CFS

W2 = 1.6 CFS

9.2 CFS ALLOWABLE FROM DETENTION SYSTEM

MAULHARDT UNDETAINED SUBAREAS E6 & E7=3.5 CFS

REDUCE 35'

W1a REV REQUIRED L=235=35+89+81+30

REDUCE TO 81'

W1a REV REQUIRED L=235'

ELIMINATE:

W1a & W1b (3.3 cfs) DSHS B45 (4.3 CFS) = 7.6 CFS

W1b REV REQUIRED LENGTH=45'

REDUCE EACH AREA SLIGHTLY TO ACHIEVE 45' TOTAL

REDUCE TO MEET L=149'

W9a REV REQUIRED L=149'

HS NORTH INFILTRATION SYSTEM

HS NORTH DETENTION SYSTEM

HS SOUTH COMBINED INFILTRATION/DETENTION SYSTEM

EAST SD

WEST SD

MAULHARDT SOUTH (3.7 CFS) + W8 (1.9 CFS) =5.6 CFS

W9a & W9b = 5.6 CFS

10+83.60
51.3 CFS FROM WEST SD TO EX WEST RCB

15.2 CFS HS NORTH DISCHARGE + 9.3 SOUTH WEST BYPASS + W7a =26 CFS
WITH W7b=27.3 CFS

0.9 CFS A17 + 0.7 CFS A18 =1.6 CFS

4.5 CFS HS SOUTH DISCHARGE + 3.5 CFS W5 + 1.8 W6 =9.8 CFS

W5 REV L=125'

REDUCE TO 15'

21.8 CFS ALLOWABLE FROM EAST SD TO EX EAST RCB FROM 97D

DSHS UNDETAINED SUBAREAS E1–E5 & E8 = 9 CFS

2+69.27

6+74.22

11+05=53 CFS ORIG.

15+49±
55.3 CFS ORIG.

224+06.15
EX 24" POC

225+22.66

473 CFS FROM EAST RCB IN ORIGINAL WEST RCB WSPG CALC

TOTAL 89.7 CFS TO EX WEST RCB

427 CFS FROM ORIGINAL WEST RCB WSPG CALC

Offsite Subareas

Flow per Acre Basis	Q10	Q50	Q100	
	q (cfs/ac)	q (cfs/ac)	q (cfs/ac)	From
South Campus East	2.42	3.57	3.94	VCRat
North Campus East	1.61	2.69	2.98	Tc Calc

	DSHS Undetained Public Street Areas East System				
		Area (ac)	Q 10 (cfs)	Q50 (cfs)	Q100 (cfs)
South Campus	E1	0.53	1.28	1.89	2.09
South Campus	E2	0.53	1.28	1.89	2.09
North Campus	E3	0.27	0.44	0.73	0.80
North Campus	E4	0.28	0.45	0.75	0.83
North Campus	E5	0.48	0.78	1.29	1.43
North Campus	E8	0.6	0.97	1.62	1.79
	Total	2.69	5.2	8.2	9.0
	DSHS Undetained Public Street Areas West System				
South Campus	W5	0.88	2.13	3.14	3.47
South Campus	W6	0.46	1.11	1.64	1.81
South Campus	W7a	0.47	1.14	1.68	1.85
North Campus	W1a	0.91	1.47	2.45	2.71
North Campus	W2	0.55	0.89	1.48	1.64
North Campus	W3	0.49	0.79	1.32	1.46
	Total	3.76	7.5	11.7	12.9

	Maulhardt Undetained Public Street Areas East System				
		Area (ac)	Q 10 (cfs)	Q50 (cfs)	Q100 (cfs)
North Campus	E6	0.56	0.90	1.51	1.67
North Campus	E7	0.62	1.00	1.67	1.85
North Campus	W1b	0.14	0.34	0.50	0.55
	Total	1.18	1.91	3.18	3.52
	Maulhardt Undetained Public Street Areas West System				
South Campus	W7b	0.24	0.58	0.86	0.95
South Campus	W8	0.49	1.19	1.75	1.93
South Campus	W9a	0.55	1.33	1.96	2.17
South Campus	W9b	0.87	2.11	3.10	3.43
North Campus	W4	0.55	0.89	1.48	1.64
North Campus	W10	1.59	2.57	4.28	4.74
North Campus	W11	0.57	0.92	1.53	1.70
	Total	4.86	9.58	14.96	16.55

FROM OVERALL HYDROLOGY REPORT

LEGEND

X
X.XX
MAIN AREAS
AREA (AC)

WATERSHED AREA BOUNDARY

WATERSHED SUB–AREA BOUNDARY

PROPOSED SD

OFFSITE INFILTRATION AREA

100' 50' 0' 100' 200'
GRAPHIC SCALE: 1"=100'

May 02, 2023

HYDROLOGY EXHIBIT

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SCALE: 1" = 100'
J.N.: PAR01.5808
DATE: 3/21/2019
DWG. NAME: 5808 OXNARD OVERALL HYDROLOGY EXHIBIT.dwg

OVERALL HYDROLOGY
FOR
MAULHARDT/DSHS

Rose Ave. & Camino del Sol
City of Ventura
COUNTY OF VENTURA STATE OF CALIFORNIA

SHEET 1 OF 1

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APPENDIX B: STORMWATER TREATMENT CALCULATIONS

StormTech® MC-4500 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.

Nominal Chamber Specifications
(not to scale)

Size (L x W x H)
52” x 100” x 60”
1321 mm x 2540 mm x 1524 mm

Chamber Storage
106.5 ft³ (3.01 m³)

Min. Installed Storage*
162.6 ft³ (4.60 m³)

Weight
125 lbs (56.7 kg)

Shipping
7 chambers/pallet
5 end caps/pallet
11 pallets/truck

*Assumes a minimum of 12” (300 mm) of stone above, 9” (230 mm) of stone below chambers, 9” (230 mm) of stone between chambers/ end caps and 40% stone porosity.

Nominal End Cap Specifications
(not to scale)

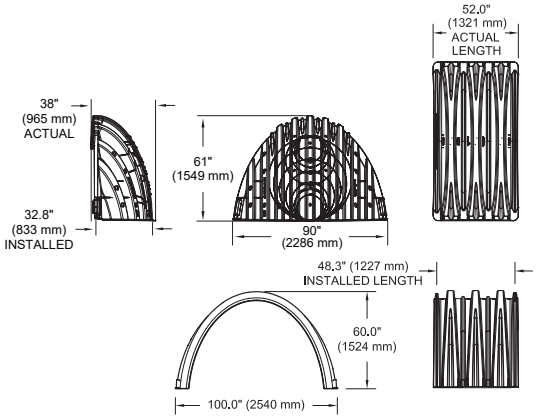
Size (L x W x H)
38” x 90” x 61”
965 mm x 2286 mm x 1549 mm

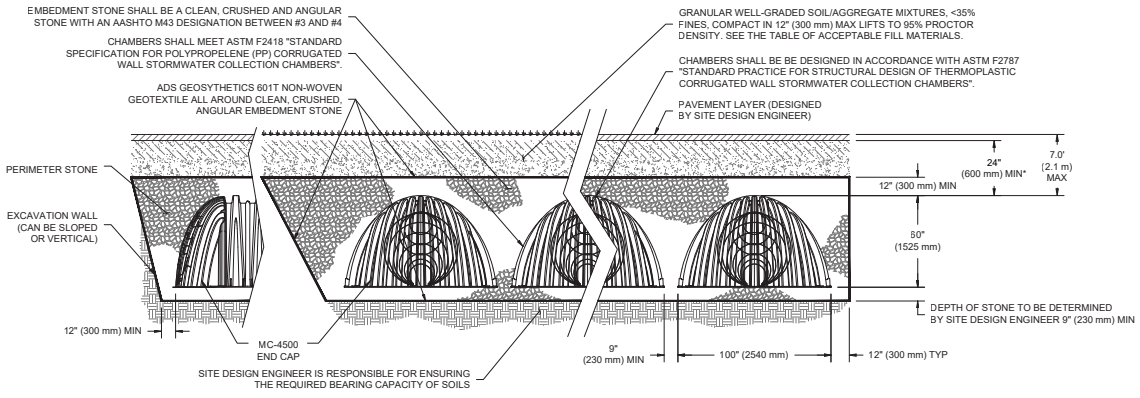
End Cap Storage
39.5 ft³ (1.12 m³)

Min. Installed Storage*
115.3 ft³ (3.26 m³)

Weight
90.0 lbs (40.8 kg)

*Assumes a minimum of 12” (300 mm) of stone above, 9” (230 mm) of stone below, 12” (300 mm) of stone perimeter, 9” (230 mm) of stone between chambers/ end caps and 40% stone porosity.





*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

ADS StormTech™

StormTech MC-4500 Specifications

Storage Volume Per Chamber

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)			
		9 in (230 mm)	12 in (300 mm)	15 in (375 mm)	18 in (450 mm)
Chamber	106.5 (3.01)	162.6 (4.60)	166.3 (4.71)	169.9 (4.81)	173.6 (4.91)
End Cap	39.5 (1.12)	115.3 (3.26)	118.6 (3.36)	121.9 (3.45)	125.2 (3.54)

Note: Assumes 9" (230 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume. End cap volume assumes 12" (300 mm) stone perimeter in front of end cap.

Amount of Stone Per Chamber

English Tons (yds³)	Stone Foundation Depth			
	9 in	12 in	15 in	18 in
Chamber	7.4 (5.2)	7.8 (5.5)	8.3 (5.9)	8.8 (6.2)
End Cap	9.8 (7.0)	10.2 (7.3)	10.6 (7.6)	11.1 (7.9)
Metric Kilograms (m³)	**230 mm**	**300 mm**	**375 mm**	**450 mm**
Chamber	6713 (4.0)	7076 (4.2)	7529 (4.5)	7983 (4.7)
End Cap	8890 (5.3)	9253 (5.5)	9616 (5.8)	10069 (6.0)

Note: 12" (300 mm) of stone above and 9" (230 mm) row spacing and 12" (300 mm) of perimeter stone in front of end caps.

Volume Excavation Per Chamber yd³ (m³)

	Stone Foundation Depth			
	9 in (230 mm)	12 in (300 mm)	15 in (375mm)	18 in (450 mm)
Chamber	10.5 (8.0)	10.8 (8.3)	11.2 (8.5)	11.5 (8.8)
End Cap	9.7 (7.4)	10.0 (7.6)	10.3 (7.9)	10.6 (8.1)

Note: Assumes 9" (230 mm) of separation between chamber rows, 12" (300 mm) of perimeter in front of the end caps, and 24" (600 mm) of cover. The volume of excavation will vary as depth of cover increases.

ADS StormTech products, manufactured in accordance with ASTM F2418 or ASTMF2922, comply with all requirements in the Build America, Buy America (BABA) Act.

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Visit us at www.stormtech.com and utilize the Design Tool

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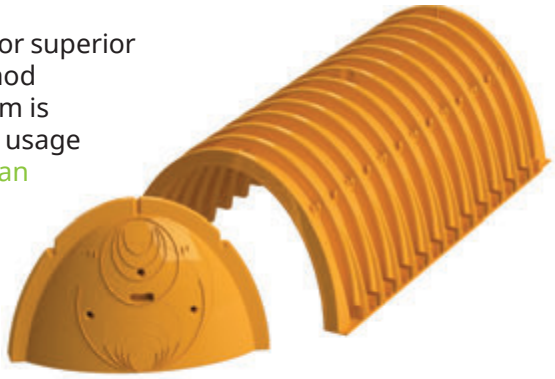
adspipe.com
800-821-6710

StormTech® DC-780 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.



- 12’ (3.6 m) Deep Cover Applications
- Designed in accordance with ASTM F2787 and produced to meet the ASTM F2418 product standard.
- AASHTO safety factors provided for AASHTO Design Truck (H20 and deep cover conditions.)

Nominal Chamber Specifications
(not to scale)

Size (L x W x H)
85.4” x 51” x 30”
2169 mm x 1,295 mm x 762 mm

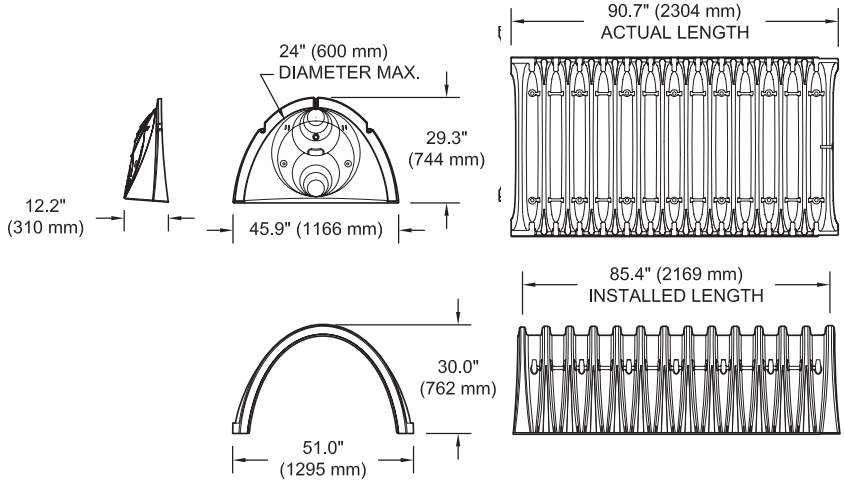
Chamber Storage
46.2 ft³ (1.30 m³)

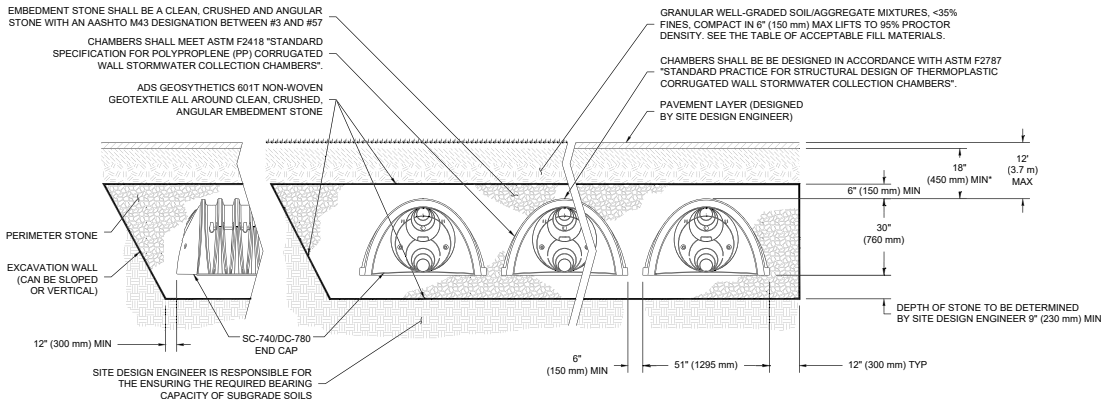
Min. Installed Storage*
78.4 ft³ (2.20 m³)

Weight
80.0 lbs (36.3 kg)

Shipping
24 chambers/pallet
60 end caps/pallet
12 pallets/truck

*Assumes 9” (230 mm) stone below, 6” (150 mm) row spacing and 40% stone porosity.





*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

ADS StormTech™

StormTech DC-780 Specifications

Cumulative Storage Volumes Per Chamber

Assumes 40% Stone Porosity. Calculations are Based Upon a 9" (230 mm) Stone Base Under Chambers.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft³ (m³)	Total System Cumulative Storage ft³ (m³)
45 (1,143)	46.27 (1.310)	78.47 (2.222)
44 (1,118)	46.27 (1.310)	77.34 (2.190)
43 (1,092)	46.27 (1.310)	76.21 (2.158)
42 (1,067)	46.27 (1.310)	75.09 (2.126)
41 (1,041)	46.27 (1.310)	73.96 (2.094)
40 (1,016)	46.27 (1.310)	72.83 (2.062)
39 (991)	46.27 (1.310)	71.71 (2.030)
38 (965)	46.21 (1.309)	70.54 (1.998)
37 (940)	46.04 (1.304)	69.32 (1.963)
36 (914)	45.76 (1.296)	68.02 (1.926)
35 (889)	45.15 (1.278)	66.53 (1.884)
34 (864)	44.34 (1.255)	64.91 (1.838)
33 (838)	43.38 (1.228)	63.21 (1.790)
32 (813)	42.29 (1.198)	61.43 (1.740)
31 (787)	41.11 (1.164)	59.59 (1.688)
30 (762)	39.83 (1.128)	57.70 (1.634)
29 (737)	38.47 (1.089)	55.76 (1.579)
28 (711)	37.01 (1.048)	53.76 (1.522)
27 (686)	35.49 (1.005)	51.72 (1.464)
26 (660)	33.90 (0.960)	49.63 (1.405)
25 (635)	32.24 (0.913)	47.52 (1.346)
24 (610)	30.54 (0.865)	45.36 (1.285)
23 (584)	28.77 (0.815)	43.18 (1.223)
22 (559)	26.96 (0.763)	40.97 (1.160)
21 (533)	25.10 (0.711)	38.72 (1.096)
20 (508)	23.19 (0.657)	36.45 (1.032)
19 (483)	21.25 (0.602)	34.16 (0.967)
18 (457)	19.26 (0.545)	31.84 (0.902)
17 (432)	17.24 (0.488)	29.50 (0.835)
16 (406)	15.19 (0.430)	27.14 (0.769)
15 (381)	13.10 (0.371)	24.76 (0.701)
14 (356)	10.98 (0.311)	22.36 (0.633)
13 (330)	8.83 (0.250)	19.95 (0.565)
12 (305)	6.66 (0.189)	17.52 (0.496)
11 (279)	4.46 (0.126)	15.07 (0.427)
10 (254)	2.24 (0.064)	12.61 (0.357)
9 (229)	0 (0)	10.14 (0.287)
8 (203)	0 (0)	9.01 (0.255)
7 (178)	0 (0)	7.89 (0.223)
6 (152)	0 (0)	6.76 (0.191)
5 (127)	0 (0)	5.63 (0.160)
4 (102)	0 (0)	4.51 (0.128)
3 (76)	0 (0)	3.38 (0.096)
2 (51)	0 (0)	2.25 (0.064)
1 (25)	0 (0)	1.13 (0.032)

Stone Cover

Stone Foundation

Note: Add 1.13 ft³ (0.032 m³) of Storage for Each Additional Inch (25 mm) of Stone Foundation.

Storage Volume Per Chamber ft³ (m³)

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)		
		6 (150)	12 (300)	18 (450)
DC-780 Chamber	78.4 (2.2)	78.4 (2.2)	81.8 (2.3)	88.6 (2.5)

Note: Assumes 40% porosity for the stone, the bare chamber volume, 6" (150 mm) of stone above, and 6" (150 mm) row spacing.

Amount of Stone Per Chamber

English Tons (yds³)	Stone Foundation Depth		
	6"	12"	18"
DC-780	4.2 (3.0)	4.7 (3.3)	5.6 (3.9)
Metric Kilograms (m³)	**150 mm**	**300 mm**	**450 mm**
DC-780	3,810 (2.3)	4,264 (2.5)	5,080 (3.0)

Note: Assumes 6" (150 mm) of stone above, and between chambers.

Volume Excavation Per Chamber yd³ (m³)

	Stone Foundation Depth		
	6 (150)	12 (300)	18 (450)
DC-780	5.9 (4.5)	6.3 (4.8)	6.9 (5.3)

Note: Assumes 6" (150 mm) separation between chamber rows and 18" (450 mm) of cover. The volume of excavation will vary as depth of cover increases.

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throughout the project area. In contrast, the sediments forming the alluvial fan north of the Santa Clara River, which is described above, are dominantly clayey material.

GROUND-WATER CONDITIONS

Liquefaction hazard may exist in areas where depth to ground water is 40 feet or less. DMG uses the highest known ground-water levels because water levels during an earthquake cannot be anticipated because of the unpredictable fluctuations caused by natural processes and human activities. A historical-high ground-water map differs from most ground-water maps, which show the actual water table at a particular time. Plate 1.2 depicts a hypothetical ground-water table within alluviated areas.

Ground-water hydrology of the Oxnard Plain is summarized in reports by the California Department of Water Resources (1971), Turner (1975), Turner and Mukae (1975), and Densmore (1996). Near-surface ground water in the Oxnard Plain is associated with an unconfined aquifer extending from the surface to a depth of about 75 feet. This upper semi-perched ground-water zone is separated from deeper aquifers by clay-rich zone that averages over 80 feet in thickness. Borehole logs collected for this study indicate that the Oxnard Plain is marked by relatively consistent historical ground-water depths that range from 25 feet or more in the north central margin of the quadrangle to 0 feet along the coastline (Plate 1.2). Depth to ground water over most of the area covered by the Oxnard Quadrangle averages about 6 feet. Ground-water recharge in the Oxnard Plain originates mainly from surface and near-surface water flow of the Santa Clara River.

PART II

LIQUEFACTION HAZARD POTENTIAL

Liquefaction may occur in water-saturated sediment during moderate to great earthquakes. Liquefied sediment loses strength and may fail, causing damage to buildings, bridges, and other structures. Many methods for mapping liquefaction hazard have been proposed. Youd (1991) highlights the principal developments and notes some of the widely used criteria. Youd and Perkins (1978) demonstrate the use of geologic criteria as a qualitative characterization of liquefaction susceptibility and introduce the mapping technique of combining a liquefaction susceptibility map and a liquefaction opportunity map to produce a liquefaction potential map. Liquefaction susceptibility is a function of the capacity of sediment to resist liquefaction. Liquefaction opportunity is a function of the potential seismic ground shaking intensity.

The method applied in this study for evaluating liquefaction potential is similar to that of Tinsley and others (1985). Tinsley and others (1985) applied a combination of the techniques used by Seed and others (1983) and Youd and Perkins (1978) for their

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Oxnard Quadrangle Plate 1.2
SEISMIC HAZARD ZONE REPORT 052

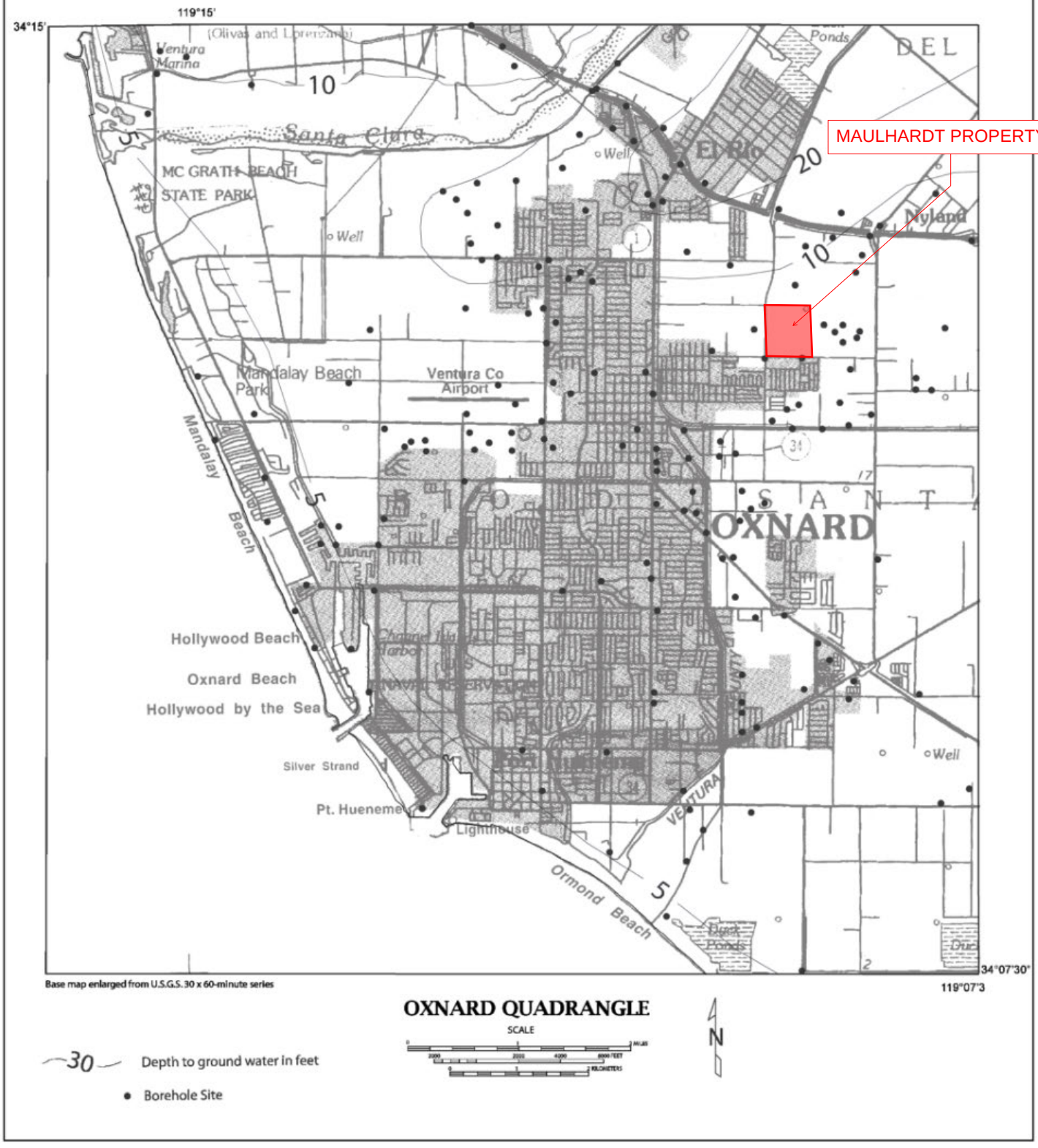


Plate 1.2 Depth to historically highest groundwater and borehole locations, Oxnard 7.5-minute quadrangle, California

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Lots 10-13
Location:	South Ranch

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	X	Other

Step 1: Determine Water Quality Design Volume

1-1	Enter Project Area	$A_{project}$=	9.5	ac
1-2	Enter the maximum allowable percent of the Project area that may be effective impervious area (%)(refer to permit), ranges from 5-30% allowable	%allowable=	0	%
1-3	Determine the maximum allowable effective impervious area (ac), $EIA_{allowable} = (A_{project})*(\%allowable)$	$EIA_{allowable}$=	0.00	ac
1-4	Enter Project Impervious fraction, IMP	IMP =	0.95	
1-5	Determine the Project Total Impervious Area (ac) $TIA = A_{project}*IMP$	TIA =	9.03	ac
1-6	Determine the total area from which runoff must be retained (ac), $A_{retain}=TIA-EIA_{allowable}$	A_{retain} =	9.03	ac
1-7	Determine pervious runoff coefficient using Table E-1, C_p	C_p =	0.050	
1-8	Calculate runoff coefficient $C=0.95*IMP + C_p(1-IMP)$	C =	0.9050	
1-9	Enter design rainfall depth of the storm (in), P_i	P_i =	0.75	in
1-10	Calculate rainfall depth (ft), $P = P_i/12$	P =	0.0625	ft
1-11	Calculate Water Quality Design Volume (CF) $SQDV = 43560*C*P*A_{project}$	SQDV =	23407	cf

Table 6.4 - Infiltration Facility Safety Factor Determination Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w*v
A	Suitability Assessment	Soil Assessment Method	2	0.25	0.5
		Predominant Soil texture	2	0.25	0.5
		Soil Variability	2	0.25	0.5
		Depth to groundwater / impervious layer	2	0.25	0.5
		Suitability Assessment Safety Factor S_A =			**2**
B	Design	Tributary Area Size	3	0.25	0.75
		Level of pre-treatment / expected sediment loads	3	0.25	0.75
		Redundancy	3	0.25	0.75
		Compaction during construction	3	0.25	0.75
		Design Safety Factor S_B =			**3**

Combined Safety Factor = S_A * S_B = 6

INF-2 - Infiltration Trench / INF-4 - Dry Well

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Lots 10-13
Location:	South Ranch

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	x	Other

Step 2: Determine the design percolation rate

2-1	Enter measured soil percolation rate (in/hr) 0.5 in/hr minimum. $P_{measured}$	$P_{measured}$=	0.9	in/hr
2-2	Determine percolation rate correction factor, S_A based on suitability assessment (see Section 6 INF-1, Table 6-2)	S_A =	2	
2-3	Determine percolation rate correction factor, S_B based on design (see Section 6 INF-1)	S_B =	3	
2-4	Calculate Combine safety factor, $S = S_A * S_B$	S =	6	
2-5	Calculate the design percolation rate (in/hr) $P_{design} = P_{measured}/S$	P_{design} =	0.150	in/hr

Step 3: Calculate the surface area

3-1	Enter required drain time (hours, 72 hours max, t	t =	72	hr
3-2	within the t (ft), dmax = Pdesign*t/12	d_{max} =	0.900	ft
3-3	For trenches, enter trench fill aggregate porosity, n_t	n_t =	0.3	ft
3-4	For trenches, enter depth of trench fill (ft), dt	d_t =	1	ft
3-5	For trenches, select ponding depth d_p such that $d_p <= d_{max} - n_t*d_t$	d_p =	0.600	ft
3-6	Enter the time to fill infiltration trench with water (use 2 hours for most designs), T	T =	2	hrs
3-7	Calculate Infiltrating surface area for infiltration trenches At = SQDV/(TPdesign/12+ntdt+dp)	A_t =	25304.5	sf

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Lots 10-12
Location:	South Ranch

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	X	Other

Step 1: Determine Water Quality Design Volume

1-1	Enter Project Area	$A_{project}$=	1	ac
1-2	Enter the maximum allowable percent of the Project area that may be effective impervious area (%)(refer to permit), ranges from 5-30% allowable	$\%_{allowable}$=	0	%
1-3	Determine the maximum allowable effective impervious area (ac), $EIA_{allowable} = (A_{project})*(\%allowable)$	$EIA_{allowable}$=	0.00	ac
1-4	Enter Project Impervious fraction, IMP	IMP =	0.6	
1-5	Determine the Project Total Impervious Area (ac) $TIA = A_{project}*IMP$	TIA =	0.60	ac
1-6	Determine the total area from which runoff must be retained (ac), $A_{retain}=TIA-EIA_{allowable}$	A_{retain} =	0.60	ac
1-7	Determine pervious runoff coefficient using Table E-1, C_p	C_p =	0.050	
1-8	Calculate runoff coefficient $C=0.95*IMP + C_p(1-IMP)$	C =	0.5900	
1-9	Enter design rainfall depth of the storm (in), P_i	P_i =	0.75	in
1-10	Calculate rainfall depth (ft), $P = P_i/12$	P =	0.0625	ft
1-11	Calculate Water Quality Design Volume (CF) $SQDV = 43560*0.95*P*A_{retain}$	SQDV =	1552	cf

Table 6.4 - Infiltration Facility Safety Factor Determination Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w*v
A	Suitability Assessment	Soil Assessment Method	2	0.25	0.5
		Predominant Soil texture	2	0.25	0.5
		Soil Variability	2	0.25	0.5
		Depth to groundwater / impervious layer	2	0.25	0.5
		Suitability Assessment Safety Factor S_A =			**2**
B	Design	Tributary Area Size	3	0.25	0.75
		Level of pre-treatment / expected sediment loads	3	0.25	0.75
		Redundancy	3	0.25	0.75
		Compaction during construction	3	0.25	0.75
		Design Safety Factor S_B =			**3**

Combined Safety Factor = S_A * S_B = 6

INF-2 - Infiltration Trench / INF-4 - Dry Well

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Lots 10-12
Location:	South Ranch

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	x	Other

Step 2: Determine the design percolation rate				
2-1	Enter measured soil percolation rate (in/hr) 0.5 in/hr minimum. $P_{measured}$	$P_{measured}$=	0.9	in/hr
2-2	Determine percolation rate correction factor, S_A based on suitability assessment (see Section 6 INF-1, Table 6-2)	S_A =	2	
2-3	Determine percolation rate correction factor, S_B based on design (see Section 6 INF-1)	S_B =	3	
2-4	Calculate Combine safety factor, $S = S_A * S_B$	S =	6	
2-5	Calculate the design percolation rate (in/hr) $P_{design} = P_{measured}/S$	P_{design} =	0.150	in/hr
Step 3: Calculate the surface area				
3-1	Enter required drain time (hours, 72 hours max, t	t =	72	hr
3-2	within the t (ft), dmax = Pdesign*t/12	d_{max} =	0.900	ft
3-3	For trenches, enter trench fill aggregate porosity, n_t	n_t =	0.3	ft
3-4	For trenches, enter depth of trench fill (ft), dt	d_t =	1	ft
3-5	For trenches, select ponding depth d_p such that $d_p <= d_{max} - n_t*d_t$	d_p =	0.600	ft
3-6	Enter the time to fill infiltration trench with water (use 2 hours for most designs), T	T =	2	hrs
3-7	Calculate Infiltrating surface area for infiltration trenches At = SQDV/(TPdesign/12+ntdt+dp)	A_t =	1677.6	sf

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	North A1 - West

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	X	Other

Step 1: Determine Water Quality Design Volume

1-1	Enter Project Area	$A_{project}$=	19.5	ac
1-2	Enter the maximum allowable percent of the Project area that may be effective impervious area (%)(refer to permit), ranges from 5-30% allowable	$\%_{allowable}$=	0	%
1-3	Determine the maximum allowable effective impervious area (ac), $EIA_{allowable} = (A_{project})*(\%allowable)$	$EIA_{allowable}$=	0.00	ac
1-4	Enter Project Impervious fraction, IMP	IMP =	0.86	
1-5	Determine the Project Total Impervious Area (ac) TIA = $A_{project}$*IMP	TIA =	16.77	ac
1-6	Determine the total area from which runoff must be retained (ac), A_{retain}=TIA-$EIA_{allowable}$	A_{retain} =	16.77	ac
1-7	Determine pervious runoff coefficient using Table E-1, C_p	C_p =	0.050	
1-8	Calculate runoff coefficient (If Using Aproject) C=0.95*IMP + C_p(1-IMP) Use C=0.95 if Aretain is used in 1-11	C =	0.8240	
1-9	Enter design rainfall depth of the storm (in), P_i	P_i =	0.75	in
1-10	Calculate rainfall depth (ft), P = P_i/12	P =	0.0625	ft
1-11	Calculate Water Quality Design Volume (CF) SQDV = 43560*C*P*$A_{project}$	SQDV =	43745	cf

Table 6.4 - Infiltration Facility Safety Factor Determination Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w*v
A	Suitability Assessment	Soil Assessment Method	2	0.25	0.5
		Predominant Soil texture	2	0.25	0.5
		Soil Variability	2	0.25	0.5
		Depth to groundwater / impervious layer	2	0.25	0.5
		Suitability Assessment Safety Factor S_A =			**2**
B	Design	Tributary Area Size	3	0.25	0.75
		Level of pre-treatment / expected sediment loads	2	0.25	0.5
		Redundancy	2	0.25	0.5
		Compaction during construction	3	0.25	0.75
		Design Safety Factor S_B =			**2.5**

Combined Safety Factor = S_A * S_B = 5

INF-2 - Infiltration Trench / INF-4 - Dry Well

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	North A1 - West

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	x	Other

Step 2: Determine the design percolation rate				
2-1	Enter measured soil percolation rate (in/hr) 0.5 in/hr minimum. $P_{measured}$	$P_{measured}$=	2.43	in/hr
2-2	Determine percolation rate correction factor, S_A based on suitability assessment (see Section 6 INF-1, Table 6-2)	S_A =	2	
2-3	Determine percolation rate correction factor, S_B based on design (see Section 6 INF-1)	S_B =	2.5	
2-4	Calculate Combine safety factor, $S = S_A * S_B$	S =	5	
2-5	Calculate the design percolation rate (in/hr) $P_{design} = P_{measured}/S$	P_{design} =	0.486	in/hr
Step 3: Calculate the surface area				
3-1	Enter required drain time (hours, 72 hours max, t	t =	72	hr
3-2	within the t (ft), dmax = Pdesign*t/12	d_{max} =	2.92	ft
3-3	For trenches, enter trench fill aggregate porosity, n_t	n_t =	0.3	ft
3-4	For trenches, enter depth of trench fill (ft), dt	d_t =	1	ft
3-5	For trenches, select ponding depth d_p such that $d_p <= d_{max} - n_t*d_t$	d_p =	2.62	ft
3-6	Enter the time to fill infiltration trench with water (use 2 hours for most designs), T	T =	2	hrs
3-7	Calculate Infiltrating surface area for infiltration trenches At = SQDV/(TPdesign/12+ntdt+dp)	A_t =	14596.3	sf

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	A3 East Village Public Park

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	X	Other

Step 1: Determine Water Quality Design Volume

1-1	Enter Project Area	$A_{project}$=	5.34	ac
1-2	Enter the maximum allowable percent of the Project area that may be effective impervious area (%)(refer to permit), ranges from 5-30% allowable	$\%_{allowable}$=	0	%
1-3	Determine the maximum allowable effective impervious area (ac), $EIA_{allowable} = (A_{project})*(\%allowable)$	$EIA_{allowable}$=	0.00	ac
1-4	Enter Project Impervious fraction, IMP	IMP =	0.4	
1-5	Determine the Project Total Impervious Area (ac) TIA = $A_{project}$*IMP	TIA =	2.14	ac
1-6	Determine the total area from which runoff must be retained (ac), A_{retain}=TIA-$EIA_{allowable}$	A_{retain} =	2.14	ac
1-7	Determine pervious runoff coefficient using Table E-1, C_p	C_p =	0.050	
1-8	Calculate runoff coefficient C=0.95*IMP + C_p(1-IMP)	C =	0.4100	
1-9	Enter design rainfall depth of the storm (in), P_i	P_i =	0.75	in
1-10	Calculate rainfall depth (ft), P = P_i/12	P =	0.0625	ft
1-11	Calculate Water Quality Design Volume (CF) SQDV = 43560*C*P*Aproject	SQDV =	5961	cf

Table 6.4 - Infiltration Facility Safety Factor Determination Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w*v
A	Suitability Assessment	Soil Assessment Method	2	0.25	0.5
		Predominant Soil texture	2	0.25	0.5
		Soil Variability	2	0.25	0.5
		Depth to groundwater / impervious layer	2	0.25	0.5
		Suitability Assessment Safety Factor S_A =			**2**
B	Design	Tributary Area Size	3	0.25	0.75
		Level of pre-treatment / expected sediment loads	2	0.25	0.5
		Redundancy	2	0.25	0.5
		Compaction during construction	3	0.25	0.75
		Design Safety Factor S_B =			**2.5**

Combined Safety Factor = S_A * S_B = 5

BIO-1 Bioretention with Underdrain and BIO-2 Planter Box

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	A3 East Village Public Park

Step 2: Determine the design percolation rate				
2-1	Enter the design saturated hydraulic conductivity of the amended filter media (2.5 in/hr recommended rate), K_{design}	K_{design}=	2.5	in/hr
Step 3: Calculate Bioretention/Planter Box surface area				
3-1	Enter Water Quality Design Volume (cf), SQDV	SQDV	5960.6	cf
3-2	Enter design saturated hydraulic conductivity (in/hr), K_{design}	K_{design}=	2.500	in/hr
3-3	Enter ponding depth (max 1.5 ft for bioretention, 1-ft for planter box) above area, dp	dp =	0.2	ft/ft
3-4	Calculate the drawdown time for the ponded water to filter through media (hours) tponding = (dp/Kdesign)*12 (tponding=0.96)	$t_{ponding}$=	1.0	hrs
3-5	Enter the storm duration for routing calculations (use 3 hours unless there is rationale for an alternative), $T_{routing}$	$T_{routing}$=	3.0	hrs
3-6	Calculate depth of water (ft) filtered by using the following two equations: $d_{filtered,1}=(K_{design}*T_{routing})/12$ $d_{filtered,2}=dp/2$	$d_{filtered,1}$=	0.6	ft
		$d_{filtered,2}$=	0.1	ft
3-7	Enter the resultant depth (ft) (the lesser of the two calculated above), $d_{filtered}$	$d_{filtered}$=	0.1	ft
3-8	Calculate the infiltrating surface area as follows (sf): A_{req} = SQDV/(dp + $d_{filtered}$)	A_{req}=	19869	sf

INF-2 - Infiltration Trench / INF-4 - Dry Well

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	A3 East Village Public Park

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	x	Other

Step 2: Determine the design percolation rate				
2-1	Enter measured soil percolation rate (in/hr) 0.5 in/hr minimum. $P_{measured}$	$P_{measured}$=	0.5	in/hr
2-2	Determine percolation rate correction factor, S_A based on suitability assessment (see Section 6 INF-1, Table 6-2)	S_A =	2	
2-3	Determine percolation rate correction factor, S_B based on design (see Section 6 INF-1)	S_B =	2.5	
2-4	Calculate Combine safety factor, $S = S_A * S_B$	S =	5	
2-5	Calculate the design percolation rate (in/hr) $P_{design} = P_{measured}/S$	P_{design} =	0.100	in/hr
Step 3: Calculate the surface area				
3-1	Enter required drain time (hours, 72 hours max, t	t =	72	hr
3-2	within the t (ft), dmax = Pdesign*t/12	d_{max} =	0.600	ft
3-3	For trenches, enter trench fill aggregate porosity, n_t	n_t =	0.4	ft
3-4	For trenches, enter depth of trench fill (ft), dt	d_t =	1	ft
3-5	For trenches, select ponding depth d_p such that $d_p <= d_{max} - n_t*d_t$	d_p =	0.200	ft
3-6	Enter the time to fill infiltration trench with water (use 2 hours for most designs), T	T =	2	hrs
3-7	Calculate Infiltrating surface area for infiltration trenches At = SQDV/(TPdesign/12+ntdt+dp)	A_t =	9665.9	sf

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	North A6 (South Block Representative)

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	X	Other

Step 1: Determine Water Quality Design Volume

1-1	Enter Project Area	$A_{project}$=	0.63	ac
1-2	Enter the maximum allowable percent of the Project area that may be effective impervious area (%)(refer to permit), ranges from 5-30% allowable	$\%_{allowable}$=	0	%
1-3	Determine the maximum allowable effective impervious area (ac), $EIA_{allowable} = (A_{project})*(\%allowable)$	$EIA_{allowable}$=	0.00	ac
1-4	Enter Project Impervious fraction, IMP	IMP =	0.9	
1-5	Determine the Project Total Impervious Area (ac) $TIA = A_{project}*IMP$	TIA =	0.57	ac
1-6	Determine the total area from which runoff must be retained (ac), $A_{retain}=TIA-EIA_{allowable}$	A_{retain} =	0.57	ac
1-7	Determine pervious runoff coefficient using Table E-1, C_p	C_p =	0.050	
1-8	Calculate runoff coefficient $C=0.95*IMP + C_p(1-IMP)$	C =	0.8600	
1-9	Enter design rainfall depth of the storm (in), P_i	P_i =	0.75	in
1-10	Calculate rainfall depth (ft), $P = P_i/12$	P =	0.0625	ft
1-11	Calculate Water Quality Design Volume (CF) $SQDV = 43560*C*P*A_{project}$	SQDV =	1475	cf

Table 6.4 - Infiltration Facility Safety Factor Determination Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w*v
A	Suitability Assessment	Soil Assessment Method	3	0.25	0.75
		Predominant Soil texture	2	0.25	0.5
		Soil Variability	2	0.25	0.5
		Depth to groundwater / impervious layer	2	0.25	0.5
		Suitability Assessment Safety Factor S_A =			**2.25**
B	Design	Tributary Area Size	3	0.25	0.75
		Level of pre-treatment / expected sediment loads	3	0.25	0.75
		Redundancy	3	0.25	0.75
		Compaction during construction	3	0.25	0.75
		Design Safety Factor S_B =			**3**

Combined Safety Factor = S_A * S_B = 6.75

Step 2: Determine the design percolation rate				
2-1	Enter measured soil percolation rate (in/hr) 0.5 in/hr minimum. $P_{measured}$	$P_{measured}$=	1	in/hr
2-2	Determine percolation rate correction factor, S_A based on suitability assessment (see Section 6 INF-1, Table 6-2)	S_A =	2.25	
2-3	Determine percolation rate correction factor, S_B based on design (see Section 6 INF-1)	S_B =	3	
2-4	Calculate Combine safety factor, $S = S_A * S_B$	S =	6.75	
2-5	Calculate the design percolation rate (in/hr) $P_{design} = P_{measured}/S$	P_{design} =	0.148	in/hr
Step 3: Calculate the surface area				
3-1	Enter required drain time (hours, 72 hours max, t	t =	72	hr
3-2	Calculate max. depth of runoff that can be infiltrated within the t (ft), d_{max} = $P_{design}*t/12$	d_{max} =	0.889	ft
3-3	For Basins, Select ponding depth dp such that $d_p <= d_{max}$	d_p =	1.32	ft
3-6	Enter the time to fill infiltration basin with water (sue 2 hours for most designs), T	T =	2	hrs
3-7	Calculate Infiltrating surface area for infiltration basin $A_b = SQDV/(TP_{design}/12+d_p)$	A_b =	1096.9	sf
Step 4: Size the forebay (infiltration trenches)				
If a separate pre-treatment unit is designed for the infiltration facility, skip to Step 5. If not complete Step 4				
4-1	Calculate the Volume of the forebay (cf), $V_{forebay}=0.25*SQDV$	$V_{forebay}$	368.8	ct
4-2	Determine forebay depth (ft), $d_{forebay}$	$d_{forebay}$ =	1	ft

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	North A7 - East

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	X	Other

Step 1: Determine Water Quality Design Volume

1-1	Enter Project Area	$A_{project}$=	12.44	ac
1-2	Enter the maximum allowable percent of the Project area that may be effective impervious area (%)(refer to permit), ranges from 5-30% allowable	%allowable=	0	%
1-3	Determine the maximum allowable effective impervious area (ac), $EIA_{allowable} = (A_{project})*(\%allowable)$	$EIA_{allowable}$=	0.00	ac
1-4	Enter Project Impervious fraction, IMP	IMP =	0.84	
1-5	Determine the Project Total Impervious Area (ac) $TIA = A_{project}*IMP$	TIA =	10.45	ac
1-6	Determine the total area from which runoff must be retained (ac), $A_{retain}=TIA-EIA_{allowable}$	A_{retain} =	10.45	ac
1-7	Determine pervious runoff coefficient using Table E-1, C_p	C_p =	0.050	
1-8	Calculate runoff coefficient $C=0.95*IMP + C_p(1-IMP)$	C =	0.8060	
1-9	Enter design rainfall depth of the storm (in), P_i	P_i =	0.75	in
1-10	Calculate rainfall depth (ft), $P = P_i/12$	P =	0.0625	ft
1-11	Calculate Water Quality Design Volume (CF) $SQDV = 43560*C*P*A_{project}$	SQDV =	27298	cf

Table 6.4 - Infiltration Facility Safety Factor Determination Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w*v
A	Suitability Assessment	Soil Assessment Method	2	0.25	0.5
		Predominant Soil texture	2	0.25	0.5
		Soil Variability	2	0.25	0.5
		Depth to groundwater / impervious layer	2	0.25	0.5
		Suitability Assessment Safety Factor S_A =			**2**
B	Design	Tributary Area Size	3	0.25	0.75
		Level of pre-treatment / expected sediment loads	2	0.25	0.5
		Redundancy	2	0.25	0.5
		Compaction during construction	3	0.25	0.75
		Design Safety Factor S_B =			**2.5**

Combined Safety Factor = S_A * S_B = 5

BIO-1 Bioretention with Underdrain and BIO-2 Planter Box

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	North A7 - East

Step 2: Determine the design percolation rate				
2-1	Enter the design saturated hydraulic conductivity of the amended filter media (2.5 in/hr recommended rate), K_{design}	K_{design}=	2.5	in/hr
Step 3: Calculate Bioretention/Planter Box surface area				
3-1	Enter Water Quality Design Volume (cf), SQDV	SQDV	27298	cf
3-2	Enter design saturated hydraulic conductivity (in/hr), K_{design}	K_{design}=	2.500	in/hr
3-3	Enter ponding depth (max 1.5 ft for bioretention, 1-ft for planter box) above area, dp	dp =	1.4	ft/ft
3-4	Calculate the drawdown time for the ponded water to filter through media (hours) tponding = (dp/Kdesign)*12 (tponding=6.72)	$t_{ponding}$=	6.7	hrs
3-5	Enter the storm duration for routing calculations (use 3 hours unless there is rationale for an alternative), $T_{routing}$	$T_{routing}$=	3.0	hrs
3-6	Calculate depth of water (ft) filtered by using the following two equations: $d_{filtered,1}=(K_{design}*T_{routing})/12$ $d_{filtered,2}=dp/2$	$d_{filtered,1}$=	0.6	ft
		$d_{filtered,2}$=	0.7	ft
3-7	Enter the resultant depth (ft) (the lesser of the two calculated above), $d_{filtered}$	$d_{filtered}$=	0.6	ft
3-8	Calculate the infiltrating surface area as follows (sf): A_{req} = SQDV/(dp + $d_{filtered}$)	A_{req}=	13480	sf

INF-2 - Infiltration Trench / INF-4 - Dry Well

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	North A7 - East

Type of Vegetation: (Check type used or describe "Other"	____	Native Grass
	____	Irrigated Turf Grass
	x	Other

Step 2: Determine the design percolation rate

2-1	Enter measured soil percolation rate (in/hr) 0.5 in/hr minimum. $P_{measured}$	$P_{measured}$=	0.5	in/hr
2-2	Determine percolation rate correction factor, S_A based on suitability assessment (see Section 6 INF-1, Table 6-2)	S_A =	2	
2-3	Determine percolation rate correction factor, S_B based on design (see Section 6 INF-1)	S_B =	2.5	
2-4	Calculate Combine safety factor, $S = S_A * S_B$	S =	5	
2-5	Calculate the design percolation rate (in/hr) $P_{design} = P_{measured}/S$	P_{design} =	0.100	in/hr

Step 3: Calculate the surface area

3-1	Enter required drain time (hours, 72 hours max, t	t =	72	hr
3-2	within the t (ft), dmax = Pdesign*t/12	d_{max} =	0.600	ft
3-3	For trenches, enter trench fill aggregate porosity, n_t	n_t =	0.3	ft
3-4	For trenches, enter depth of trench fill (ft), dt	d_t =	0.75	ft
3-5	For trenches, select ponding depth d_p such that $d_p <= d_{max} - n_t*d_t$	d_p =	0.375	ft
3-6	Enter the time to fill infiltration trench with water (use 2 hours for most designs), T	T =	2	hrs
3-7	Calculate Infiltrating surface area for infiltration trenches At = SQDV/(TPdesign/12+ntdt+dp)	A_t =	44266.3	sf

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	North A8 - East Parcel F

Type of Vegetation: (Check type used or describe "Other"		Native Grass
		Irrigated Turf Grass
	X	Other

Step 1: Determine Water Quality Design Volume

1-1	Enter Project Area	$A_{project}$=	1.61	ac
1-2	Enter the maximum allowable percent of the Project area that may be effective impervious area (%)(refer to permit), ranges from 5-30% allowable	$\%_{allowable}$=	0	%
1-3	Determine the maximum allowable effective impervious area (ac), $EIA_{allowable} = (A_{project})*(\%allowable)$	$EIA_{allowable}$=	0.00	ac
1-4	Enter Project Impervious fraction, IMP	IMP =	0.9	
1-5	Determine the Project Total Impervious Area (ac) $TIA = A_{project}*IMP$	TIA =	1.45	ac
1-6	Determine the total area from which runoff must be retained (ac), $A_{retain}=TIA-EIA_{allowable}$	A_{retain} =	1.45	ac
1-7	Determine pervious runoff coefficient using Table E-1, C_p	C_p =	0.050	
1-8	Calculate runoff coefficient $C=0.95*IMP + C_p(1-IMP)$	C =	0.8600	
1-9	Enter design rainfall depth of the storm (in), P_i	P_i =	0.75	in
1-10	Calculate rainfall depth (ft), $P = P_i/12$	P =	0.0625	ft
1-11	Calculate Water Quality Design Volume (CF) $SQDV = 43560*C*P*A_{project}$	SQDV =	3770	cf

Table 6.4 - Infiltration Facility Safety Factor Determination Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w*v
A	Suitability Assessment	Soil Assessment Method	2	0.25	0.5
		Predominant Soil texture	2	0.25	0.5
		Soil Variability	2	0.25	0.5
		Depth to groundwater / impervious layer	2	0.25	0.5
		Suitability Assessment Safety Factor S_A =			**2**
B	Design	Tributary Area Size	3	0.25	0.75
		Level of pre-treatment / expected sediment loads	2	0.25	0.5
		Redundancy	2	0.25	0.5
		Compaction during construction	3	0.25	0.75
		Design Safety Factor S_B =			**2.5**

Combined Safety Factor = S_A * S_B = 5

BIO-1 Bioretention with Underdrain and BIO-2 Planter Box

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	North A8 - East Parcel F

Step 2: Determine the design percolation rate				
2-1	Enter the design saturated hydraulic conductivity of the amended filter media (2.5 in/hr recommended rate), K_{design}	K_{design}=	2.5	in/hr
Step 3: Calculate Bioretention/Planter Box surface area				
3-1	Enter Water Quality Design Volume (cf), SQDV	SQDV	3769.6	cf
3-2	Enter design saturated hydraulic conductivity (in/hr), K_{design}	K_{design}=	2.500	in/hr
3-3	Enter ponding depth (max 1.5 ft for bioretention, 1-ft for planter box) above area, dp	dp =	0.5	ft/ft
3-4	Calculate the drawdown time for the ponded water to filter through media (hours) tponding = (dp/Kdesign)*12 (tponding=2.4)	$t_{ponding}$=	2.4	hrs
3-5	Enter the storm duration for routing calculations (use 3 hours unless there is rationale for an alternative), $T_{routing}$	$T_{routing}$=	3.0	hrs
3-6	Calculate depth of water (ft) filtered by using the following two equations: $d_{filtered,1}=(K_{design}*T_{routing})/12$ $d_{filtered,2}=dp/2$	$d_{filtered,1}$=	0.6	ft
		$d_{filtered,2}$=	0.3	ft
3-7	Enter the resultant depth (ft) (the lesser of the two calculated above), $d_{filtered}$	$d_{filtered}$=	0.3	ft
3-8	Calculate the infiltrating surface area as follows (sf): A_{req} = SQDV/(dp + $d_{filtered}$)	A_{req}=	5026	sf

INF-2 - Infiltration Trench / INF-4 - Dry Well

Designer:	Jensen Design & Survey, Inc
Project Proponent:	Maulhardt-Stiles
Date:	12/8/2023
Project:	Tract 6059
Location:	North A8 - East Parcel F

Type of Vegetation: (Check type used or describe "Other"	_____	Native Grass
	_____	Irrigated Turf Grass
	x	Other

Step 2: Determine the design percolation rate				
2-1	Enter measured soil percolation rate (in/hr) 0.5 in/hr minimum. $P_{measured}$	$P_{measured}$=	0.5	in/hr
2-2	Determine percolation rate correction factor, S_A based on suitability assessment (see Section 6 INF-1, Table 6-2)	S_A =	2	
2-3	Determine percolation rate correction factor, S_B based on design (see Section 6 INF-1)	S_B =	2.5	
2-4	Calculate Combine safety factor, $S = S_A * S_B$	S =	5	
2-5	Calculate the design percolation rate (in/hr) $P_{design} = P_{measured}/S$	P_{design} =	0.100	in/hr
Step 3: Calculate the surface area				
3-1	Enter required drain time (hours, 72 hours max, t	t =	72	hr
3-2	within the t (ft), dmax = Pdesign*t/12	d_{max} =	0.600	ft
3-3	For trenches, enter trench fill aggregate porosity, n_t	n_t =	0.3	ft
3-4	For trenches, enter depth of trench fill (ft), dt	d_t =	2	ft
3-5	For trenches, select ponding depth d_p such that $d_p <= d_{max} - n_t*d_t$	d_p =	0.000	ft
3-6	Enter the time to fill infiltration trench with water (use 2 hours for most designs), T	T =	2	hrs
3-7	Calculate Infiltrating surface area for infiltration trenches At = SQDV/(TPdesign/12+ntdt+dp)	A_t =	6112.8	sf

APPENDIX C: DETENTION ANALYSES

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Modified Rational Model Results Report

Job: 1 Project: Tract 6059 Q-100

Project Description

Assumed TC

VCRat version: 2.64.0.37
VCRain version: 201801
DOS EXE version: PC 2.64-201605
VCRain Curve Set: VCWPD 2016 Revised Curve Set
Curve A: REV2: Oxnard Plain - Nyeland Drain
Curve B: None
Curve C: None
Curve D: None

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.64)

Job: 1 Project: Tract 6059 Q-100

Model Results

NODE ID	SOIL TYPE	RAIN ZONE	TC (MIN)	% IMP	AREA (AC)	FLOW (CFS)	ACCUMULATED DATA AREA (AC)	ACCUMULATED DATA FLOW (CFS)	ACCUMULATED DATA TIME (MIN)	ROUTING AFTER ACCUMULATION CHANNEL TYPE	LENGTH (FT)	SLOPE (FT/FT)	SIZE (FT)	H:V (Z)	N VALUES CHNL	N VALUES SIDES	VEL (FT/S)	DEPTH (FT)
1A	---	---	--	--	---	---	0	0	----	-------	----	-------	---	----	-----	-----	--	--
2A : North Parcel West																		
2A	040	A100	7	90	8	25	8	25	1153	-------	----	-------	---	----	-----	-----	--	--
* INCOMING HYDROGRAPH PEAK (cfs): 24.70 VOLUME (acre-ft): 3.20 *																		
* NO HYDROGRAPH ADJUSTMENT *																		
* RUNOFF FACTOR(in): 4.80 TOTAL RAIN(in): 6.30 SCS Curve: 87 *																		
* FATTENED HYDROGRAPH PEAK (cfs): 24.70 VOLUME (acre-ft): 3.21 *																		
2A	---	---	--	--	---	---	8	25	----	-------	----	-------	---	----	-----	-----	--	--
3B : North Parcel East																		
3B	040	A100	7	75	33	93	33	93	1153	-------	----	-------	---	----	-----	-----	--	--

```
      ********************************************************************************************
      *      INCOMING HYDROGRAPH  PEAK (cfs):     93.08         VOLUME (acre-ft):     11.18      *
      *      NO HYDROGRAPH ADJUSTMENT                                                            *
      *      RUNOFF FACTOR(in):   4.80      TOTAL RAIN(in):   6.30      SCS Curve: 87          *
      *      FATTENED HYDROGRAPH  PEAK (cfs):     93.08         VOLUME (acre-ft):     13.22      *
      ********************************************************************************************
```

3B	---	---	--	--	---	---	33	93	----	-------	----	-------	---	----	-----	-----	--	--
4A	---	---	--	--	---	---	8	25	1153	-------	----	-------	---	----	-----	-----	--	--

Issue/Warning Messages

TYPE	ERR NO	PROCEDURE	LOCATION	MESSAGE
NO ISSUES OR WARNINGS DETECTED				

HYDROGRAPH FATTENED AT 2A

```
      ********************************************************************************************
      *      INCOMING HYDROGRAPH  PEAK (cfs):     24.70         VOLUME (acre-ft):      3.20      *
      *      NO HYDROGRAPH ADJUSTMENT                                                            *
      *      RUNOFF FACTOR(in):   4.80      TOTAL RAIN(in):   6.30      SCS Curve: 87          *
      *      FATTENED HYDROGRAPH  PEAK (cfs):     24.70         VOLUME (acre-ft):      3.21      *
      ********************************************************************************************
```

TIME (min)	PRE-ADJ (cfs)	PRE-FAT (cfs)	FATTENED (cfs)	TIME (min)	PRE-ADJ (cfs)	PRE-FAT (cfs)	FATTENED (cfs)
0	0.00	0.00	0.00	100	0.77	0.77	0.77
200	0.77	0.77	0.77	300	0.77	0.77	0.77
400	0.77	0.77	0.77	500	0.77	0.77	0.77
600	0.90	0.90	0.90	700	1.31	1.31	1.31
800	1.31	1.31	1.31	900	1.70	1.70	1.70
1000	2.37	2.37	2.38	1050	3.10	3.10	3.11
1100	3.98	3.98	3.99	1110	5.71	5.71	5.72
1120	6.76	6.76	6.77	1130	7.02	7.02	7.03
1131	7.10	7.10	7.12	1132	7.25	7.25	7.26
1133	7.33	7.33	7.34	1134	7.47	7.47	7.49
1135	7.55	7.55	7.57	1136	7.70	7.70	7.71
1137	7.78	7.78	7.79	1138	7.78	7.78	7.79
1139	7.78	7.78	7.79	1140	7.78	7.78	7.79
1141	7.90	7.90	7.92	1142	8.09	8.09	8.11
1143	8.15	8.15	8.17	1144	8.34	8.34	8.36
1145	9.03	9.03	9.04	1146	9.72	9.72	9.73
1147	10.47	10.47	10.48	1148	10.96	10.96	10.98
1149	13.95	13.95	13.96	1150	16.93	16.93	16.93
1151	19.85	19.85	19.85	1152	22.33	22.33	22.34
1153	24.70	24.70	24.70	1154	24.70	24.70	24.70
1155	24.14	24.14	24.14	1156	21.03	21.03	21.03
1157	17.92	17.92	17.93	1158	14.88	14.88	14.89
1159	11.59	11.59	11.60	1160	8.34	8.34	8.36
1161	7.47	7.47	7.48	1162	7.21	7.21	7.23
1163	7.09	7.09	7.11	1164	6.96	6.96	6.98
1165	6.40	6.40	6.42	1166	6.02	6.02	6.04

1167	5.65	5.65	5.67	1168	5.27	5.27	5.29
1169	4.90	4.90	4.91	1170	4.40	4.40	4.42
1171	4.05	4.05	4.06	1172	4.05	4.05	4.06
1173	4.05	4.05	4.06	1174	4.05	4.05	4.06
1175	4.05	4.05	4.06	1176	4.05	4.05	4.06
1177	3.99	3.99	4.00	1178	3.87	3.87	3.89
1179	3.75	3.75	3.77	1180	3.64	3.64	3.65

Hydrograph Printouts

TIME (min)	PRE-ADJ (cfs)	PRE-FAT (cfs)	FATTENED (cfs)	TIME (min)	PRE-ADJ (cfs)	PRE-FAT (cfs)	FATTENED (cfs)
1181	3.52	3.52	3.53	1182	3.34	3.34	3.36
1183	3.23	3.23	3.24	1184	3.23	3.23	3.24
1185	3.23	3.23	3.24	1186	3.23	3.23	3.24
1187	3.23	3.23	3.24	1188	3.23	3.23	3.24
1189	3.17	3.17	3.18	1190	2.99	2.99	3.00
1191	2.87	2.87	2.89	1192	2.76	2.76	2.77
1193	2.64	2.64	2.65	1194	2.52	2.52	2.53
1195	2.35	2.35	2.36	1196	2.35	2.35	2.36
1197	2.40	2.40	2.42	1198	2.40	2.40	2.42
1199	2.35	2.35	2.36	1200	2.35	2.35	2.36
1201	2.35	2.35	2.36	1202	2.40	2.40	2.42
1203	2.40	2.40	2.42	1204	2.35	2.35	2.36
1205	2.35	2.35	2.36	1206	2.40	2.40	2.42
1207	2.40	2.40	2.42	1208	2.40	2.40	2.42
1209	2.35	2.35	2.36	1210	2.35	2.35	2.36
1211	2.40	2.40	2.41	1212	2.40	2.40	2.41
1213	2.40	2.40	2.41	1214	2.35	2.35	2.36
1215	2.35	2.35	2.36	1216	2.40	2.40	2.41
1217	2.40	2.40	2.41	1218	2.35	2.35	2.36
1219	2.35	2.35	2.36	1220	2.35	2.35	2.36
1221	2.40	2.40	2.41	1222	2.40	2.40	2.41
1223	2.35	2.35	2.35	1224	2.35	2.35	2.35
1225	2.23	2.23	2.24	1226	2.11	2.11	2.12
1227	1.94	1.94	1.94	1228	1.76	1.76	1.77
1229	1.58	1.58	1.59	1230	1.47	1.47	1.48
1231	1.29	1.29	1.30	1232	1.35	1.35	1.36
1233	1.29	1.29	1.30	1234	1.29	1.29	1.30
1235	1.29	1.29	1.30	1236	1.29	1.29	1.30
1237	1.35	1.35	1.36	1238	1.35	1.35	1.36
1239	1.29	1.29	1.30	1240	1.29	1.29	1.30
1241	1.29	1.29	1.30	1242	1.29	1.29	1.30
1243	1.35	1.35	1.36	1244	1.29	1.29	1.30
1245	1.29	1.29	1.30	1246	1.29	1.29	1.30
1247	1.29	1.29	1.30	1248	1.35	1.35	1.36
1249	1.35	1.35	1.36	1250	1.29	1.29	1.30

1251	1.29	1.29	1.30	1252	1.29	1.29	1.30
1253	1.35	1.35	1.36	1254	1.35	1.35	1.36
1255	1.29	1.29	1.30	1256	1.29	1.29	1.30
1257	1.29	1.29	1.30	1258	1.29	1.29	1.30
1259	1.35	1.35	1.36	1260	1.29	1.29	1.30
1261	1.29	1.29	1.30	1262	1.29	1.29	1.30
1263	1.29	1.29	1.30	1264	1.35	1.35	1.36
1265	1.35	1.35	1.36	1266	1.29	1.29	1.30
1267	1.29	1.29	1.30	1268	1.29	1.29	1.30
1269	1.29	1.29	1.30	1270	1.35	1.35	1.35
1271	1.29	1.29	1.30	1272	1.29	1.29	1.30
1273	1.29	1.29	1.30	1274	1.29	1.29	1.30
1275	1.35	1.35	1.35	1276	1.35	1.35	1.35
1277	1.29	1.29	1.30	1278	1.29	1.29	1.30
1279	1.29	1.29	1.30	1280	1.29	1.29	1.30
1281	1.35	1.35	1.35	1282	1.29	1.29	1.30
1283	1.29	1.29	1.30	1284	1.29	1.29	1.30
1285	1.29	1.29	1.30	1286	1.35	1.35	1.35
1287	1.35	1.35	1.35	1288	1.29	1.29	1.30
1289	1.29	1.29	1.30	1290	1.29	1.29	1.30
1291	1.29	1.29	1.30	1292	1.35	1.35	1.35
1293	1.29	1.29	1.30	1294	1.29	1.29	1.30
1295	1.29	1.29	1.30	1296	1.29	1.29	1.30
1297	1.23	1.23	1.24	1298	1.17	1.17	1.18
1299	1.06	1.06	1.06	1300	1.00	1.00	1.00
1310	0.78	0.78	0.78	1320	0.74	0.74	0.74
1330	0.78	0.78	0.78	1340	0.78	0.78	0.78
1350	0.78	0.78	0.78	1360	0.78	0.78	0.78
1370	0.74	0.74	0.74	1380	0.78	0.78	0.78
1390	0.78	0.78	0.78	1400	0.78	0.78	0.78
1420	0.76	0.76	0.76	1440	0.78	0.78	0.78
1460	0.00	0.00	0.00	1500	0.00	0.00	0.00

HYDROGRAPH FATTENED AT 3B

```
**********************************************************************************
*      INCOMING HYDROGRAPH  PEAK (cfs):     93.08         VOLUME (acre-ft):     11.18      *
*      NO HYDROGRAPH ADJUSTMENT                                                  *
*      RUNOFF FACTOR(in):   4.80      TOTAL RAIN(in):   6.30      SCS Curve: 87           *
*      FATTENED HYDROGRAPH  PEAK (cfs):     93.08         VOLUME (acre-ft):     13.22      *
**********************************************************************************
```

TIME	PRE-ADJ	PRE-FAT	FATTENED	TIME	PRE-ADJ	PRE-FAT	FATTENED

(min)	(cfs)	(cfs)	(cfs)	(min)	(cfs)	(cfs)	(cfs)
0	0.00	0.00	0.00	100	2.65	2.65	2.69
200	2.65	2.65	2.74	300	2.65	2.65	2.76
400	2.65	2.65	2.79	500	2.65	2.65	2.83
600	3.09	3.09	3.32	700	4.49	4.49	4.80
800	4.49	4.49	4.96	900	5.83	5.83	6.59
1000	8.16	8.16	9.59	1050	10.67	10.67	12.82
1100	13.69	13.69	17.30	1110	20.18	20.18	23.96
1120	24.26	24.26	28.38	1130	25.28	25.28	30.00
1131	25.60	25.60	30.37	1132	26.16	26.16	30.96
1133	26.47	26.47	31.33	1134	27.03	27.03	31.92
1135	27.34	27.34	32.29	1136	27.90	27.90	32.89
1137	28.21	28.21	33.26	1138	28.21	28.21	33.35
1139	28.21	28.21	33.43	1140	28.21	28.21	33.52
1141	28.69	28.69	34.06	1142	29.42	29.42	34.81
1143	29.66	29.66	35.13	1144	30.39	30.39	35.89
1145	33.05	33.05	38.41	1146	35.71	35.71	40.92
1147	38.61	38.61	43.65	1148	40.52	40.52	45.48
1149	51.91	51.91	55.86	1150	63.29	63.29	66.20
1151	74.47	74.47	76.33	1152	84.01	84.01	84.93
1153	93.08	93.08	93.08	1154	93.08	93.08	93.08
1155	90.93	90.93	91.14	1156	79.00	79.00	80.38
1157	67.09	67.09	69.59	1158	55.47	55.47	59.03
1159	42.90	42.90	47.56	1160	30.39	30.39	36.12
1161	27.00	27.00	32.94	1162	26.03	26.03	31.96
1163	25.55	25.55	31.42	1164	25.07	25.07	30.88
1165	22.88	22.88	28.78	1166	21.42	21.42	27.35
1167	19.96	19.96	25.92	1168	18.50	18.50	24.48
1169	17.04	17.04	23.04	1170	15.12	15.12	21.18
1171	13.91	13.91	19.97	1172	13.91	13.91	19.87
1173	13.91	13.91	19.78	1174	13.91	13.91	19.70
1175	13.91	13.91	19.61	1176	13.91	13.91	19.53
1177	13.71	13.71	19.25	1178	13.31	13.31	18.80
1179	12.91	12.91	18.34	1180	12.50	12.50	17.89
1181	12.10	12.10	17.44	1182	11.49	11.49	16.79
1183	11.09	11.09	16.34	1184	11.09	11.09	16.27
1185	11.09	11.09	16.20	1186	11.09	11.09	16.13
1187	11.09	11.09	16.06	1188	11.09	11.09	15.99
1189	10.89	10.89	15.74	1190	10.28	10.28	15.10
1191	9.88	9.88	14.66	1192	9.48	9.48	14.21
1193	9.07	9.07	13.77	1194	8.67	8.67	13.33
1195	8.07	8.07	12.70	1196	8.07	8.07	12.64
1197	8.27	8.27	12.77	1198	8.27	8.27	12.72
1199	8.07	8.07	12.47	1200	8.07	8.07	12.41
1201	8.07	8.07	12.36	1202	8.27	8.27	12.50
1203	8.27	8.27	12.45	1204	8.07	8.07	12.21
1205	8.07	8.07	12.16	1206	8.27	8.27	12.30
1207	8.27	8.27	12.25	1208	8.27	8.27	12.20
1209	8.07	8.07	11.97	1210	8.07	8.07	11.92
1211	8.27	8.27	12.07	1212	8.27	8.27	12.02
1213	8.27	8.27	11.98	1214	8.07	8.07	11.75
1215	8.07	8.07	11.71	1216	8.27	8.27	11.86

1217	8.27	8.27	11.82	1218	8.07	8.07	11.59
1219	8.07	8.07	11.55	1220	8.07	8.07	11.51
1221	8.27	8.27	11.66	1222	8.27	8.27	11.63
1223	8.07	8.07	11.40	1224	8.07	8.07	11.36
1225	7.66	7.66	10.94	1226	7.26	7.26	10.52
1227	6.65	6.65	9.90	1228	6.05	6.05	9.29
1229	5.44	5.44	8.67	1230	5.04	5.04	8.25
1231	4.44	4.44	7.63	1232	4.64	4.64	7.79
1233	4.44	4.44	7.57	1234	4.44	4.44	7.54
1235	4.44	4.44	7.50	1236	4.44	4.44	7.47
1237	4.64	4.64	7.64	1238	4.64	4.64	7.61

Hydrograph Printouts

TIME (min)	PRE-ADJ (cfs)	PRE-FAT (cfs)	FATTENED (cfs)	TIME (min)	PRE-ADJ (cfs)	PRE-FAT (cfs)	FATTENED (cfs)
1239	4.44	4.44	7.39	1240	4.44	4.44	7.36
1241	4.44	4.44	7.33	1242	4.44	4.44	7.30
1243	4.64	4.64	7.47	1244	4.44	4.44	7.25
1245	4.44	4.44	7.22	1246	4.44	4.44	7.19
1247	4.44	4.44	7.17	1248	4.64	4.64	7.34
1249	4.64	4.64	7.31	1250	4.44	4.44	7.09
1251	4.44	4.44	7.07	1252	4.44	4.44	7.04
1253	4.64	4.64	7.22	1254	4.64	4.64	7.19
1255	4.44	4.44	6.97	1256	4.44	4.44	6.95
1257	4.44	4.44	6.93	1258	4.44	4.44	6.91
1259	4.64	4.64	7.08	1260	4.44	4.44	6.86
1261	4.44	4.44	6.84	1262	4.44	4.44	6.82
1263	4.44	4.44	6.80	1264	4.64	4.64	6.98
1265	4.64	4.64	6.96	1266	4.44	4.44	6.74
1267	4.44	4.44	6.72	1268	4.44	4.44	6.70
1269	4.44	4.44	6.68	1270	4.64	4.64	6.86
1271	4.44	4.44	6.65	1272	4.44	4.44	6.63
1273	4.44	4.44	6.61	1274	4.44	4.44	6.59
1275	4.64	4.64	6.77	1276	4.64	4.64	6.76
1277	4.44	4.44	6.54	1278	4.44	4.44	6.53
1279	4.44	4.44	6.51	1280	4.44	4.44	6.49
1281	4.64	4.64	6.67	1282	4.44	4.44	6.46
1283	4.44	4.44	6.44	1284	4.44	4.44	6.43
1285	4.44	4.44	6.41	1286	4.64	4.64	6.59
1287	4.64	4.64	6.58	1288	4.44	4.44	6.37
1289	4.44	4.44	6.35	1290	4.44	4.44	6.34
1291	4.44	4.44	6.32	1292	4.64	4.64	6.51
1293	4.44	4.44	6.30	1294	4.44	4.44	6.28
1295	4.44	4.44	6.27	1296	4.44	4.44	6.26
1297	4.23	4.23	6.04	1298	4.03	4.03	5.83
1299	3.63	3.63	5.42	1300	3.43	3.43	5.21

1310	2.68	2.68	4.36	1320	2.54	2.54	4.11
1330	2.68	2.68	4.15	1340	2.68	2.68	4.06
1350	2.68	2.68	3.98	1360	2.68	2.68	3.91
1370	2.54	2.54	3.70	1380	2.68	2.68	3.78
1390	2.68	2.68	3.72	1400	2.68	2.68	3.67
1420	2.61	2.61	3.51	1440	2.68	2.68	3.50
1460	0.00	0.00	0.77	1500	0.00	0.00	0.66

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 4A

TOTAL AREA TO HYDROGRAPH: 8 acres
HYDROGRAPH PEAK: 25 cfs
TIME OF PEAK: 1153 minutes
HYDROGRAPH VOLUME: 3.21 acre-ft

TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	0.77	200	0.77	300	0.77	400	0.77
500	0.77	600	0.90	700	1.31	800	1.31	900	1.70
1000	2.38	1050	3.11	1100	3.99	1110	5.72	1120	6.77
1130	7.03	1131	7.12	1132	7.26	1133	7.34	1134	7.49
1135	7.57	1136	7.71	1137	7.79	1138	7.79	1139	7.79
1140	7.79	1141	7.92	1142	8.11	1143	8.17	1144	8.36
1145	9.04	1146	9.73	1147	10.48	1148	10.98	1149	13.96
1150	16.93	1151	19.85	1152	22.34	1153	24.70	1154	24.70
1155	24.14	1156	21.03	1157	17.93	1158	14.89	1159	11.60
1160	8.36	1161	7.48	1162	7.23	1163	7.11	1164	6.98
1165	6.42	1166	6.04	1167	5.67	1168	5.29	1169	4.91
1170	4.42	1171	4.06	1172	4.06	1173	4.06	1174	4.06
1175	4.06	1176	4.06	1177	4.00	1178	3.89	1179	3.77
1180	3.65	1181	3.53	1182	3.36	1183	3.24	1184	3.24
1185	3.24	1186	3.24	1187	3.24	1188	3.24	1189	3.18
1190	3.00	1191	2.89	1192	2.77	1193	2.65	1194	2.53
1195	2.36	1196	2.36	1197	2.42	1198	2.42	1199	2.36
1200	2.36	1201	2.36	1202	2.42	1203	2.42	1204	2.36
1205	2.36	1206	2.42	1207	2.42	1208	2.42	1209	2.36
1210	2.36	1211	2.41	1212	2.41	1213	2.41	1214	2.36
1215	2.36	1216	2.41	1217	2.41	1218	2.36	1219	2.36
1220	2.36	1221	2.41	1222	2.41	1223	2.35	1224	2.35
1225	2.24	1226	2.12	1227	1.94	1228	1.77	1229	1.59
1230	1.48	1231	1.30	1232	1.36	1233	1.30	1234	1.30
1235	1.30	1236	1.30	1237	1.36	1238	1.36	1239	1.30

1240	1.30	1241	1.30	1242	1.30	1243	1.36	1244	1.30
1245	1.30	1246	1.30	1247	1.30	1248	1.36	1249	1.36
1250	1.30	1251	1.30	1252	1.30	1253	1.36	1254	1.36
1255	1.30	1256	1.30	1257	1.30	1258	1.30	1259	1.36
1260	1.30	1261	1.30	1262	1.30	1263	1.30	1264	1.36
1265	1.36	1266	1.30	1267	1.30	1268	1.30	1269	1.30
1270	1.35	1271	1.30	1272	1.30	1273	1.30	1274	1.30
1275	1.35	1276	1.35	1277	1.30	1278	1.30	1279	1.30
1280	1.30	1281	1.35	1282	1.30	1283	1.30	1284	1.30
1285	1.30	1286	1.35	1287	1.35	1288	1.30	1289	1.30
1290	1.30	1291	1.30	1292	1.35	1293	1.30	1294	1.30
1295	1.30	1296	1.30	1297	1.24	1298	1.18	1299	1.06
1300	1.00	1310	0.78	1320	0.74	1330	0.78	1340	0.78
1350	0.78	1360	0.78	1370	0.74	1380	0.78	1390	0.78
1400	0.78	1420	0.76	1440	0.78	1460	0.00	1500	0.00

VCRat Model Input

Model Lines

```
005     1  001A Header place holder
005     1  002A Header place holder
005     1  003B Header place holder
005     1  004A Header place holder
999
999
006     1  001A 010      099A97                              G1
006     1  002A 040090000807A97                            1
110
111            1.00000    4.80
110
006     1  003B 040075003307A97                            1
110
111            1.00000    4.80
110
006     1  004A 010      099A97                              1  2
999
```

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

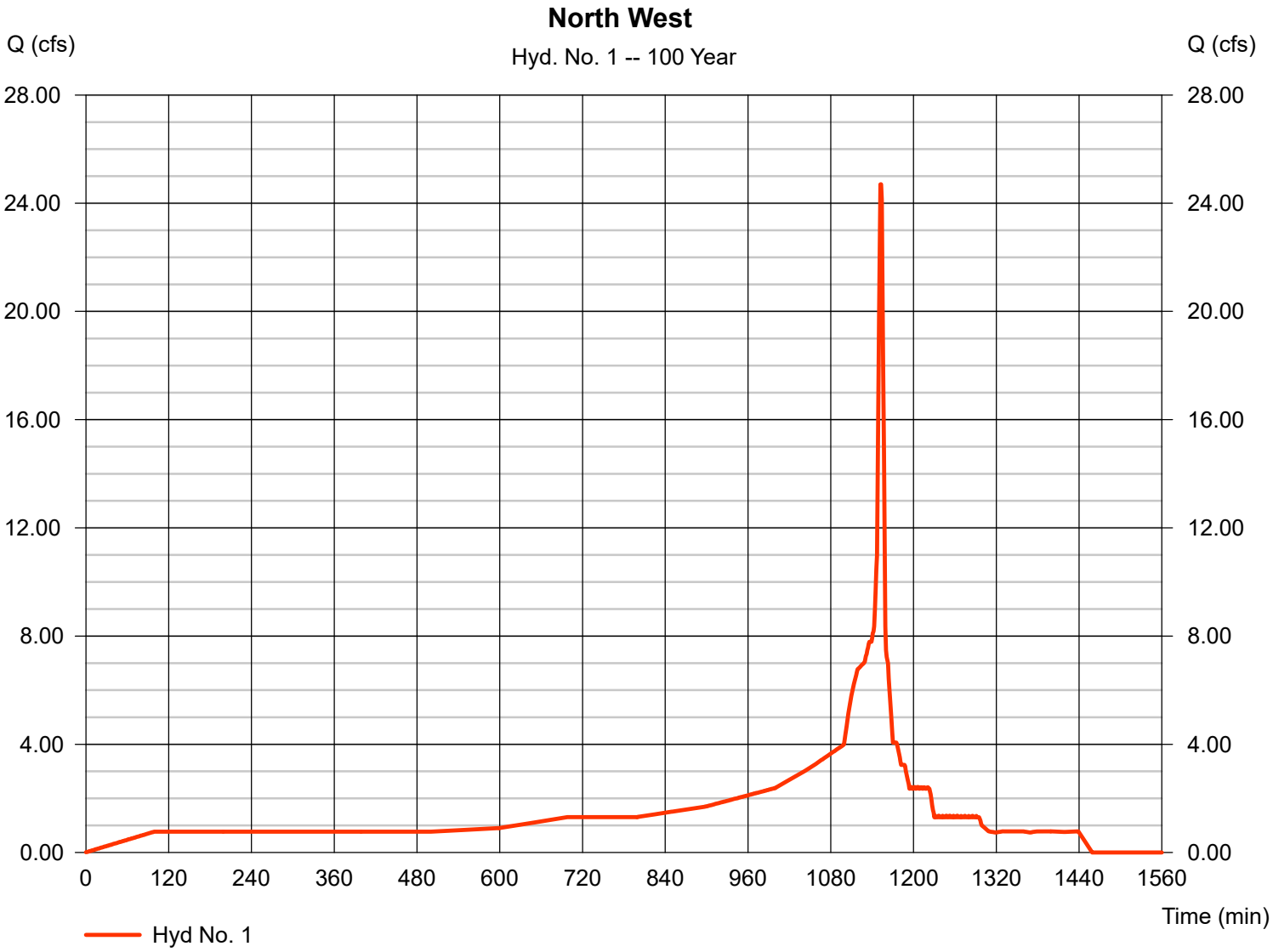
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	Manual	24.70	1	1152	3.207	----	------	------	North West
2	Manual	60.15	1	1152	7.808	----	------	------	North West -Adj to 19.5 ac
3	Diversion1	1.870	1	98	1.006	2	------	------	Infiltration
4	Diversion2	60.15	1	1152	6.801	2	------	------	Detain-Discharge
5	Diversion1	11.00	1	1103	5.807	4	------	------	Discharge
6	Diversion2	49.15	1	1152	0.995	4	------	------	Detain
7	Combine	49.15	1	1152	2.001	3, 6	------	------	To West Basin
8	Reservoir	1.963	1	1167	0.441	7	65.01	1.96	West Basin
9	Reservoir	2.323	1	1167	0.770	7	64.95	1.95	West Basin No TW
10	Combine	13.32	1	1167	6.576	5, 9	------	------	Total West Discharge
13	Manual	38.86	1	1152	5.523	----	------	------	North East Ajd to 12.5 ac A7
15	Manual	4.980	1	1152	0.708	----	------	------	North East Adj to 1.61 ac A8
16	Diversion1	0.150	1	149	0.087	15	------	------	infiltration
17	Diversion2	4.980	1	1152	0.622	15	------	------	Detain in A7
18	Combine	43.84	1	1152	6.144	13, 17	------	------	A7 and A8 to A7 Basin
19	Reservoir	2.978	1	1292	4.793	18	68.10	4.46	East Basin A7 No TW
20	Reservoir	2.978	1	1292	4.787	18	68.10	4.46	East A7 Basin
22	Manual	7.300	1	1153	0.126	----	------	------	Total to NW Rose Basin
23	Manual	14.65	1	1153	0.252	----	------	------	Total to NW Rose Basin Ajd to 5.34 P
24	Diversion1	7.910	1	1149	0.138	23	------	------	Infiltration
25	Diversion2	14.65	1	1153	0.113	23	------	------	Detentinon
26	Reservoir	2.397	1	1157	0.113	25	65.46	0.094	Public Park Det

Hydrograph Report

Hyd. No. 1

North West

Hydrograph type	= Manual	Peak discharge	= 24.70 cfs
Storm frequency	= 100 yrs	Time to peak	= 1152 min
Time interval	= 1 min	Hyd. volume	= 3.207 acft

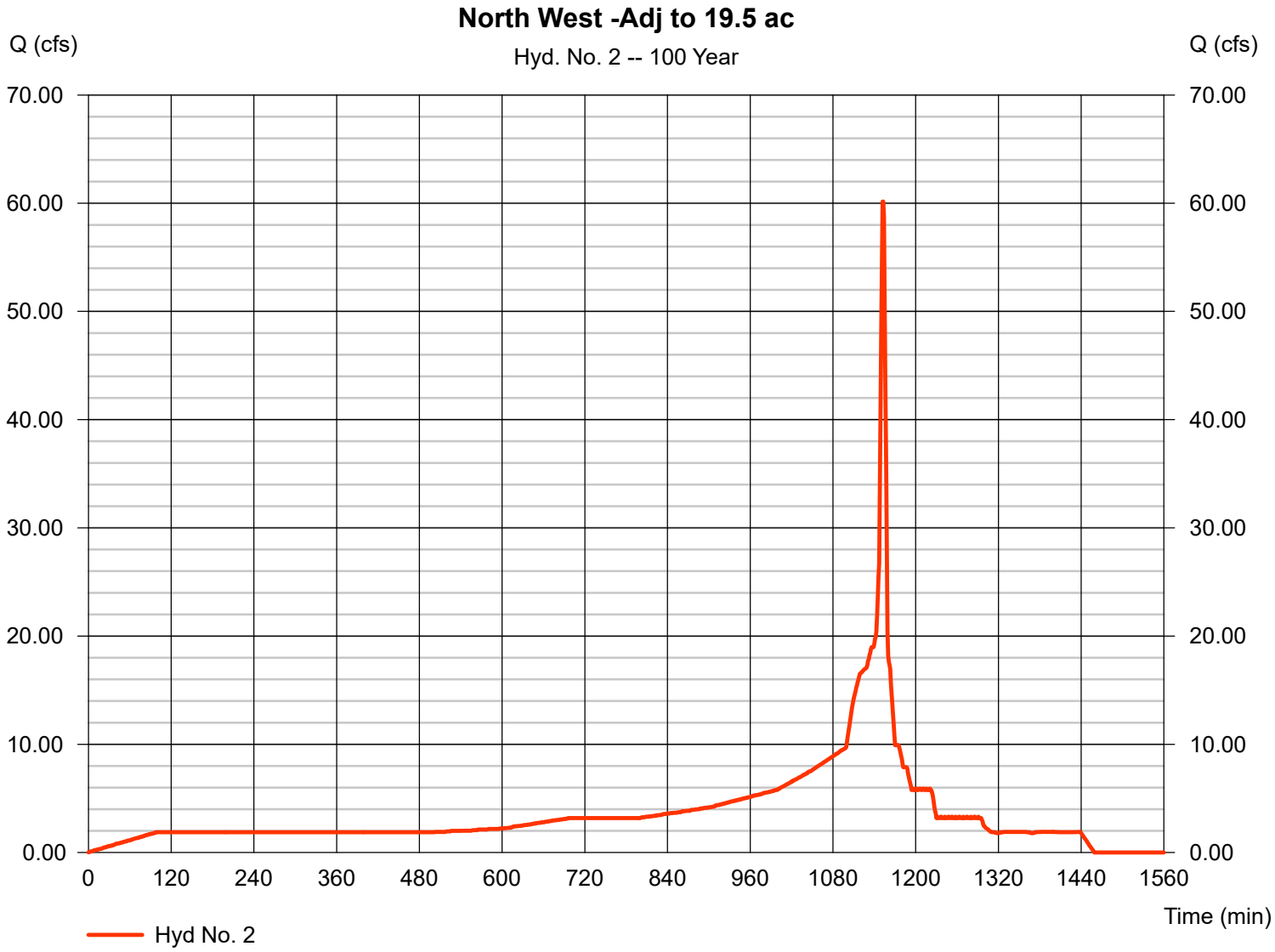


Hydrograph Report

Hyd. No. 2

North West -Adj to 19.5 ac

Hydrograph type	= Manual	Peak discharge	= 60.15 cfs
Storm frequency	= 100 yrs	Time to peak	= 1152 min
Time interval	= 1 min	Hyd. volume	= 7.808 acft

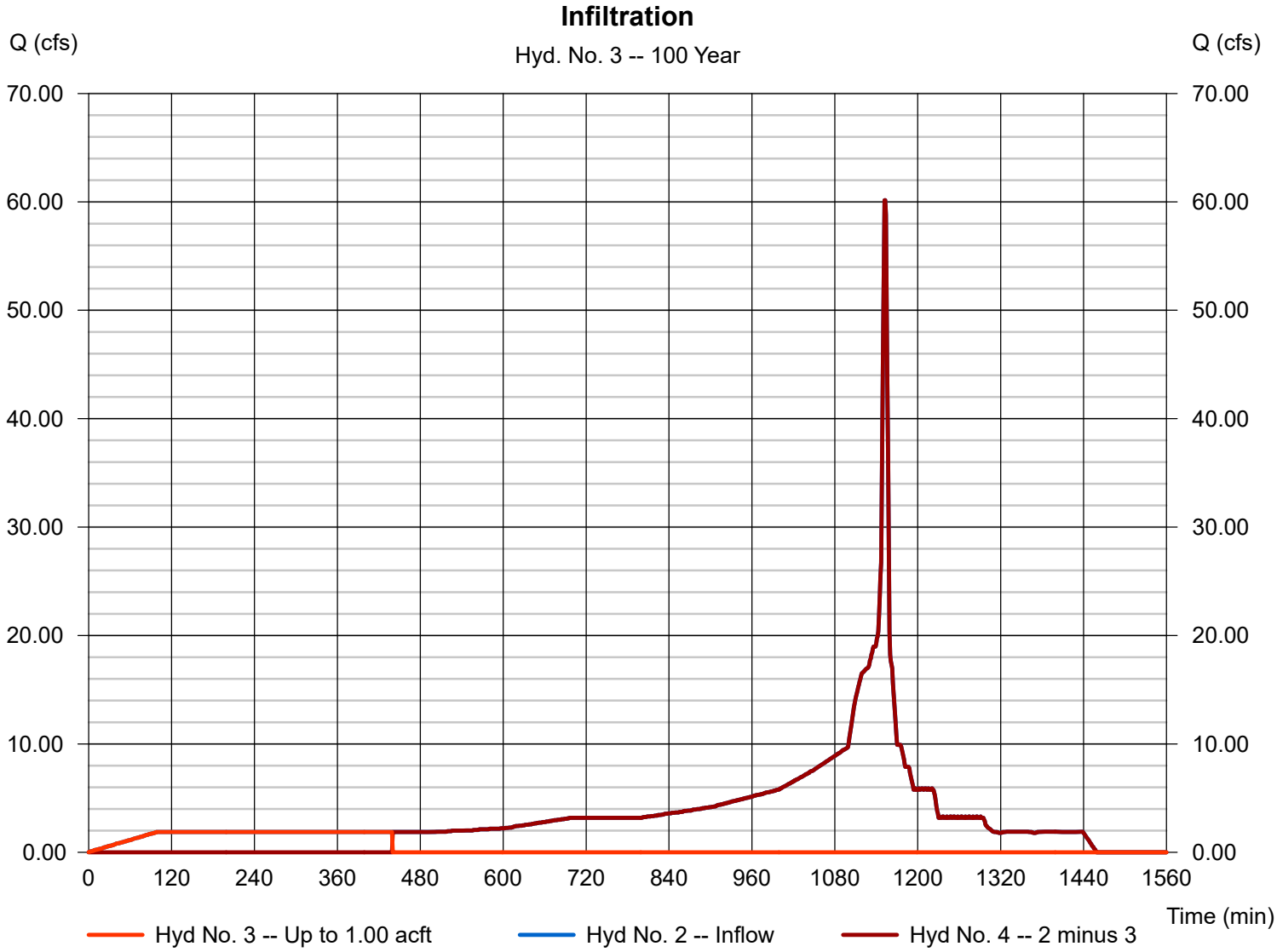


Hydrograph Report

Hyd. No. 3

Infiltration

Hydrograph type	=	Diversion1	Peak discharge	=	1.870 cfs
Storm frequency	=	100 yrs	Time to peak	=	98 min
Time interval	=	1 min	Hyd. volume	=	1.006 acft
Inflow hydrograph	=	2 - North West -Adj to 19.5 ac	2nd diverted hyd.	=	4
Diversion method	=	First Flush Volume	Volume Up To	=	1.00 acft

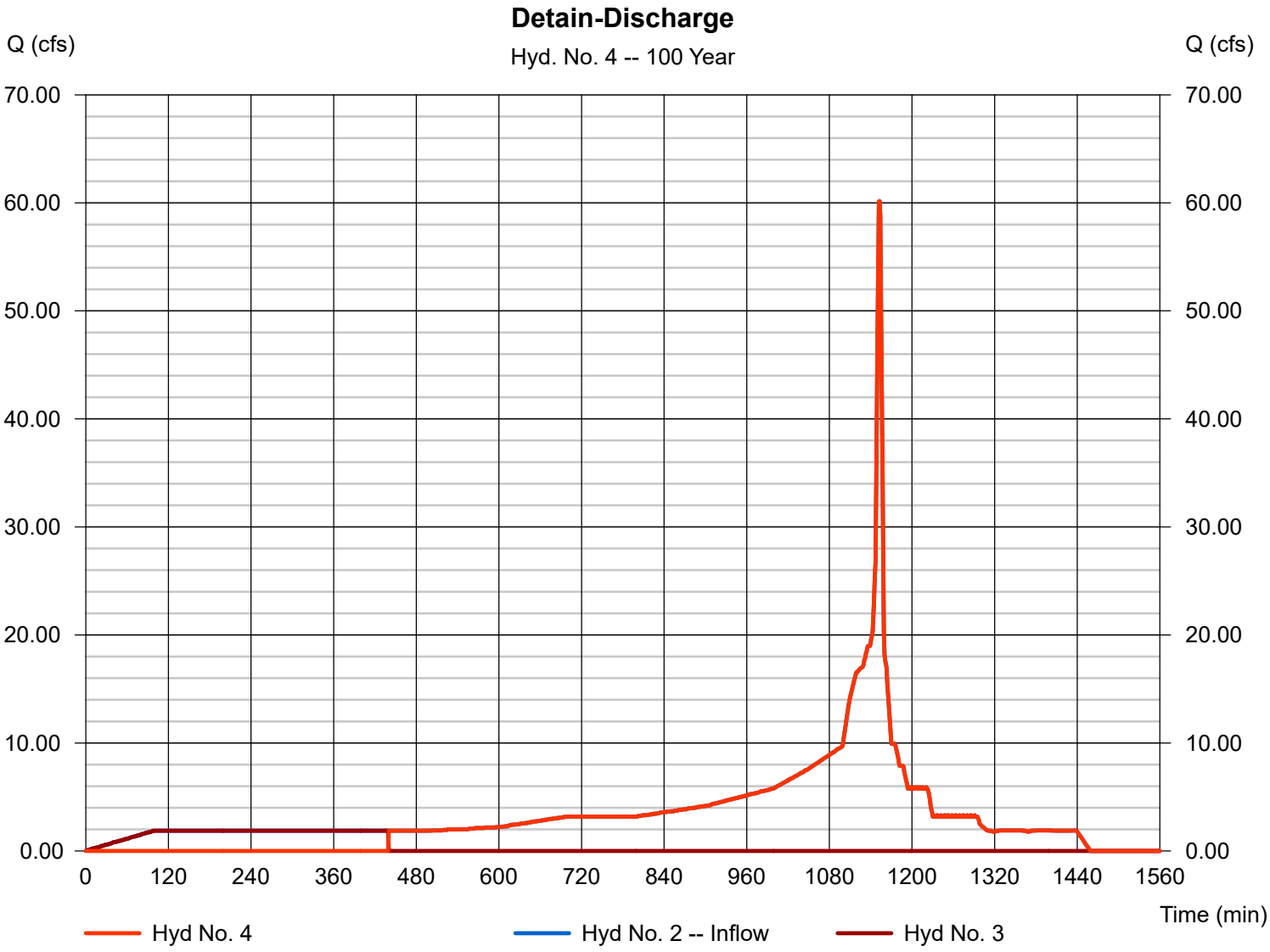


Hydrograph Report

Hyd. No. 4

Detain-Discharge

Hydrograph type	=	Diversion2	Peak discharge	=	60.15 cfs
Storm frequency	=	100 yrs	Time to peak	=	1152 min
Time interval	=	1 min	Hyd. volume	=	6.801 acft
Inflow hydrograph	=	2 - North West -Adj to 19.5 ac	2nd diverted hyd.	=	3
Diversion method	=	First Flush Volume	Volume Up To	=	1.00 acft

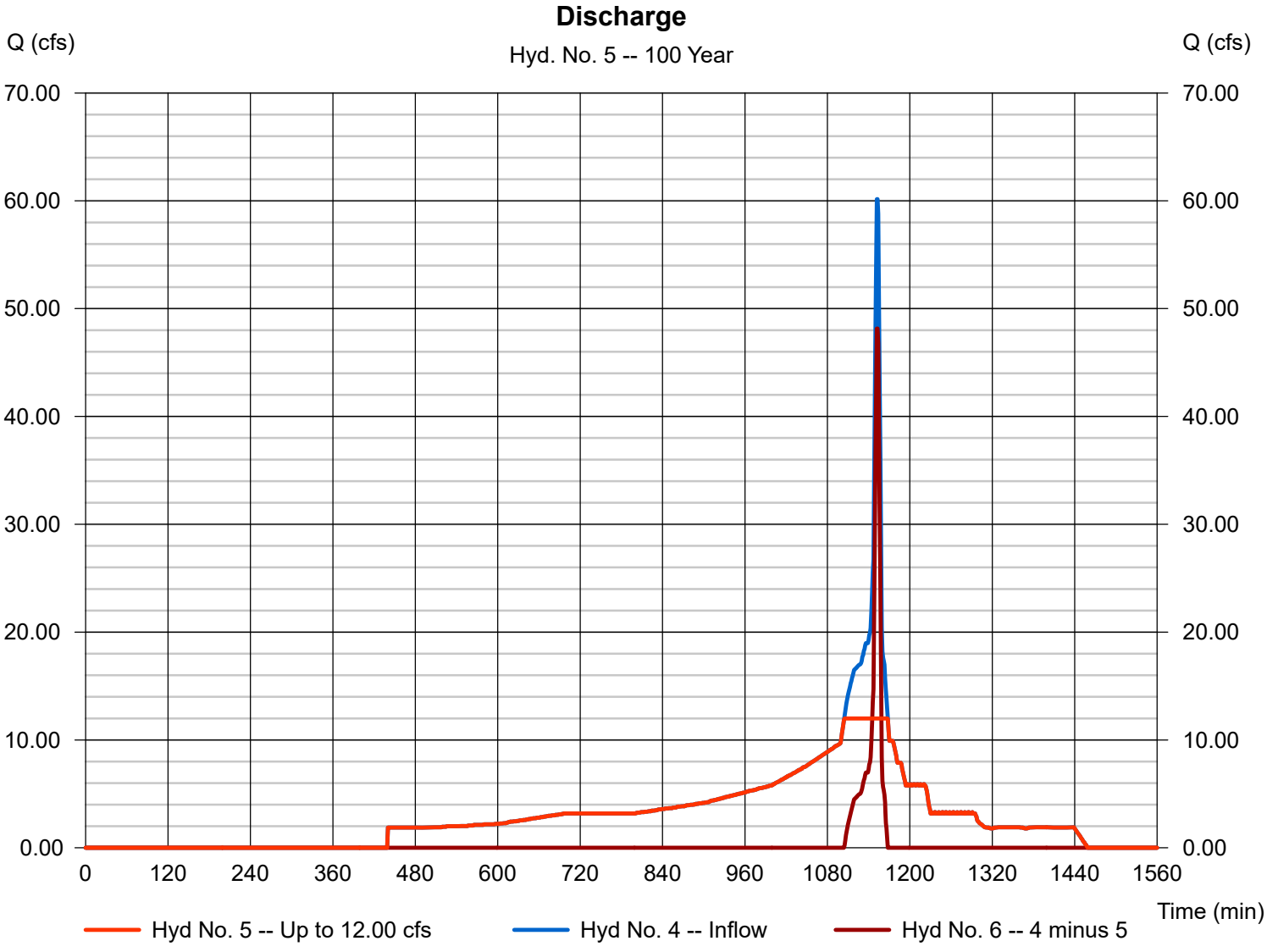


Hydrograph Report

Hyd. No. 5

Discharge

Hydrograph type	=	Diversion1	Peak discharge	=	12.00 cfs
Storm frequency	=	100 yrs	Time to peak	=	1105 min
Time interval	=	1 min	Hyd. volume	=	5.897 acft
Inflow hydrograph	=	4 - Detain-Discharge	2nd diverted hyd.	=	6
Diversion method	=	Constant Q	Constant Q	=	12.00 cfs

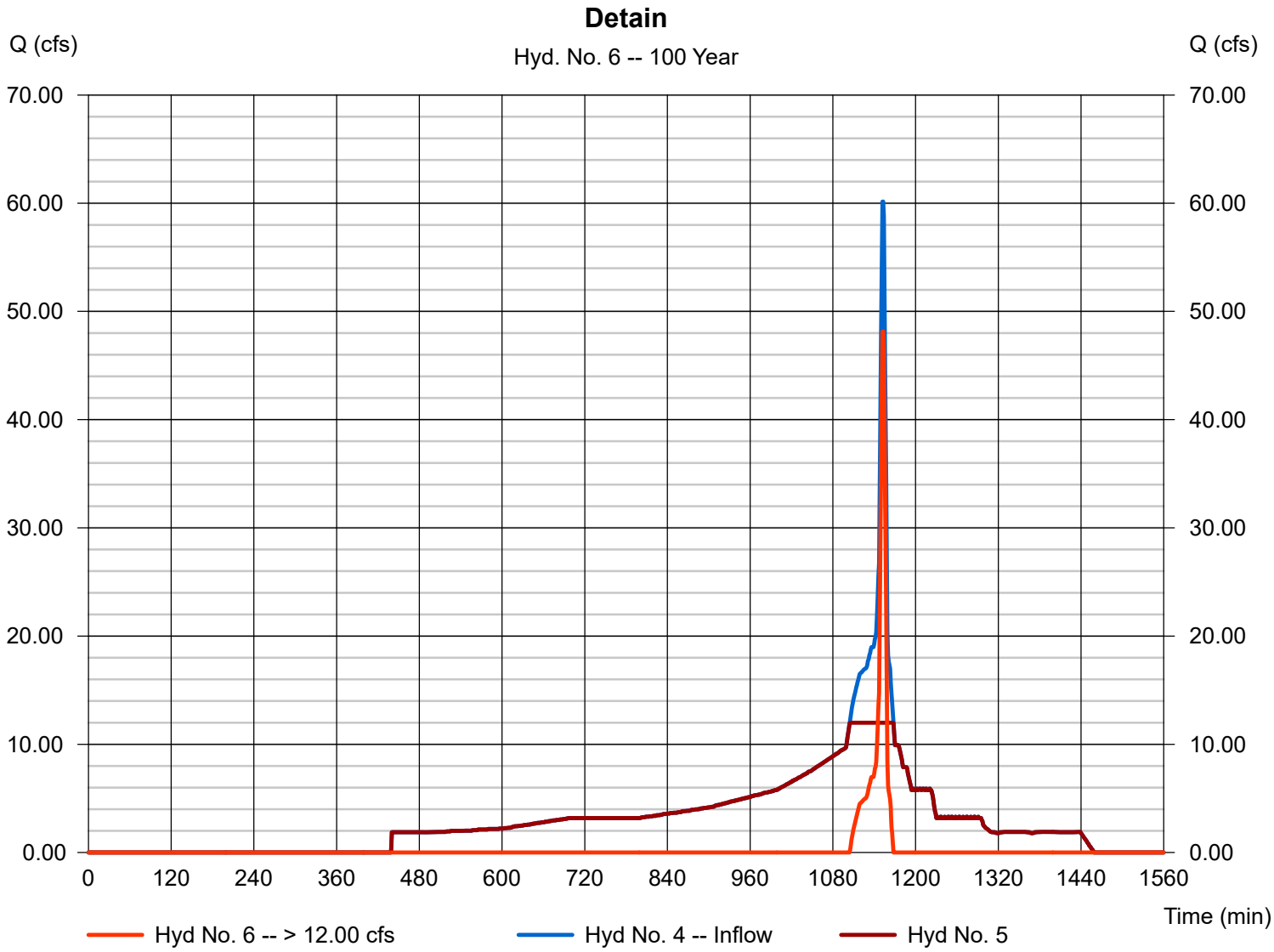


Hydrograph Report

Hyd. No. 6

Detain

Hydrograph type	=	Diversion2	Peak discharge	=	48.15 cfs
Storm frequency	=	100 yrs	Time to peak	=	1152 min
Time interval	=	1 min	Hyd. volume	=	0.905 acft
Inflow hydrograph	=	4 - Detain-Discharge	2nd diverted hyd.	=	5
Diversion method	=	Constant Q	Constant Q	=	12.00 cfs

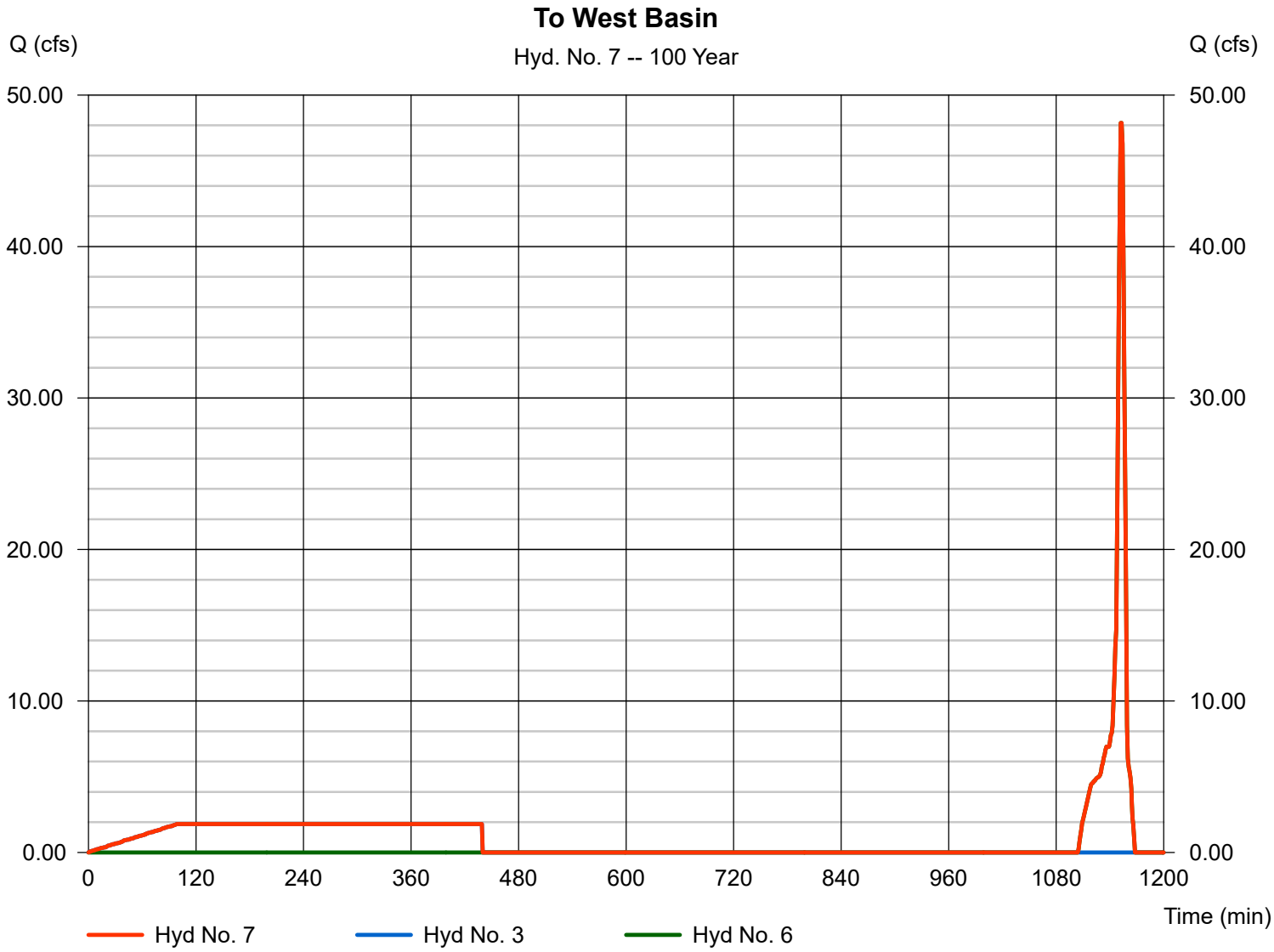


Hydrograph Report

Hyd. No. 7

To West Basin

Hydrograph type	= Combine	Peak discharge	= 48.15 cfs
Storm frequency	= 100 yrs	Time to peak	= 1152 min
Time interval	= 1 min	Hyd. volume	= 1.911 acft
Inflow hyds.	= 3, 6	Contrib. drain. area	= 0.000 ac



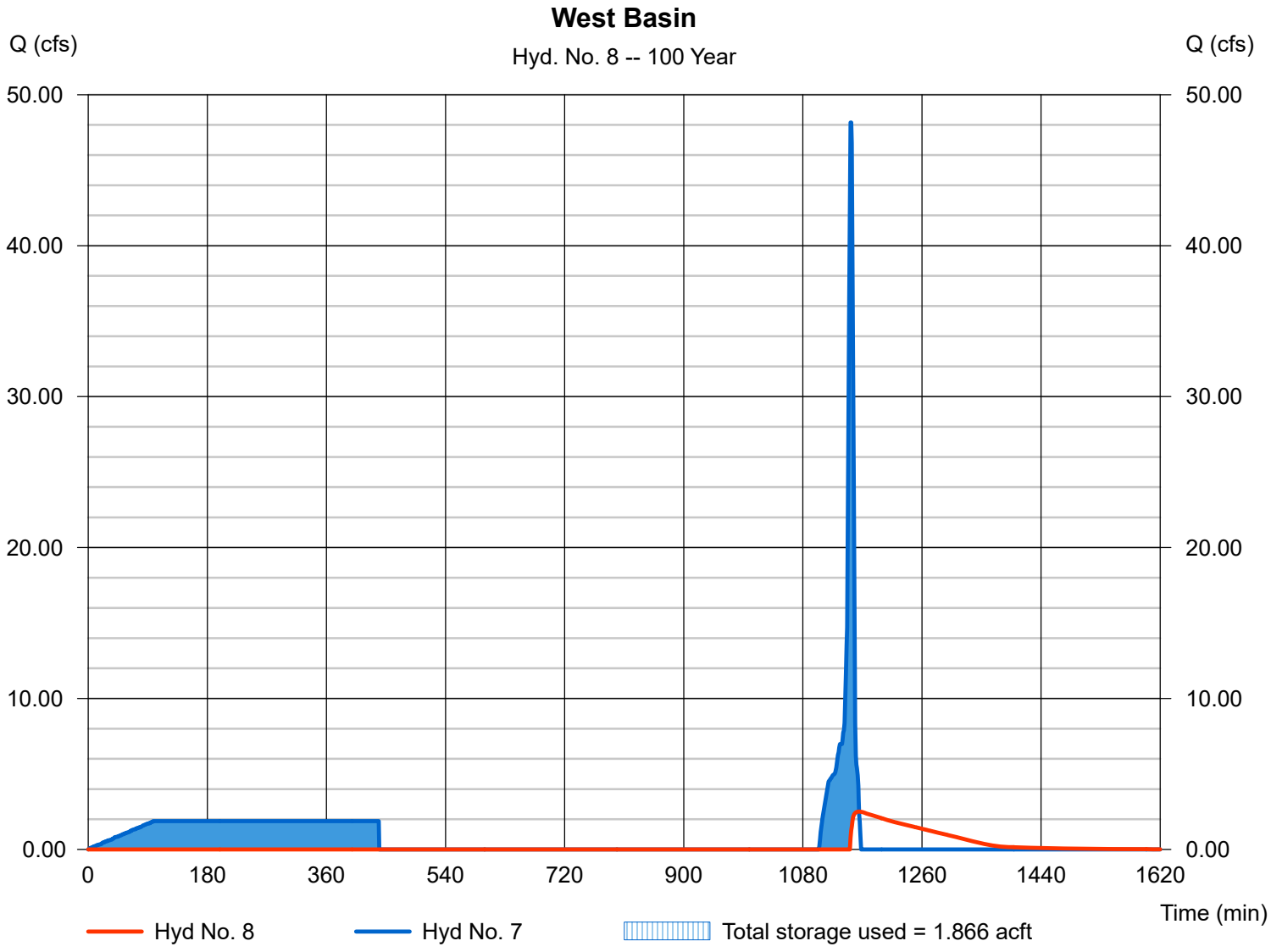
Hydrograph Report

Hyd. No. 8

West Basin

Hydrograph type	=	Reservoir	Peak discharge	=	2.514 cfs
Storm frequency	=	100 yrs	Time to peak	=	1165 min
Time interval	=	1 min	Hyd. volume	=	0.434 acft
Inflow hyd. No.	=	7 - To West Basin	Max. Elevation	=	65.05 ft
Reservoir name	=	North West	Max. Storage	=	1.866 acft

Storage Indication method used.



Pond No. 6 - North West

Pond Data

UG Chambers - Invert elev. = 60.00 ft, Rise x Span = 5.00 x 8.30 ft, Barrel Len = 160.00 ft, No. Barrels = 11, Slope = 0.00%, Headers = Yes
Encasement - Invert elev. = 59.00 ft, Width = 9.08 ft, Height = 6.75 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	59.00	n/a	0.000	0.000
0.68	59.68	n/a	0.110	0.110
1.35	60.35	n/a	0.189	0.299
2.03	61.03	n/a	0.260	0.559
2.70	61.70	n/a	0.256	0.815
3.38	62.38	n/a	0.248	1.063
4.05	63.05	n/a	0.237	1.300
4.73	63.73	n/a	0.221	1.522
5.40	64.40	n/a	0.198	1.719
6.08	65.08	n/a	0.153	1.873
6.75	65.75	n/a	0.110	1.983

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 9.00	0.00	0.00	0.00
Span (in)	= 9.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 62.62	0.00	0.00	0.00
Length (ft)	= 20.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 63.65

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage acft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0.000	59.00	0.00	---	---	---	---	---	---	---	---	---	0.000
0.68	0.110	59.68	0.00	---	---	---	---	---	---	---	---	---	0.000
1.35	0.299	60.35	0.00	---	---	---	---	---	---	---	---	---	0.000
2.03	0.559	61.03	0.00	---	---	---	---	---	---	---	---	---	0.000
2.70	0.815	61.70	0.00	---	---	---	---	---	---	---	---	---	0.000
3.38	1.063	62.38	0.00	---	---	---	---	---	---	---	---	---	0.000
4.05	1.300	63.05	0.00	---	---	---	---	---	---	---	---	---	0.000
4.73	1.522	63.73	0.58 ic	---	---	---	---	---	---	---	---	---	0.582
5.40	1.719	64.40	1.84 ic	---	---	---	---	---	---	---	---	---	1.842
6.08	1.873	65.08	2.54 ic	---	---	---	---	---	---	---	---	---	2.539
6.75	1.983	65.75	3.08 ic	---	---	---	---	---	---	---	---	---	3.082

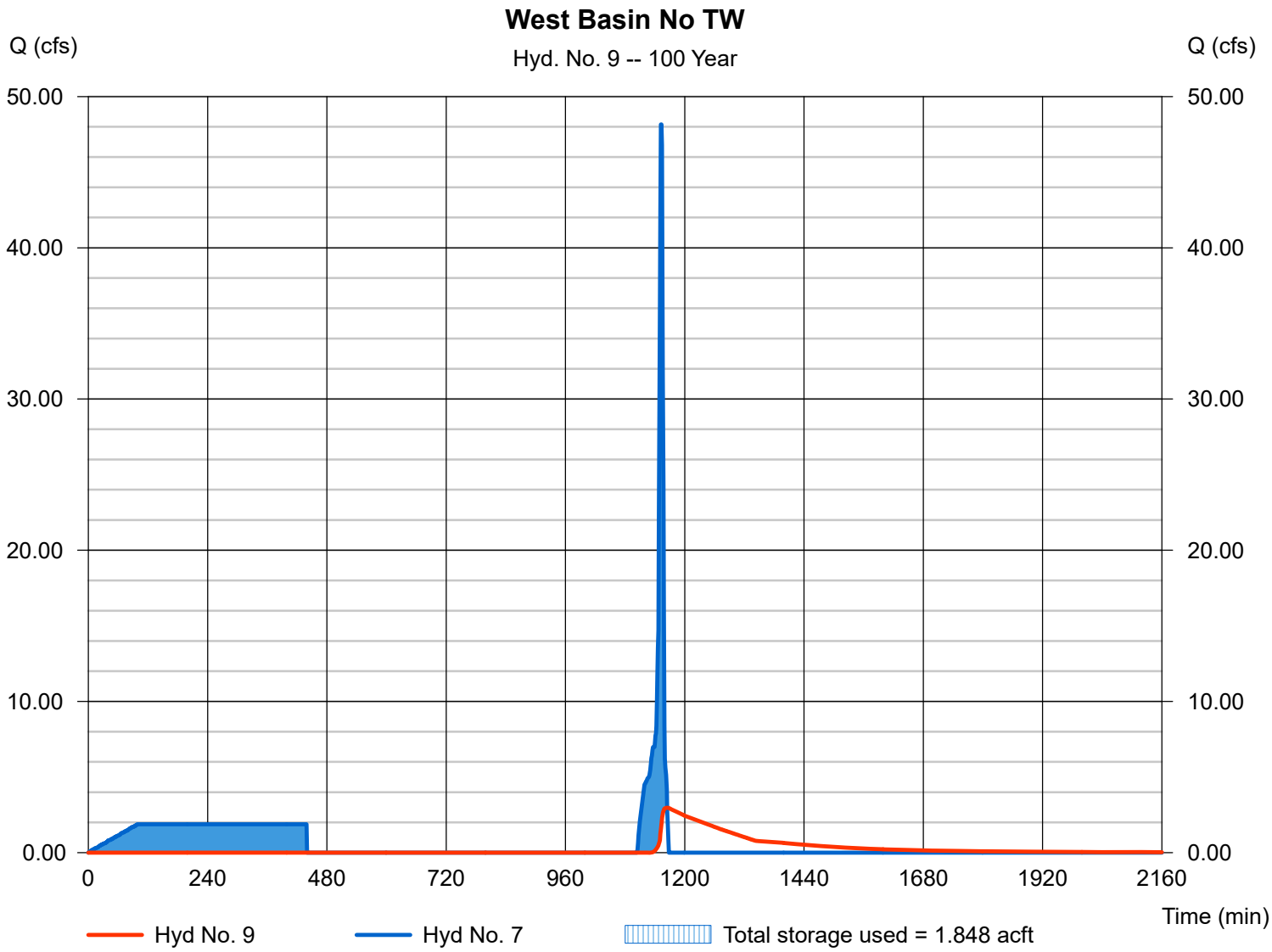
Hydrograph Report

Hyd. No. 9

West Basin No TW

Hydrograph type	=	Reservoir	Peak discharge	=	2.976 cfs
Storm frequency	=	100 yrs	Time to peak	=	1165 min
Time interval	=	1 min	Hyd. volume	=	0.748 acft
Inflow hyd. No.	=	7 - To West Basin	Max. Elevation	=	64.97 ft
Reservoir name	=	North West no TW	Max. Storage	=	1.848 acft

Storage Indication method used.



Pond No. 7 - North West no TW

Pond Data

UG Chambers - Invert elev. = 60.00 ft, Rise x Span = 5.00 x 8.30 ft, Barrel Len = 160.00 ft, No. Barrels = 11, Slope = 0.00%, Headers = Yes
Encasement - Invert elev. = 59.00 ft, Width = 9.08 ft, Height = 6.75 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	59.00	n/a	0.000	0.000
0.68	59.68	n/a	0.110	0.110
1.35	60.35	n/a	0.189	0.299
2.03	61.03	n/a	0.260	0.559
2.70	61.70	n/a	0.256	0.815
3.38	62.38	n/a	0.248	1.063
4.05	63.05	n/a	0.237	1.300
4.73	63.73	n/a	0.221	1.522
5.40	64.40	n/a	0.198	1.719
6.08	65.08	n/a	0.153	1.873
6.75	65.75	n/a	0.110	1.983

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 9.00	0.00	0.00	0.00
Span (in)	= 9.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 62.62	0.00	0.00	0.00
Length (ft)	= 20.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

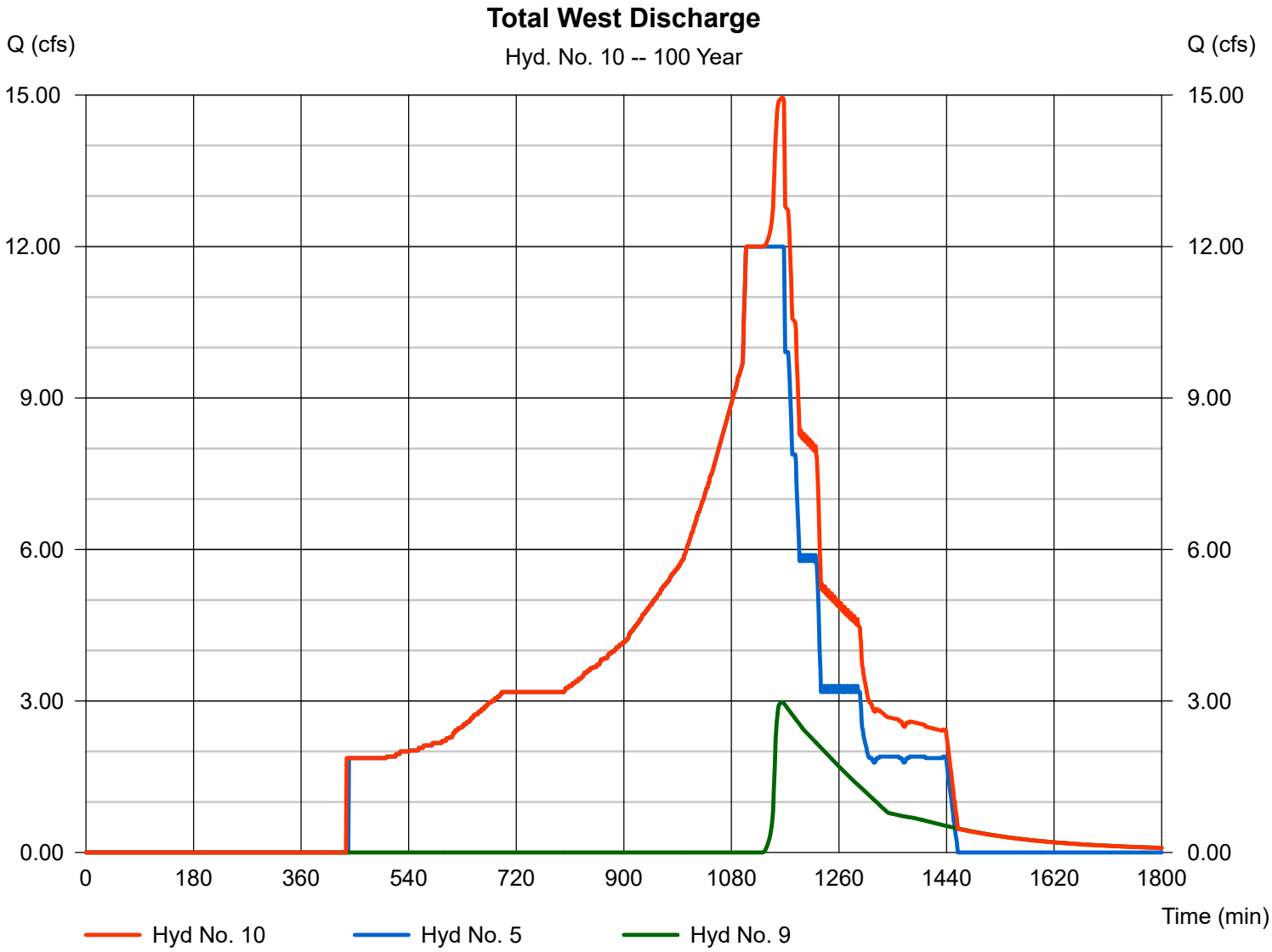
Stage ft	Storage acft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0.000	59.00	0.00	---	---	---	---	---	---	---	---	---	0.000
0.68	0.110	59.68	0.00	---	---	---	---	---	---	---	---	---	0.000
1.35	0.299	60.35	0.00	---	---	---	---	---	---	---	---	---	0.000
2.03	0.559	61.03	0.00	---	---	---	---	---	---	---	---	---	0.000
2.70	0.815	61.70	0.00	---	---	---	---	---	---	---	---	---	0.000
3.38	1.063	62.38	0.00	---	---	---	---	---	---	---	---	---	0.000
4.05	1.300	63.05	0.44 oc	---	---	---	---	---	---	---	---	---	0.437
4.73	1.522	63.73	1.54 oc	---	---	---	---	---	---	---	---	---	1.541
5.40	1.719	64.40	2.43 oc	---	---	---	---	---	---	---	---	---	2.428
6.08	1.873	65.08	3.07 ic	---	---	---	---	---	---	---	---	---	3.067
6.75	1.983	65.75	3.53 ic	---	---	---	---	---	---	---	---	---	3.530

Hydrograph Report

Hyd. No. 10

Total West Discharge

Hydrograph type	= Combine	Peak discharge	= 14.94 cfs
Storm frequency	= 100 yrs	Time to peak	= 1165 min
Time interval	= 1 min	Hyd. volume	= 6.645 acft
Inflow hyds.	= 5, 9	Contrib. drain. area	= 0.000 ac

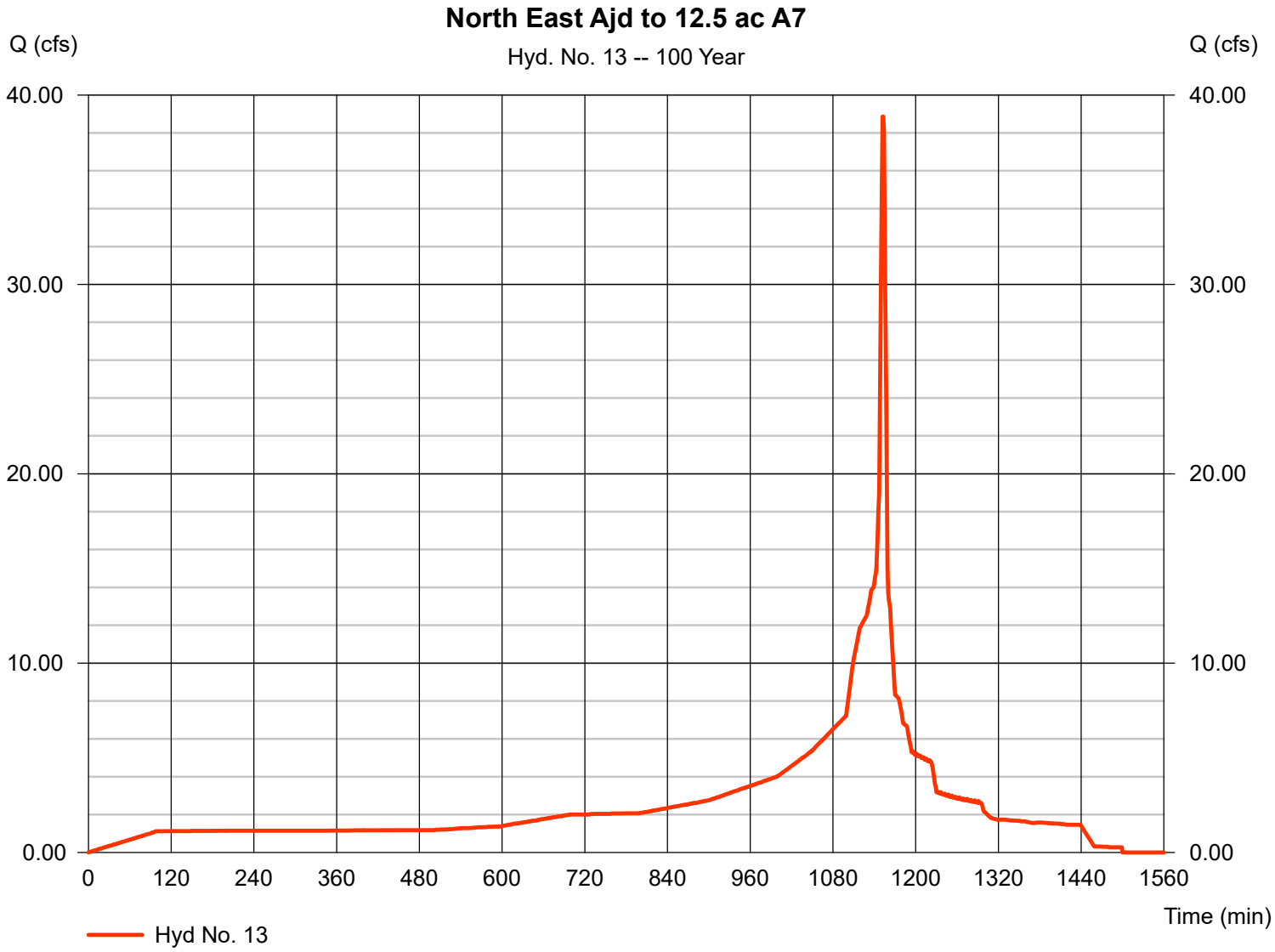


Hydrograph Report

Hyd. No. 13

North East Ajd to 12.5 ac A7

Hydrograph type	= Manual	Peak discharge	= 38.86 cfs
Storm frequency	= 100 yrs	Time to peak	= 1152 min
Time interval	= 1 min	Hyd. volume	= 5.523 acft

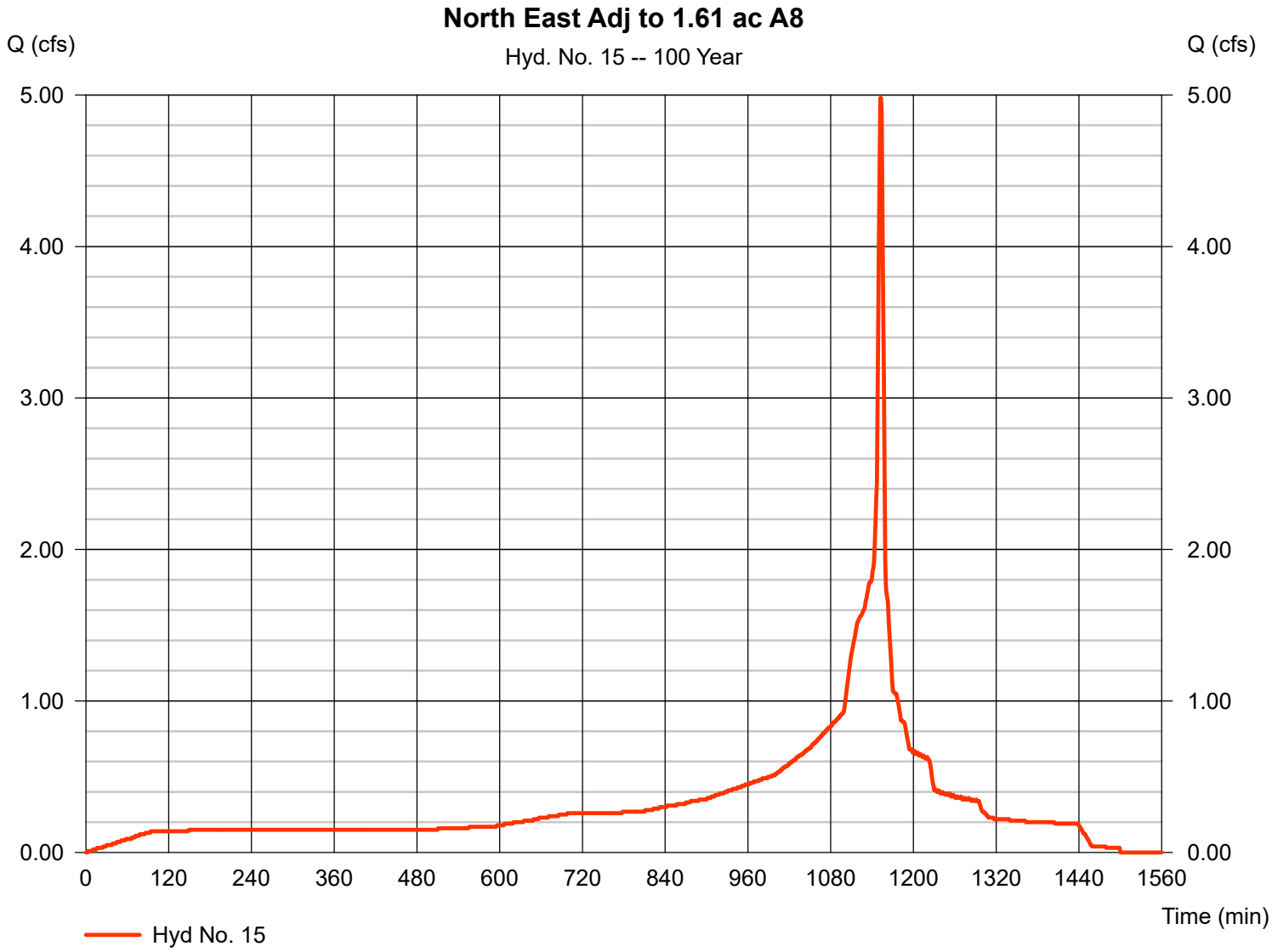


Hydrograph Report

Hyd. No. 15

North East Adj to 1.61 ac A8

Hydrograph type	= Manual	Peak discharge	= 4.980 cfs
Storm frequency	= 100 yrs	Time to peak	= 1152 min
Time interval	= 1 min	Hyd. volume	= 0.708 acft

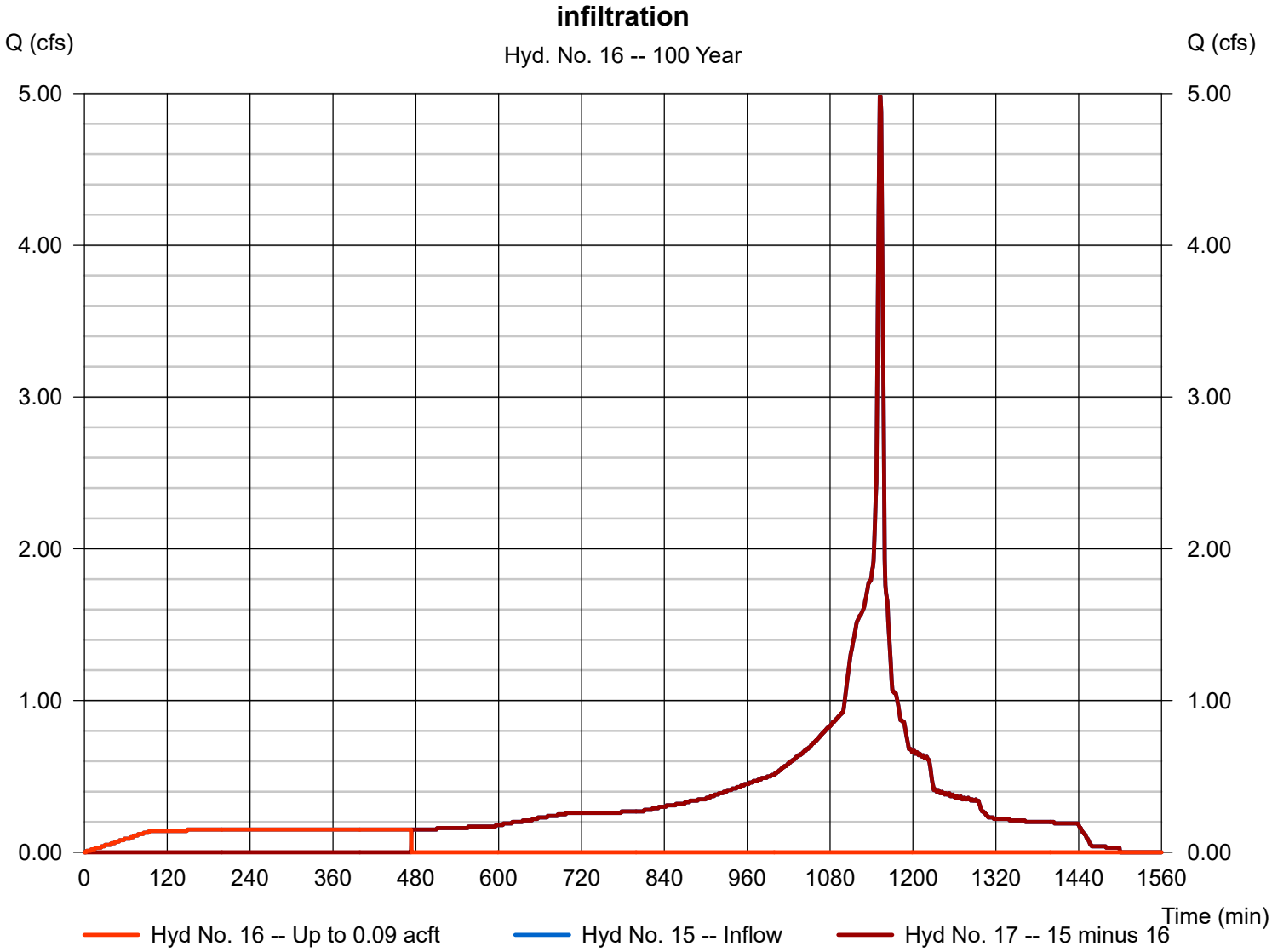


Hydrograph Report

Hyd. No. 16

infiltration

Hydrograph type	=	Diversion1	Peak discharge	=	0.150 cfs
Storm frequency	=	100 yrs	Time to peak	=	149 min
Time interval	=	1 min	Hyd. volume	=	0.087 acft
Inflow hydrograph	=	15 - North East Adj to 1.61 ac A8	2nd diverted hyd.	=	17
Diversion method	=	First Flush Volume	Volume Up To	=	0.09 acft

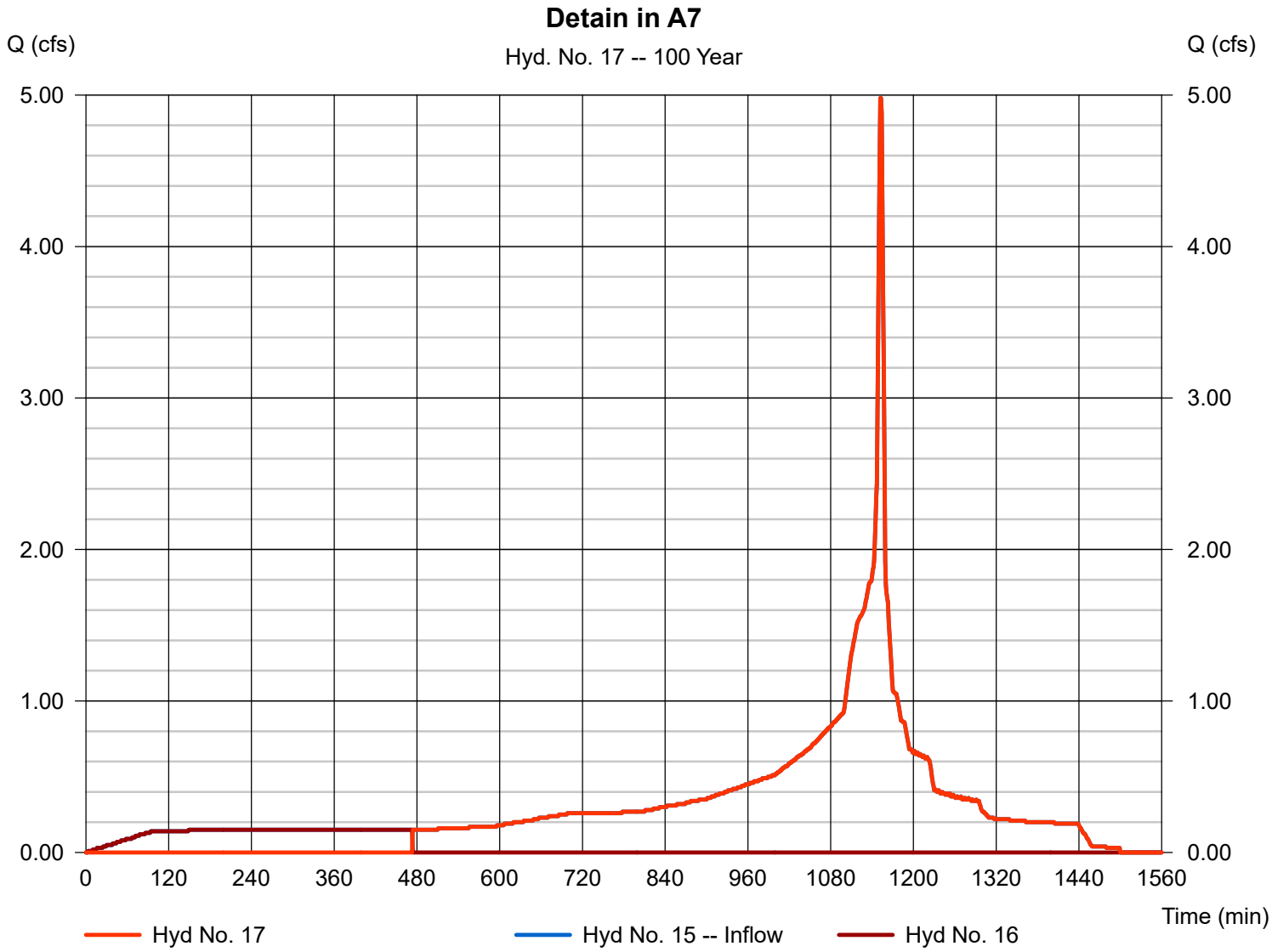


Hydrograph Report

Hyd. No. 17

Detain in A7

Hydrograph type	=	Diversion2	Peak discharge	=	4.980 cfs
Storm frequency	=	100 yrs	Time to peak	=	1152 min
Time interval	=	1 min	Hyd. volume	=	0.622 acft
Inflow hydrograph	=	15 - North East Adj to 1.61 ac A8	2nd diverted hyd.	=	16
Diversion method	=	First Flush Volume	Volume Up To	=	0.09 acft

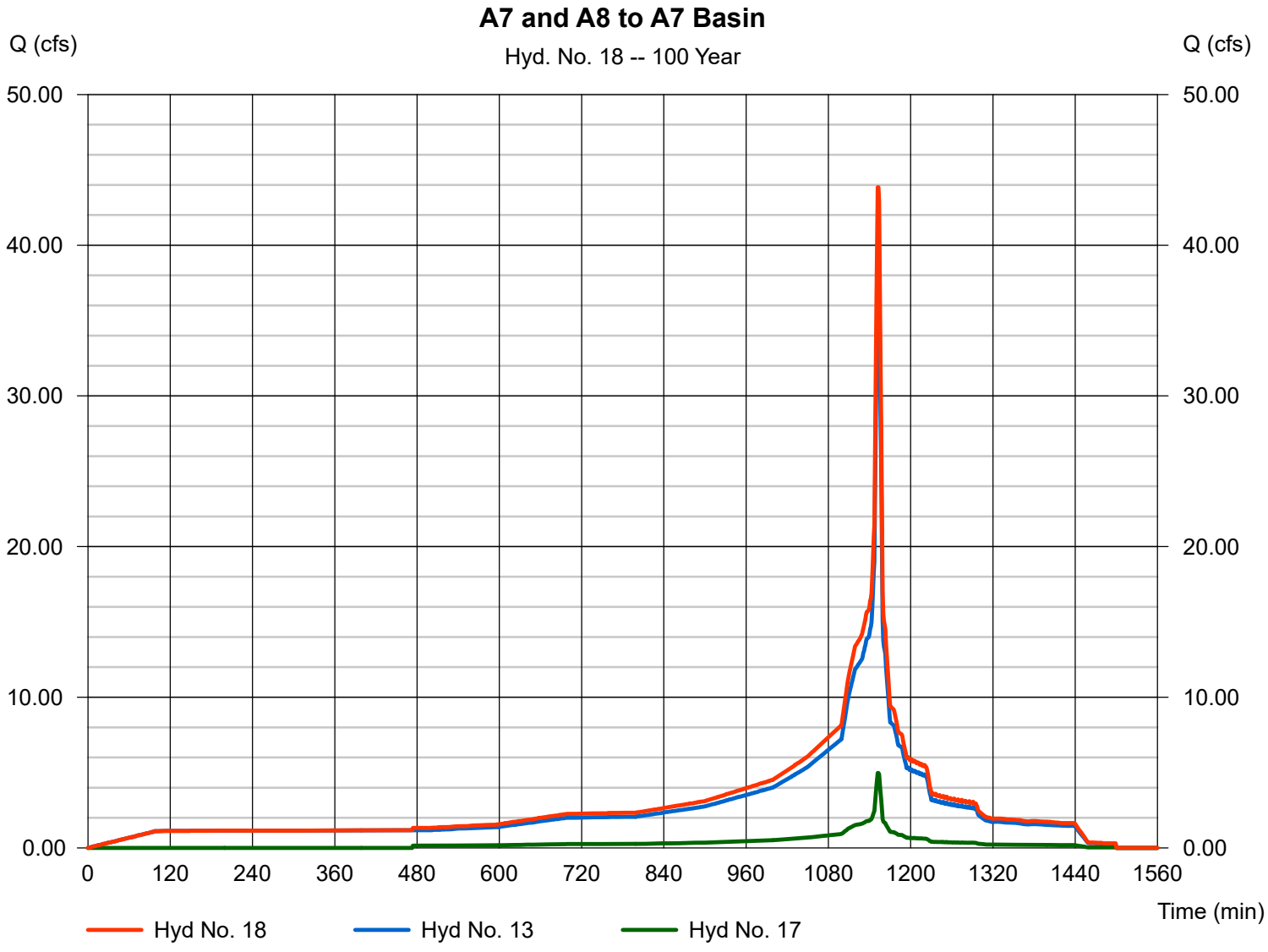


Hydrograph Report

Hyd. No. 18

A7 and A8 to A7 Basin

Hydrograph type	= Combine	Peak discharge	= 43.84 cfs
Storm frequency	= 100 yrs	Time to peak	= 1152 min
Time interval	= 1 min	Hyd. volume	= 6.144 acft
Inflow hyds.	= 13, 17	Contrib. drain. area	= 0.000 ac



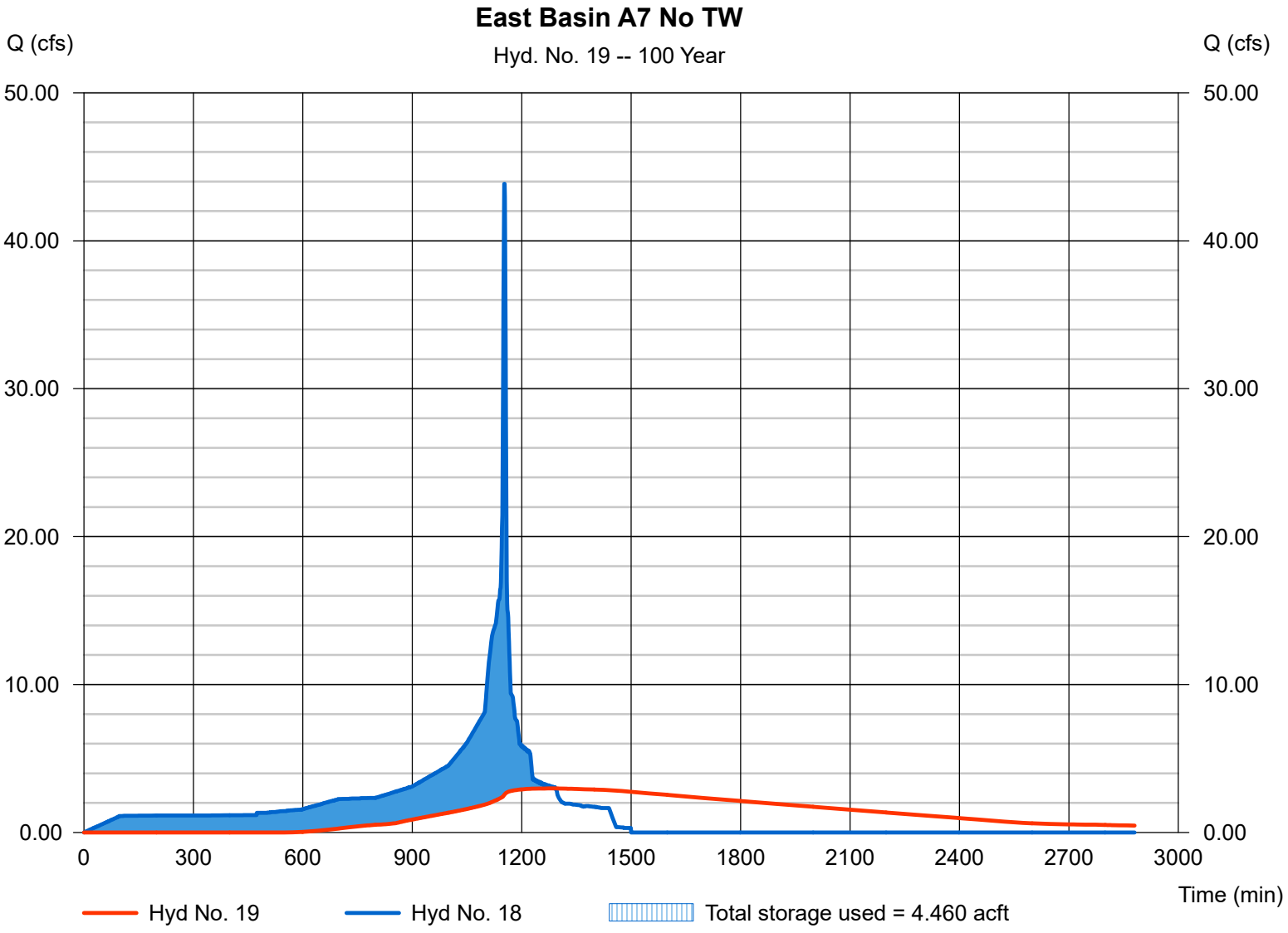
Hydrograph Report

Hyd. No. 19

East Basin A7 No TW

Hydrograph type	=	Reservoir	Peak discharge	=	2.978 cfs
Storm frequency	=	100 yrs	Time to peak	=	1292 min
Time interval	=	1 min	Hyd. volume	=	4.793 acft
Inflow hyd. No.	=	18 - A7 and A8 to A7 Basin	Max. Elevation	=	68.10 ft
Reservoir name	=	North East No TW-Increase Area for SQDWB Depth	Max. Storage	=	4.460 acft

Storage Indication method used.



Pond No. 4 - North East No TW-Increase Area for SQDV Depth

Pond Data

UG Chambers - Invert elev. = 64.25 ft, Rise x Span = 5.00 x 8.30 ft, Barrel Len = 285.00 ft, No. Barrels = 19, Slope = 0.00%, Headers = Yes
Encasement - Invert elev. = 63.50 ft, Width = 9.08 ft, Height = 6.75 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	63.50	n/a	0.000	0.000
0.68	64.18	n/a	0.324	0.324
1.35	64.85	n/a	0.718	1.043
2.03	65.53	n/a	0.761	1.803
2.70	66.20	n/a	0.745	2.548
3.38	66.88	n/a	0.719	3.267
4.05	67.55	n/a	0.682	3.949
4.73	68.23	n/a	0.628	4.577
5.40	68.90	n/a	0.547	5.124
6.08	69.58	n/a	0.381	5.505
6.75	70.25	n/a	0.324	5.829

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 64.63	0.00	0.00	0.00
Length (ft)	= 20.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage acft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0.000	63.50	0.00	---	---	---	---	---	---	---	---	---	0.000
0.68	0.324	64.18	0.00	---	---	---	---	---	---	---	---	---	0.000
1.35	1.043	64.85	0.15 oc	---	---	---	---	---	---	---	---	---	0.151
2.03	1.803	65.53	1.01 oc	---	---	---	---	---	---	---	---	---	1.010
2.70	2.548	66.20	1.76 oc	---	---	---	---	---	---	---	---	---	1.757
3.38	3.267	66.88	2.27 oc	---	---	---	---	---	---	---	---	---	2.270
4.05	3.949	67.55	2.69 oc	---	---	---	---	---	---	---	---	---	2.687
4.73	4.577	68.23	3.04 ic	---	---	---	---	---	---	---	---	---	3.037
5.40	5.124	68.90	3.34 ic	---	---	---	---	---	---	---	---	---	3.336
6.08	5.505	69.58	3.61 ic	---	---	---	---	---	---	---	---	---	3.611
6.75	5.829	70.25	3.87 ic	---	---	---	---	---	---	---	---	---	3.866

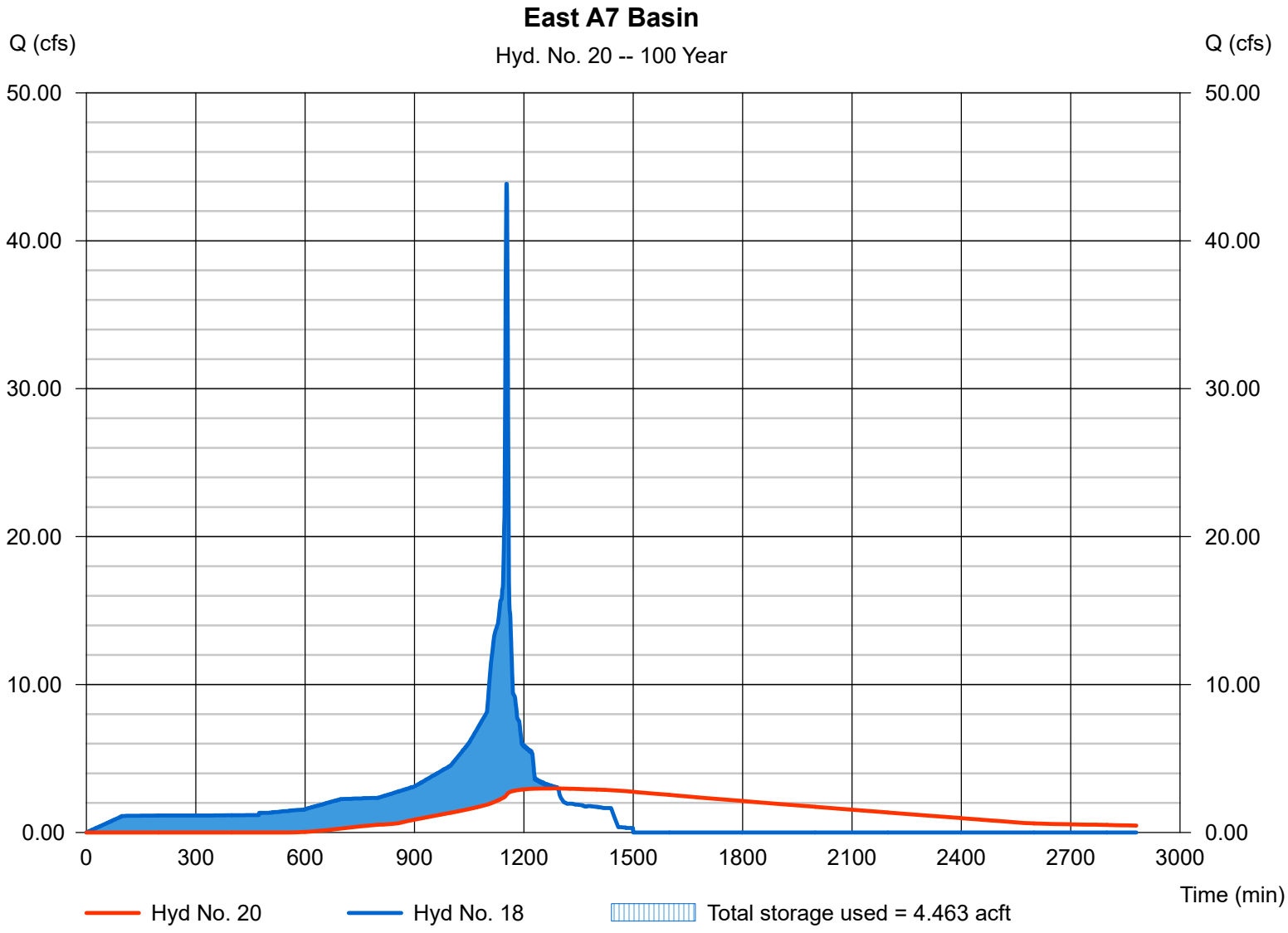
Hydrograph Report

Hyd. No. 20

East A7 Basin

Hydrograph type	=	Reservoir	Peak discharge	=	2.978 cfs
Storm frequency	=	100 yrs	Time to peak	=	1292 min
Time interval	=	1 min	Hyd. volume	=	4.787 acft
Inflow hyd. No.	=	18 - A7 and A8 to A7 Basin	Max. Elevation	=	68.10 ft
Reservoir name	=	North East-Increase Area for SQDV Depth	Max. Storage	=	4.463 acft

Storage Indication method used.



Pond No. 3 - North East-Increase Area for SQDV Depth

Pond Data

UG Chambers - Invert elev. = 64.25 ft, Rise x Span = 5.00 x 8.30 ft, Barrel Len = 285.00 ft, No. Barrels = 19, Slope = 0.00%, Headers = Yes
Encasement - Invert elev. = 63.50 ft, Width = 9.08 ft, Height = 6.75 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	63.50	n/a	0.000	0.000
0.68	64.18	n/a	0.324	0.324
1.35	64.85	n/a	0.718	1.043
2.03	65.53	n/a	0.761	1.803
2.70	66.20	n/a	0.745	2.548
3.38	66.88	n/a	0.719	3.267
4.05	67.55	n/a	0.682	3.949
4.73	68.23	n/a	0.628	4.577
5.40	68.90	n/a	0.547	5.124
6.08	69.58	n/a	0.381	5.505
6.75	70.25	n/a	0.324	5.829

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 64.63	0.00	0.00	0.00
Length (ft)	= 20.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 64.30

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

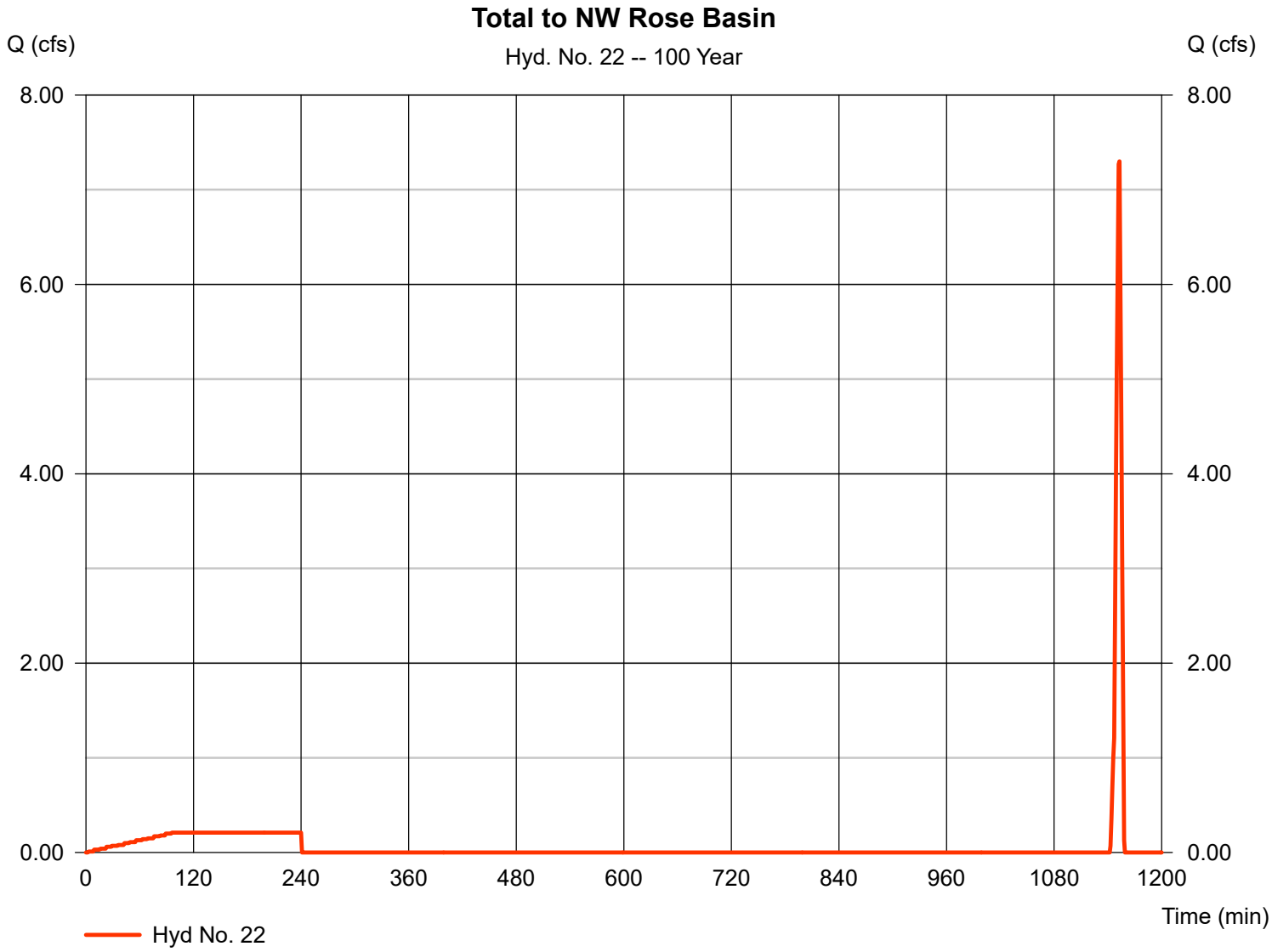
Stage ft	Storage acft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0.000	63.50	0.00	---	---	---	---	---	---	---	---	---	0.000
0.68	0.324	64.18	0.00	---	---	---	---	---	---	---	---	---	0.000
1.35	1.043	64.85	0.15 oc	---	---	---	---	---	---	---	---	---	0.146
2.03	1.803	65.53	1.00 oc	---	---	---	---	---	---	---	---	---	1.003
2.70	2.548	66.20	1.75 oc	---	---	---	---	---	---	---	---	---	1.753
3.38	3.267	66.88	2.27 oc	---	---	---	---	---	---	---	---	---	2.267
4.05	3.949	67.55	2.68 oc	---	---	---	---	---	---	---	---	---	2.684
4.73	4.577	68.23	3.04 ic	---	---	---	---	---	---	---	---	---	3.035
5.40	5.124	68.90	3.33 ic	---	---	---	---	---	---	---	---	---	3.334
6.08	5.505	69.58	3.61 ic	---	---	---	---	---	---	---	---	---	3.609
6.75	5.829	70.25	3.86 ic	---	---	---	---	---	---	---	---	---	3.864

Hydrograph Report

Hyd. No. 22

Total to NW Rose Basin

Hydrograph type	= Manual	Peak discharge	= 7.300 cfs
Storm frequency	= 100 yrs	Time to peak	= 1153 min
Time interval	= 1 min	Hyd. volume	= 0.126 acft

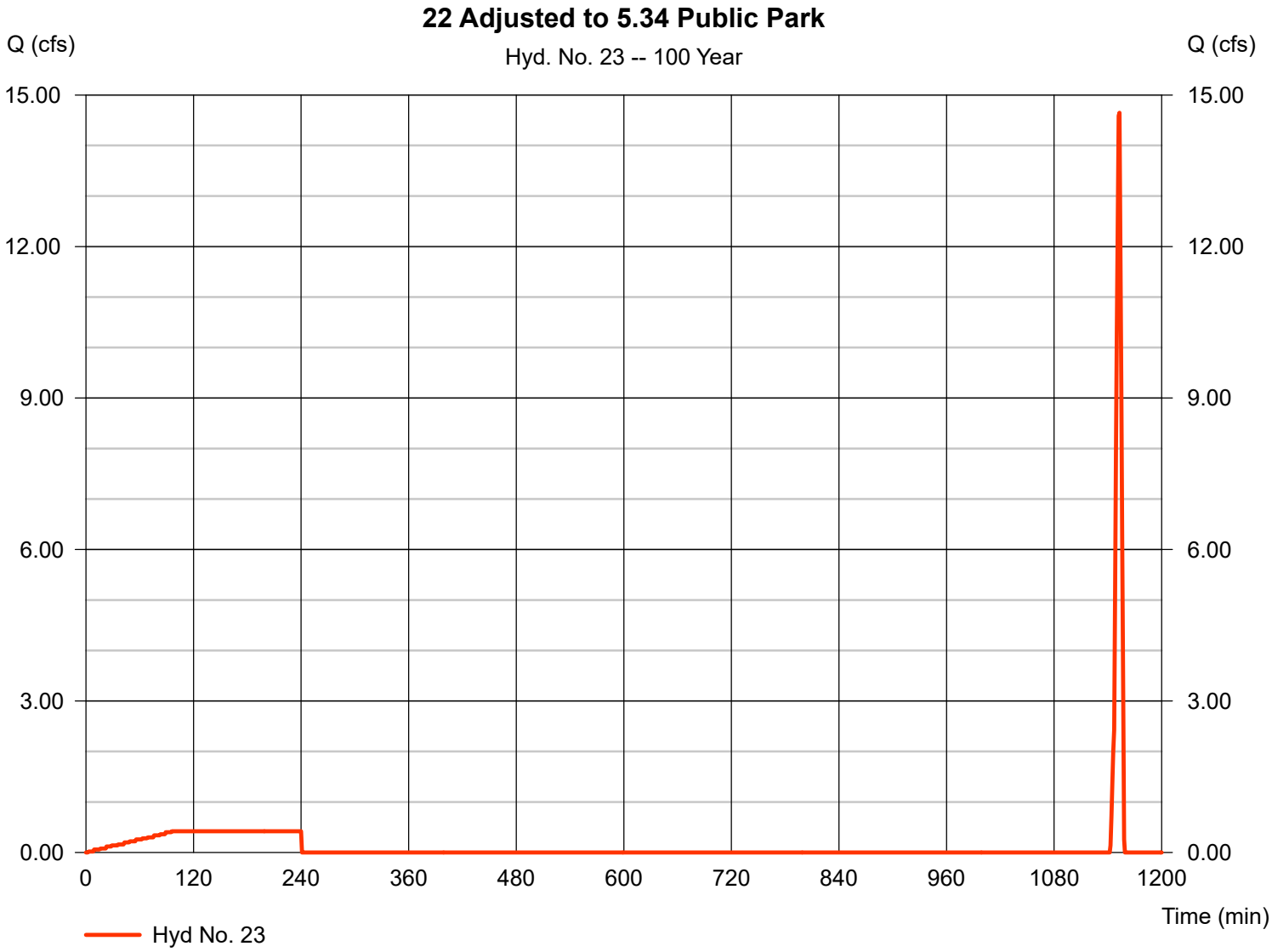


Hydrograph Report

Hyd. No. 23

22 Adjusted to 5.34 Public Park

Hydrograph type	= Manual	Peak discharge	= 14.65 cfs
Storm frequency	= 100 yrs	Time to peak	= 1153 min
Time interval	= 1 min	Hyd. volume	= 0.252 acft

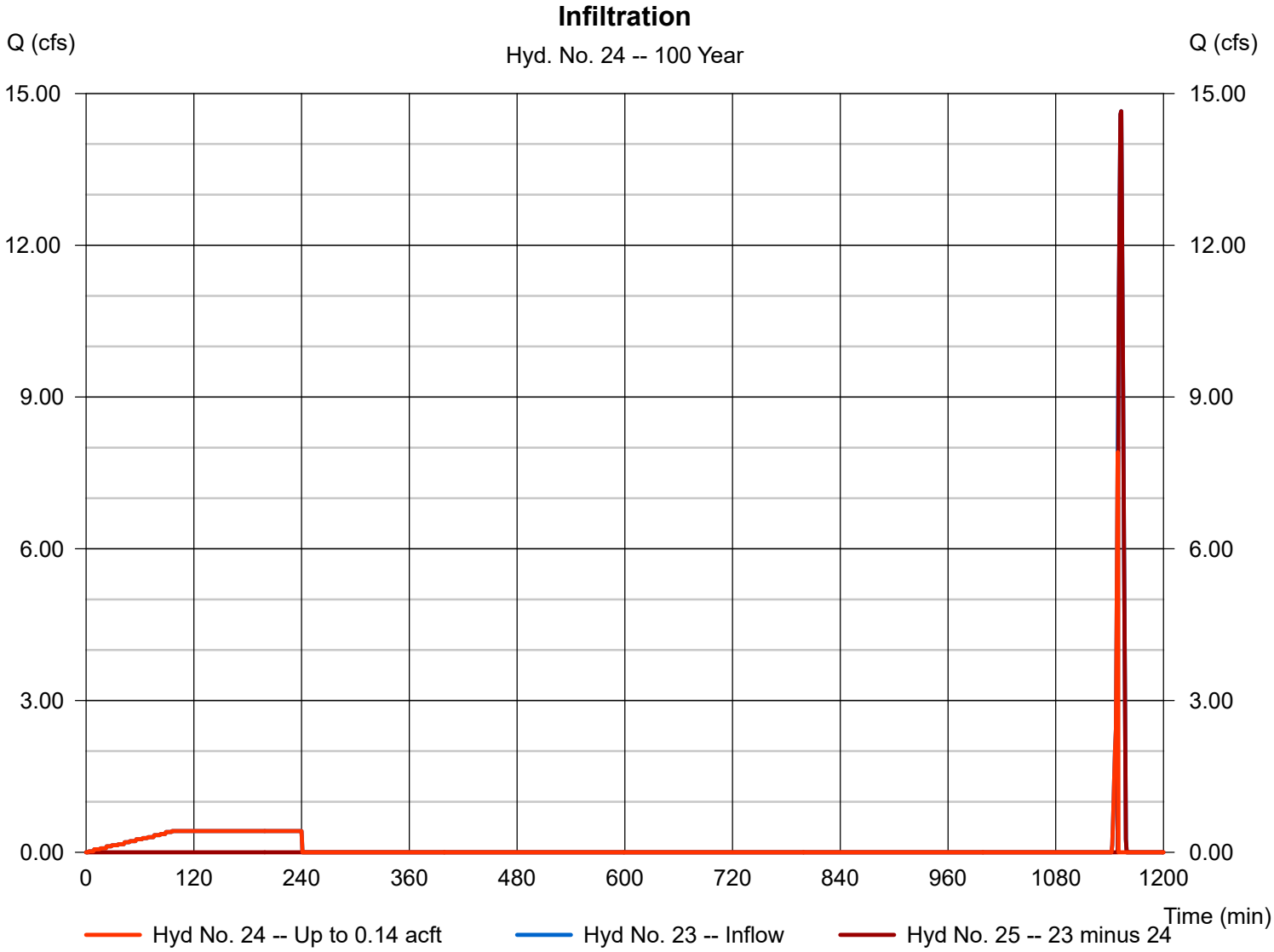


Hydrograph Report

Hyd. No. 24

Infiltration

Hydrograph type	=	Diversion1	Peak discharge	=	7.910 cfs
Storm frequency	=	100 yrs	Time to peak	=	1149 min
Time interval	=	1 min	Hyd. volume	=	0.138 acft
Inflow hydrograph	=	23 - 22 Adjusted to 5.34 Public Park	2nd diverted hyd.	=	25
Diversion method	=	First Flush Volume	Volume Up To	=	0.14 acft

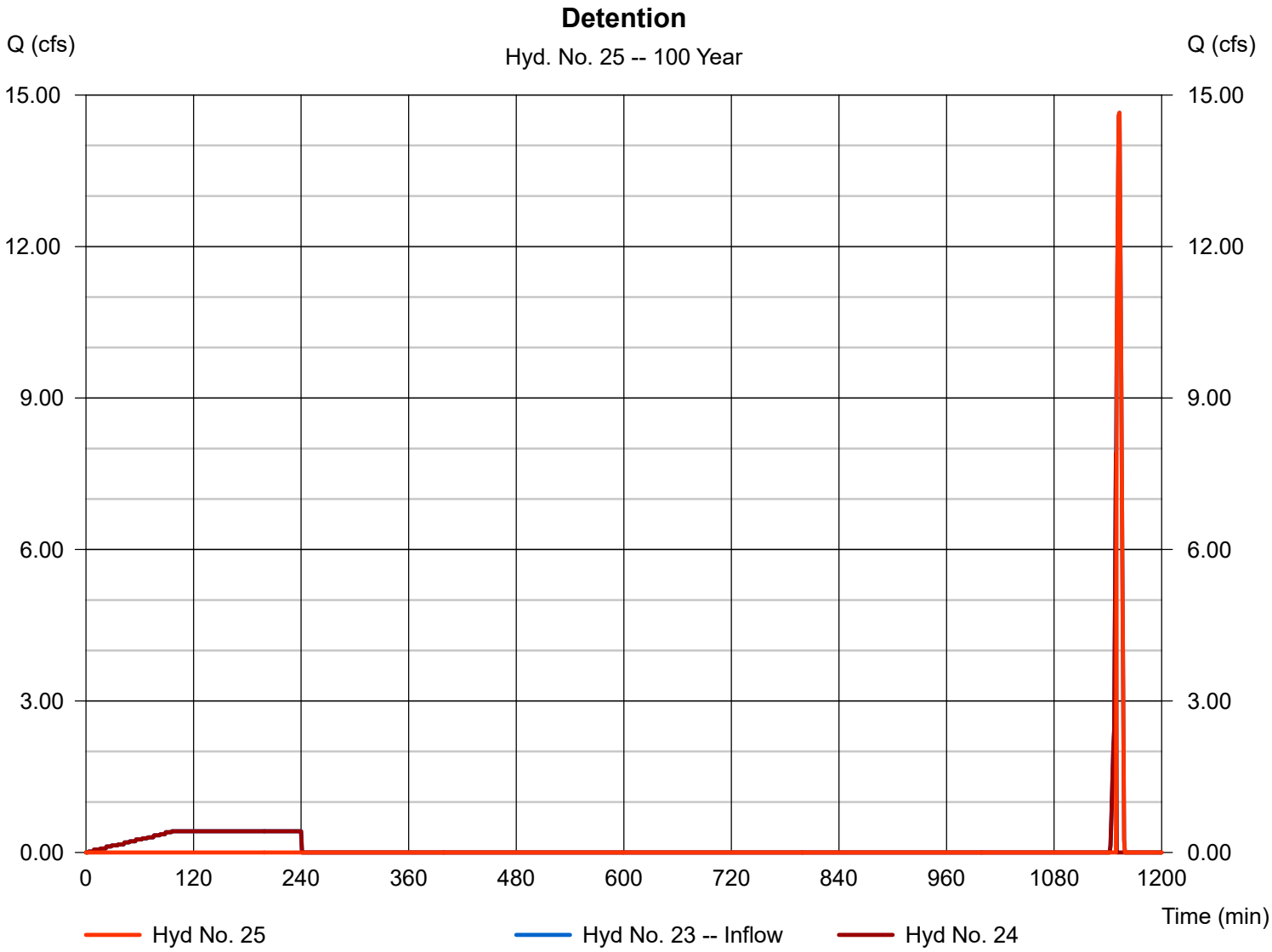


Hydrograph Report

Hyd. No. 25

Detention

Hydrograph type	=	Diversion2	Peak discharge	=	14.65 cfs
Storm frequency	=	100 yrs	Time to peak	=	1153 min
Time interval	=	1 min	Hyd. volume	=	0.113 acft
Inflow hydrograph	=	23 - 22 Adjusted to 5.34 Public Park	2nd diverted hyd.	=	24
Diversion method	=	First Flush Volume	Volume Up To	=	0.14 acft



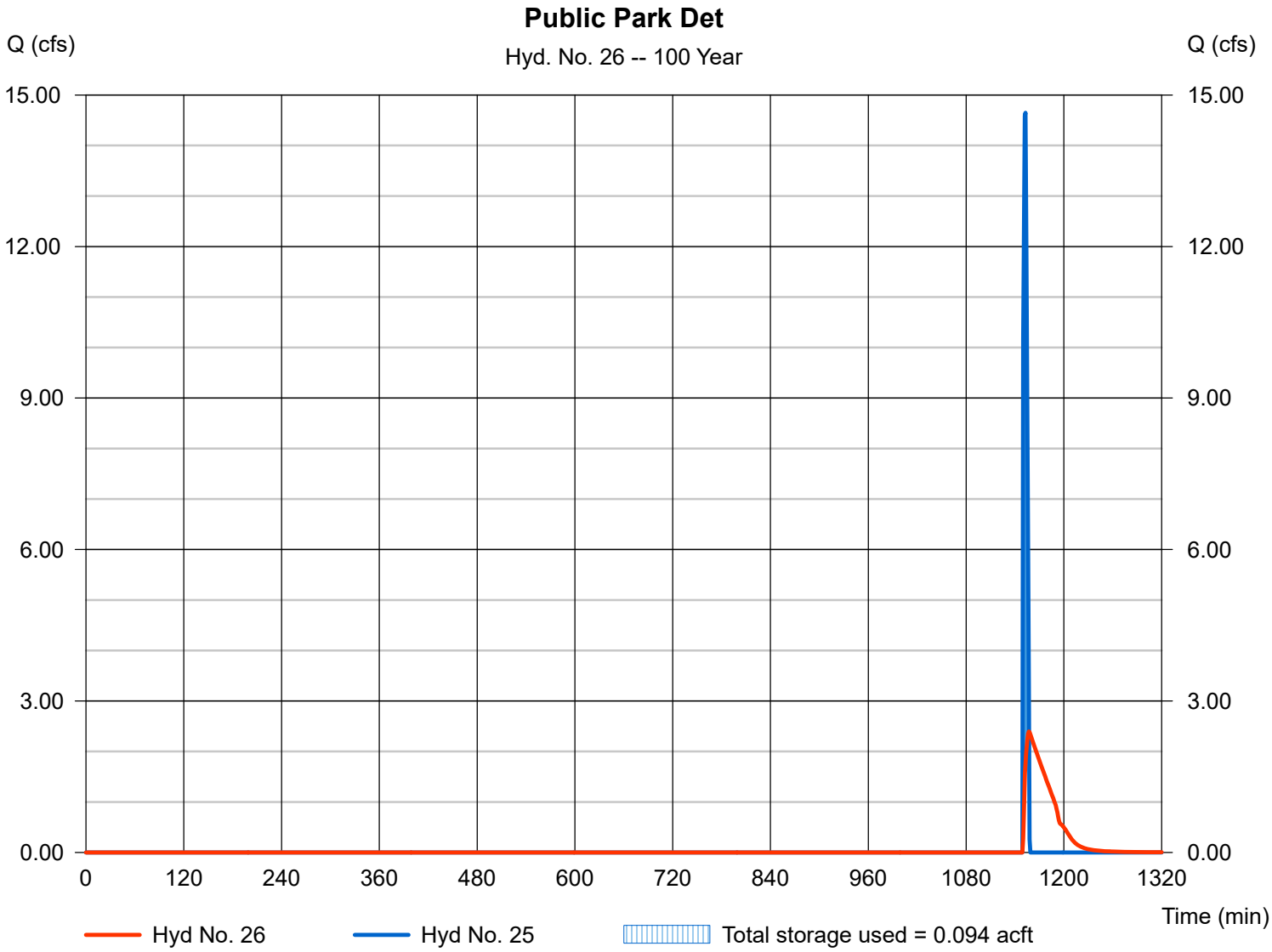
Hydrograph Report

Hyd. No. 26

Public Park Det

Hydrograph type	=	Reservoir	Peak discharge	=	2.397 cfs
Storm frequency	=	100 yrs	Time to peak	=	1157 min
Time interval	=	1 min	Hyd. volume	=	0.113 acft
Inflow hyd. No.	=	25 - Detention	Max. Elevation	=	65.46 ft
Reservoir name	=	Public Park DC780 No TW	Max. Storage	=	0.094 acft

Storage Indication method used.



Pond No. 9 - Public Park DC780 No TW

Pond Data

UG Chambers - Invert elev. = 63.75 ft, Rise x Span = 2.50 x 4.25 ft, Barrel Len = 50.00 ft, No. Barrels = 8, Slope = 0.00%, Headers = Yes
Encasement - Invert elev. = 63.00 ft, Width = 4.75 ft, Height = 4.25 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	63.00	n/a	0.000	0.000
0.43	63.43	n/a	0.009	0.009
0.85	63.85	n/a	0.012	0.020
1.28	64.28	n/a	0.021	0.041
1.70	64.70	n/a	0.020	0.061
2.13	65.13	n/a	0.019	0.080
2.55	65.55	n/a	0.018	0.098
2.98	65.98	n/a	0.016	0.114
3.40	66.40	n/a	0.011	0.125
3.83	66.83	n/a	0.009	0.134
4.25	67.25	n/a	0.009	0.143

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 63.00	0.00	0.00	0.00
Length (ft)	= 20.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage acft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0.000	63.00	0.00	---	---	---	---	---	---	---	---	---	0.000
0.43	0.009	63.43	0.39 oc	---	---	---	---	---	---	---	---	---	0.386
0.85	0.020	63.85	0.93 oc	---	---	---	---	---	---	---	---	---	0.931
1.28	0.041	64.28	1.47 oc	---	---	---	---	---	---	---	---	---	1.473
1.70	0.061	64.70	1.86 oc	---	---	---	---	---	---	---	---	---	1.863
2.13	0.080	65.13	2.18 oc	---	---	---	---	---	---	---	---	---	2.184
2.55	0.098	65.55	2.46 oc	---	---	---	---	---	---	---	---	---	2.464
2.98	0.114	65.98	2.72 oc	---	---	---	---	---	---	---	---	---	2.715
3.40	0.125	66.40	2.94 ic	---	---	---	---	---	---	---	---	---	2.943
3.83	0.134	66.83	3.14 ic	---	---	---	---	---	---	---	---	---	3.140
4.25	0.143	67.25	3.33 ic	---	---	---	---	---	---	---	---	---	3.326

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.23

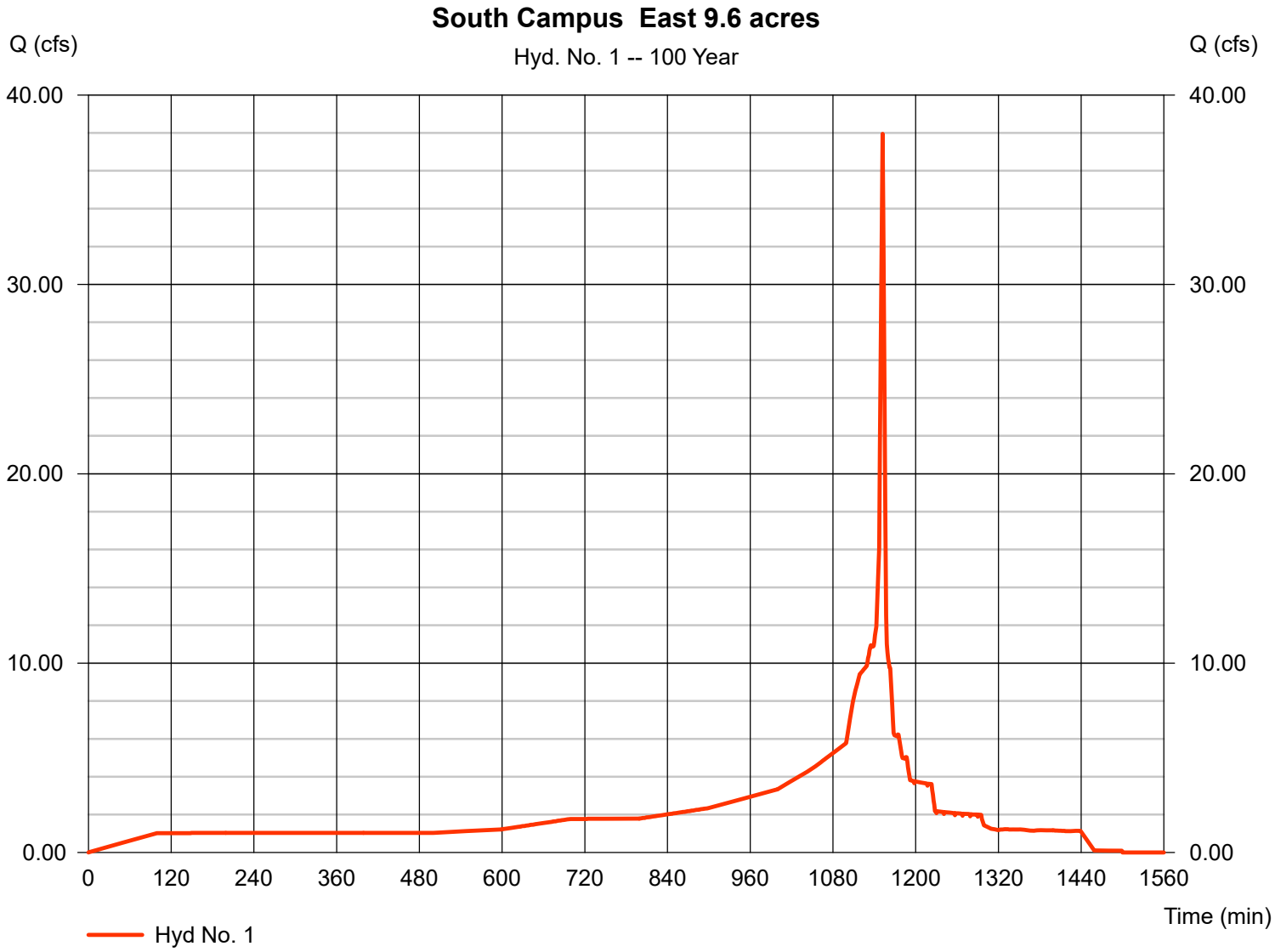
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	Manual	37.95	1	1152	4.487	----	------	------	South Campus East 9.6 acres
3	Manual	37.48	1	1152	4.426	----	------	------	South Ranch Total 9.5 ac
4	Diversion1	1.040	1	349	0.538	3	------	------	Infiltration
5	Diversion2	37.48	1	1152	3.888	3	------	------	Detain/Release
6	Diversion1	0.800	1	1066	1.126	5	------	------	Release
7	Diversion2	36.68	1	1152	2.762	5	------	------	Detain
8	Combine	36.68	1	1152	3.300	4, 7	------	------	Total to Basin
22	Reservoir	2.016	1	1226	1.543	8	60.82	2.85	E-W SC 740
23	Reservoir	2.184	1	1225	2.426	8	60.35	2.59	E-W SC 740 No TW
25	Combine	2.984	1	1225	3.552	6, 23,	------	------	Total Discharge SC740 E-W
27	Manual	2.800	1	1152	0.334	----	------	------	Public Park 1 ac 2.8cfs/ac
28	Diversion1	0.080	1	99	0.036	27	------	------	Public Infiltration
29	Diversion2	2.800	1	1152	0.298	27	------	------	Public Detention
30	Diversion1	0.500	1	1104	0.261	29	------	------	Release
31	Diversion2	2.300	1	1152	0.037	29	------	------	Public Detention

Hydrograph Report

Hyd. No. 1

South Campus East 9.6 acres

Hydrograph type	= Manual	Peak discharge	= 37.95 cfs
Storm frequency	= 100 yrs	Time to peak	= 1152 min
Time interval	= 1 min	Hyd. volume	= 4.487 acft

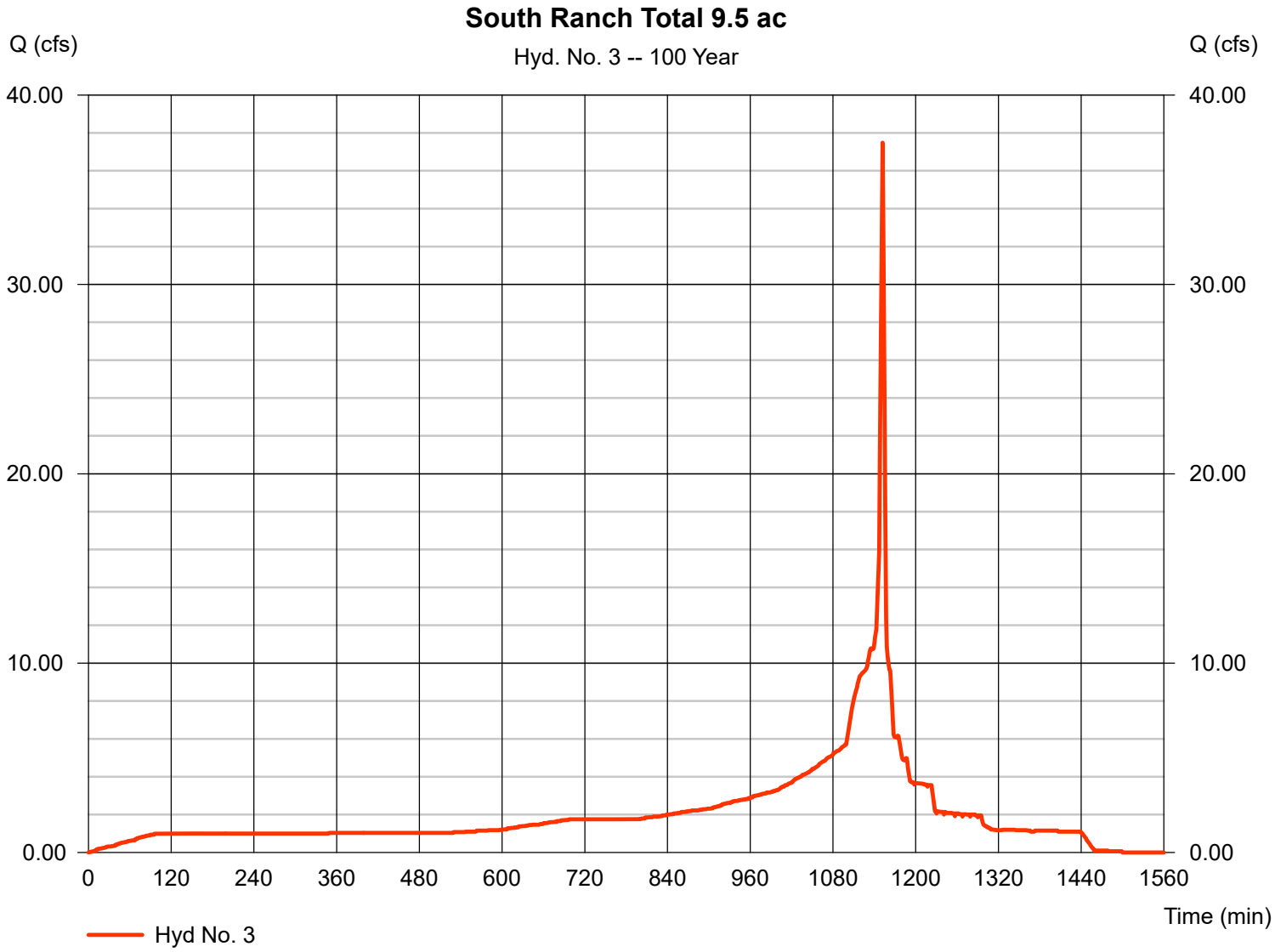


Hydrograph Report

Hyd. No. 3

South Ranch Total 9.5 ac

Hydrograph type	= Manual	Peak discharge	= 37.48 cfs
Storm frequency	= 100 yrs	Time to peak	= 1152 min
Time interval	= 1 min	Hyd. volume	= 4.426 acft

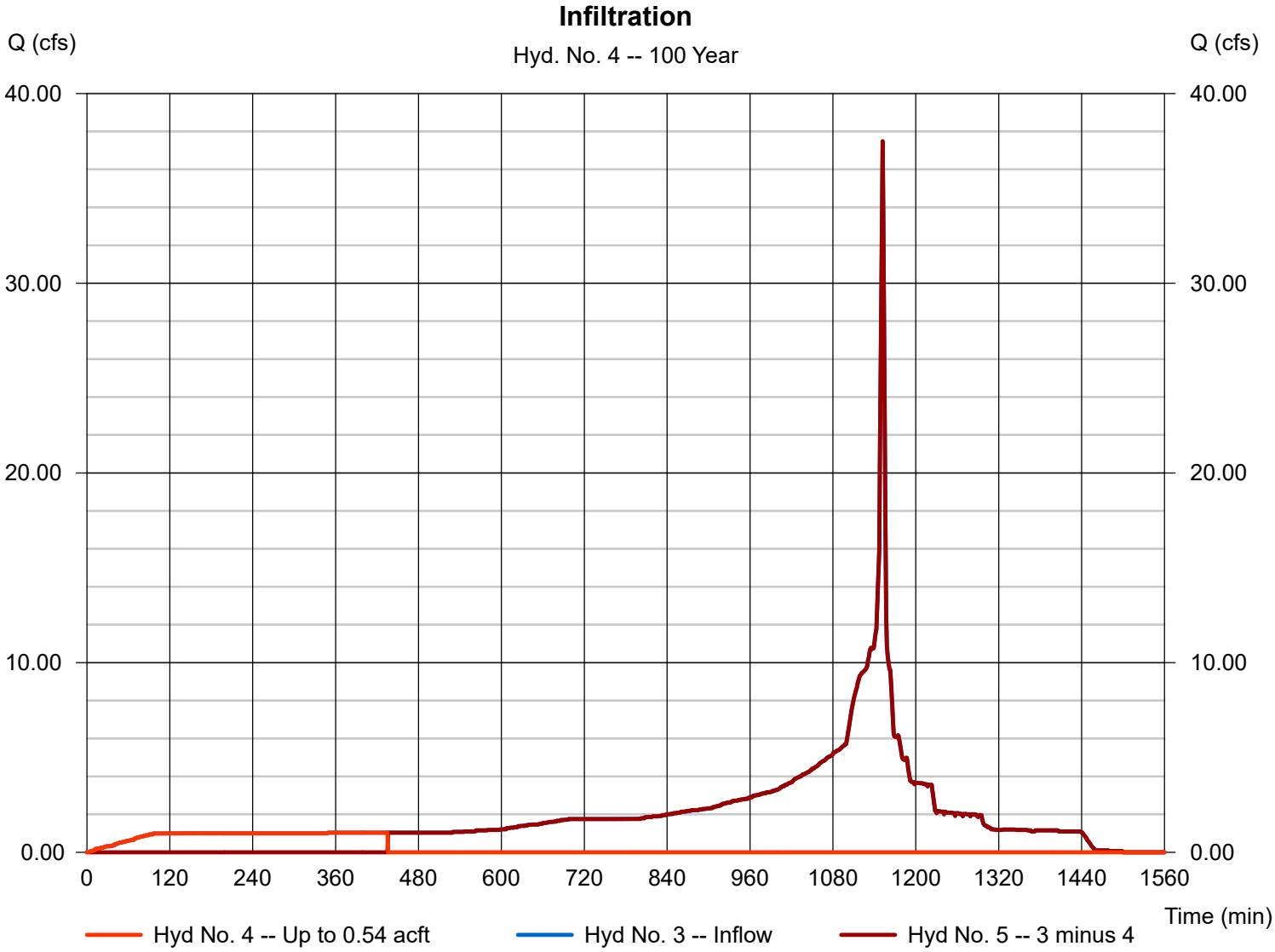


Hydrograph Report

Hyd. No. 4

Infiltration

Hydrograph type	=	Diversion1	Peak discharge	=	1.040 cfs
Storm frequency	=	100 yrs	Time to peak	=	349 min
Time interval	=	1 min	Hyd. volume	=	0.538 acft
Inflow hydrograph	=	3 - South Ranch Total 9.5 ac	2nd diverted hyd.	=	5
Diversion method	=	First Flush Volume	Volume Up To	=	0.54 acft

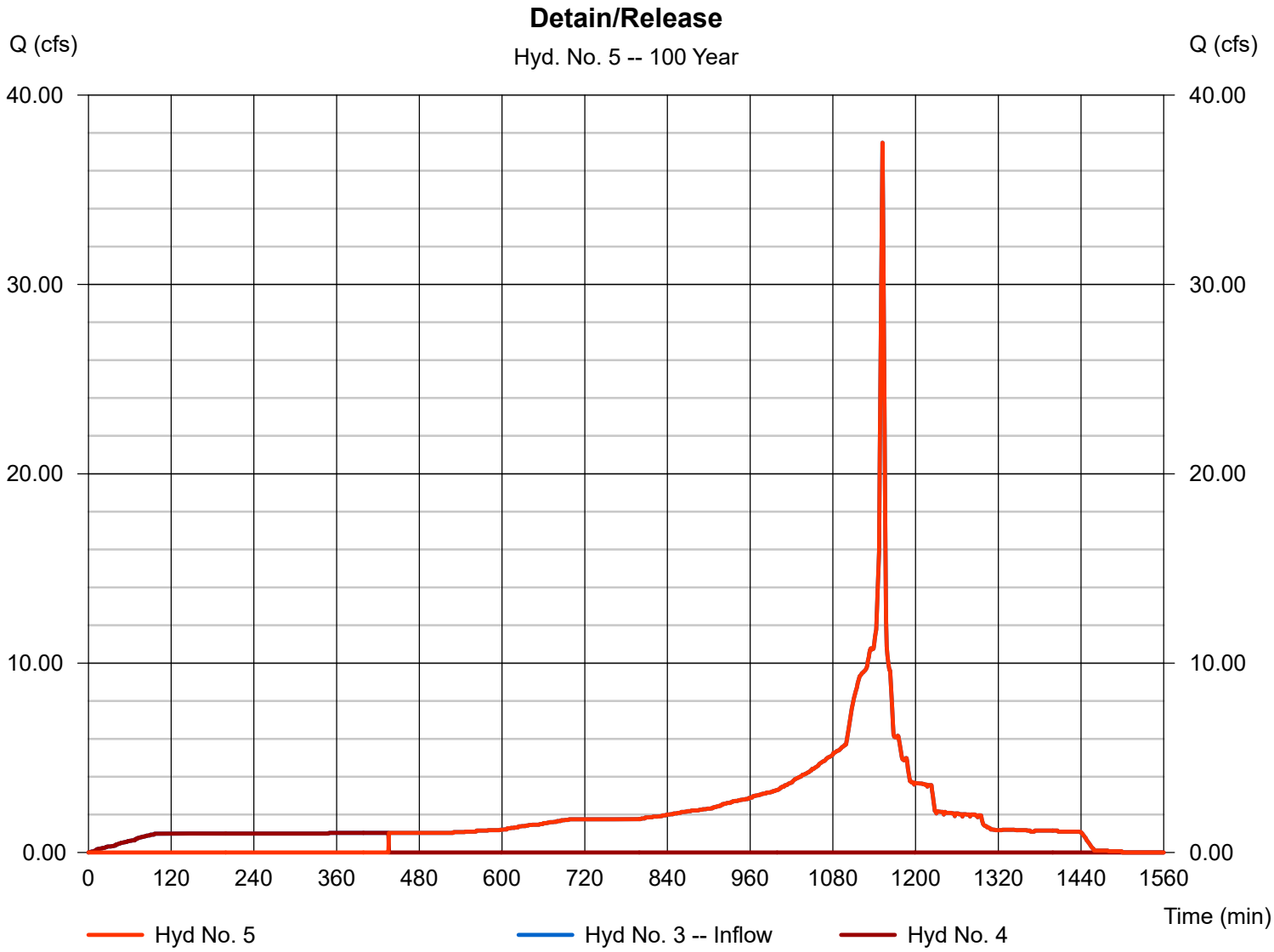


Hydrograph Report

Hyd. No. 5

Detain/Release

Hydrograph type	=	Diversion2	Peak discharge	=	37.48 cfs
Storm frequency	=	100 yrs	Time to peak	=	1152 min
Time interval	=	1 min	Hyd. volume	=	3.888 acft
Inflow hydrograph	=	3 - South Ranch Total 9.5 ac	2nd diverted hyd.	=	4
Diversion method	=	First Flush Volume	Volume Up To	=	0.54 acft

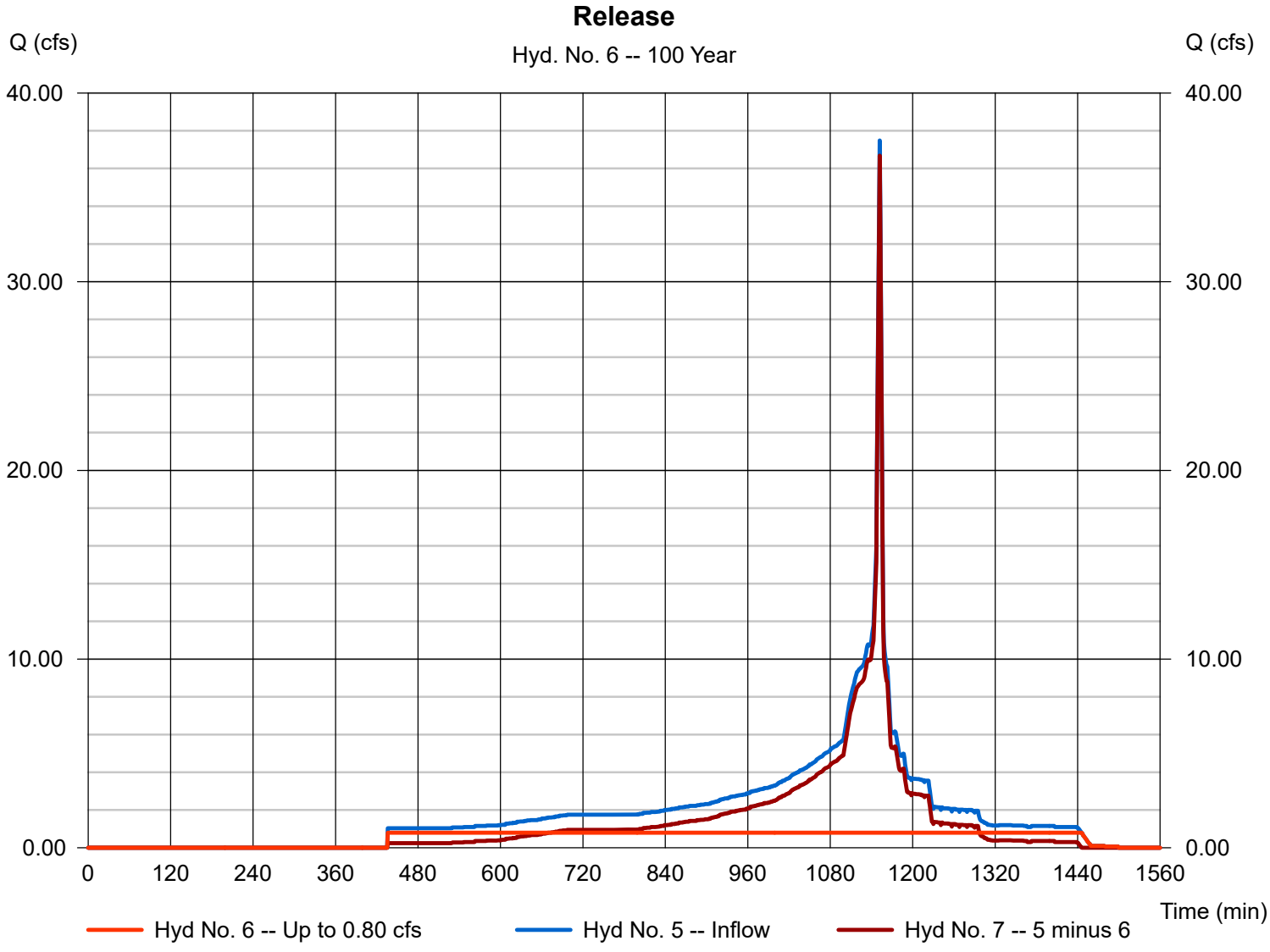


Hydrograph Report

Hyd. No. 6

Release

Hydrograph type	=	Diversion1	Peak discharge	=	0.800 cfs
Storm frequency	=	100 yrs	Time to peak	=	1066 min
Time interval	=	1 min	Hyd. volume	=	1.126 acft
Inflow hydrograph	=	5 - Detain/Release	2nd diverted hyd.	=	7
Diversion method	=	Constant Q	Constant Q	=	0.80 cfs

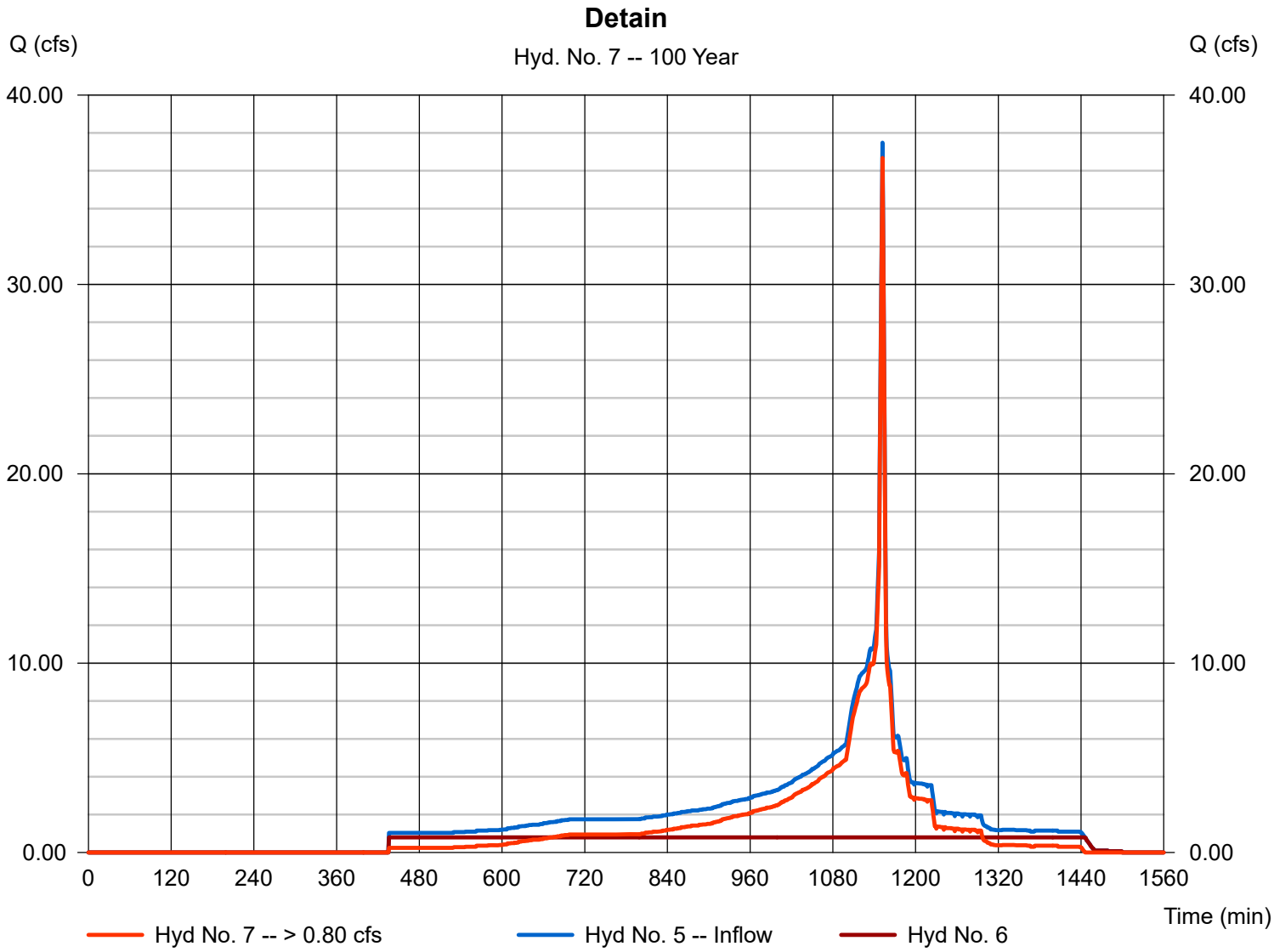


Hydrograph Report

Hyd. No. 7

Detain

Hydrograph type	=	Diversion2	Peak discharge	=	36.68 cfs
Storm frequency	=	100 yrs	Time to peak	=	1152 min
Time interval	=	1 min	Hyd. volume	=	2.762 acft
Inflow hydrograph	=	5 - Detain/Release	2nd diverted hyd.	=	6
Diversion method	=	Constant Q	Constant Q	=	0.80 cfs

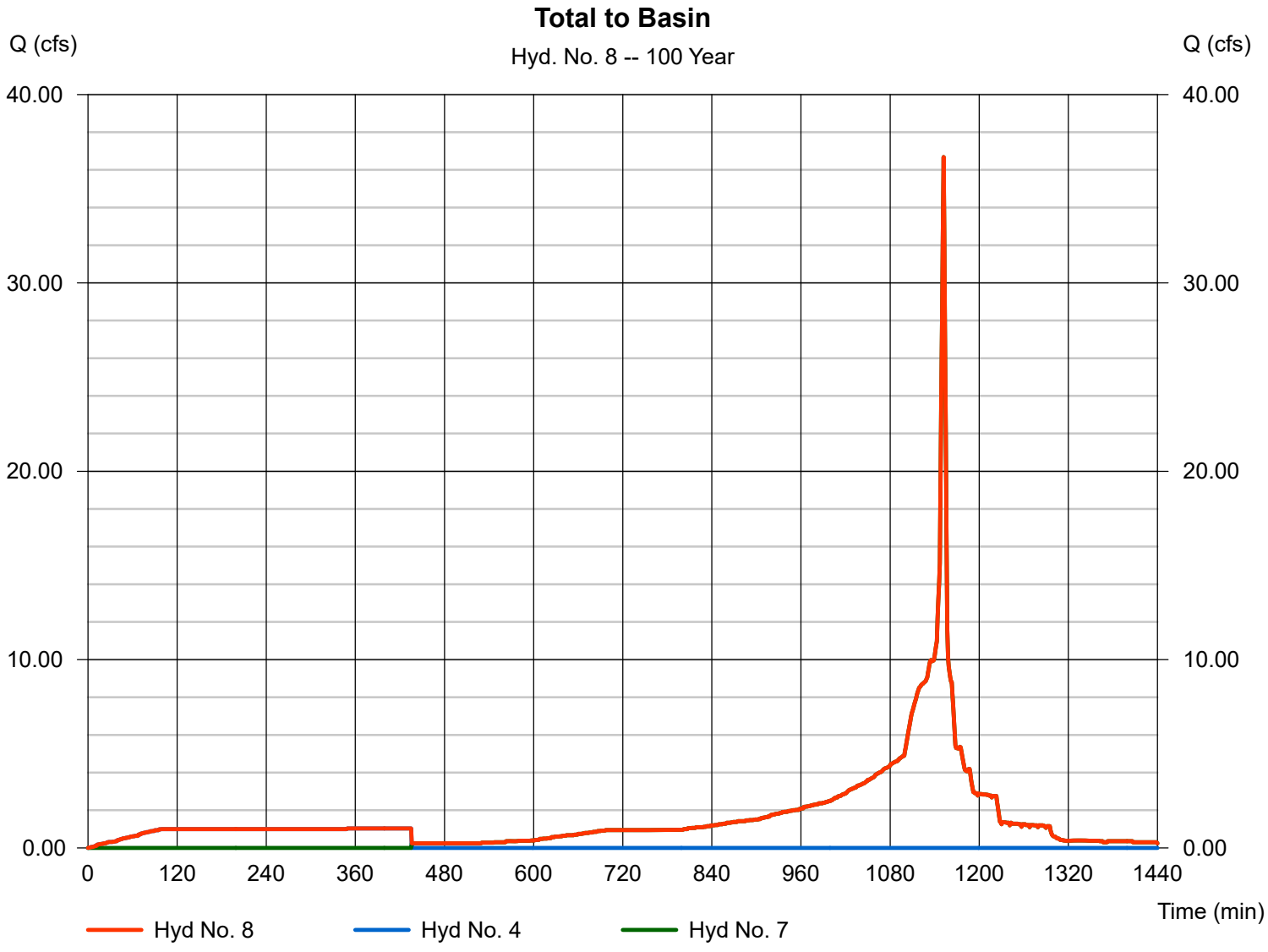


Hydrograph Report

Hyd. No. 8

Total to Basin

Hydrograph type	= Combine	Peak discharge	= 36.68 cfs
Storm frequency	= 100 yrs	Time to peak	= 1152 min
Time interval	= 1 min	Hyd. volume	= 3.300 acft
Inflow hyds.	= 4, 7	Contrib. drain. area	= 0.000 ac



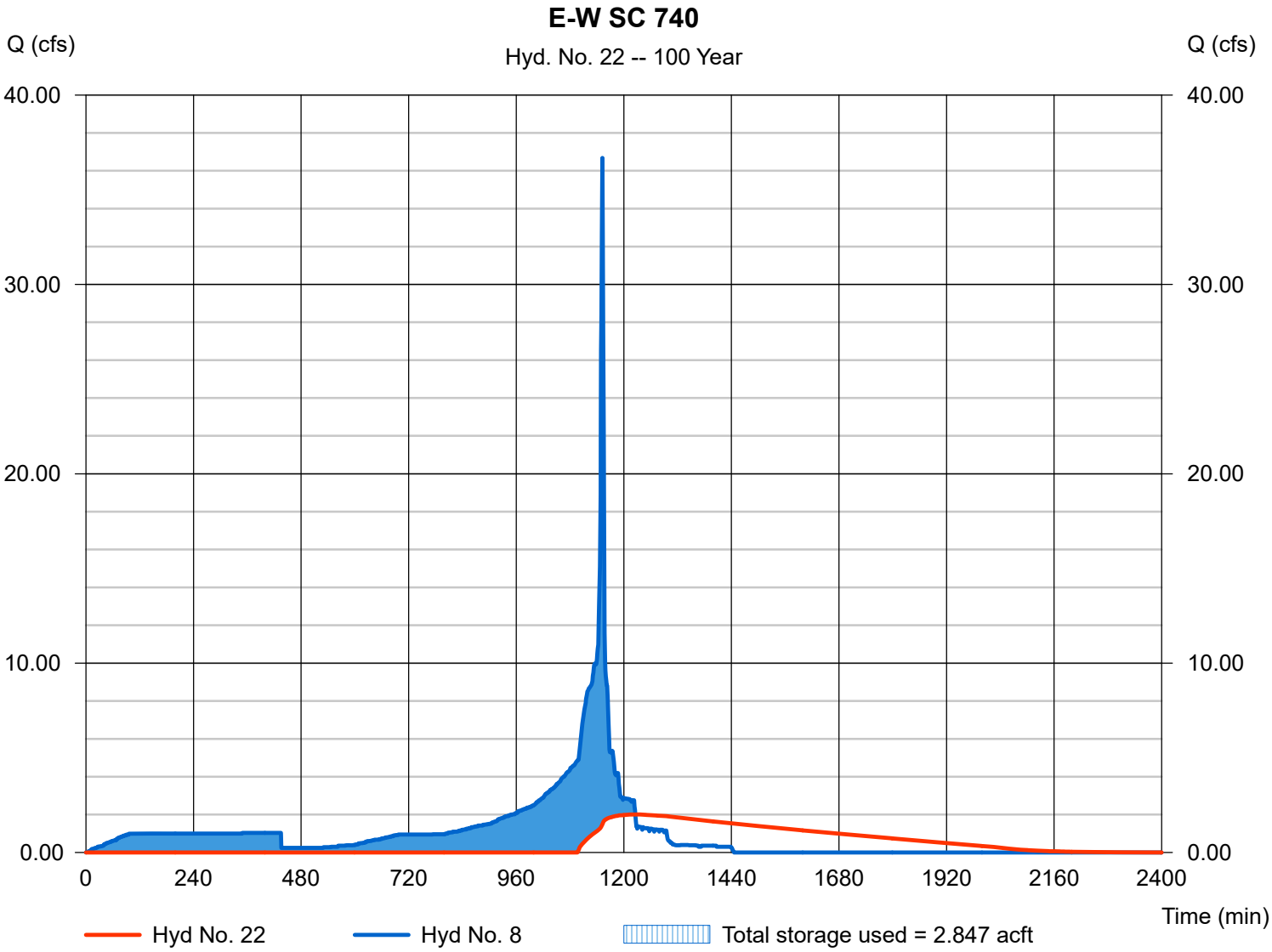
Hydrograph Report

Hyd. No. 22

E-W SC 740

Hydrograph type	=	Reservoir	Peak discharge	=	2.016 cfs
Storm frequency	=	100 yrs	Time to peak	=	1226 min
Time interval	=	1 min	Hyd. volume	=	1.543 acft
Inflow hyd. No.	=	8 - Total to Basin	Max. Elevation	=	60.82 ft
Reservoir name	=	Full SIte SC740-E/W	Max. Storage	=	2.847 acft

Storage Indication method used.



Pond No. 20 - Full SIte SC740-E/W

Pond Data

UG Chambers - Invert elev. = 57.95 ft, Rise x Span = 2.50 x 4.25 ft, Barrel Len = 400.00 ft, No. Barrels = 25, Slope = 0.00%, Headers = Yes
Encasement - Invert elev. = 57.45 ft, Width = 5.25 ft, Height = 3.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	57.45	n/a	0.000	0.000
0.35	57.80	n/a	0.173	0.173
0.70	58.15	n/a	0.293	0.466
1.05	58.50	n/a	0.381	0.847
1.40	58.85	n/a	0.374	1.222
1.75	59.20	n/a	0.363	1.584
2.10	59.55	n/a	0.346	1.930
2.45	59.90	n/a	0.321	2.251
2.80	60.25	n/a	0.283	2.534
3.15	60.60	n/a	0.205	2.739
3.50	60.95	n/a	0.173	2.912

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 58.33	0.00	0.00	0.00
Length (ft)	= 15.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 59.38

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage acft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0.000	57.45	0.00	---	---	---	---	---	---	---	---	---	0.000
0.35	0.173	57.80	0.00	---	---	---	---	---	---	---	---	---	0.000
0.70	0.466	58.15	0.00	---	---	---	---	---	---	---	---	---	0.000
1.05	0.847	58.50	0.00	---	---	---	---	---	---	---	---	---	0.000
1.40	1.222	58.85	0.00	---	---	---	---	---	---	---	---	---	0.000
1.75	1.584	59.20	0.00	---	---	---	---	---	---	---	---	---	0.000
2.10	1.930	59.55	0.69 ic	---	---	---	---	---	---	---	---	---	0.693
2.45	2.251	59.90	1.21 ic	---	---	---	---	---	---	---	---	---	1.212
2.80	2.534	60.25	1.57 ic	---	---	---	---	---	---	---	---	---	1.567
3.15	2.739	60.60	1.86 ic	---	---	---	---	---	---	---	---	---	1.856
3.50	2.912	60.95	2.11 ic	---	---	---	---	---	---	---	---	---	2.106

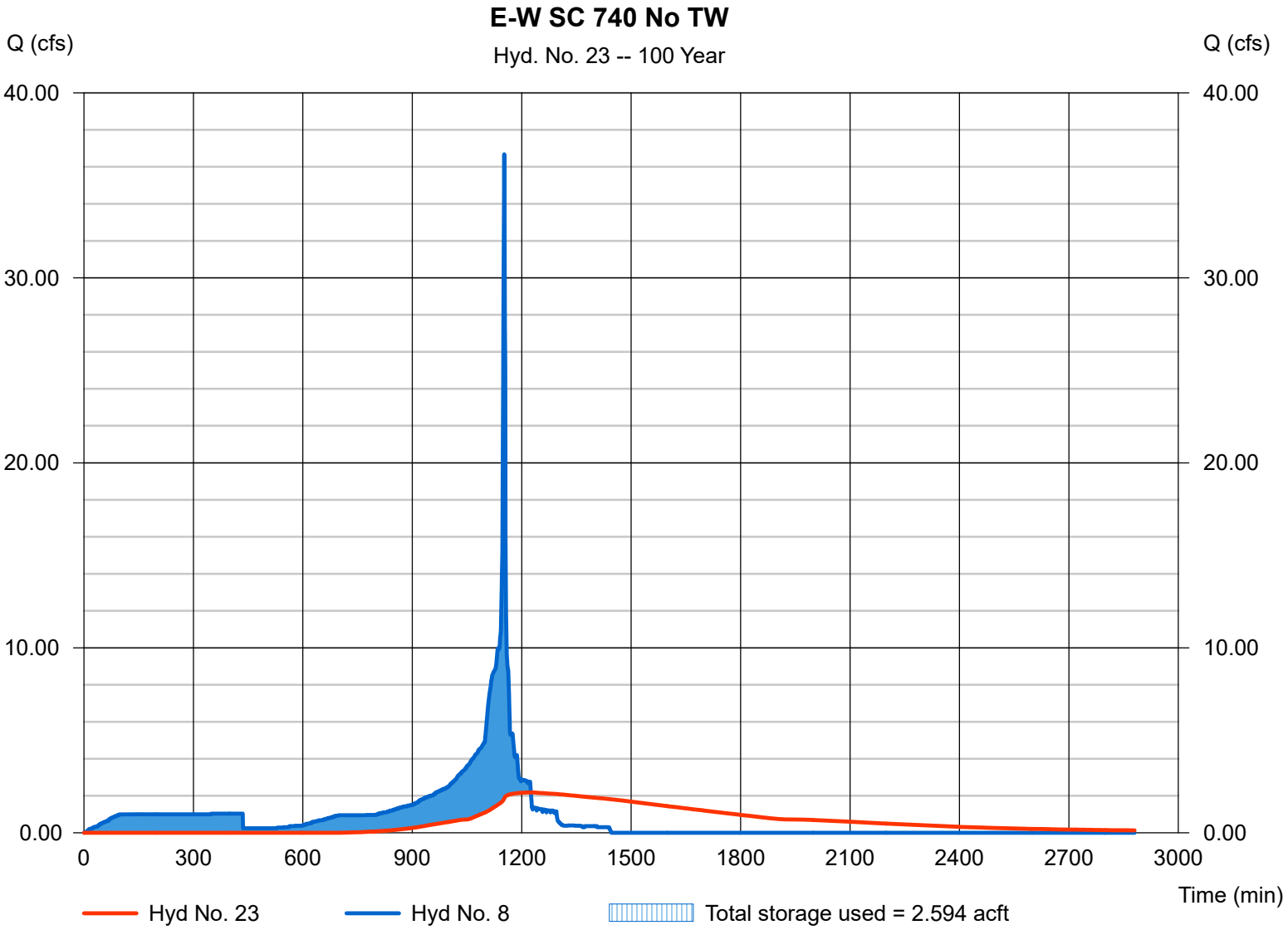
Hydrograph Report

Hyd. No. 23

E-W SC 740 No TW

Hydrograph type	=	Reservoir	Peak discharge	=	2.184 cfs
Storm frequency	=	100 yrs	Time to peak	=	1225 min
Time interval	=	1 min	Hyd. volume	=	2.426 acft
Inflow hyd. No.	=	8 - Total to Basin	Max. Elevation	=	60.35 ft
Reservoir name	=	Full SIte SC740 NO TW E/W	Max. Storage	=	2.594 acft

Storage Indication method used.



Pond No. 21 - Full SIte SC740 NO TW E/W

Pond Data

UG Chambers - Invert elev. = 57.95 ft, Rise x Span = 2.50 x 4.25 ft, Barrel Len = 400.00 ft, No. Barrels = 25, Slope = 0.00%, Headers = Yes
Encasement - Invert elev. = 57.45 ft, Width = 5.25 ft, Height = 3.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	57.45	n/a	0.000	0.000
0.35	57.80	n/a	0.173	0.173
0.70	58.15	n/a	0.293	0.466
1.05	58.50	n/a	0.381	0.847
1.40	58.85	n/a	0.374	1.222
1.75	59.20	n/a	0.363	1.584
2.10	59.55	n/a	0.346	1.930
2.45	59.90	n/a	0.321	2.251
2.80	60.25	n/a	0.283	2.534
3.15	60.60	n/a	0.205	2.739
3.50	60.95	n/a	0.173	2.912

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 58.33	0.00	0.00	0.00
Length (ft)	= 15.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage acft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0.000	57.45	0.00	---	---	---	---	---	---	---	---	---	0.000
0.35	0.173	57.80	0.00	---	---	---	---	---	---	---	---	---	0.000
0.70	0.466	58.15	0.00	---	---	---	---	---	---	---	---	---	0.000
1.05	0.847	58.50	0.10 ic	---	---	---	---	---	---	---	---	---	0.099
1.40	1.222	58.85	0.62 oc	---	---	---	---	---	---	---	---	---	0.625
1.75	1.584	59.20	1.10 oc	---	---	---	---	---	---	---	---	---	1.099
2.10	1.930	59.55	1.55 oc	---	---	---	---	---	---	---	---	---	1.550
2.45	2.251	59.90	1.87 ic	---	---	---	---	---	---	---	---	---	1.869
2.80	2.534	60.25	2.12 ic	---	---	---	---	---	---	---	---	---	2.117
3.15	2.739	60.60	2.34 ic	---	---	---	---	---	---	---	---	---	2.339
3.50	2.912	60.95	2.54 ic	---	---	---	---	---	---	---	---	---	2.541

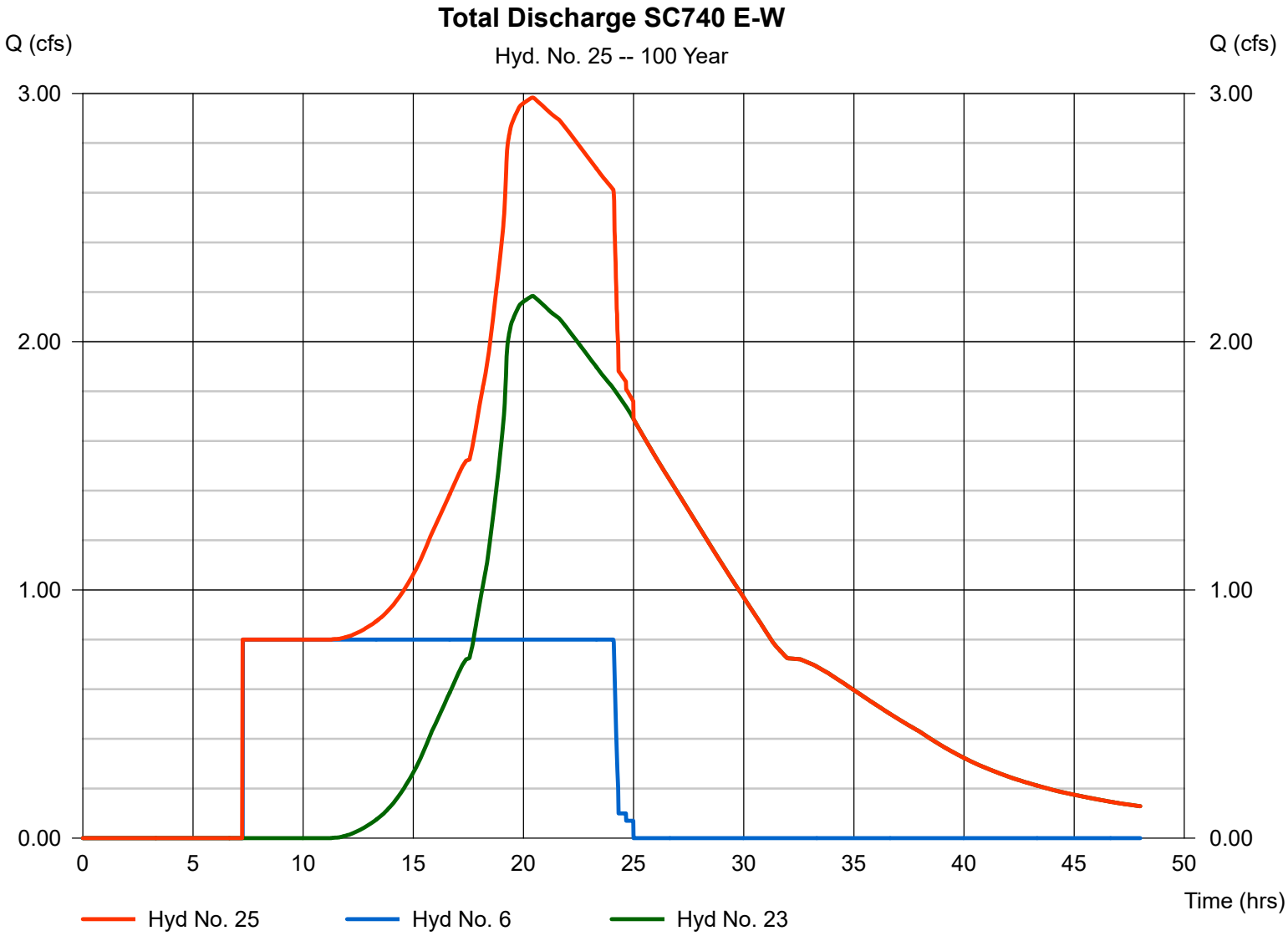
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Friday, Dec 8, 2023

Hyd. No. 25

Total Discharge SC740 E-W

Hydrograph type	= Combine	Peak discharge	= 2.984 cfs
Storm frequency	= 100 yrs	Time to peak	= 20.42 hrs
Time interval	= 1 min	Hyd. volume	= 3.552 acft
Inflow hyds.	= 6, 23	Contrib. drain. area	= 0.000 ac

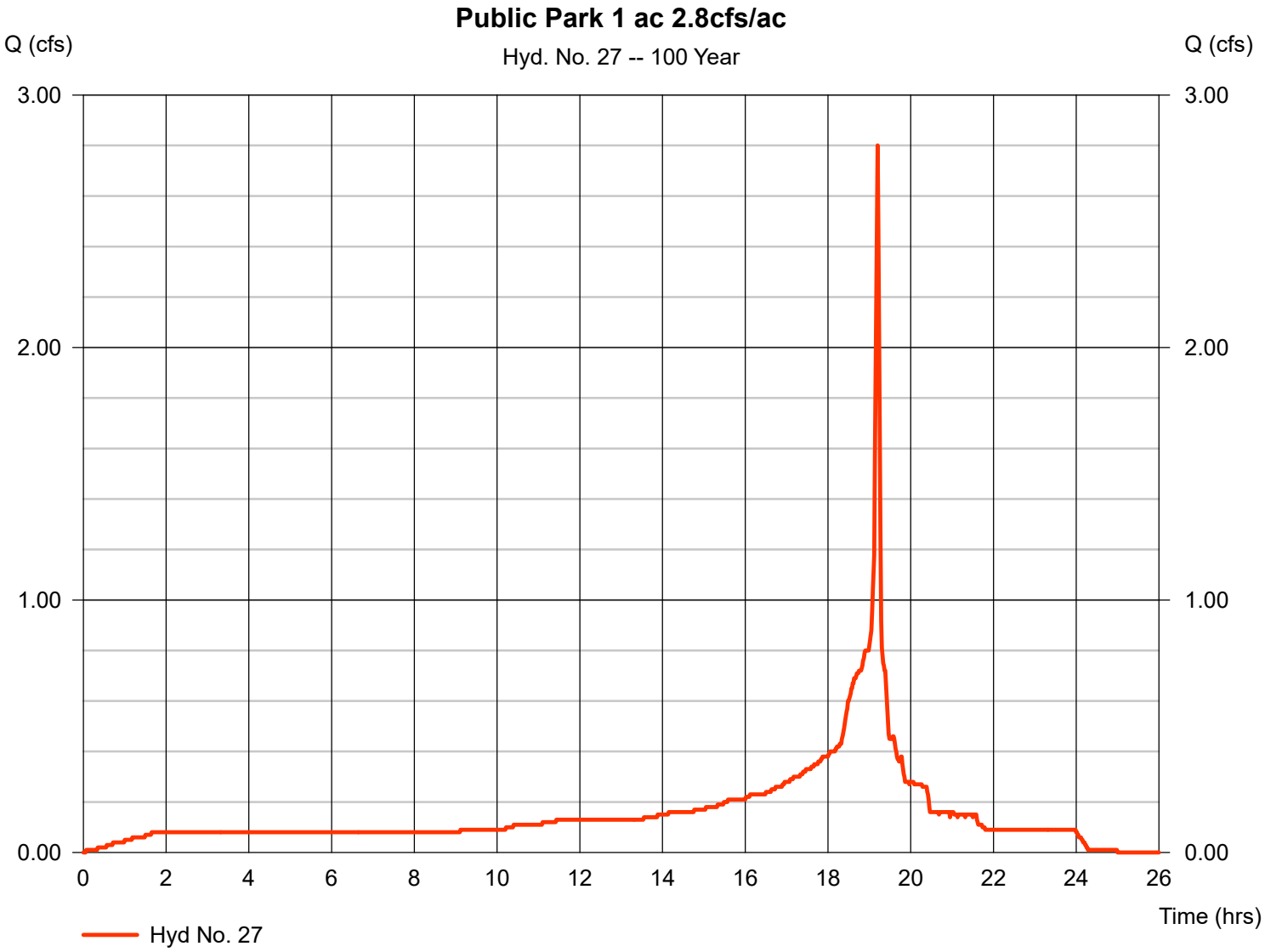


Hydrograph Report

Hyd. No. 27

Public Park 1 ac 2.8cfs/ac

Hydrograph type	= Manual	Peak discharge	= 2.800 cfs
Storm frequency	= 100 yrs	Time to peak	= 19.20 hrs
Time interval	= 1 min	Hyd. volume	= 0.334 acft

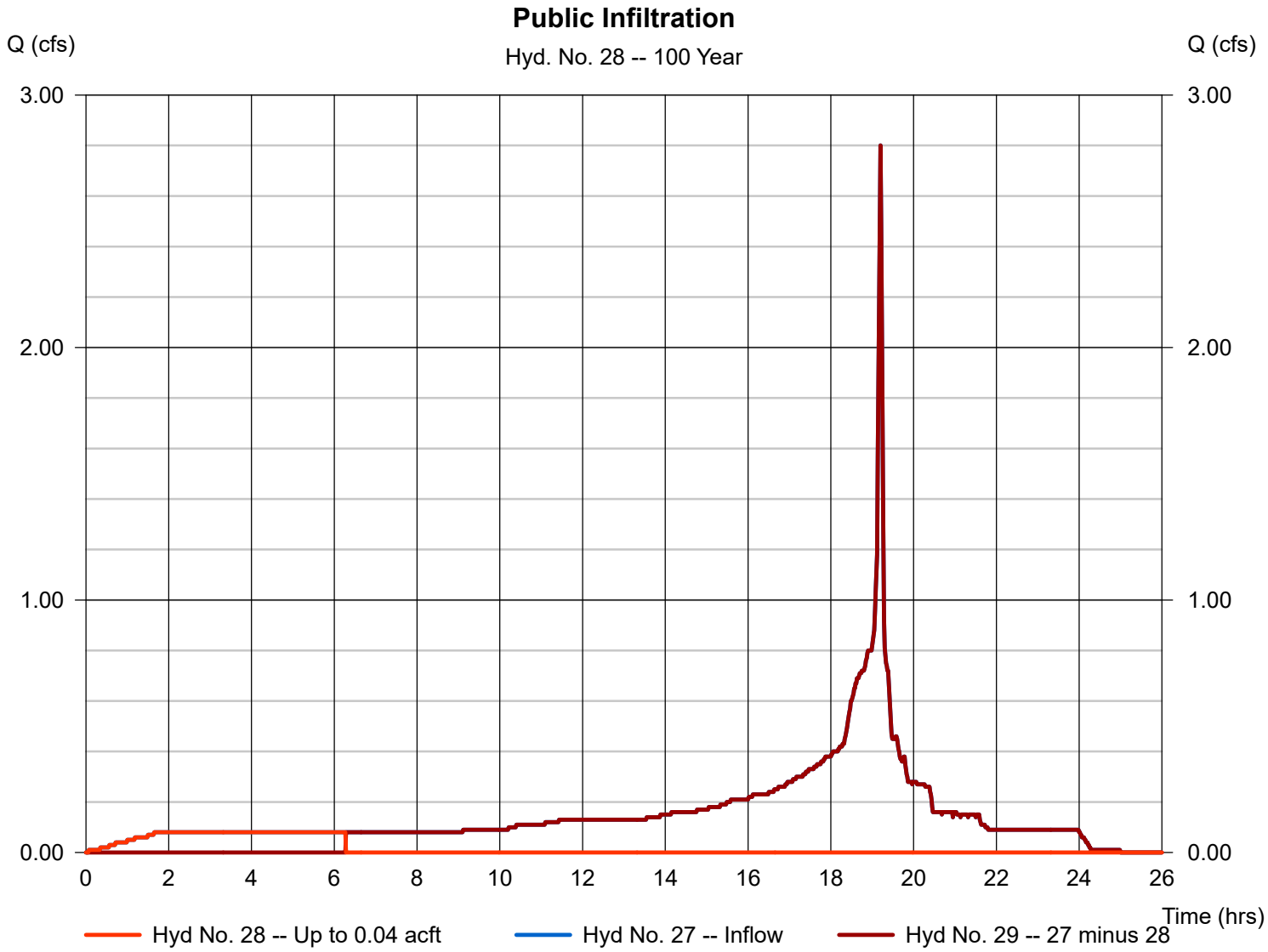


Hydrograph Report

Hyd. No. 28

Public Infiltration

Hydrograph type	=	Diversion1	Peak discharge	=	0.080 cfs
Storm frequency	=	100 yrs	Time to peak	=	1.65 hrs
Time interval	=	1 min	Hyd. volume	=	0.036 acft
Inflow hydrograph	=	27 - Public Park 1 ac 2.8cfs/ac	2nd diverted hyd.	=	29
Diversion method	=	First Flush Volume	Volume Up To	=	0.04 acft

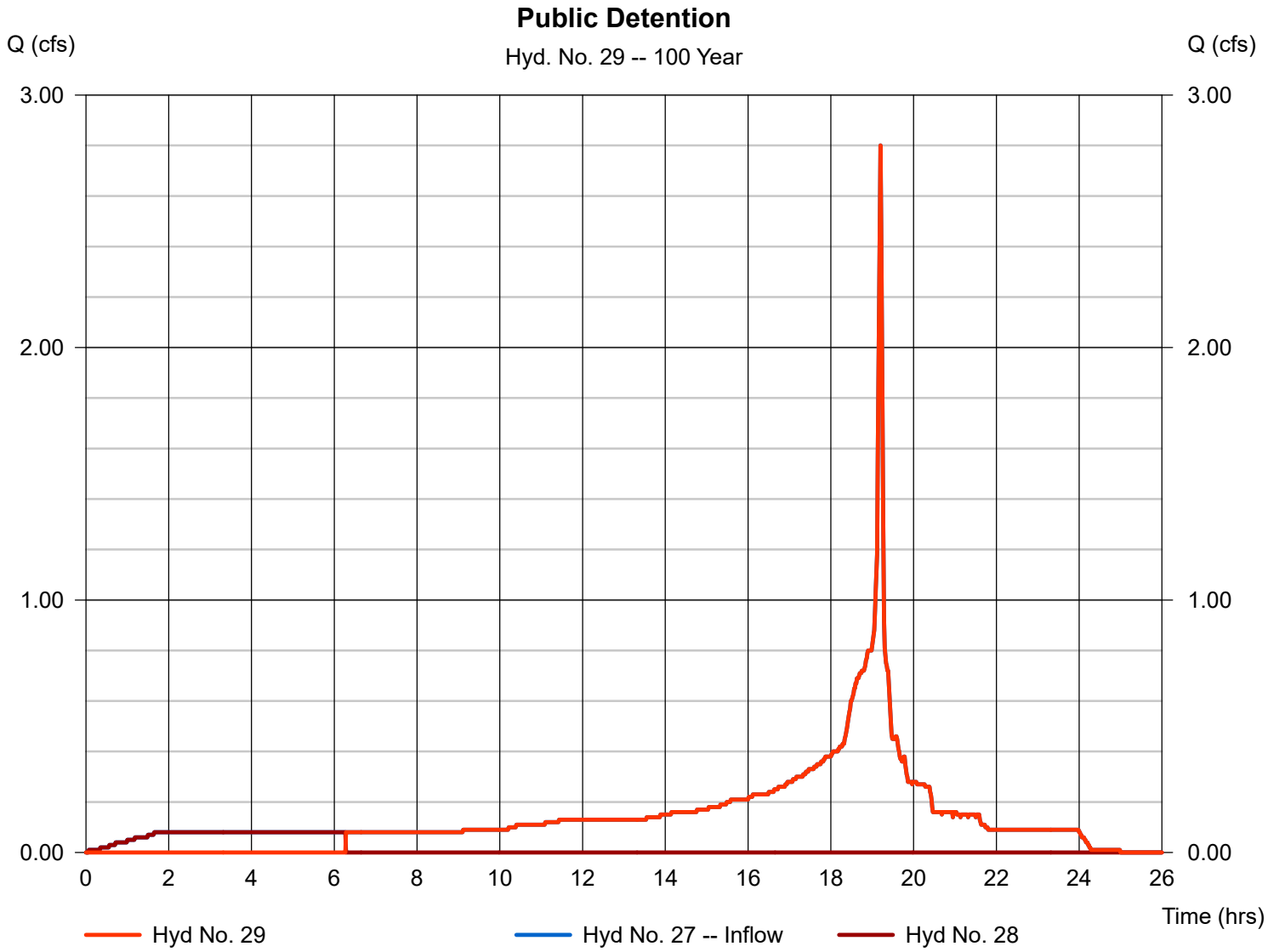


Hydrograph Report

Hyd. No. 29

Public Detention

Hydrograph type	=	Diversion2	Peak discharge	=	2.800 cfs
Storm frequency	=	100 yrs	Time to peak	=	19.20 hrs
Time interval	=	1 min	Hyd. volume	=	0.298 acft
Inflow hydrograph	=	27 - Public Park 1 ac 2.8cfs/ac	2nd diverted hyd.	=	28
Diversion method	=	First Flush Volume	Volume Up To	=	0.04 acft

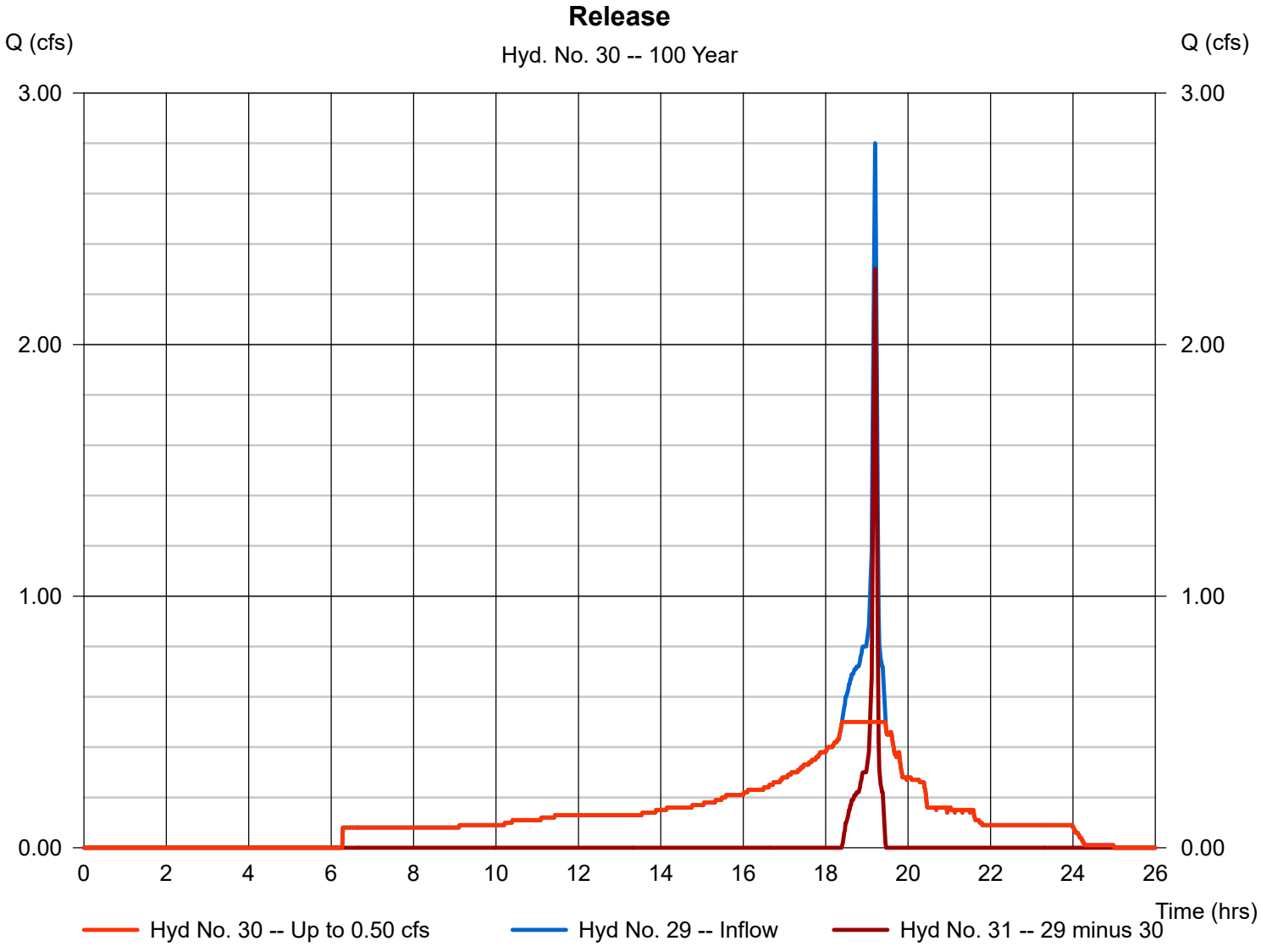


Hydrograph Report

Hyd. No. 30

Release

Hydrograph type	=	Diversion1	Peak discharge	=	0.500 cfs
Storm frequency	=	100 yrs	Time to peak	=	18.40 hrs
Time interval	=	1 min	Hyd. volume	=	0.261 acft
Inflow hydrograph	=	29 - Public Detention	2nd diverted hyd.	=	31
Diversion method	=	Constant Q	Constant Q	=	0.50 cfs

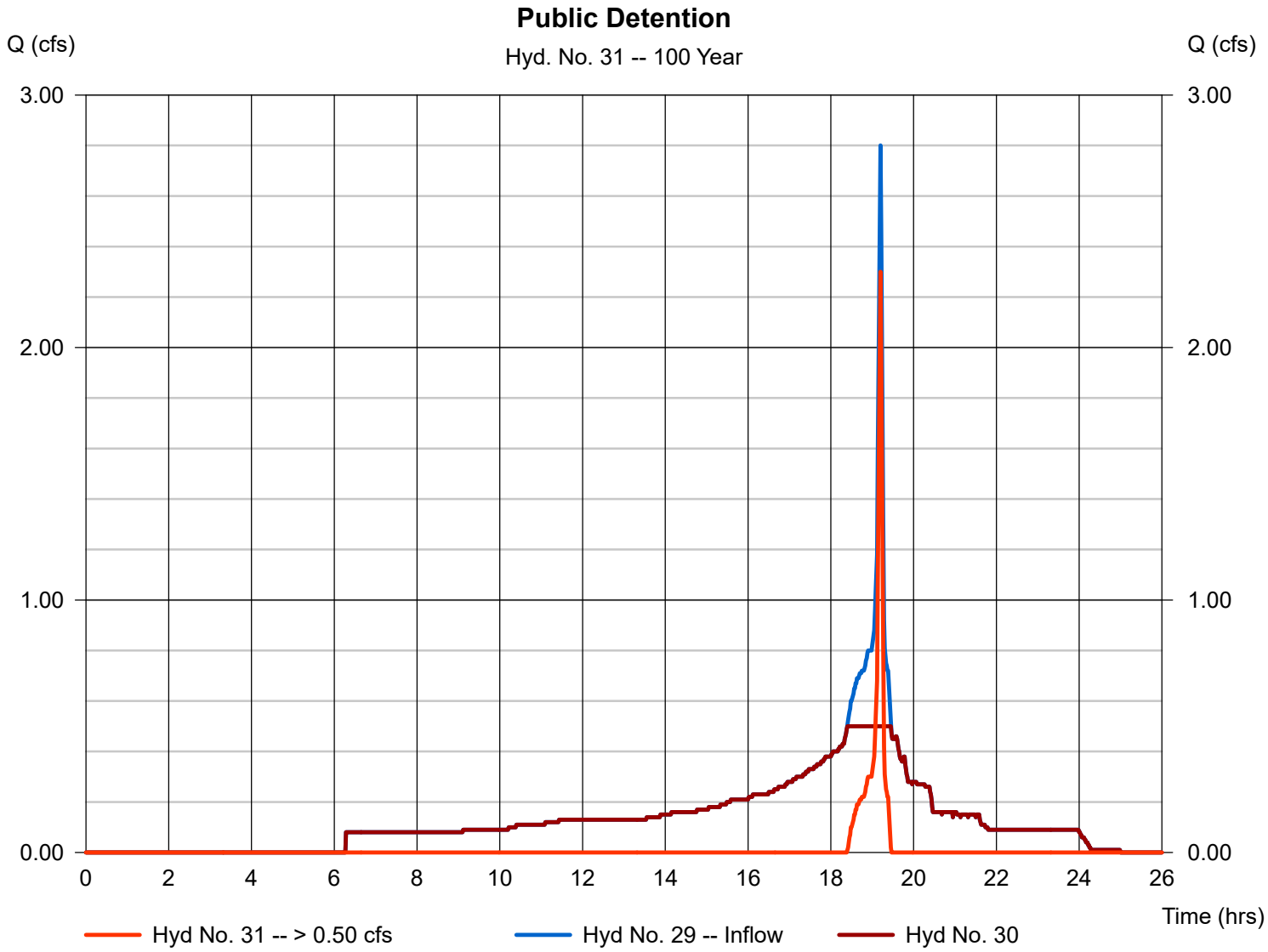


Hydrograph Report

Hyd. No. 31

Public Detention

Hydrograph type	=	Diversion2	Peak discharge	=	2.300 cfs
Storm frequency	=	100 yrs	Time to peak	=	19.20 hrs
Time interval	=	1 min	Hyd. volume	=	0.037 acft
Inflow hydrograph	=	29 - Public Detention	2nd diverted hyd.	=	30
Diversion method	=	Constant Q	Constant Q	=	0.50 cfs



APPENDIX D: INFILTRATION TESTING REPORT

INFILTRATION TESTING REPORT

TENTATIVE TRACT 6059

NORTHEAST CORNER OF THE INTERSECTION

OF ROSE AVENUE AND CAMINO DEL SOL

OXNARD, CALIFORNIA

PROJECT NO.: 305135-001

March 11, 2022

PREPARED FOR

JENSEN DESIGN & SURVEY, INC

ATTENTION: AVA EDIGER

BY

EARTH SYSTEMS PACIFIC

1731-A WALTER STREET

VENTURA, CALIFORNIA 93003

Earth Systems
1731 Walter Street, Suite A | Ventura, CA 93003 | Ph: 805.642.6727 | www.earthsystems.com

March 11, 2022

Project No.: 305135-001
Report No.: 22-3-25

Ava Ediger
Jensen Design & Survey, Inc.
1672 Donlon Street
Ventura, CA 93003

Project: Tentative Tract No. 6059
Northeast Corner of the Intersection of Rose Avenue and Camino Del Sol
Oxnard, California
Subject: Infiltration Testing Report

As authorized, Earth Systems Pacific (Earth Systems) has prepared this Infiltration Testing Report for proposed stormwater infiltration feasibility evaluation for tentative tract 6059 located at the intersection of Rose Avenue and Camino Del Sol in Oxnard, California. The accompanying Infiltration Testing Report presents the results of our subsurface exploration and infiltration testing. This report completes the scope of services described within our Proposal No. VEN-22-01-004 dated January 7, 2022 and authorized by Ava Ediger on January 14, 2022.

We have appreciated the opportunity to be of service to you on this project. Please call if you have any questions, or if we can be of further service.

Respectfully submitted,

EARTH SYSTEMS PACIFIC

3-11-22

PROFESSIONAL GEOLOGIST
Anthony Luna
NO. 9573
STATE OF CALIFORNIA

Anthony Luna
Professional Geologist

Reviewed and Approved

PROFESSIONAL GEOLOGIST
TODD J. TRANBY
No. 2078
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Todd Tranby
Engineering Geologist

3/11/2022

Copies: 1 - Client (email)
1 - Project File

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Historical High Groundwater Map
Field Study
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Boring Logs
Boring Log Symbols
Unified Soil Classification System
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Infiltration Testing Results

INTRODUCTION

Project Description

This report presents results of infiltration testing performed for proposed stormwater infiltration feasibility for tentative tract 6059 located at the intersection of Rose Avenue and Camino Del Sol in Oxnard, California (see Vicinity Map in Appendix A).

Purpose and Scope of Work

The purpose of the infiltration study was to log the soil profile at the test locations and to provide tested infiltration rates. The soil conditions include surface and subsurface soil types and the presence or absence of subsurface water. The scope of work included:

- Drilling and logging seventeen hollow-stem auger borings to study soil and groundwater conditions.
- Performing infiltration testing in all seventeen boring locations.
- Analyzing the infiltration data obtained.
- Preparing this report.

Site Setting

The project site is located at the northeast corner of Rose Avenue and Camino Del Sol in Oxnard, California. The site is bounded to the south by Camino Del Sol, to the east by single-family residences, to the north by Cesar Chavez Drive, and to the west by Rose Avenue. The northern area of the site is vacant with the ground surface consisting of exposed soil and moderate to dense native grass and weed growth. The southwestern portion of the site consists of several single-family residences and barns surrounded by a lemon orchard.

The project site is relatively flat and has a slight surface drainage to the south and southwest. The geographic coordinates of the project site are 34.2065° North Latitude and -119.1581° West Longitude.

SOIL AND GROUNDWATER CONDITIONS

Native alluvial soils were encountered at the groundsurface at all of the boring locations. The alluvium consists of silty sands with varying clay content. Groundwater was not encountered in any of our borings to a maximum depth of about 19.5 feet below the existing ground surface.

It should be noted that fluctuations in groundwater levels may occur because of variations in rainfall, regional climate, and other factors.

INFILTRATION TESTING

On January 25, 2022 seventeen 8-inch diameter infiltration borings (IT-1 through IT-17) were drilled to depths of 4 to 19.5 feet below the existing site grades to determine the soil profile and allow installation of plastic casing for infiltration testing (see Site Plan in Appendix A for infiltration boring locations).

After drilling was completed 3-inch diameter slotted PVC casings were lowered into the boreholes. The annuli between the casings and boring walls were then filled with pea gravel. The borings were then filled with clean water as part of the pre-soaking process. The TGM allows tests to be performed the same day as the pre-saturation when the water drains away rapidly as was the case at this site.

The falling-head borehole infiltration test procedure was used for infiltration testing. Approximately 2 feet of water was added to the bottom of the holes to start the tests, and the drop in the water surface monitored by taking periodic measurements. Readings were taken at reasonable time intervals based on the infiltrating rate, and after each of these intervals, water was added to return the water level to its approximate original depth above the hole bottom. The tests were run until the infiltration rates were reasonably stable.

It should be noted that the rate the water surface drops in a borehole is a percolation rate, which is related to, but is not an infiltration rate. Percolation rate ignores the wetted soil surface area into which the water is infiltrating and does not account for the volume of water infiltrated. An infiltration rate considers both factors. Hence, percolation rates (in unit length per unit time) are an overestimation of infiltration rates (also in unit length per unit time). Earth Systems uses the Porchet equation to account for the wetted surface area and volume of water infiltrated to estimate an infiltration rate. Forms of the equation can be found in the Riverside County - Low Impact Development BMP Design Handbook (2001), the South Orange County Version, Technical Guidance Documents Appendices (2017), or in a paper by J.W. Van Hoorn, “Determining Hydraulic Conductivity with the Inversed Auger Hole and Infiltrometer Methods.” The Porchet equation in its most simple form is the volume of water infiltrated divided by the product of the change in time and the wetted surface area. By substitution, the equation can be shown to be equal to:

$$\text{Infiltration Rate (inches /hr.)} = \frac{\Delta H * r * 60}{\Delta t * (r + 2H_{avg})}$$

where: ΔH = Change in water level (inches)
Δt = Change in time (minutes)
r = Radius of test hole (inches)
H_{avg} = Average height of water in test hole (inches)

The above equation does not account for the gravel pack in the annulus between the borehole wall and the slotted pipe fitted in the test hole. Ignoring the gravel pack inflates the amount of water infiltrated and, hence, yields an unconservative infiltration rate. A method to account for the volume occupied by the gravel (and the slotted pipe) and adjust the infiltration rate accordingly is presented in Caltrans Test 750. Earth Systems makes this additional adjustment to our test data. The equation is:

$$\text{Correction Factor} = n * [1 - (O/D)^2] + (I/D)^2$$

Where: n = Pea gravel porosity
O = Outside diameter of slotted pipe (inches)
D = Test hole diameter (inches)
I = Inside diameter of slotted pipe (inches)

Earth Systems has determined an average porosity for the pea gravel used in our testing. The other values are simple measurements.

Based on the infiltration testing results in Appendix B, the slowest measured test infiltration rates for the depths tested and boring locations are summarized in the following table:

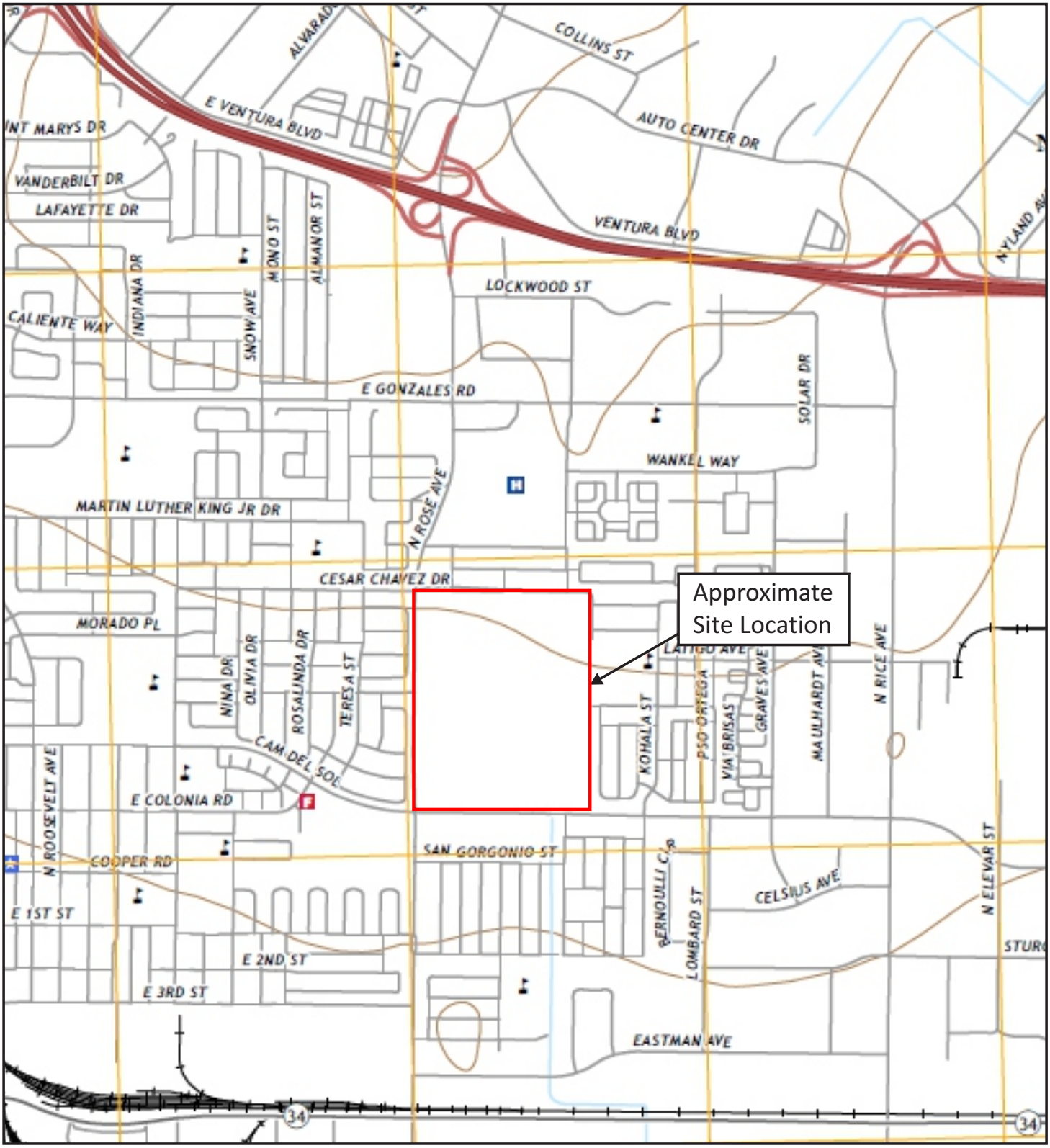
Boring	Boring Depth (feet)	Infiltration Rate (inch/hour
IT-1	3.0	0.71
IT-2	14.0	7.4
IT-3	3.0	1.6
IT-4	5.0	4.86
IT-5	16.5	8.06
IT-6	5.0	5.24

IT-7	5.0	0.63
IT-8	5.0	0.84
IT-9	5.0	0.21
IT-10	16.5	1.64
IT-11	5.0	2.13
IT-12	5.0	0.26
IT-13	5.0	1.88
IT-14	8.5	2.25
IT-15	8.5	3.71
IT-16	19.5	7.4
IT-17	8.5	6.38

There are many factors that influence the infiltration rate. Clear water was used in our tests, whereas deleterious material will likely be contained in the storm water. Variations in soil conditions within the limits of the proposed infiltration system will likely affect infiltration characteristics. The designer who utilizes the infiltration results should consider these factors, as well as apply a factor-of-safety to the infiltration rate to account for future disposal bed siltation.

APPENDIX A

Vicinity Map
Regional Geologic Maps
Historical High Groundwater Map
Field Study
Site Plan
Boring Logs
Boring Log Symbols
Unified Soil Classification System



*Taken from USGS Topo Map, Oxnard Quadrangle, California, 2018.

Approximate Scale: 1" = 2,000'

0 2,000' 4,000'

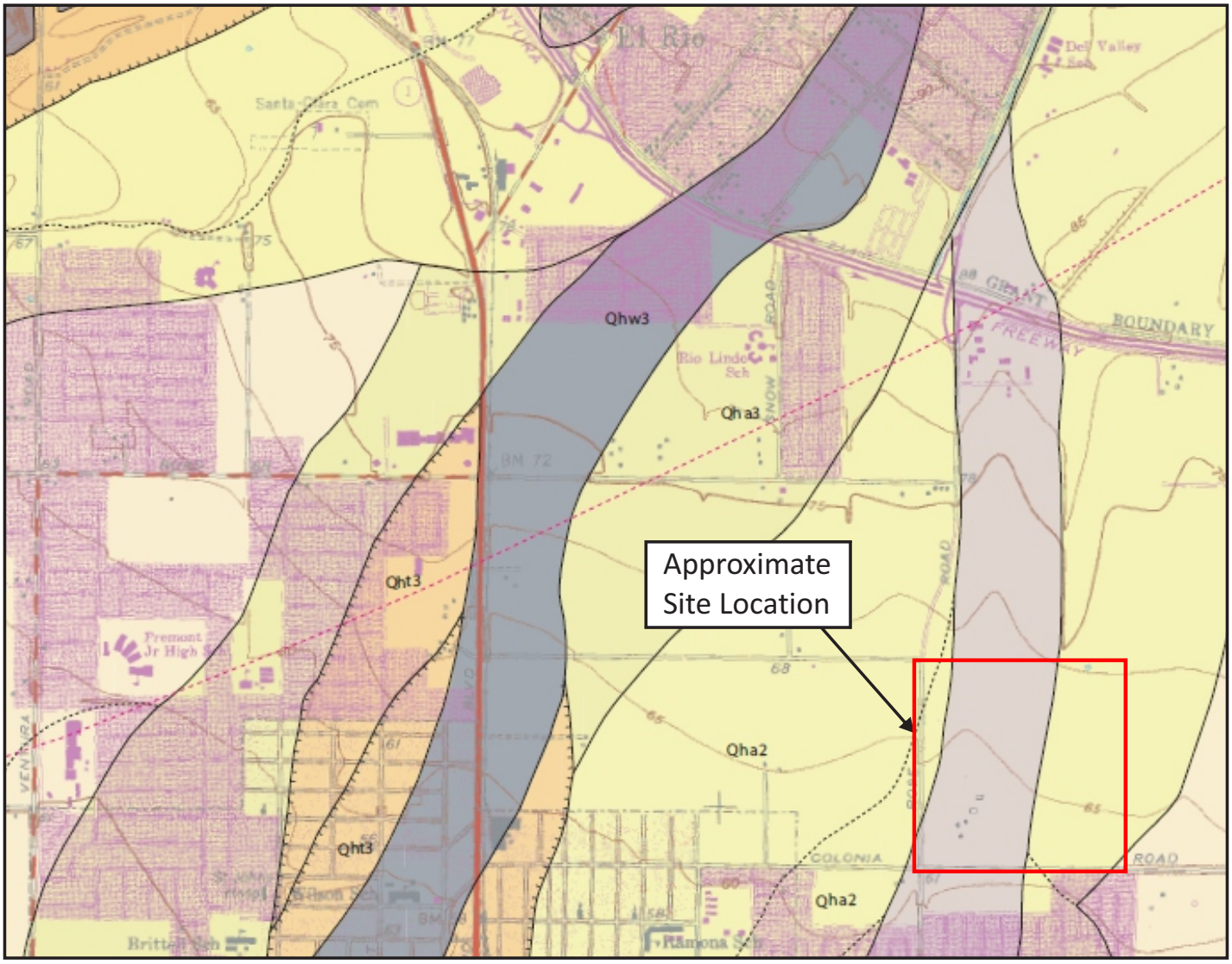
N

VICINITY MAP

Tentative Tract 6059
Oxnard, California

Earth Systems

March 2022	305135-001



*Taken from USGS, SCAMP Geologic Map of the Ventura 7.5' Quadrangle, Ventura County, California, 2003.

Approximate Scale: 1" = 2,000'

0 2,000' 4,000'

N

Southern California
USGS
SCAMP
CDMG
Areal Mapping Project

MAP SYMBOLS

- Contact between map units of different relative age; generally approximately located.
- Contact between terraced alluvial units; hachures point towards topographically lower surface.
- Contact between similar map units; generally approximately located.
- Fault; dotted where concealed.
- Axis of anticline; dotted where concealed.
- Axis of syncline; dotted where concealed.

Qha3: Holocene alluvial deposits

Qhw3: Holocene wash deposit

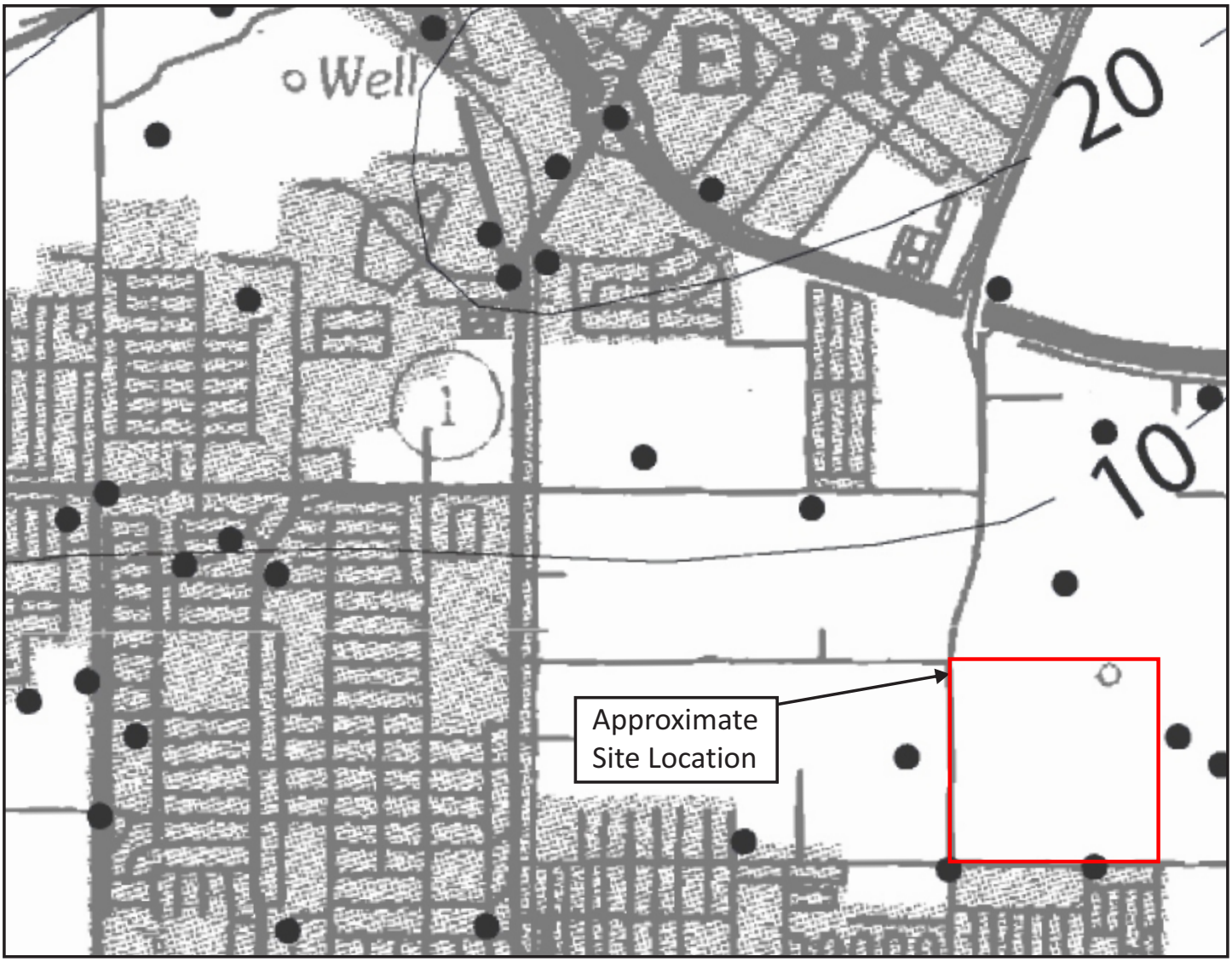
Qha2: Holocene alluvial deposits

REGIONAL GEOLOGIC MAP

Tentative Tract 6059
Oxnard, California

Earth Systems

March 2022	305135-001



*Taken from CGS, Seismic Hazard Zone Report For The Oxnard 7.5-Minute Quadrangle, Ventura County, California, 2002.

30 Depth to ground water in feet

Borehole Site

Approximate Scale: 1" = 2,000'

0 2,000' 4,000'

N

HISTORICAL HIGH GROUNDWATER MAP

Tentative Tract 6059
Oxnard, California

Earth Systems

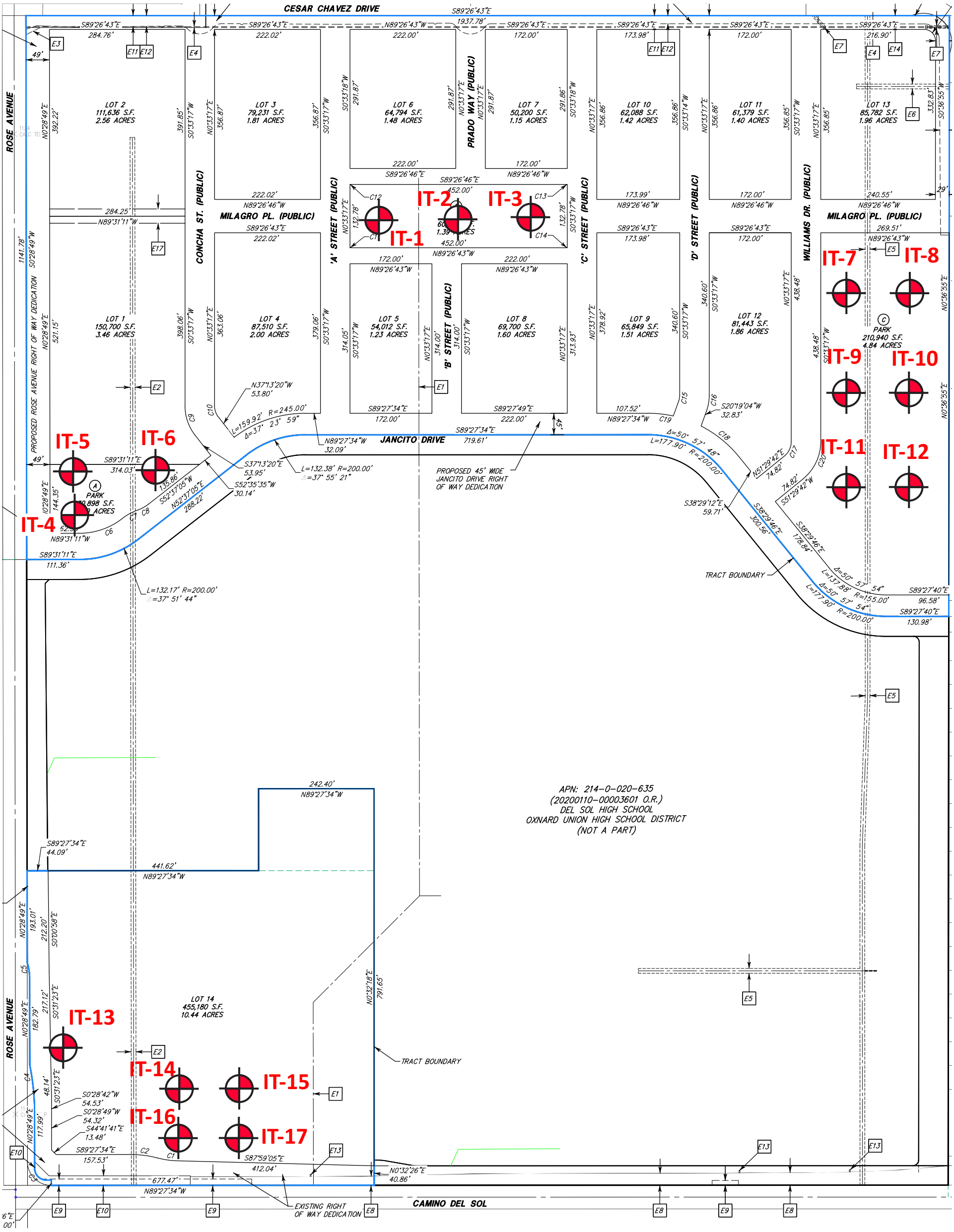
March 2022	305135-001

FIELD STUDY

A. Seventeen borings were drilled to depths of 3 to 19.5 feet below the existing ground surface to observe the soil profile and to perform infiltration testing. The borings were drilled on January 25, 2022 using an 8-inch hollow-stem auger powered by a CME-75 truck mounted drilling rig. The approximate locations of the test borings were determined in the field by pacing and sighting and are shown on the Site Plan in this Appendix.

B. On January 26, 2022 infiltration testing was performed at each boring location.

C. The final boring logs represent interpretations of the field logs during the subsurface study. The final logs are included in this Appendix.



APN: 214-0-020-635
(20200110-00003601 O.R.)
DEL SOL HIGH SCHOOL
OXNARD UNION HIGH SCHOOL DISTRICT
(NOT A PART)

N

IT-1 : Approximate Boring Locations

Approximate Scale: 1" = 50'

0 50' 100'

SITE PLAN	
Tract 6059 Oxnard, California	
Earth Systems	
February 2022	305135-001

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-1
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM/ ML			**ALLUVIUM:** Brown Silty fine Sand to fine Sandy Silt, medium dense, damp
5									**Total Depth: 3.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-2
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, medium dense, damp
5									
10									
15									**Total Depth: 14.0 feet** **No Groundwater Encountered**
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-3
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, medium dense, damp
5									**Total Depth: 3.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-4
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-5
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, medium dense, damp
5									
10									
15						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, some coarse Sand, little fine Gravel, medium dense, damp
20									**Total Depth: 16.5 feet** **No Groundwater Encountered**
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-6
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-7
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, little Clay, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-8
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, little Clay, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-9
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, little Clay, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-10
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, medium dense, damp
5									
10									
10						SM			**ALLUVIUM:** Brown Silty fine Sand, little Clay, medium dense, damp
15									
20									**Total Depth: 16.5 feet** **No Groundwater Encountered**
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-11
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-12
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, little Clay, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-13
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, some medium Sand, medium dense, damp
5									**Total Depth: 5.0 feet** **No Groundwater Encountered**
10									
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-14
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						ML			**ALLUVIUM:** Gray Brown fine Sandy Silt, little Clay, medium dense, damp
5						SM			**ALLUVIUM:** Brown Silty fine to coarse Sand, medium dense, damp
10									**Total Depth: 8.5 feet** **No Groundwater Encountered**
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-15
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						ML			**ALLUVIUM:** Gray Brown fine Sandy Silt, little Clay, medium dense, damp
5						SM			**ALLUVIUM:** Brown Silty fine to coarse Sand, medium dense, damp
10									**Total Depth: 8.5 feet** **No Groundwater Encountered**
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-13
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						ML			**ALLUVIUM:** Gray Brown fine Sandy Silt, trace Clay, medium dense, damp
10						SW			**ALLUVIUM:** Brown fine to coarse Sand, trace to little Silt, medium dense, damp
15						SM			**ALLUVIUM:** Brown Silty fine to coarse Sand, trace fine Gravel, medium dense, damp
20									**Total Depth: 19.5 feet** **No Groundwater Encountered**
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

Earth Systems
1731-A Walter Street, Ventura, California 93003
PHONE: (805) 642-6727 FAX: (805) 642-1325

BORING NO: IT-17
PROJECT NAME: Tract 6059
PROJECT NUMBER: 305135-001
BORING LOCATION: Per Plan

DRILLING DATE: January 25, 2022
DRILL RIG: Gtech 8
DRILLING METHOD: Hollow-Stem Auger
LOGGED BY: AL

Vertical Depth	Sample Type: Bulk	Sample Type: SPT	Sample Type: Mod. Calif.	PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
0						SM			**ALLUVIUM:** Brown Silty fine Sand, medium dense, damp
5						SM			**ALLUVIUM:** Brown Silty fine to medium Sand, little to some coarse Sand, medium dense, damp
10									**Total Depth: 8.5 feet** **No Groundwater Encountered**
15									
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

APPENDIX B

Infiltration Testing Results

INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-1
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	3.6
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.3
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	1.60	2.45	27.60	17.40	10.20	20.40	1.67	0.80
2	30.00	1.60	2.42	27.60	17.76	9.84	19.68	1.59	0.76
3	30.00	1.60	2.40	27.60	18.00	9.60	19.20	1.55	0.74
4	30.00	1.60	2.40	27.60	18.00	9.60	19.20	1.55	0.74
5	30.00	1.60	2.39	27.60	18.12	9.48	18.96	1.53	0.73
6	30.00	1.60	2.38	27.60	18.24	9.36	18.72	1.50	0.72
7	30.00	1.60	2.38	27.60	18.24	9.36	18.72	1.50	0.72
8	30.00	1.60	2.37	27.60	18.36	9.24	18.48	1.48	0.71
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11									
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-2
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	13.1
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	11.10	13.10	24.00	0.00	24.00	144.00	20.57	9.82
2	10.00	11.10	13.10	24.00	0.00	24.00	144.00	20.57	9.82
3	10.00	11.10	12.95	24.00	1.80	22.20	133.20	17.88	8.54
4	10.00	11.10	12.90	24.00	2.40	21.60	129.60	17.05	8.14
5	10.00	11.10	12.85	24.00	3.00	21.00	126.00	16.26	7.76
6	10.00	11.10	12.80	24.00	3.60	20.40	122.40	15.49	7.40
7									
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9									
10									
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-3
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	2.8
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	0.80	2.40	24.00	4.80	19.20	115.20	14.05	6.71
2	10.00	0.80	1.50	24.00	15.60	8.40	50.40	4.62	2.21
3	10.00	0.80	1.39	24.00	16.92	7.08	42.48	3.78	1.81
4	10.00	0.80	1.37	24.00	17.16	6.84	41.04	3.64	1.74
5	10.00	0.80	1.35	24.00	17.40	6.60	39.60	3.49	1.67
6	10.00	0.80	1.33	24.00	17.64	6.36	38.16	3.34	1.60
7									
8									
9									
10									
11									
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25									

INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-4
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	5.0
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	3.00	4.80	24.00	2.40	21.60	129.60	17.05	8.14
2	10.00	3.00	4.70	24.00	3.60	20.40	122.40	15.49	7.40
3	10.00	3.00	4.55	24.00	5.40	18.60	111.60	13.37	6.38
4	10.00	3.00	4.47	24.00	6.36	17.64	105.84	12.32	5.88
5	10.00	3.00	4.36	24.00	7.68	16.32	97.92	10.98	5.24
6	10.00	3.00	4.29	24.00	8.52	15.48	92.88	10.17	4.86
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8									
9									
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-5
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	16.2
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	14.20	16.05	24.00	1.80	22.20	133.20	17.88	8.54
2	10.00	14.20	15.97	24.00	2.76	21.24	127.44	16.57	7.91
3	10.00	14.20	15.98	24.00	2.64	21.36	128.16	16.73	7.99
4	10.00	14.20	16.02	24.00	2.16	21.84	131.04	17.38	8.30
5	10.00	14.20	16.00	24.00	2.40	21.60	129.60	17.05	8.14
6	10.00	14.20	15.99	24.00	2.52	21.48	128.88	16.89	8.06
7									
8									
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-6
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	4.9
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	2.90	4.79	24.00	1.32	22.68	136.08	18.56	8.86
2	10.00	2.90	4.53	24.00	4.44	19.56	117.36	14.47	6.91
3	10.00	2.90	4.40	24.00	6.00	18.00	108.00	12.71	6.07
4	10.00	2.90	4.28	24.00	7.44	16.56	99.36	11.21	5.35
5	10.00	2.90	4.28	24.00	7.44	16.56	99.36	11.21	5.35
6	10.00	2.90	4.26	24.00	7.68	16.32	97.92	10.98	5.24
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8									
9									
10									
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-7
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	4.9
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.4
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	2.90	3.25	28.20	24.00	4.20	25.20	1.79	0.86
2	30.00	2.90	3.95	28.20	15.60	12.60	25.20	2.11	1.01
3	30.00	2.90	3.85	28.20	16.80	11.40	22.80	1.86	0.89
4	30.00	2.90	3.75	28.20	18.00	10.20	20.40	1.63	0.78
5	30.00	2.90	3.70	28.20	18.60	9.60	19.20	1.51	0.72
6	30.00	2.90	3.65	28.20	19.20	9.00	18.00	1.40	0.67
7	30.00	2.90	3.60	28.20	19.80	8.40	16.80	1.29	0.62
8	30.00	2.90	3.61	28.20	19.68	8.52	17.04	1.31	0.63
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-8
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	4.9
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	2.90	3.95	24.00	11.40	12.60	25.20	2.56	1.22
2	30.00	2.90	3.87	24.00	12.36	11.64	23.28	2.31	1.10
3	30.00	2.90	3.80	24.00	13.20	10.80	21.60	2.10	1.00
4	30.00	2.90	3.78	24.00	13.44	10.56	21.12	2.04	0.97
5	30.00	2.90	3.76	24.00	13.68	10.32	20.64	1.98	0.95
6	30.00	2.90	3.74	24.00	13.92	10.08	20.16	1.92	0.92
7	30.00	2.90	3.71	24.00	14.28	9.72	19.44	1.84	0.88
8	30.00	2.90	3.68	24.00	14.64	9.36	18.72	1.76	0.84
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-9
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	5.1
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.2
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	3.10	3.50	26.40	21.60	4.80	9.60	0.74	0.35
2	30.00	3.10	3.43	26.40	22.44	3.96	7.92	0.60	0.29
3	30.00	3.10	3.42	26.40	22.56	3.84	7.68	0.58	0.28
4	30.00	3.10	3.40	26.40	22.80	3.60	7.20	0.54	0.26
5	30.00	3.10	3.40	26.40	22.80	3.60	7.20	0.54	0.26
6	30.00	3.10	3.38	26.40	23.04	3.36	6.72	0.50	0.24
7	30.00	3.10	3.37	26.40	23.16	3.24	6.48	0.48	0.23
8	30.00	3.10	3.35	26.40	23.40	3.00	6.00	0.45	0.21
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-10
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	14.6
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	12.60	14.10	24.00	6.00	18.00	36.00	4.24	2.02
2	30.00	12.60	14.11	24.00	5.88	18.12	36.24	4.28	2.04
3	30.00	12.60	14.08	24.00	6.24	17.76	35.52	4.15	1.98
4	30.00	12.60	14.04	24.00	6.72	17.28	34.56	3.98	1.90
5	30.00	12.60	14.01	24.00	7.08	16.92	33.84	3.86	1.84
6	30.00	12.60	13.97	24.00	7.56	16.44	32.88	3.70	1.77
7	30.00	12.60	13.93	24.00	8.04	15.96	31.92	3.54	1.69
8	30.00	12.60	13.90	24.00	8.40	15.60	31.20	3.43	1.64
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-11
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	4.8
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	2.80	4.71	24.00	1.08	22.92	45.84	6.31	3.01
2	10.00	2.80	3.78	24.00	12.24	11.76	70.56	7.01	3.35
3	10.00	2.80	3.73	24.00	12.84	11.16	66.96	6.56	3.13
4	10.00	2.80	3.64	24.00	13.92	10.08	60.48	5.77	2.76
5	10.00	2.80	3.56	24.00	14.88	9.12	54.72	5.10	2.44
6	10.00	2.80	3.52	24.00	15.36	8.64	51.84	4.78	2.28
7	10.00	2.80	3.48	24.00	15.84	8.16	48.96	4.47	2.13
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-12
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	5.1
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.1
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	30.00	3.10	3.87	25.20	15.96	9.24	18.48	1.64	0.78
2	30.00	3.10	3.50	25.20	20.40	4.80	9.60	0.77	0.37
3	30.00	3.10	3.48	25.20	20.64	4.56	9.12	0.73	0.35
4	30.00	3.10	3.47	25.20	20.76	4.44	8.88	0.71	0.34
5	30.00	3.10	3.45	25.20	21.00	4.20	8.40	0.67	0.32
6	30.00	3.10	3.43	25.20	21.24	3.96	7.92	0.63	0.30
7	30.00	3.10	3.41	25.20	21.48	3.72	7.44	0.59	0.28
8	30.00	3.10	3.39	25.20	21.72	3.48	6.96	0.55	0.26
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-13
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	9.1
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	20.00	7.10	9.10	24.00	0.00	24.00	72.00	10.29	4.91
2	30.00	7.10	8.80	24.00	3.60	20.40	40.80	5.16	2.47
3	30.00	7.10	8.70	24.00	4.80	19.20	38.40	4.68	2.24
4	30.00	7.10	8.65	24.00	5.40	18.60	37.20	4.46	2.13
5	30.00	7.10	8.55	24.00	6.60	17.40	34.80	4.02	1.92
6	30.00	7.10	8.53	24.00	6.84	17.16	34.32	3.94	1.88
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-14
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	8.3
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	6.30	7.30	24.00	12.00	12.00	72.00	7.20	3.44
2	10.00	6.30	7.20	24.00	13.20	10.80	64.80	6.29	3.00
3	10.00	6.30	7.05	24.00	15.00	9.00	54.00	5.02	2.40
4	10.00	6.30	7.01	24.00	15.48	8.52	51.12	4.70	2.25
5	10.00	6.30	7.03	24.00	15.24	8.76	52.56	4.86	2.32
6	10.00	6.30	7.01	24.00	15.48	8.52	51.12	4.70	2.25
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-15
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	8.3
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	6.30	7.60	24.00	8.40	15.60	93.60	10.29	4.91
2	10.00	6.30	7.60	24.00	8.40	15.60	93.60	10.29	4.91
3	10.00	6.30	7.53	24.00	9.24	14.76	88.56	9.51	4.54
4	10.00	6.30	7.45	24.00	10.20	13.80	82.80	8.67	4.14
5	10.00	6.30	7.40	24.00	10.80	13.20	79.20	8.16	3.90
6	10.00	6.30	7.36	24.00	11.28	12.72	76.32	7.77	3.71
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-16
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	18.8
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	16.80	18.50	24.00	3.60	20.40	122.40	15.49	7.40
2	10.00	16.80	18.52	24.00	3.36	20.64	123.84	15.80	7.54
3	10.00	16.80	18.50	24.00	3.60	20.40	122.40	15.49	7.40
4	10.00	16.80	18.51	24.00	3.48	20.52	123.12	15.64	7.47
5	10.00	16.80	18.50	24.00	3.60	20.40	122.40	15.49	7.40
6	10.00	16.80	18.50	24.00	3.60	20.40	122.40	15.49	7.40
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INFILTRATION RATE BY THE BOREHOLE PERCOLATION TEST METHOD

This workbook calculates an adjusted infiltration rate from a borehole percolation test. The percolation rate is adjusted for sidewall area according to the Porchet method, and then re-adjusted for the effect of the gravel placed in annulus between the borehole wall and a pipe placed in the borehole by a method presented in Caltrans Test 750.

Project Name	Tract 6059
Project Number	305135-001
Test Hole No.	IT-17
Tester	A. Luna
Pre-Soak Date	1/27/22
Test Date	1/28/22

Test Hole Radius, r (inches)	4
Total Depth of Test Hole, D_T (feet)	8.3
Inside Diameter of Pipe, I (inches)	3.00
Outside Diameter of Pipe, O (inches)	3.38
Pipe Stick-Up (feet)	0.0
Porosity of Gravel, n	0.41
Porosity Correction Factor, C	0.48
Factor of Safety (FOS), F	N/A

Interval No.	Delta Time, Δt (min.)	Initial Depth to Water from TOP, D_o (ft.)	Final Depth to Water from TOP, D_f (ft.)	Initial Water Height, H_o (in.)	Final Water Height, H_f (in.)	Change in Water Height, ΔH (in.)	Perc Rate, (in/hr)	Infiltration Rate (in./hr.)	Corrected Infiltration Rate (in/hr)
1	10.00	6.30	8.25	24.00	0.60	23.40	140.40	19.64	9.38
2	10.00	6.30	8.14	24.00	1.92	22.08	132.48	17.71	8.46
3	10.00	6.30	8.03	24.00	3.24	20.76	124.56	15.95	7.61
4	10.00	6.30	7.95	24.00	4.20	19.80	118.80	14.76	7.05
5	10.00	6.30	7.90	24.00	4.80	19.20	115.20	14.05	6.71
6	10.00	6.30	7.85	24.00	5.40	18.60	111.60	13.37	6.38
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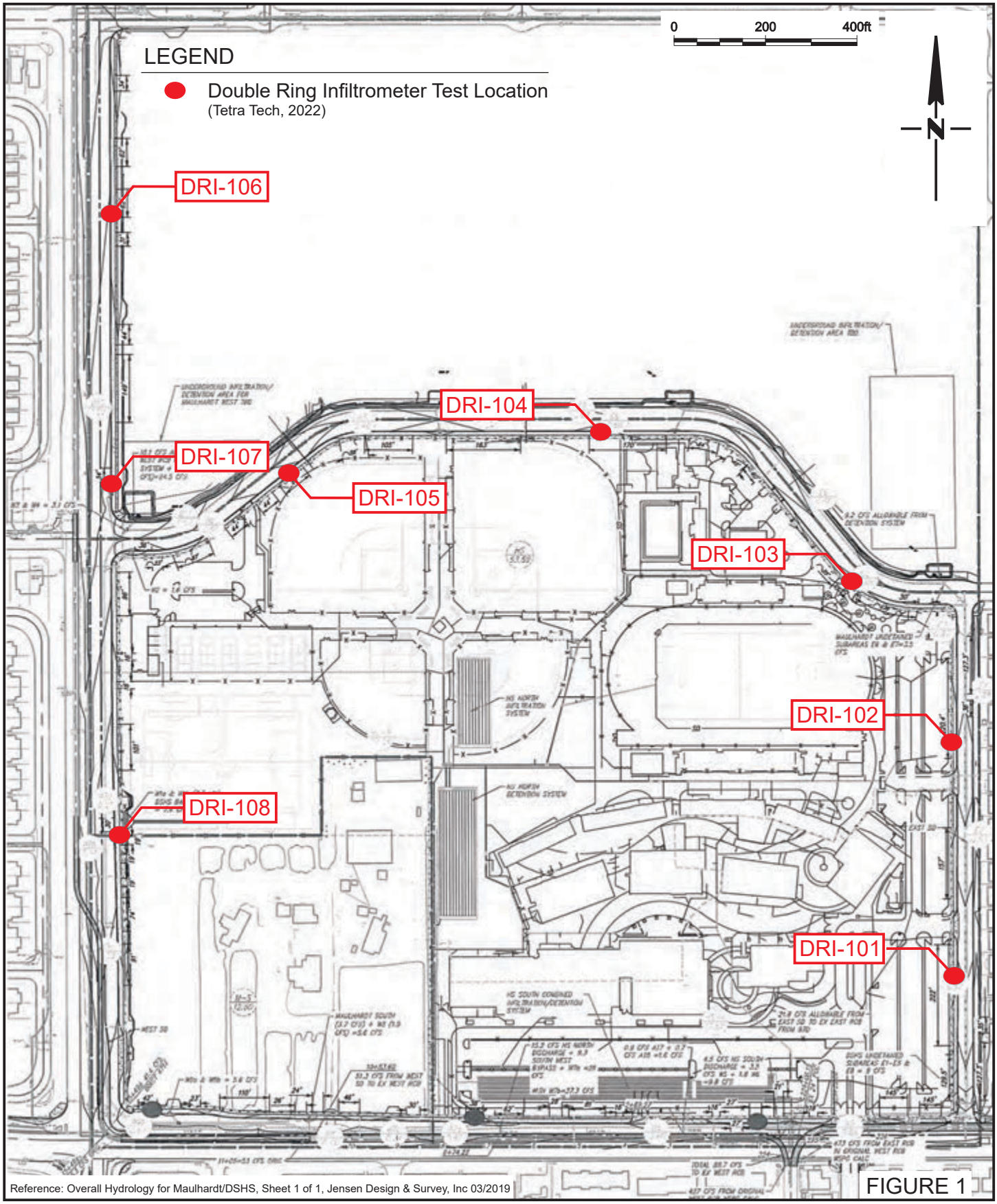

Reference: Overall Hydrology for Maulhardt/DSHS, Sheet 1 of 1, Jensen Design & Survey, Inc 03/2019

FIGURE 1

TETRA TECH
21700 Copley Drive, Suite 200, Diamond Bar, CA 91765
TEL 909.860.7777 www.tetratech.com

DRI TESTING EVALUATION - OXNARD, CA

DOUBLE RING INFILTROMETER TEST LOCATION MAP

JOB NO.	TET 22-249E
DATE	DEC 2022
DRAWN BY	SCM
CHECKED BY	YL

TETRA TECH

Double Ring Infiltrometer

ASTM D-3385

Project Name:	Del Sol High School, Oxnard	**Date Start:**	November 29, 2022
Project No:	TET 22-249E	**Date Finished:**	November 29, 2022
Test Number:	**DRI-104**	**Entered By:**	SCM
Preformed By:	**SCM**	**Reviewed By:**	FC

		INNER RING	OUTER RING
Diameter of Ring	**d, cm**	30.5	61.0
Area of Ring / Annular Space	**A, cm2**	729.7	2192.8
Height of water above soil surface	**Hz, cm**	13.5	9.5 - 11

Trial No.	Date	Time Reading hr:min:sec	Time (sec)	Inner Flow Readings: Inner Ring, cm	Inner Mariotte Reading (ml)	Flow Rate (cm3/sec)	Outer Flow Readings: Outer Ring, cm	Outer Mariotte Reading (ml)	Flow Rate (cm3/sec)	Temp. (C)	Infiltration Rate, Inner (cm/sec)	Comments
1	11/29/2022	14:20:00		13.5			10.0					
		14:30:00	600	13.5	750	1.25E+00	10.0	1000	1.67E+00	18.3	1.71E-03	
2	11/29/2022	14:32:00		13.5			9.5					
		14:42:00	600	13.5	750	1.25E+00	9.5	1750	2.92E+00	18.2	1.71E-03	
3	11/29/2022	14:44:00		13.5			9.5					
		14:54:00	600	13.5	725	1.21E+00	9.5	1750	2.92E+00	18.1	1.66E-03	
4	11/29/2022	14:56:00		13.5			9.5					
		15:06:00	600	13.5	800	1.33E+00	9.5	1750	2.92E+00	18.3	1.83E-03	
5	11/29/2022	15:10:00		13.5			11.0					
		15:20:00	600	13.5	800	1.33E+00	10.0	250	4.17E-01	18.1	1.83E-03	
6	11/29/2022	15:22:00		13.5			10.0					
		15:32:00	600	13.5	800	1.33E+00	9.5	500	8.33E-01	18.1	1.83E-03	
7	11/29/2022	15:33:00		13.5			9.5					
		15:43:00	600	13.5	700	1.17E+00	9.5	1500	2.50E+00	18.1	1.60E-03	
8	11/29/2022	15:44:00		13.5			9.5					
		15:54:00	600	13.5	750	1.25E+00	9.5	1500	2.50E+00	17.8	1.71E-03	
9	11/29/2022	15:56:00		13.5			9.5					
		16:06:00	600	13.5	700	1.17E+00	9.5	1500	2.50E+00	17.8	1.60E-03	
10	11/29/2022	16:07:00		13.5			9.5					
		16:17:00	600	13.5	700	1.17E+00	9.5	1500	2.50E+00	17.6	1.60E-03	
11	11/29/2022	16:19:00		13.5			9.5					
		16:29:00	600	13.5	700	1.17E+00	9.5	1500	2.50E+00	17.8	1.60E-03	
12	11/29/2022	16:34:00		13.5			9.5					
		16:44:00	600	13.5	700	1.17E+00	9.5	1500	2.50E+00	17.8	1.60E-03	
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												

AVERAGE OF LAST 3 TEST INTERVALS = 1.60E-03 cm/sec

Notes:

1) Permeant levels maintained using: [X] 2 Marriotte Tubes [ ] Float Valve [ ] Other
2) Water Source: 55 gal drum / water truck
3) Depth to water table: 10 to 30 feet (assumed)
4) Annular Space Ring Marriotte Tube Voulme = 10, 000 ml Inner Ring Marriotte Tube Volume = 3,000 ml

TETRA TECH

Double Ring Infiltrometer

ASTM D-3385

Project Name:	Del Sol High School, Oxnard	**Date Start:**	November 30, 2022
Project No:	TET 22-249E	**Date Finished:**	November 30, 2022
Test Number:	**DRI-105**	**Entered By:**	SCM
Preformed By:	**SMS/YL**	**Reviewed By:**	FC

		INNER RING	OUTER RING
Diameter of Ring	**d, cm**	30.5	61.0
Area of Ring / Annular Space	**A, cm2**	729.7	2192.8
Height of water above soil surface	**Hz, cm**	12.5 - 13.5	12.5 - 14

Trial No.	Date	Time Reading hr:min:sec	Time (sec)	Inner Flow Readings: Inner Ring, cm	Inner Mariotte Reading (ml)	Inner Flow Rate (cm3/sec)	Outer Flow Readings: Outer Ring, cm	Outer Mariotte Reading (ml)	Outer Flow Rate (cm3/sec)	Temp. (C)	Infiltration Rate, Inner (cm/sec)	Comments
1	11/30/2022	8:14:00		12.5			12.5					
		8:24:00	600	13.5	1100	1.83E+00	13.0	125	2.08E-01	16.1	2.51E-03	
2	11/30/2022	8:26:00		13.5			13.0					
		8:56:00	1800	13.5	300	1.67E-01	13.0	3250	1.81E+00	16.1	2.28E-04	
3	11/30/2022	8:59:00		13.5			13.0					
		9:29:00	1800	13.5	350	1.94E-01	13.0	2625	1.46E+00	15.0	2.66E-04	
4	11/30/2022	9:35:00		13.5			13.0					
		10:05:00	1800	13.5	250	1.39E-01	13.0	2063	1.15E+00	14.6	1.90E-04	
5	11/30/2022	10:10:00		13.0			14.0					
		10:40:00	1800	13.0	240	1.33E-01	13.0	2000	1.11E+00	15.0	1.83E-04	
6	11/30/2022	10:45:00		13.0			13.0					
		11:15:00	1800	13.0	260	1.44E-01	13.0	2000	1.11E+00	15.6	1.98E-04	
7	11/30/2022	11:20:00		13.0			13.0					
		11:50:00	1800	13.0	250	1.39E-01	13.0	2000	1.11E+00	15.6	1.90E-04	
8												
9												
10												
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13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												

AVERAGE OF LAST 3 TEST INTERVALS = 1.90E-04 cm/sec

Notes:

1) Permeant levels maintained using: [X] 2 Marriotte Tubes [ ] Float Valve [ ] Other
2) Water Source: 55 gal drum / water truck
3) Depth to water table: 10 to 30 feet (assumed)
4) Annular Space Ring Marriotte Tube Voulme = 10, 000 ml Inner Ring Marriotte Tube Volume = 3,000 ml

APPENDIX O

Noise Study

NOISE STUDY

MAULHARDT-STILES SUB-NEIGHBORHOOD PLAN PROJECT

CITY OF OXNARD

Prepared for:

City of Oxnard
214 South C Street
Oxnard, CA 93030

Prepared by:

Meridian Consultants

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Westlake Village, CA 91361
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SEPTEMBER 2025

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2.0 Roadway Noise Worksheets
3.0 Construction Noise Worksheets
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A. EXECUTIVE SUMMARY

This Noise Study provides an assessment of the potential noise and vibration impacts that may occur from development of the Maulhardt-Stiles Sub-Neighborhood Plan Project (Project) in the City of Oxnard (City). This analysis describes the existing environment in the Project area; estimates future noise and vibration levels at surrounding land uses resulting from construction and operation of the Project; and identifies the potential for significant impacts. An evaluation of the contribution of the Project to potential cumulative noise impacts is also provided. This Noise Study also addresses the consistency of the Project with applicable noise and vibration regulations, standards, and identifies measures needed to reduce potentially significant impacts.

1. Construction Noise

Activities associated with construction are exempt from the specific quantitative limitations in the City Noise Ordinance but are restricted to the hours between 7:00 AM and 6:00 PM on weekdays and Saturdays, under Section 7-188[0] of the Oxnard City Code (OCC). Given the lack of City-defined construction thresholds, the City's CEQA Thresholds Guide states that construction noise is considered substantial when Federal Transit Administration (FTA) construction criteria are exceeded because the FTA criteria are reasonable for the purposes of assessing construction noise impacts based on the potential for adverse community reaction in their Transit and Noise Vibration Impact Assessment Manual (FTA 2018). The City's CEQA Thresholds Guide specifically references the FTA residential threshold of 80 dBA (Leq-8hr). Modeled construction noise levels would be reduced with implementation of **Mitigation Measure (MM) NOI-1**, which are existing requirements and reasonably anticipated standard conditions based on local, State, or federal regulations and laws that are frequently required independently of CEQA review and serve to offset or prevent specific impacts. Modeled construction noise levels with **MM-NOI-1** would be reduced to within acceptable limits which include the use of optimal muffler systems, dampening materials, sound aprons and limiting simultaneous operations. As such, average noise levels during construction would not result in noise levels that exceed the FTA residential threshold of 80 dBA (Leq-8hr). In addition, construction noise would also not exceed the FTA threshold of 90 dBA (Leq-1hr) threshold for residential uses identified by the FTA.

Construction of the Project would require worker, haul, and vendor truck trips to and from the site to work on the site, export soil, and deliver supplies to the site. Trucks traveling to and from the Project Site would be required to travel along a haul route approved by the City. At the maximum, approximately 100 hauling trips per day would take place during the grading phase based on construction schedule assumptions. Haul truck traffic would take the most direct route to the freeway ramp along North Rose Avenue. The noise level increases from truck trips would be below the construction noise significance threshold of 80 dBA. As such, off-site construction noise impacts would not be considered significant.

2. Operational Noise

The Project would introduce various stationary noise sources, including heating, ventilation, and air conditioning systems, which would be located either on the roof, side of a structure, or on the ground adjacent to a structure. These noise sources would be similar to the sources of noise associated with the residential, institutional, and commercial land uses surrounding the site and would not contribute to an increase in ambient noise levels. Roadway noise levels would increase due to changes in traffic volumes from traffic generated by the Project. The increase in roadway noise would not cause noise levels along the analyzed roadways to increase by more than 1.0 dBA. Vehicular related noise impacts would not be considered significant. Accordingly, the proposed Project would not result in a permanent increase in noise levels above ambient levels in the vicinity of the Project site.

3. Construction Vibration

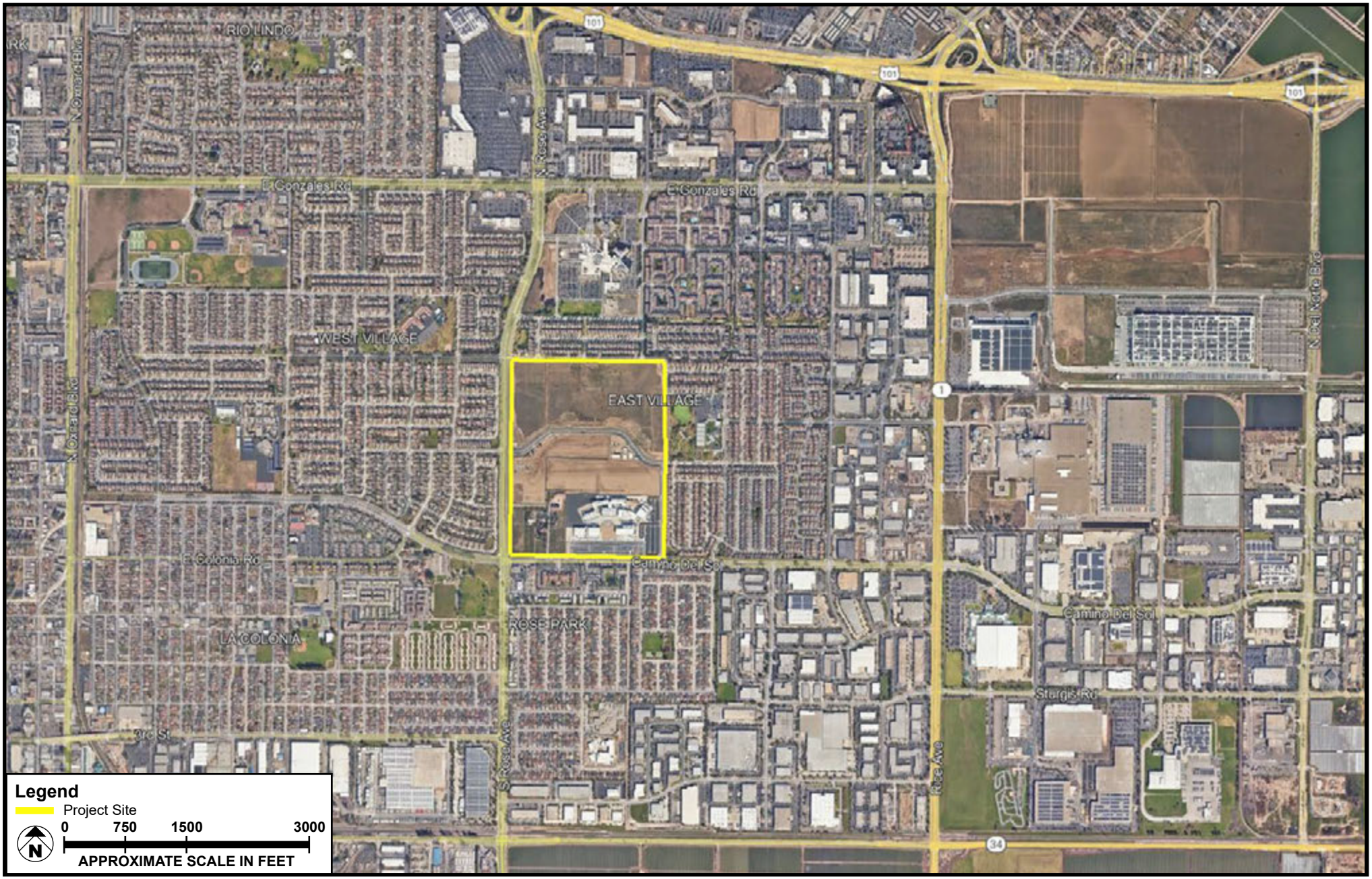
The area surrounding the Project Site consists of single-family residential uses to the north along Cesar Chavez Drive; single-family residential uses to the east along Ocaso Place and Milagro Place, East Village Park and Rio Rosales Elementary School to the east; single-family residential uses across North Rose Avenue, and single-family and multi-family residential uses and commercial uses to the south along Camino Del Sol. The existing Del Sol High School is also located in the central portion of the Project Site. The City's CEQA Thresholds Guide utilizes the Caltrans Transportation and Construction Vibration Guidance Manual vibration thresholds in order to assess impacts due to ground-borne vibration during construction. The Project would result in construction-related vibration that is less than the construction vibration damage criteria of 0.4 inches per second (ips) peak particle velocity (PPV) for residential buildings and the 0.24 inches per second PPV threshold for human annoyance at the nearby residential uses and Del Sol High School. Impacts would be less than significant.

B. PROJECT DESCRIPTION

The Project Site includes 107-acres located in the Northeast Community Specific Plan area in the City of Oxnard, as shown in **Figure 1: Project Site Location**. The Project Site is bounded to the north by Cesar Chavez Drive, to the east by Gibraltar Street/East Village Park, to the south by Camino Del Sol, and to the west by Rose Avenue.

The Project Site includes three Assessor Parcels owned by Oxnard Union High School District (OUHSD) and two parcels, owned by the Maulhardt/Stiles families. The Project Site is currently comprised of vacant, undeveloped land that has been subject to previous disturbance from agricultural use, an existing single family home and accessory residential units and buildings associated with past agricultural use of the site, and Del Sol High School in the central portion of the site. The area surrounding the Project Site consists of single-family residential uses to the north and west; single-family residential uses, East Village Park, and Rio Rosales Elementary School to the east; and single-family and multi-family residential uses and commercial uses to the south.

The Project is proposed to implement the City of Oxnard (City) 2030 General Plan and the Northeast Community Specific Plan (NECSP) by regulating development of up to 950 residential dwelling units, a maximum of 40,000 square feet of retail and general commercial space, and public parks on the portions of the site located north and southwest of Del Sol High School.



SOURCE: Google Earth – 2024

FIGURE **1**

Meridian Consultants

Project Site Location

408-001-24

C. EXISTING CONDITIONS

Specific numerical noise criteria are included in the City's General Plan Background Report.[1] **Table 1: Community Noise Exposure LND or CNEL, DB** presents criteria used to assess the compatibility of proposed land uses with the noise environment. The proposed Project includes the potential for development of up to 950 residential dwelling units and up to 40,000 square feet of commercial uses. As shown, normally acceptable noise levels for residential single-family uses are 60 dBA CNEL or less and normally acceptable noise levels for commercial uses are 70 dBA CNEL or less.

TABLE 1: COMMUNITY NOISE EXPOSURE LDN OR CNEL, DB

Land Use Category	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Low Density, Single Family, Duplex, Mobile Homes	<60	55-70	70-75	>80
Residential – Multi Family	<65	60-70	70-75	>75
Transient Loding – Motels, Hotels	<65	60-70	70-80	>80
Schools, Libraries, Churches, Hospitals, Nursing Homes	<70	60-70	70-80	>80
Auditoriums, Concert Halls, Amphitheaters	NA	<70	NA	>65
Sports Arena, Outdoor Spectator Sports	NA	<75	NA	>70
Playgrounds, Neighborhood Parks	<70	67.5-75	NA	>72.5
Golf Courses, Riding Stables, Water Recreation, Cemeteries	<75	70-80	70-80	>80
Office Buildings, Business Commercial and Professional	<70	67.5-77.5	>75	NA
Industrial, Manufacturing Utilities, Agriculture	<75	70-80	>75	NA

Note:

Normally Acceptable *– Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal convention construction, without any special noise insulation requirements.*

Conditionally Acceptable *– New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design – Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice*

Normally Unacceptable *– New construction or development should generally be discouraged – If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.*

Clearly Unacceptable *– New construction or development should generally not be undertaken.*

NA *– Not applicable.*

1 City of Oxnard. *Draft Background Report.* 2006.

TABLE 1: COMMUNITY NOISE EXPOSURE LDN OR CNEL, DB				
Land Use Category	**Normally Acceptable**	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**

Source: City of Oxnard, *Draft Background Report* (2006).

1. Ambient Noise Levels

The main sources of noise within the City are vehicular traffic on the US-101 Ventura Freeway and other major roadways, the Oxnard Airport, the Union Pacific Railroad line, and a variety of stationary noise sources. The highest noise levels are adjacent to the US-101 Ventura Freeway. The City of Oxnard 2030 General Plan defines sensitive receptors as residential areas, hospitals, child and daycare facilities, convalescent homes and facilities, schools, and other similar land uses.[2] These uses are considered sensitive because the presence of excessive noise may interrupt normal activities typically associated with their use. Additionally, increased noise levels occur along major arterials including Victoria Avenue, Channel Islands Boulevard, Ventura Road, and Oxnard Boulevard.

Short-term sound monitoring was conducted by Meridian Consultants on September 24, 2024, at seven (7) locations surrounding the Project Site in order to measure ambient sound levels within the Project vicinity, as shown in **Figures 2a–2g: Noise Monitoring Locations (Sites 1 through 7).** Measurements were taken at each location over 15-minute intervals between the hours of 9:12 AM and 11:35 AM, and summarized in **Table 2: Ambient Noise Measurements** (refer to **Appendix 1.0: Noise Monitoring Data Sheets** for the data collection worksheets). As shown in **Table 2**, ambient noise levels ranged from a low of 55.0 dBA (Leq 15-minute) in the middle of the Project Site north of Del Sol High School (Site 1), to a high of 68.9 dBA (Leq 15-minute) west of the Project Site along Viviana Drive (Site 5).

TABLE 2: AMBIENT NOISE MEASUREMENTS					
	Location Number / Description	**Nearest Use**	**Time Period**	**Noise Source**	**dBA Leq 15-minute**
1	**Northeast border of Project Site at intersection of Gibraltar Street and Milagro Place**	Single-family residential uses, school uses	10:22 AM – 10:37 AM	Vehicle and pedestrian flow along Milagro Place, children playing on school field	55.8
2	**Southeast border of Project Site between Del Sol High School and Festivo Street**	Single-family residential uses, school uses	9:33 AM – 9:48 AM	Vehicle and pedestrian flow along unnamed road, school generator	61.2
3	**South of Project Site across Camino Del Sol**	Multi-family residential uses, school uses	9:12 AM – 9:27 AM	Vehicle and pedestrian flow along Camino Del Sol Street	66.5

2 City of Oxnard, General Plan, https://www.oxnard.gov/wp-content/uploads/2023/10/Oxnard-2030-General-Plan-Amend-12.2022-SMda.pdf. Accessed September 2025.

TABLE 2: AMBIENT NOISE MEASUREMENTS

	Location Number / Description	Nearest Use	Time Period	Noise Source	dBA Leq 15-minute
4	**West of Project Site across N Rose Avenue along Valentia Drive**	Single-family residential uses	11:20 AM – 11:35 AM	Vehicle and pedestrian flow along N Rose Avenue, Valentina Drive, and Hilaria Street	66.1
5	**West of Project Site across N Rose Avenue along Vivian Drive**	Single-family residential uses	11:01 AM – 11:16 AM	Vehicle and pedestrian flow along N Rose Avenue, Viviana Drive, and Lola Way	68.9
6	**North of Project Site at intersection of Cesar Chavez Drive and Prado Way**	Single-family residential uses	10:40 AM – 10:55 AM	Vehicle and pedestrian flow along Cesar Chavez Drive and Prado Way	63.1
7	**Middle of Project Site along unnamed road**	School uses	9:51 AM – 10:06 AM	Vehicle and pedestrian flow along unnamed road	55.0

Notes: dBA = A-weighted decibels; Leq = average equivalent sound level.

Source: Refer to **Appendix 1.0: Noise Monitoring Data Sheets**.

2. Roadway Noise Levels

In addition to the ambient noise measurements near the Project site, the existing traffic noise on local roadways in the surrounding areas was calculated to quantify the daytime and nighttime noise levels using information provided in the transportation impact analysis.[3] Traffic noise levels were calculated using the Federal Highway Administration Traffic Noise Model (FHWA TNM). The transportation impact analysis analyzed the following sixteen intersections within the Project vicinity:

- Rose Avenue & Camino Del Sol
- Rose Avenue & Cesar Chavez Drive
- Rose Avenue & Gonzales Road
- Rose Avenue & US-101 Southbound Off-Ramp
- Rose Avenue & US-101 Northbound Off-Ramp
- Rice Avenue/State Route (SR)-1 & Gonzales Road
- Rice Avenue/SR-1 & Camino Del Sol
- Rice Avenue/SR-1 & US-101 Southbound Off-Ramp
- Santa Clara Avenue & Auto Center Drive/ US-101 Northbound Off-Ramp
- Rice Avenue/SR-1 & 5Th Street
- Rose Avenue & 5th Street
- Rose Avenue & Wooley Road
- Oxnard Boulevard & Wooley Road/Saviers Road
- Oxnard Boulevard & 5th Stret

3 Fehr & Peers. *Maulhardt Stiles Sub-Neighborhood Plan Project*.

- Oxnard Boulevard & Gonzales Road
- Oxnard Boulevard & Vineyard Avenue

Table 3: Existing Roadway Noise Levels provides the calculated 24-hour CNEL noise levels for the roadways surrounding the Project Site based on existing traffic volumes (refer to **Appendix 2.0: Roadway Noise Worksheets** for modeling worksheets). 24-hour CNEL levels attributed to roadway traffic range from a low of 56.0 dBA CNEL along Cesar Chavez Drive east of Rose Avenue to a high of 69.6 dBA CNEL along Oxnard Boulevard south of Vineyard Avenue. In terms of the City's land use compatibility categories, listed in **Table 1**, based on roadway traffic only, all locations are classified as normally acceptable or conditionally acceptable.

TABLE 3: EXISTING ROADWAY NOISE LEVELS

Intersection Number	Roadway Segment	Adjacent Land Use(s)	Existing Roadway Noise Level dBA CNEL	Existing Noise Exposure Compatibility Category
Camino Del Sol				
1	East of Rose Avenue	Single Family Residential	61.7	Conditionally Acceptable
1	West of Rose Avenue	Single Family Residential	61.5	Conditionally Acceptable
7	East of Rice Avenue	Industrial	61.2	Normally Acceptable
7	West of Rice Avenue	Industrial	66.8	Normally Acceptable
Cesar Chavez Drive				
2	East of Rose Avenue	Single Family Residential	56.0	Normally Acceptable
2	West of Rose Avenue	Single Family Residential	60.7	Conditionally Acceptable
Gonzalez Road				
3	East of Rose Avenue	Single Family Residential /Commercial	67.8	Conditionally Acceptable
3	West of Rose Avenue	Single Family Residential	69.0	Conditionally Acceptable
6	West of Rice Avenue	Commercial/Industrial	66.2	Normally Acceptable
15	East of Oxnard Boulevard	Single Family Residential/School	68.9	Conditionally Acceptable
15	West of Oxnard Boulevard	Single Family Residential /Commercial	66.6	Conditionally Acceptable
US-101 SB Off Ramp				
4	East of Rose Avenue	Commercial	59.5	Normally Acceptable
4	West of Rose Avenue	Commercial	66.3	Normally Acceptable
8	East of Rice Avenue	Commercial	62.9	Normally Acceptable
8	West of Rice Avenue	Commercial/Industrial	66.7	Normally Acceptable
Auto Center Drive/US-101 NB Off Ramp				
5	East of Rose Avenue	Commercial/Industrial	62.8	Normally Acceptable
5	West of Rose Avenue	Commercial	58.6	Normally Acceptable
9	East of Santa Clara Avenue	Commercial	64.6	Normally Acceptable
9	West of Santa Clara Avenue	Commercial/Industrial	68.3	Normally Acceptable

TABLE 3: EXISTING ROADWAY NOISE LEVELS				
Intersection Number	Roadway Segment	Adjacent Land Use(s)	Existing Roadway Noise Level dBA CNEL	Existing Noise Exposure Compatibility Category
5th Street				
10	East of Rice Avenue	Industrial/Agricultural	65.5	Normally Acceptable
10	West of Rice Avenue	Commercial/Industrial	64.7	Normally Acceptable
11	East of Rose Avenue	Industrial/Agricultural	64.7	Normally Acceptable
11	West of Rose Avenue	Commercial/Industrial	65.2	Normally Acceptable
14	East of Oxnard Boulevard	Commercial	63.5	Normally Acceptable
14	West of Oxnard Boulevard	Commercial	62.5	Normally Acceptable
Wooley Road				
12	East of Rose Avenue	Agricultural	59.5	Normally Acceptable
12	West of Rose Avenue	Industrial	62.7	Normally Acceptable
13	East of Saviers Road	Commercial/Multi-Family Residential	65.4	Conditionally Acceptable
13	West of Saviers Road	Commercial	64.9	Normally Acceptable
Vineyard Avenue				
16	East of Oxnard Boulevard	Multi-Family Residential	66.1	Normally Acceptable
16	West of Oxnard Boulevard	Commercial	66.9	Normally Acceptable
Rice Avenue				
6	North of Gonzalez Road	Commercial	69.7	Conditionally Acceptable
6	South of Gonzalez Road	Industrial	68.7	Normally Acceptable
7	North of Camino Del Sol	Industrial	68.4	Normally Acceptable
7	South of Camino Del Sol	Industrial	67.9	Normally Acceptable
8	North of US-101 SB Off Ramp	Industrial	67.2	Normally Acceptable
8	South of US-101 SB Off Ramp	Commercial	67.7	Normally Acceptable
Rose Avenue				
1	North of Camino Del Sol	Single Family Residential	66.2	Conditionally Acceptable
1	South of Camino Del Sol	Multi-Family Residential	66.0	Conditionally Acceptable
2	North of Cesar Chavez Drive	Multi-Family Residential	66.7	Conditionally Acceptable
2	South of Cesar Chavez Drive	Single Family Residential	66.5	Conditionally Acceptable
3	North of Gonzalez Road	Commercial	68.9	Conditionally Acceptable
3	South of Gonzalez Road	Multi-Family Residential	68.4	Conditionally Acceptable
4	North of US-101 SB Off Ramp	Commercial	75.2	Conditionally Acceptable
4	South of US-101 SB Off Ramp	Commercial	68.7	Conditionally Acceptable
5	North of US-101 NB Off Ramp	Commercial	74.5	Conditionally Acceptable
5	South of US-101 NB Off Ramp	Commercial	67.9	Conditionally Acceptable

TABLE 3: EXISTING ROADWAY NOISE LEVELS				
Intersection Number	Roadway Segment	Adjacent Land Use(s)	Existing Roadway Noise Level dBA CNEL	Existing Noise Exposure Compatibility Category
11	North of 5th Street	Single Family Residential	66.9	Conditionally Acceptable
11	South of 5th Street	Commercial	66.0	Normally Acceptable
Santa Clara Avenue				
9	North of Auto Center Dr./ US-101 NB Off Ramp	Single Family Residential	64.3	Conditionally Acceptable
9	South of Auto Center Dr./ US-101 NB Off Ramp	Commercial	65.7	Normally Acceptable
Saviers Road				
13	North of Wooley Road	Commercial	65.9	Conditionally Acceptable
13	South of Wooley Road	Single Family Residential	66.9	Conditionally Acceptable
Oxnard Boulevard				
14	North of 5th Street	Commercial	66.9	Normally Acceptable
14	South of 5th Street	Commercial	66.7	Normally Acceptable
15	North of Gonzalez Road	Single Family Residential	69.2	Conditionally Acceptable
15	South of Gonzalez Road	Multi-Family Residential	68.7	Conditionally Acceptable
16	North of Vineyard Avenue	Multi-Family Residential	67.6	Conditionally Acceptable
16	South of Vineyard Avenue	Multi-Family Residential	69.6	Conditionally Acceptable

Source: Refer to **Appendix 2.0** for Roadway Noise Worksheets.

3. Sensitive Uses

An overview of the surrounding land uses relative to their respective noise monitoring locations in **Table 2** is provided below. Additionally, **Figure 3: Sensitive Receptor Map** shows the location of each of the sensitive uses described below:

- **Noise Monitoring Site 1**: Located towards the northeast corner of the Project Site at the corner of Gibraltar Street and Milagro Place; sensitive uses include single family residential uses (zoned RL—Residential Low and RLM—Residential Low Medium) located to the north and east of the Project Site and Rio Rosales Elementary School located to the east.
- **Noise Monitoring Site 2**: Located towards the southeast corner of the Project Site between Del Sol High School and the single-family residential uses located along Festivo Street; sensitive uses include single family residential uses (zoned RL—Residential Low) and Del Sol High School.
- **Noise Monitoring Site 3**: Located on the southern border of the Project Site along Camino Del Sol; sensitive uses include senior apartments (zoned RHD—Residential High Density) and multifamily uses zoned (zoned RHD—Residential High Density) along Camino Del Sol as well as Del Sol High School.
- **Noise Monitoring Site 4**: Located towards the southwest corner of the Project Site across North Rose Avenue along Valentina Drive; sensitive uses include single family residential uses (zoned RL—Residential Low) located along Valentina Drive.

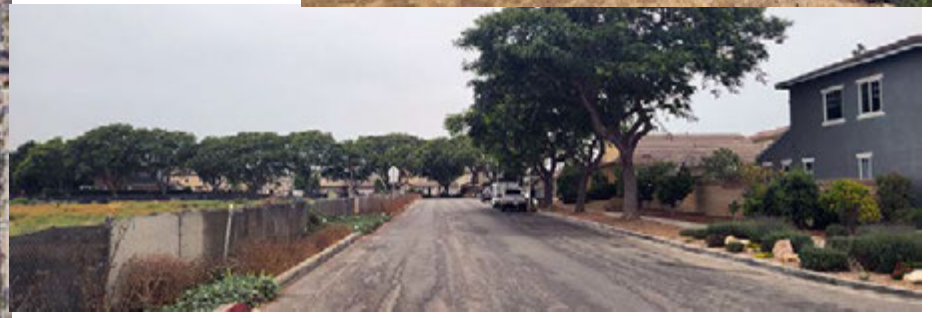
- **Noise Monitoring Site 5**: Located towards the northwest corner of the Project Site across North Rose Avenue along Viviana Drive; sensitive uses include single family residential uses (zoned RL—Residential Low) located along Valentina Drive.
- **Noise Monitoring Site 6**: Located to the north of the Project Site across at the intersection of Prado Way and Cesar Chavez Drive; sensitive uses include single family residential uses (zoned RL—Residential Low) located along Cesar Chavez Drive.
- **Noise Monitoring Site 7**: Located in the Middle of the Project Site along a currently unnamed road.

4. Vibration Conditions

Based on field observations, the primary source of existing groundborne vibration in the vicinity of the Project Site is vehicle traffic on local roadways. According to the Federal Transit Administration (FTA),[4] typical road traffic–induced vibration levels are unlikely to be perceptible by people. Trucks and buses typically generate groundborne vibration velocity levels of approximately 63 VdB (at a 50-foot distance), and these levels could reach 72 VdB when trucks and buses pass over bumps in the road. A vibration level of 72 VdB is above the 60-VdB level of perceptibility.

4 Federal Transit Administration. *Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123*. September 2018. Accessed June 2024. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf.

South



North

East

West

SOURCE: Google Earth - 2024

FIGURE **2a**

Meridian Consultants

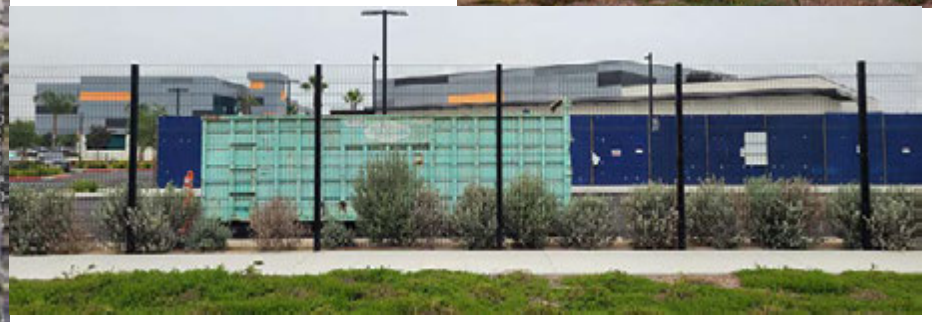
Noise Monitoring Location (Site 1)

408-001-24

South

North

East



West

SOURCE: Google Earth - 2024

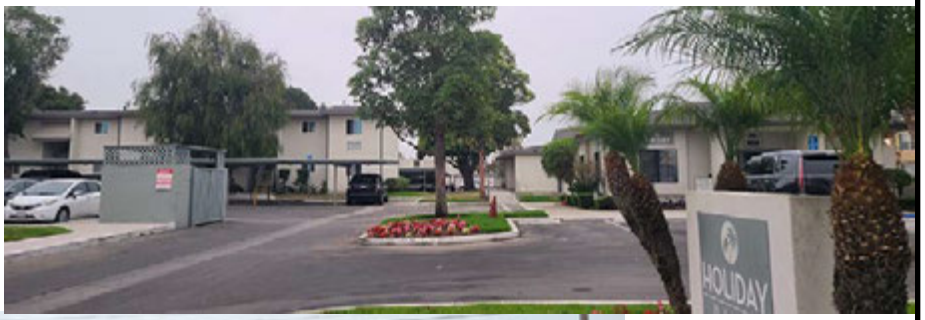
FIGURE **2b**

Meridian Consultants

Noise Monitoring Location (Site 2)

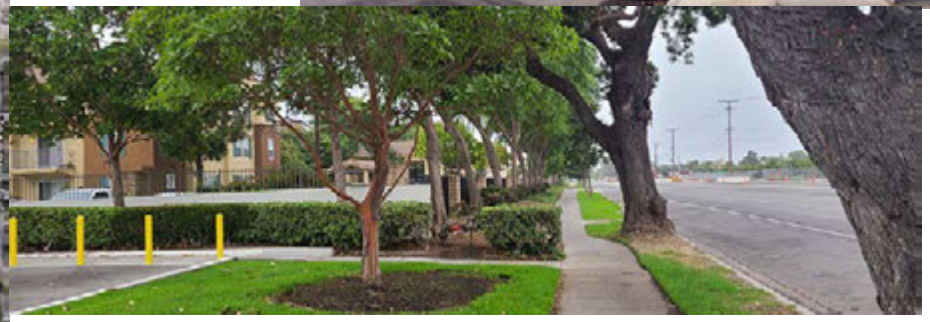
408-001-24

South



North

East



West

SOURCE: Google Earth - 2024

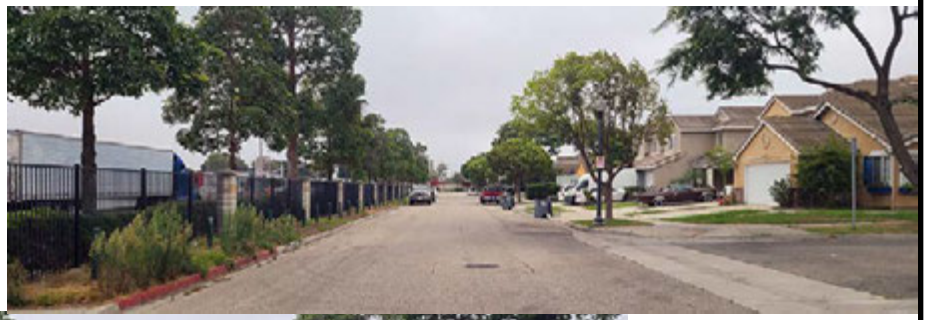
FIGURE **2c**

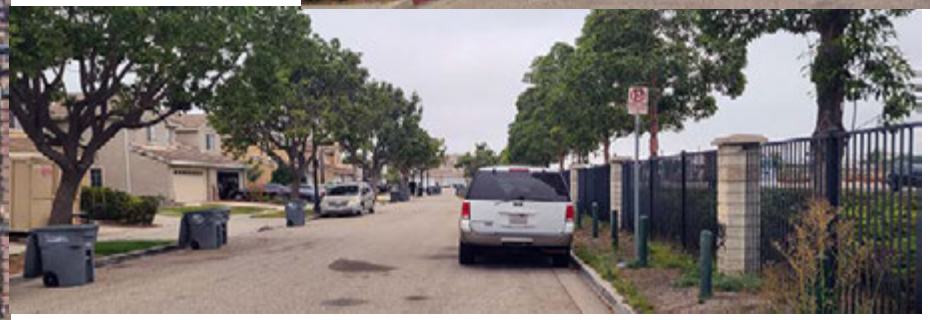
Meridian Consultants

Noise Monitoring Location (Site 3)

408-001-24

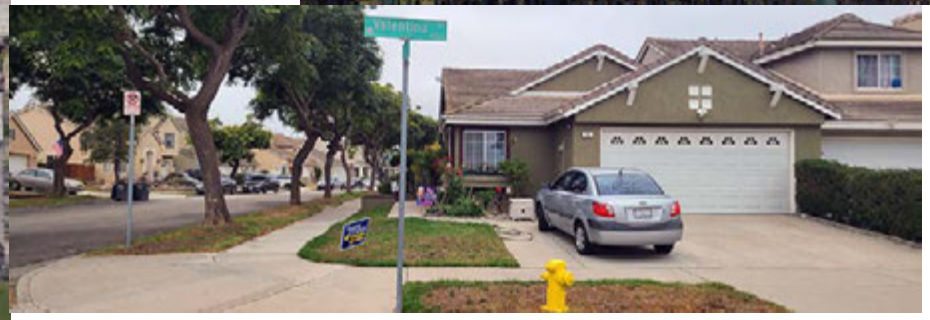
South





North

East



West

SOURCE: Google Earth - 2024

FIGURE **2d**

Meridian Consultants

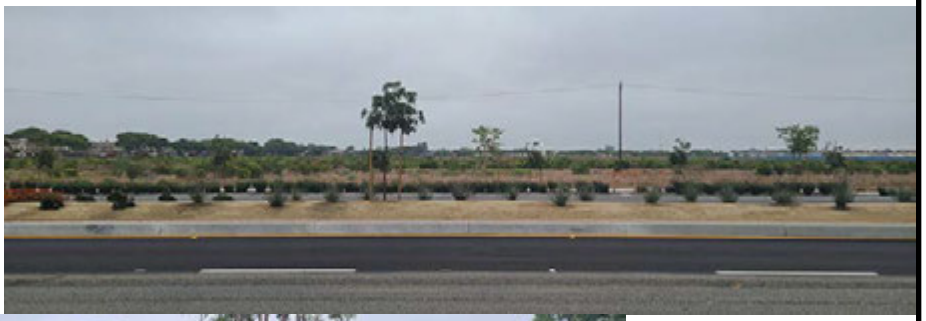
Noise Monitoring Location (Site 4)

408-001-24

South

North

East



West

SOURCE: Google Earth - 2024

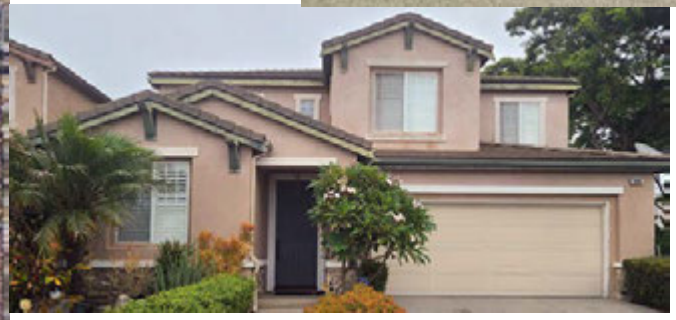
FIGURE **2e**

Meridian Consultants

Noise Monitoring Location (Site 5)

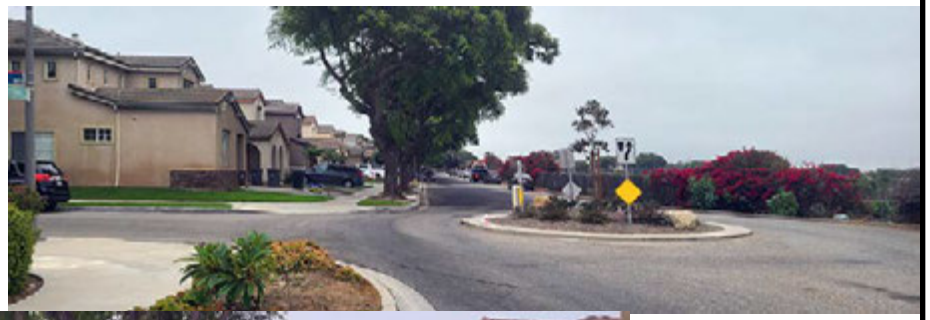
408-001-24

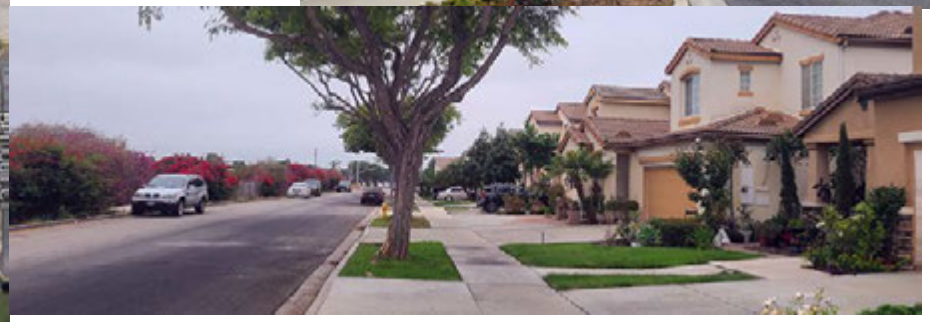
South



North

East





West

SOURCE: Google Earth - 2024

FIGURE **2f**

Meridian Consultants

Noise Monitoring Location (Site 6)

408-001-24

South

North

East

West

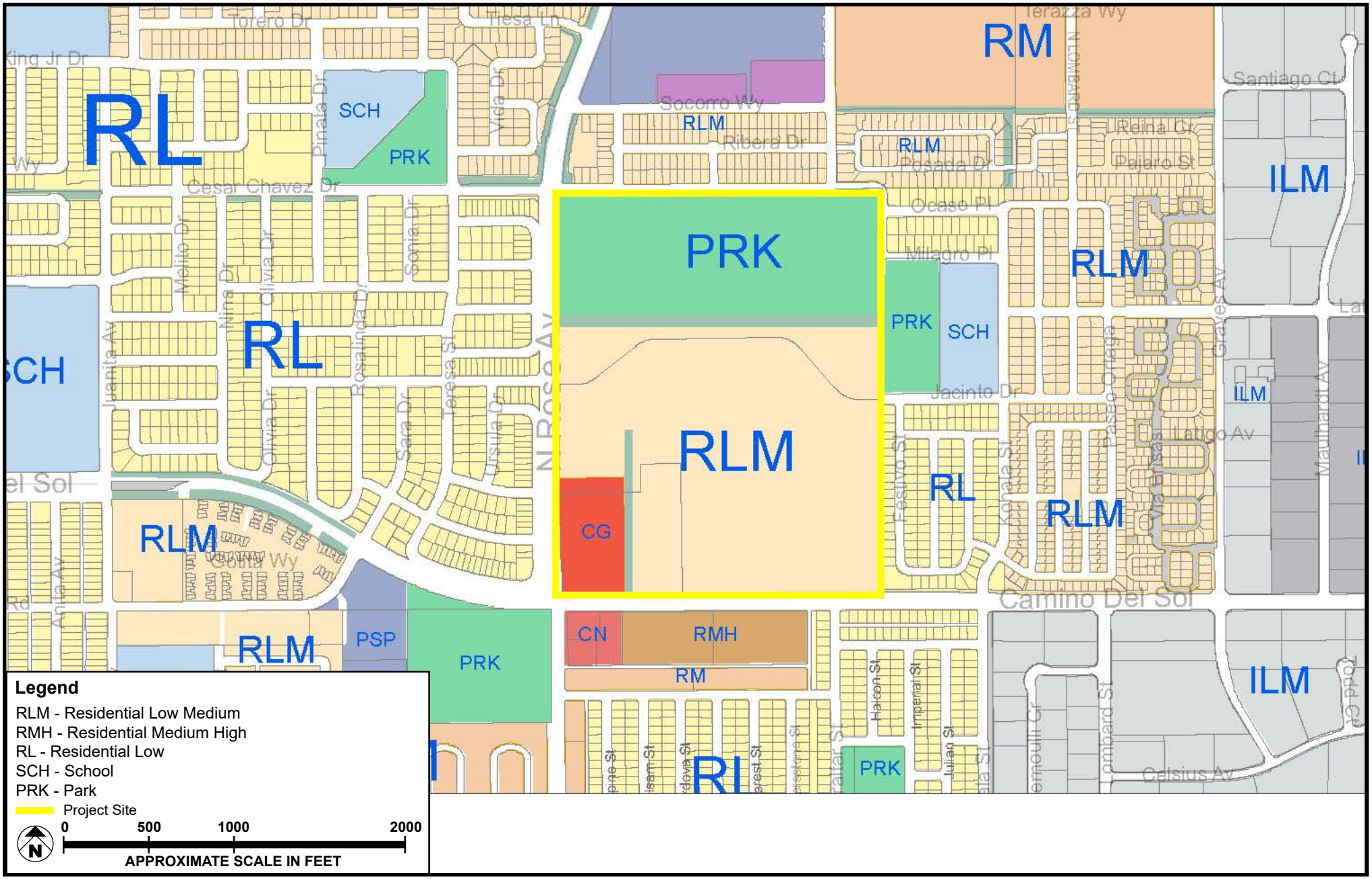
SOURCE: Google Earth - 2024

FIGURE **2g**

Meridian Consultants

Noise Monitoring Location (Site 7)

408-001-24



SOURCE: Google Earth – 2024

FIGURE **3**

Meridian Consultants

Sensitive Receptor Map

408-001-24

D. METHODOLOGY

1. Ambient Noise Measurements

Noise-level monitoring was conducted by Meridian Consultants on September 24, 2024, at seven (7) locations within the Project area vicinity, as shown in **Figures 2a** through **2g**. Noise-level monitoring was conducted for 15-minute intervals at each location using a Larson Davis Model 831 sound-level meter. This meter satisfies the American National Standards Institute (ANSI) standard for general environmental noise measurement instrumentation. The ANSI specifies several types of sound-level meters according to their precision. Types 1, 2, and 3 are referred to as "precision," "general-purpose," and "survey" meters, respectively. Most measurements carefully taken with a Type 1 sound-level meter will have a margin of error not exceeding 1 dB.

The Larson Davis Model 831 is a Type 1 precision sound-level meter. This meter meets all requirements of ANSI S1.4-1983 and ANSI1.43-1997 Type 1 standards, as well as International Electrotechnical Commission (IEC) IEC61672-1 Ed. 1.0, IEC60651 Ed 1.2, and IEC60804 Type 1, Group X standards. The sound-level meter was located approximately five feet above ground and was covered with a Larson Davis windscreen. The sound-level meter was calibrated in the field with an external calibrator prior to use.

2. Construction

For purposes of this analysis, Project construction is assumed to occur in two (2) phases with Area A including construction of the North Neighborhood or Planning Area 'A' beginning January 2026 and ending April 2031. Area C would include the construction of Planning Area 'C', consisting of the Southwest Neighborhood, and would begin in January 2026 and end in July 2027. These assumed construction timeframes are subject to change. Construction would include the following activities: demolition; grading; building construction; paving; and architectural coating.

Each phase of construction would result in varying levels of intensity and a number of construction personnel. During Area A, the construction workforce would consist of approximately 20 worker trips per day and 100 hauling trips during grading; approximately 484 worker trips and 76 vendor trips per day during building construction; approximately 15 worker trips per day during paving; and approximately 97 worker trips per day during architectural coating. During Area C, the construction workforce would consist of approximately 15 worker trips per day and 17 hauling trips during demolition; approximately 20 worker trips per day and 75 hauling trips during grading; approximately 213 worker trips and 32 vendor trips per day during building construction; approximately 15 worker trips per day during paving; and approximately 43 worker trips per day during architectural coating.

(a) On-Site Construction Equipment

Construction activities typically generate noise from the operation of equipment within the Project Site that is required for the construction of site improvements and buildings. Noise impacts from on-

site construction equipment as well as the on-site staging of construction trucks were evaluated by determining the noise levels generated by different types of construction activity and calculating the construction-related noise level at nearby noise-sensitive receptor locations. Actual construction noise levels would vary, depending upon the equipment type, model, the type of work activity being performed, and the condition of the equipment.

In order to calculate construction noise levels, hourly activity, or utilization factors (i.e., the percentage of normal construction activity that would occur, or construction equipment that would be active, during each hour of the day) are estimated based on the temporal characteristics of other previous and current construction projects. The hourly activity factors express the percentage of time that construction activities would emit average noise levels. Typical noise levels for each type of construction equipment were obtained from the *FHWA Roadway Construction Noise Model*.[5]

An inventory of construction equipment, including the number and types of equipment, that may be operating simultaneously within the Project Site was identified for each phase/component of construction as shown in **Table 4: Construction Equipment by Phase**. It is highly unlikely that all pieces of construction equipment identified in **Table 4** would operate simultaneously in any specific location during construction because equipment is generally operated only when needed and space constraints limit the equipment that can be used at any one time in a specific location. Therefore, the values provided below for the equipment at 50 feet is considered a conservative approach conservative approach to the maximum noise levels that may be generated.

Construction noise levels have been calculated at each of the identified sensitive receptor locations during each of the four construction phases using the reference equipment noise levels at 50 feet from RCNM and the distance to each nearby noise-sensitive receiver (refer to **Appendix 3.0: Construction Noise Worksheets** for modeled construction noise).

TABLE 4: CONSTRUCTION EQUIPMENT BY PHASE

Construction Phase	Equipment Type	Quantity	Usage Hours (per day)	Noise Level at 50 feet (L_{max})
	Area A			
Grading	Graders	1	8	85
	Excavators	2	8	85
	Tractors/Loaders/Backhoes	2	8	84
	Scrapers	2	8	85
	Rubber Tired Dozers	1	8	85
Building Construction	Forklifts	3	8	80
	Generator Sets	1	8	82
	Cranes	1	7	85
	Welders	1	8	73

5 United States Department of Transportation. *FHWA Roadway Construction Noise Model User's Guide, Final Report*. January 2006. Accessed June 2024. https://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf.

TABLE 4: CONSTRUCTION EQUIPMENT BY PHASE				
Construction Phase	**Equipment Type**	**Quantity**	**Usage Hours (per day)**	**Noise Level at 50 feet (L_{max})**
Paving	Tractors/Loaders/Backhoes	3	7	84
	Pavers	2	8	85
	Paving Equipment	2	8	85
	Rollers	2	8	85
Architectural Coating	Air Compressors	1	6	80
Area C				
Demolition	Rubber Tired Dozers	2	8	85
	Excavators	3	8	85
	Concrete/Industrial Saws	1	8	90
Grading	Graders	1	8	85
	Excavators	2	8	85
	Tractors/Loaders/Backhoes	2	8	84
	Scrapers	2	8	85
	Rubber Tired Dozers	1	8	85
Building Construction	Forklifts	3	8	80
	Generator Sets	1	8	82
	Cranes	1	7	85
	Welders	1	8	73
	Tractors/Loaders/Backhoes	3	7	84
Paving	Pavers	2	8	85
	Paving Equipment	2	8	85
	Rollers	2	8	85
Architectural Coating	Air Compressors	1	6	80

Source: *FHWA Roadway Construction Noise Model* (RCNM) version 1.1. Refer to **Appendix 3.0** for construction noise worksheets.

(b) Construction Traffic Noise

The analysis of off-site construction traffic noise impacts focuses on: (1) identifying major roadways that may be used for construction worker commute routes or truck haul routes; (2) identifying the nature and location of noise-sensitive receptors along those routes; and (3) evaluating the traffic characteristics along those routes, specifically as related to existing traffic volumes.

(c) Construction Equipment Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. While ground vibrations from construction activities do not often reach the levels that can damage structures, fragile buildings must receive special consideration.

Impacts due to construction activities were evaluated by identifying vibration sources (i.e., construction equipment), measuring the distance between vibration sources and surrounding structure locations, and making a significance determination.

For quantitative construction vibration assessments related to building damage and human annoyance, vibration source levels for construction equipment are taken from the FTA *Transit Noise and Vibration Impact Assessment Manual*.[6] Building damage would be assessed for each piece of equipment individually and assessed in terms of peak particle velocity expressed in inches per second.

The vibration source levels for various types of equipment are based on data provided by the FTA.

3. Operation

(a) Roadway Noise

Traffic noise levels were modeled using the FHWA TNM. The FHWA TNM calculates noise associated with a specific line source and the results characterize noise generated by motor vehicle travel along a specific roadway segment. The traffic noise impact analysis is based on the 24-hour CNEL noise descriptor and incorporates traffic volumes, vehicle mix, posted speed limits, roadway geometry, and site conditions. Noise levels were evaluated with respect to the following traffic scenarios:

- Existing (2025) Conditions;
- Existing (2025) plus Project Conditions;
- Cumulative without Project Conditions; and
- Cumulative with Project Conditions.

Noise impacts due to off-site motor vehicle travel were analyzed by comparing the projected increase in traffic noise levels from without Project conditions to plus proposed Project to the applicable significance criteria. Cumulative plus Project conditions include traffic volumes from future ambient growth, related projects, and the proposed Project.

6 Federal Transit Administration. *Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123.*

E. THRESHOLDS OF SIGNIFICANCE

In accordance with the City's CEQA Threshold Guidelines, a project would have a potentially significant impact related to noise and groundborne vibration if it would result in:

- ***Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the Oxnard 2030 General Plan or noise ordinance, or applicable standards of other agencies?***
- ***Generation of excessive groundborne vibration or groundborne noise levels?***
- ***For a project located within the vicinity of a private airstrip or an airport land use plan for Oxnard Airport or within two miles of Naval Base Ventura County, Point Mugu, would the project expose people residing or working in the project area to excessive noise levels?***

The Project Site is located approximately 2.0 miles east of the Oxnard Airport; however, the Project Site is not located within the Oxnard Airport noise contours.[7] As such, the location of the Project would not result in excessive noise for residents or employees in the Project area. As such, the Project would result in no impacts to this screening criteria and no further analysis of this topic is necessary.

1. Construction Noise

The City's CEQA Threshold Guide identifies activities associated with construction as exempt from the specific quantitative limitations in the City Noise Ordinance but such construction activities are restricted to the hours between 7:00 AM and 6:00 PM on weekdays and Saturdays, Section 7-188[0] of the Oxnard City Code (OCC). Given the lack of a City-defined construction threshold, a construction-related noise level threshold is adopted from the FTA Construction Noise Handbook for General Assessment Construction Noise Criteria. The FTA *Transit Noise and Vibration Impact Assessment Manual*[8] provides a general noise assessment guideline to assess potential noise impacts construction of transit projects. A general noise assessment is suitable and appropriate given the current stage of planning and evaluation for this Project. The City's CEQA Thresholds Guide specifically references the FTA residential threshold of 80 dBA (Leq-8hr). The FTA *Transit Noise and Vibration Impact Assessment Manual* also identifies a daytime noise threshold of 90 dBA (Leq-1hr) for residential uses. Since the construction-related noise level threshold represents the energy average of the noise source over a given time, they are expressed as Leq noise levels. Construction

7 Ventura County Airport Land Use Commission. *Airport Comprehensive Land Use Plan for Ventura County, Final Report*. Adopted July 7, 2000. Accessed July 2025. https://www.goventura.org/wp-content/uploads/2018/03/2000-airport-land-use-for-ventura-county.pdf.

8 Federal Transit Administration. *Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123*.

noise would be significant if these thresholds are exceeded or if construction activity occurs outside the 7:00 AM and 6:00 PM hours.

2. Construction Vibration

The City's CEQA Threshold Guide utilizes the Caltrans Transportation and Construction Vibration Guidance Manual to determine potential impacts to land uses from vibration from construction activities. Maximum Vibration Limits are recommended by the American Association of State Highway and Transportation Officials (AASHTO). Based on AASHTO recommendations, limiting vibration levels to below 0.4 inches per second PPV at residential structures would prevent structural damage. These limits are applicable regardless of the source. However. Potential human annoyance associated with vibration is usually different if it is generated by a steady state or transient vibration source. The vibration level at which transient vibration sources including construction equipment, are considered to be distinctly perceptible is 0.24 inches per second PPV.

3. Operation

Specific numerical noise criteria are not included in the 2030 General Plan but are referenced in the General Plan Background Report. As shown above in **Table 1**, for multi-family residential and other sensitive uses, the maximum normally acceptable Community Noise Level Equivalent (CNEL) considered compatible is 65 dBA and for single-family residential the maximum normally acceptable CNEL is 60 dBA.

Additionally, operational activities are subject to the City Noise Ordinance and the exterior noise limits set forth in the City's Municipal Code Section 7-185. **Table 5: Exterior Sound Standards** show the allowable exterior sound level for the residential uses surrounding the Project Site.

TABLE 5: EXTERIOR SOUND STANDARDS

Sound Zone	Type of Land Use	Allowable Exterior Sound Level	
		7:00 AM to 10:00 PM	10:00 PM to 7:00 AM
I	Residential	55	50
II	Commercial	65	60
III	Industrial	70	70

Source: City of Oxnard, Municipal Code, Section 7-185.

The City of Oxnard CEQA Guidelines recommends noise criteria for noise generated by traffic. These recommendations can be used as guidance to determine whether or not a change in traffic would result in "substantial" permanent increase in noise. The allowable noise exposure increase is reduced with increasing ambient existing noise exposure, such that higher ambient noise levels have a lower allowable noise exposure increase. **Table 6: Significance of Changes in Operational Roadway Noise Exposure** shows the significance thresholds for increases in traffic-related noise levels. These standards are applicable to project-related impacts on existing sensitive receptors. For

noise exposures above 75 dBA CNEL, there is no allowable noise exposure increase. As shown in **Table 2**, the maximum ambient noise exposure within the Project site is 68.9 dBA. As such, allowable noise exposure increase limit is one (1) dBA for this portion of the site.

TABLE 6: SIGNIFICANCE OF CHANGES IN OPERATIONAL ROADWAY NOISE EXPOSURE

Existing Noise Exposure (dBA Ldn or Leq)	Allowable Noise Exposure Increase (dBA Ldn or Leq)
45-49	7
50-54	5
55-59	3
60-64	2
65-74	1
75+	0

Source: City of Oxnard *CEQA Guidelines*, Table 5: Significance of Changes in Operational Roadway Noise Exposure, May 2017.

F. IMPACT ANALYSIS

Noise impacts associated with the proposed Project include short- and long-term impacts. Construction activities, especially heavy equipment operations, would create noise effects on and adjacent to the construction site. Long-term noise impacts include Project-generated on- and off-site operational noise sources. On-site (stationary) noise sources would include the operation of mechanical equipment such as air conditioners, as well as landscaping and building maintenance activities. Off-site noise would be attributed to Project-induced traffic, which would cause an incremental increase in noise levels within and near the Project vicinity.

This section also evaluates potential groundborne vibration that would be generated from the construction or operation of the proposed Project.

1. Construction

(a) On-Site Construction Noise

While the Maulhardt-Stiles Sub-Neighborhood Plan is a planning document and no specific development projects are proposed within the Project Site at this time, the Project would include the reconstruction of an existing bus stop along Rose Avenue fronting Del Sol Park and include the construction of several new bus stop locations at a few intersections (Rose Avenue and Camino de la Luna, Rose Avenue and Jacinto Drive (formerly Central Street), Rose Avenue and Cesar Chavez Drive). Additionally, the Project would construct a bus pull-out at the northeast corner of Rose Ave and Camino Del Sol and relocate furniture and signage from the southeast corner. However, noise levels from construction of subsequent individual development projects that could occur cannot be precisely estimated at this time. A general estimate of likely construction noise levels was developed for a scenario in which a reasonable number of pieces of construction equipment was assumed to be operating simultaneously with logistical limitations and with the noise equipment located at the construction area nearest to the affected receptors to present a conservative impact analysis.

Noise from construction activities would be affected by the amount of construction equipment, the location of the equipment, the timing and duration of construction activities, and the relative distance to noise-sensitive receptors. Construction activities that would occur during the construction phases would generate both steady-state and episodic noise that would be heard both on and off the Project site. Each construction phase involves the use of different types of construction equipment and, therefore, has its own distinct noise characteristics. The Project would be constructed using typical construction techniques; no blasting or impact pile driving would be required.

The construction equipment reference noise levels provided in **Table 4** are based on measured noise data compiled by the Federal Highway Administration (FHWA) and would occur when equipment is operating under full power conditions. However, equipment used on construction sites typically

operate at less than full power. The acoustic usage factor is the percentage of time that each type of construction equipment is anticipated to be in full power operation during a typical construction day. These values are estimates and would vary based on the actual construction process and schedule.

Construction equipment operates at its noisiest levels for certain percentages of time during operation. As such, equipment would operate at different percentages over the course of an hour.[9] During a typical construction day, the highest noise levels would be generated when multiple pieces of construction equipment are operated concurrently.

To characterize construction-period noise levels, the average (hourly Leq) noise level associated with each construction stage was calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage using the roadway construction noise model (RCNM) (refer to **Appendix 3.0: Construction Noise Worksheets**). These noise levels are typically associated with multiple pieces of equipment operating simultaneously.

The estimated construction noise levels were calculated for each of the analyzed receptors (refer to **Figure 3**) during each of the construction phases. As mentioned previously, given the physical size of the Project Site and logistical limitations, noise equipment was placed at the construction area nearest to the affected receptors to present a conservative impact analysis. This is considered a worst-case evaluation because construction of the Project would typically use fewer pieces of equipment simultaneously at any given time as well as operating throughout the construction site (i.e., most of the time, construction equipment would be operating at distances further away from the off-site receptors than assumed in the forecasting of Project construction noise levels). As such, Project construction would often generate lower noise levels than reported herein.

Table 7: Construction Maximum Noise Estimates presents the maximum noise impacts that are forecasted at each of the receptor sites. As shown, average noise levels during construction would result in a maximum increase of 6.6 dBA above the 80 dBA (Leq-8hr) threshold for residential uses identified in the City's CEQA Thresholds without the implementation of technically feasible noise reduction measures. As discussed below, with the implementation of feasible noise reduction measures, construction noise levels will be below the 80 dBA (Leq-8hr) threshold used by the City to determine the significance of construction noise. In addition, construction noise levels would not exceed the FTA 90 dBA (Leq-1hour) threshold for nearby residential uses without mitigation. The 80 dBA (Leq-8hr) residential threshold identified in the City's CEQA Thresholds Guide for residential uses is also used for Del Sol High School.

9 United States Department of Transportation, Federal Highway Administration. "Traffic Noise Model." 2006.

TABLE 7: CONSTRUCTION MAXIMUM NOISE ESTIMATES

Site	Nearest Off-Site Building Structures	Calculated Noise Level (dBA, Leq-1hour) by Construction Phase					Significance Threshold	Increase Above Significance Threshold?
		Demolition	Grading	Building Construction	Paving	Architectural Coating		
				Area A				
1	Single-family residential uses along Milagro Place and Gibraltar Street	—	86.6	85.3	80.0	72.1	80	+6.6
2	Single-family residential uses along Festivo Street and Del Sol High School	—	65.7	64.3	59.1	51.1	80	+0.0
3	Multi-family residential uses along Camino Del Sol	—	58.3	56.9	51.7	43.8	80	+0.0
4	Single-family residential uses along Valentina Drive	—	65.7	64.4	59.1	51.2	80	+0.0
5	Single-family residential uses along Vivana Drive	—	75.1	73.8	68.6	60.6	80	+0.0
6	Single-family residential uses along Cesar Chavez Drive	—	84.1	82.8	77.5	69.6	80	+4.1
7	Del Sol High School	—	68.2	66.9	61.6	53.7	80	+0.0
				Area C				
1	Single-family residential uses along Milagro Place and Gibraltar Street	55.6	56.9	56.0	53.5	42.8	80	+0.0
2	Single-family residential uses along Festivo Street and Del Sol High School	58.8	60.2	59.3	56.8	46.1	80	+0.0
3	Multi-family residential uses along Camino Del Sol	70.9	72.2	71.3	68.9	58.1	80	+0.0
4	Single-family residential uses along Valentina Drive	73.4	74.7	73.8	71.4	60.6	80	+0.0

TABLE 7: CONSTRUCTION MAXIMUM NOISE ESTIMATES

Site	Nearest Off-Site Building Structures	Calculated Noise Level (dBA, Leq-1hour) by Construction Phase					Significance Threshold	Increase Above Significance Threshold?
		Demolition	Grading	Building Construction	Paving	Architectural Coating		
5	**Single-family residential uses along Vivana Drive**	59.6	61.0	60.0	57.6	46.8	80	+0.0
6	**Single-family residential uses along Cesar Chavez Drive**	55.9	57.3	56.3	53.9	43.1	80	+0.0
7	**Del Sol High School**	80.4	81.8	80.8	78.4	67.7	80	+1.8

Notes: No demolition is taking place during Area A of construction as the site is vacant and undeveloped.

Source: Refer to **Appendix 3.0** for Construction Noise Worksheets.

In devising construction noise control strategies, important options include controlling the noise at the source. Source control requirements include added benefits in promoting technological advances in the development of quieter equipment. Source control techniques can include: (1) muffler requirements, (2) maintenance and operational requirements, and (3) equipment emission level requirements. These control techniques can be used separately or in combination in order to achieve the desired results. Most noise originates from equipment powered by either gasoline or diesel engines. A large part of the noise emitted is due to the intake and exhaust portions of the engine cycle. A remedy for controlling much of the engine noise is by adhering to **MM NOI-1** which requires the use of optimal muffler systems. **MM NOI-1** would lead to replacement of worn mufflers and to retrofitting where mufflers are not in use. Using optimal muffler systems on all equipment would reduce construction noise levels by 10 dBA or more.[10]

Other effective methods of diminishing the noise impacts associated with individual pieces of construction equipment is to employ less noisy machinery. This is accomplished by specifying the quietest available equipment. Additionally, shield free standing shields around stationary equipment may achieve reductions of 20 dBA at high frequencies and 10 dBA in the middle frequency range. This material can be constructed from polyvinyl chloride (PVC) layers, lead-filled fabric, or rubber. These aprons are most useful when equipment only needs partial shielding or has to be regularly moved.

Additionally, limiting the number of noise-generating, heavy-duty construction equipment to two (2) pieces operating simultaneously would reduce construction noise levels by approximately 1.5 dBA.

10 United States Department of Transportation, Federal Highway Administration. *Special Report—Measurement, Prediction, and Mitigation, Chapter 4, Mitigation*. June 2017. Accessed August 2025. https://www.fhwa.dot.gov/Environment/noise/construction_noise/special_report/hcn04.cfm.

With implementation of **MM NOI-1,** construction noise levels resulting in an increase of 6.6 dBA (Leq-1hr) above the significance threshold would be reduced by a minimum of 6.6 dBA (Leq-1hr). Additionally, the Project would be required to comply with Section 7-188[0] of OCC by ensuring construction activities would occur during the hours 7:00 AM and 6:00 PM on weekdays or Saturdays only. Compliance with the above practices would ensure construction noise levels would be below the significance threshold; thus, construction noise levels would not be considered significant.

(b) Off-Site Construction Noise

Construction of the Project would require workers travelling to and from the Project Site to work on the site, export soil, and deliver supplies to the site. Trucks traveling to and from the Project Site would be required to travel along a haul route approved by the City. At the maximum, approximately 100 hauling trips per day would take place during the grading in Area A. Haul truck traffic would take the most direct route to the freeway ramp along North Rose Avenue to U.S Route 101. Hauling of a total of 212,000 cubic yards of import during Area A and 18,000 cubic yards during Area C is proposed.

Noise associated with construction truck trips were estimated using the Caltrans Federal Highway Administration (FHWA) Traffic Noise Model based on the maximum number of truck trips in a day. Based on traffic counts conducted for the Project, the existing (2025) average daily traffic county on North Rose Avenue is 21,663 vehicles per day. Comparing the maximum number of daily construction-related trips (a total of 697 worker trips and 108 vendor trips during the overlapping building construction phase for both Area A and Area C, and an adjusted Passenger Car Equivalent [PCE] total of 913 trips based on the vendor truck trips generating the equivalent noise of two passenger vehicles) to an average daily traffic volume of 21,663, the additional vehicle trips would amount to a worst-case number of trips due to Project construction. Based on the total number of project trips being 913 per day, the predicted existing (2025) plus project construction trip noise level is approximately 66.2 dBA CNEL. As shown in **Table 3**, existing roadway noise levels at intersection 1, North Rose Avenue north of Camino Del Sol, are 66.2 dBA CNEL. Construction trips would not increase roadway noise levels, and the noise level increases from truck trips would be below the construction threshold of 80 dBA. As such, off-site construction noise impacts would not be considered significant.

(c) Construction Vibration

Table 8: On-Site Construction Vibration Impacts—Human Annoyance present construction vibration impacts associated with on-site construction in terms of human annoyance. As shown in **Table 8**, the forecasted vibration levels due to on-site construction activities would not exceed the residential significance threshold of 0.24 inches per second PPV. Additionally, construction vibration would not exceed the structural damage threshold of 0.4 PPV for residential structures.

Due to the distance of the Project-identified sensitive receptors, changes in elevations, and intervening structures, such as buildings and walls, on-site construction vibration would not result in a significant vibration impact with regard to building damage or human annoyance. Impacts related to on-site construction vibration would not be considered significant.

TABLE 8: ON-SITE CONSTRUCTION VIBRATION IMPACTS—HUMAN ANNOYANCE

Site	Nearest Off-Site Building Structures	Estimated Vibration Velocity Levels at the Nearest Off-Site Structures from the Project Construction Equipment					Significance Threshold (PPV)	Exceeds Threshold?
		Vibratory Roller	Loaded Trucks	Jackhammer	Large Bulldozer	Small Bulldozer		
				Area A				
1	**Single-family residential uses along Milagro Place and Gibraltar Street**	0.056	0.020	0.009	0.024	0.001	0.24	No
2	**Single-family residential uses along Festivo Street and Del Sol High School**	0.002	0.001	0.000	0.001	0.000	0.24	No
3	**Multi-family residential uses along Camino Del Sol**	0.000	0.000	0.000	0.000	0.000	0.24	No
4	**Single-family residential uses along Valentina Drive**	0.002	0.001	0.000	0.001	0.000	0.24	No
5	**Single-family residential uses along Vivana Drive**	0.008	0.003	0.001	0.003	0.000	0.24	No
6	**Single-family residential uses along Cesar Chavez Drive**	0.037	0.013	0.006	0.0016	0.001	0.24	No
7	**Del Sol High School**	0.002	0.001	0.000	0.001	0.000	0.24	No
				Area C				
1	**Single-family residential uses along Milagro**	0.000	0.000	0.000	0.000	0.000	0.24	No

TABLE 8: ON-SITE CONSTRUCTION VIBRATION IMPACTS—HUMAN ANNOYANCE

Site	Nearest Off-Site Building Structures	Estimated Vibration Velocity Levels at the Nearest Off-Site Structures from the Project Construction Equipment					Significance Threshold (PPV)	Exceeds Threshold?
		Vibratory Roller	Loaded Trucks	Jackhammer	Large Bulldozer	Small Bulldozer		
	Place and Gibraltar Street							
2	**Single-family residential uses along Festivo Street and Del Sol High School**	0.001	0.000	0.000	0.000	0.000	0.24	No
3	**Multi-family residential uses along Camino Del Sol**	0.005	0.002	0.001	0.002	0.000	0.24	No
4	**Single-family residential uses along Valentina Drive**	0.008	0.003	0.001	0.003	0.000	0.24	No
5	**Single-family residential uses along Vivana Drive**	0.001	0.000	0.000	0.000	0.000	0.24	No
6	**Single-family residential uses along Cesar Chavez Drive**	0.000	0.000	0.000	0.000	0.000	0.24	No
7	**Del Sol High School**	0.026	0.010	0.004	0.011	0.000	0.24	No

Source: Refer to **Appendix 4.0** for construction vibration worksheets.

2. Operation

(a) Fixed Mechanical Equipment Noise

Stationary sources of noise that could be introduced in the area could include mechanical equipment, loading docks, and parking lots. Given that this equipment would be required to adhere to the City's Noise Ordinance, all stationary sources would be required to have shielding or other noise-abatement measures so as not to exceed the exterior sound standards, as shown in **Table 5**.

(b) HVAC Systems

The Project would introduce various stationary noise sources, including HVAC systems, which would be located either on the roof, the side of a structure or on the ground. Off-site and on-site sensitive receptors could be potentially affected by the introduction of such equipment. This equipment would be screened and integrated into the architectural design of the building and would further have to comply with the exterior sound standards listed in **Table 5**. The use of such equipment would not generate noise levels that would substantially elevate the ambient noise environment and would not generate substantial noise and impacts to nearby noise-sensitive receptors. Impacts would be less than significant.

Human Activity Related Nosie

Future residents located on the Project site, as well as nearby sensitive receptors, may experience increases in noise due to an increase in human activity within the area either from people living on the premises, utilizing the on-site amenities including parks and open space. Potential residential noise includes people talking, doors slamming, stereos, and other noise associated with human activity. These noise sources are generated by project occupants and are not considered significant under AB 1307.

Maximum permissible noise levels for residential uses range between is 70 dB with a conditionally acceptable range between 60 – 70 dB, as determined by the General Plan Background Report. Overall, the noise generated by the Project's land uses would be consistent with the ambient noise levels in the Project Site, which range from 55.0 to 68.9 dB(A). Accordingly, impacts would be less than significant.

(c) Roadway Noise

Table 9: Existing plus Project Roadway Noise Levels illustrates the change in noise levels from traffic volumes and from traffic generated by the Project (refer **to Appendix 2.0: Roadway Nosie Worksheets** for traffic noise worksheets containing the information summarized in Table 9). The difference in traffic noise between existing conditions and existing plus Project conditions represents the increase in noise attributable to Project-related traffic. As shown in **Table 9**, the maximum noise level increase along the analyzed roadways were 0.8 dBA CNEL along Cesar Chavez Road east of Rose Avenue. Consequently, Project-related traffic would not cause noise levels along the analyzed roadways to increase by more than 1.0 dBA. Thus, the proposed Project would not result in a permanent increase in noise levels above ambient levels in the vicinity of the Project Site in excess of the City's Noise Element and Noise Ordinance. Vehicular related noise impacts would not be considered significant.

TABLE 9: EXISTING PLUS PROJECT ROADWAY NOISE LEVELS					
Intersection Number	Roadway Segment	Existing, dBA CNEL		Difference	Significant Impact?
		Without Project	With Project		
Camino Del Sol					
1	East of Rose Avenue	61.7	61.8	+0.1	No
1	West of Rose Avenue	61.5	61.6	+0.1	No
7	East of Rice Avenue	61.2	61.2	+0.0	No
7	West of Rice Avenue	66.8	66.9	+0.1	No
Cesar Chavez Drive					
2	East of Rose Avenue	56.0	56.8	+0.8	No
2	West of Rose Avenue	60.7	60.7	+0.0	No
Gonzalez Road					
3	East of Rose Avenue	67.8	67.8	+0.0	No
3	West of Rose Avenue	69.0	69.0	+0.0	No
6	West of Rice Avenue	66.2	66.3	+0.1	No
15	East of Oxnard Boulevard	68.9	68.9	+0.0	No
15	West of Oxnard Boulevard	66.6	66.7	+0.1	No
US-101 SB Off Ramp					
4	East of Rose Avenue	59.5	59.5	+0.0	No
4	West of Rose Avenue	66.3	66.5	+0.2	No
8	East of Rice Avenue	62.9	62.9	+0.0	No
8	West of Rice Avenue	66.7	66.7	+0.0	No
Auto Center Drive/US-101 NB Off Ramp					
5	East of Rose Avenue	62.8	62.8	+0.0	No
5	West of Rose Avenue	58.6	58.6	+0.0	No
9	East of Santa Clara Avenue	64.6	64.6	+0.0	No
9	West of Santa Clara Avenue	68.3	68.5	+0.2	No
5th Street					
10	East of Rose Avenue	65.5	65.6	+0.0	No
10	West of Rose Avenue	64.7	64.7	+0.0	No
11	East of Rice Avenue	64.7	64.7	+0.0	No
11	West of Rice Avenue	65.2	65.4	+0.2	No
14	East of Oxnard Boulevard	63.5	63.7	+0.2	No
14	West of Oxnard Boulevard	62.5	62.7	+0.2	No
Wooley Road					
12	East of Rose Avenue	59.5	59.5	+0.0	No
12	West of Rose Avenue	62.7	62.8	+0.1	No
13	East of Saviers Road	65.4	65.5	+0.1	No
13	West of Saviers Road	64.9	65.0	+0.1	No
Vineyard Avenue					
16	East of Oxnard Boulevard	66.1	66.1	+0.0	No
16	West of Oxnard Boulevard	66.9	66.9	+0.0	No

TABLE 9: EXISTING PLUS PROJECT ROADWAY NOISE LEVELS					
Intersection Number	Roadway Segment	Existing, dBA CNEL		Difference	Significant Impact?
		Without Project	With Project		
Rice Avenue					
6	North of Gonzalez Road	69.7	69.8	+0.1	No
6	South of Gonzalez Road	68.7	68.7	+0.0	No
7	North of Camino Del Sol	68.4	68.4	+0.0	No
7	South of Camino Del Sol	67.9	68.0	+0.1	No
8	North of US-101 SB Off Ramp	67.2	67.2	+0.0	No
8	South of US-101 SB Off Ramp	67.7	67.7	+0.0	No
Rose Avenue					
1	North of Camino Del Sol	66.2	66.6	+0.4	No
1	South of Camino Del Sol	66.0	66.3	+0.3	No
2	North of Cesar Chavez Drive	66.7	66.9	+0.2	No
2	South of Cesar Chavez Drive	66.5	66.6	+0.1	No
3	North of Gonzalez Road	68.9	69.1	+0.2	No
3	South of Gonzalez Road	68.4	68.7	+0.3	No
4	North of US-101 SB Off Ramp	75.2	75.3	+0.1	No
4	South of US-101 SB Off Ramp	68.7	68.8	+0.1	No
5	North of US-101 NB Off Ramp	74.5	74.6	+0.1	No
5	South of US-101 NB Off Ramp	67.9	67.9	+0.0	No
11	North of 5th Street	66.9	67.1	+0.2	No
11	South of 5th Street	66.0	66.1	+0.1	No
Santa Clara Avenue					
9	North of Auto Center Dr./ US-101 NB Off Ramp	64.3	64.3	+0.0	No
9	South of Auto Center Dr./ US-101 NB Off Ramp	65.7	65.7	+0.0	No
Saviers Road					
13	North of Saviers Road	65.9	65.9	+0.0	No
13	South of Saviers Road	66.9	66.9	+0.0	No
Oxnard Boulevard					
14	North of 5th Street	66.9	66.9	+0.0	No
14	South of 5th Street	66.7	66.7	+0.0	No
15	North of Gonzalez Road	69.2	69.2	+0.0	No
15	South of Gonzalez Road	68.7	68.7	+0.0	No
16	North of Vineyard Avenue	67.6	67.6	+0.0	No
16	South of Vineyard Avenue	69.6	69.6	+0.0	No

Source: Refer to **Appendix 2.0** for Roadway Noise Worksheets.

Cumulative plus Project

Table 10: Cumulative plus Project Roadway Noise Levels illustrates the difference in traffic noise between cumulative conditions and cumulative plus Project conditions and represents the increase in noise attributable to Project-related traffic (refer to **Appendix 2.0: Roadway Noise worksheets** for traffic noise worksheets containing the information summarized in Table 10.) As shown in **Table 10**, the maximum noise level increase along the analyzed roadways were 0.7 dBA CNEL along Cesar Chavez Drive to the east of Rose Avenue. Consequently, Project-related traffic would not cause noise levels along the analyzed roadways to increase by more than 1.0 dBA. Thus, the proposed Project would not result in a permanent increase in noise levels above ambient levels in the vicinity of the Project site. Vehicular related noise impacts would not be considered significant.

TABLE 10: CUMULATIVE PLUS PROJECT ROADWAY NOISE LEVELS

Intersection Number	Roadway Segment	Cumulative, dBA CNEL		Difference	Significant Impact?
		Without Project	With Project		
Camino Del Sol					
1	East of Rose Avenue	64.2	64.3	+0.1	No
1	West of Rose Avenue	66.7	66.9	+0.2	No
7	East of Rice Avenue	62.1	62.1	+0.0	No
7	West of Rice Avenue	67.5	67.6	+0.1	No
Cesar Chavez Drive					
2	East of Rose Avenue	56.4	57.1	+0.7	No
2	West of Rose Avenue	60.8	60.8	+0.0	No
Gonzalez Road					
3	East of Rose Avenue	68.2	68.2	+0.0	No
3	West of Rose Avenue	69.5	69.5	+0.0	No
6	West of Rice Avenue	66.5	66.7	+0.2	No
15	East of Oxnard Boulevard	69.7	69.7	+0.0	No
15	West of Oxnard Boulevard	67.2	67.2	+0.0	No
US-101 SB Off Ramp					
4	East of Rose Avenue	59.6	59.6	+0.0	No
4	West of Rose Avenue	66.6	66.7	+0.1	No
8	East of Rice Avenue	61.5	61.5	+0.0	No
8	West of Rice Avenue	67.4	67.4	+0.0	No
Auto Center Drive/US-101 NB Off Ramp					
5	East of Rose Avenue	63.0	63.0	+0.0	No
5	West of Rose Avenue	58.7	58.7	+0.0	No
9	East of Santa Clara Avenue	64.7	64.7	+0.0	No
9	West of Santa Clara Avenue	69.1	69.2	+0.1	No
5th Street					
10	East of Rose Avenue	66.7	66.8	+0.1	No
10	West of Rose Avenue	66.8	66.8	+0.0	No
11	East of Rice Avenue	66.8	66.8	+0.0	No

TABLE 10: CUMULATIVE PLUS PROJECT ROADWAY NOISE LEVELS					
Intersection Number	Roadway Segment	Cumulative, dBA CNEL		Difference	Significant Impact?
		Without Project	With Project		
11	West of Rice Avenue	66.7	66.7	+0.0	No
14	East of Oxnard Boulevard	65.3	65.4	+0.1	No
14	West of Oxnard Boulevard	64.6	64.7	+0.1	No
Wooley Road					
12	East of Rose Avenue	59.6	59.6	+0.0	No
12	West of Rose Avenue	63.5	63.6	+0.0	No
13	East of Saviers Road	66.1	66.2	+0.1	No
13	West of Saviers Road	65.7	65.7	+0.0	No
Vineyard Avenue					
16	East of Oxnard Boulevard	66.7	66.7	+0.0	No
16	West of Oxnard Boulevard	67.5	67.5	+0.0	No
Rice Avenue					
6	North of Gonzalez Road	70.5	70.6	+0.1	No
6	South of Gonzalez Road	69.8	69.8	+0.0	No
7	North of Camino Del Sol	69.1	69.1	+0.0	No
7	South of Camino Del Sol	68.7	68.8	+0.1	No
8	North of US-101 SB Off Ramp	67.1	67.1	+0.0	No
8	South of US-101 SB Off Ramp	68.0	68.0	+0.0	No
Rose Avenue					
1	North of Camino Del Sol	66.6	66.9	+0.3	No
1	South of Camino Del Sol	66.7	66.9	+0.2	No
2	North of Cesar Chavez Drive	67.0	67.2	+0.2	No
2	South of Cesar Chavez Drive	66.9	67.0	+0.1	No
3	North of Gonzalez Road	69.4	69.5	+0.1	No
3	South of Gonzalez Road	68.8	69.0	+0.2	No
4	North of US-101 SB Off Ramp	75.5	75.6	+0.1	No
4	South of US-101 SB Off Ramp	68.8	68.9	+0.1	No
5	North of US-101 NB Off Ramp	74.8	74.8	+0.0	No
5	South of US-101 NB Off Ramp	68.1	68.1	+0.0	No
11	North of 5th Street	67.5	67.6	+0.1	No
11	South of 5th Street	66.8	66.9	+0.1	No
Santa Clara Avenue					
9	North of Auto Center Dr./ US-101 NB Off Ramp	64.7	64.7	+0.0	No
9	South of Auto Center Dr./ US-101 NB Off Ramp	66.0	66.1	+0.1	No
Saviers Road					
13	North of Wooley Road	66.1	66.1	+0.0	No
13	South of Wooley Road	67.3	67.3	+0.0	No

TABLE 10: CUMULATIVE PLUS PROJECT ROADWAY NOISE LEVELS					
Intersection Number	Roadway Segment	Cumulative, dBA CNEL		Difference	Significant Impact?
		Without Project	With Project		
Oxnard Boulevard					
14	North of 5th Street	67.2	67.2	+0.0	No
14	South of 5th Street	67.0	67.0	+0.0	No
15	North of Gonzalez Road	69.9	69.9	+0.0	No
15	South of Gonzalez Road	69.0	69.0	+0.0	No
16	North of Vineyard Avenue	68.2	68.2	+0.0	No
16	South of Vineyard Avenue	70.2	70.2	+0.0	No

Source: Refer to **Appendix 2.0** for Roadway Noise Worksheets.

3. Cumulative

For purposes of this analysis, development of other projects in the sub-region are considered to contribute to cumulative noise impacts. Noise, by definition, is a localized phenomenon and drastically reduces as distance from the source increases. As a result, only related projects and growth in the general area of the Project Site (within 500 feet) would contribute to cumulative noise impacts. Cumulative construction-noise impacts have the potential to occur when multiple construction projects in the local area generate noise within the same time frame and contribute to the local ambient noise environment. It is expected that, as with the Project, related projects would implement noise reduction techniques such as mufflers, shields, sound barriers, which would minimize any noise-related nuisances during construction. In addition, distance attenuation and intervening structures would further reduce construction noise levels and not result in noticeable increases. Therefore, the combined construction noise impacts of related projects within 500 feet and the Project's contribution would not cause a significant cumulative impact. Additionally, traffic noise from cumulative Projects was found to not to have a substantial contribution to any cumulatively significant traffic noise impact.

G. MITIGATION MEASURES

Noise levels generated by on-site construction equipment can be reduced via **Mitigation Measure MM NOI-1**, which are existing requirements and reasonably anticipated standard conditions based on local, State, or federal regulations and laws that are frequently required independently of CEQA review and serve to offset or prevent specific impacts.

NOI-1 Construction Noise Reduction Measures

The proposed project shall comply with the City of Oxnard Noise Element and any subsequent ordinance that prohibit the emission or creation of noise beyond certain levels at adjacent uses.

To implement **MM-NOI-1** and reduce construction noise, the Contractor would be required to implement reduction measures, prior to the start of construction activities, as determined by the City of Oxnard, which may include but are not limited to:

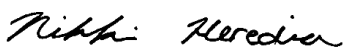
- Install a temporary 8-foot-tall construction noise barrier between the Project Site and the single-family residential uses along Milagro Place and Gibraltar Street and along Cesar Chavez Drive, as well as between the Project Site and Del Sol High School.
- Retrofit mobile equipment with optimal muffler systems capable of reducing construction noise levels by 10 dBA or more.
- Enclose stationary equipment with shields capable of achieve noise reductions of up to 10 dBA.
- Locate all construction areas for staging and warming up as far as possible from adjacent residential buildings and sensitive receivers.

H. CERTIFICATION

The contents of this Noise Study represent an accurate depiction of the noise environment and impacts associated with the proposed Maulhardt-Stiles Sub-Neighborhood Plan Project. The information contained in this Noise Study is based on the best available information at the time of preparation. If you have any questions, please contact me directly at (818) 415-7274.

Sincerely,

Christ Kirikian, INCE
Partner | Director of Air Quality & Acoustics
ckirikian@meridianconsultantsllc.com



Nikki Heredia | Project Environmental Scientist
nheredia@meridianconsultantsllc.com

APPENDIX 1.0

Noise Monitoring Data Sheets

Monitoring Location: Site 1
Monitoring Date: 9/24/24

Monitoring Period

Time	LAeq	LASmax	LASmin
10:22:09	62.2	74.5	47.9
10:23:09	52.9	62.2	46
10:24:09	55.0	59.2	48.4
10:25:09	54.7	64.2	48.5
10:26:09	50.6	55	46.5
10:27:09	57.2	62.9	46.8
10:28:09	58.6	65.9	52
10:29:09	57.0	64.6	48.4
10:30:09	54.3	61.7	46.3
10:31:09	49.2	55.9	44.4
10:32:09	53.4	57.9	46.8
10:33:09	48.3	54	45.9
10:34:09	54.0	59.5	48
10:35:09	54.8	60.9	47.5
10:36:09	55.0	58.9	49.1
10:37:09	53.8	57.8	48.3

Monitoring Location: Site 2
Monitoring Date: 9/24/24

Monitoring Period

Time	LAeq	LASmax	LASmin
9:33:59	58.5	60.1	57.9
9:34:59	60.8	70.9	58.1
9:35:59	58.8	59.7	58.3
9:36:59	58.8	59.8	58.3
9:37:59	59	59.4	58.5
9:38:59	59.3	60.6	58.7
9:39:59	67.2	79.8	59.1
9:40:59	59.7	60.5	58.9
9:41:59	59.8	61.7	58.9
9:42:59	63.4	77.1	59.2
9:43:59	60.8	72.1	58
9:44:59	61.3	73.1	58
9:45:59	60.4	71.4	58
9:46:59	60.2	70	57.6
9:47:59	60.7	65.8	58.8
9:48:59	59.3	59.4	59.1

15-minute LAeq **61.2**

Monitoring Location: Site 3
Monitoring Date: 9/24/24

Monitoring Period

Time	LAeq	LASmax	LASmin
9:12:39	64.6	74.0	48.8
9:13:39	66.2	72.6	48.4
9:14:39	63.1	72.7	45.2
9:15:39	68.3	75.3	55.4
9:16:39	66.3	75.7	46.0
9:17:39	63.9	72.3	46.4
9:18:39	67.3	76.2	45.1
9:19:39	61.9	72.5	42.9
9:20:39	69.7	76.7	50.4
9:21:39	66.1	78.4	41.1
9:22:39	64.4	75.3	42.2
9:23:39	69.2	75.4	41.9
9:24:39	66.9	73.0	50.8
9:25:39	63.3	70.9	51.3
9:26:39	69.5	77.8	53.9
9:27:39	61.9	72.4	46.3

15-minute LAeq **66.5**

Monitoring Location: Site 4
Monitoring Date: 9/24/24

Monitoring Period

Time	LAeq	LASmax	LASmin
11:20:40	66.7	75.4	56.4
11:21:40	59.2	65.3	41.4
11:22:40	62.8	70.4	43.3
11:23:40	59.1	67.6	49.5
11:24:40	69.1	80	47.2
11:25:40	65.4	75.7	51.5
11:26:40	60.6	68.5	52.7
11:27:40	65.3	72.5	56.6
11:28:40	58.9	66.1	48.4
11:29:40	65.3	73.8	43.7
11:30:40	57.6	66.4	41.7
11:31:40	63.5	69.1	46.4
11:32:40	62.1	69.1	43.9
11:33:40	59.9	66.4	50.3
11:34:40	67.4	73.9	57.1
11:35:40	74.1	75.4	70.8

15-minute LAeq **66.1**

Monitoring Location: Site 5
Monitoring Date: 9/24/24

Monitoring Period

Time	LAeq	LASmax	LASmin
11:01:28	71.3	78	52.5
11:02:28	65.5	72.2	51.3
11:03:28	71.2	76.8	56.7
11:04:28	62.8	73.8	46.6
11:05:28	72.6	85.8	47.7
11:06:28	68.6	77.4	56.1
11:07:28	66.0	73.3	48.3
11:08:28	69.7	78.7	50.6
11:09:28	64.1	73	55.7
11:10:28	70.1	75.5	56.2
11:11:28	64.6	71.7	52.1
11:12:28	68.5	78.5	55.1
11:13:28	68.7	74.2	57.1
11:14:28	65.4	74	44.7
11:15:28	72.1	77.7	61.8
11:16:28	64.9	74.1	59.1

15-minute LAeq **68.9**

Monitoring Location: Site 6
Monitoring Date: 9/24/24

Monitoring Period

Time	LAeq	LASmax	LASmin
10:40:50	48.0	58.3	44.9
10:41:50	58.7	67.9	43.6
10:42:50	52.4	58	41.7
10:43:50	47.4	50.8	44.3
10:44:50	50.7	60	45.5
10:45:50	57.6	67.1	47.1
10:46:50	53.7	65.3	42.9
10:47:50	56.1	67.4	44.5
10:48:50	46.6	51.2	41.4
10:49:50	55.3	65.8	45.7
10:50:50	56.8	64.6	45.2
10:51:50	52.3	62.8	40.7
10:52:50	60.2	71.4	43.1
10:53:50	74.5	88.3	49
10:54:50	54.8	65.8	45.5
10:55:50	48.9	55.2	45

15-minute LAeq **63.1**

Monitoring Location: Site 4
Monitoring Date: 9/24/24

Monitoring Period

Time	LAeq	LASmax	LASmin
9:51:37	55.5	68	43.2
9:52:37	59.3	70.6	40.7
9:53:37	49.2	56.4	41.3
9:54:37	55.1	62.6	48.2
9:55:37	55.0	68	41.6
9:56:37	48.0	54.7	43
9:57:37	47.5	55.9	42.1
9:58:37	49.6	59.9	42.1
9:59:37	57.9	69.7	44.7
10:00:37	57.0	70.2	45.1
10:01:37	58.2	70	42.1
10:02:37	53.8	67	41.5
10:03:37	56.0	69.7	42.9
10:04:37	43.0	50.8	41.3
10:05:37	56.3	66.8	41.8
10:06:37	48.8	53.7	46.1

15-minute LAeq **55.0**

APPENDIX 2.0

Roadway Noise Worksheets

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 1

Rose Avenue & Camino Del Sol

Rose Avenue

Southbound	right	through	left
Existing 2025	55	848	145
Existing with Pro	55	931	169
Future 2028	56	927	296
Future with Proje	56	1,010	320
Existing 2025	136	1,073	115
Existing with Pro	136	1,138	135
Future 2028	139	1,159	158
Future with Proje	139	1,224	178

Camino Del Sol

Eastbound	left	through	right
Existing 2025	107	272	120
Existing with Pro	112	273	120
Future 2028	110	372	124
Future with Proje	115	373	124
Existing 2025	103	148	61
Existing with Pro	118	153	61
Future 2028	106	171	64
Future with Proje	121	176	64

Westbound	right	through	left
Existing 2025	110	161	108
Existing with Pro	120	161	108
Future 2028	192	164	243
Future with Proje	202	164	243
Existing 2025	82	308	82
Existing with Pro	112	308	82
Future 2028	127	314	220
Future with Proje	157	314	220

W N E S

Northbound	left	through	right
Existing 2025	141	932	93
Existing with Pro	141	963	93
Future 2028	144	1,022	329
Future with Proje	144	1,053	329
Existing 2025	109	1010	58
Existing with Pro	109	1108	58
Future 2028	111	1082	187
Future with Proje	111	1180	187

ADT

Road	Rose Avenue		Camino Del Sol	
Leg	North of	South of	East of	West of
Cross Street	Camino Del Sol		Rose Avenue	
Existing 2025	18,894.2	19,281.2	7,645.4	7,361.6
Existing with Pro	20,210.0	20,261.6	7,946.4	7,413.2
Future 2028	22,385.8	23,985.4	13,725.6	8,342.0
Future with Proje	23,701.6	24,965.8	14,026.6	8,393.6
Existing 2025	21,663.4	20,579.8	6,819.8	7,439.0
Existing with Pro	23,624.2	21,981.6	7,292.8	7,611.0
Future 2028	23,830.6	24,277.8	10,122.2	7,783.0
Future with Proje	25,791.4	25,679.6	10,595.2	7,955.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	dB(A) CNEL	Traffic Volumes: Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level: Dist	Ld: A	MT	HT	Adj	Le: A	MT	HT	Total	Ln: A	MT	HT	Total
Rose Avenue n/o Camino Del																																
Existing 2025		4	0	18,894	45	100	0	0	1.8%	0.7%	65.6	#####	####	####	297	118	17	4	26	11	69.3	77.6	82.1	-3.0	65.2	56.7	57.2	66.4	62.3	49.1	47.0	62.6	49.1	47.3	48.0	52.9
Existing with Project (2025)		4	0	20,210	45	100	0	0	1.8%	0.7%	65.9	#####	####	####	318	126	18	4	27	11	69.3	77.6	82.1	-3.0	65.5	57.0	57.5	66.7	62.6	49.4	47.3	62.9	49.4	47.5	48.3	53.2
Future 2028		4	0	22,386	45	100	0	0	1.8%	0.7%	66.3	#####	####	####	352	140	20	4	30	13	69.3	77.6	82.1	-3.0	66.0	57.4	57.9	67.1	63.0	49.9	47.8	63.3	49.8	48.0	48.7	53.7
Future with Project (2028)		4	0	23,702	45	100	0	0	1.8%	0.7%	66.6	#####	####	####	373	148	22	5	32	13	69.3	77.6	82.1	-3.0	66.2	57.7	58.2	67.4	63.2	50.1	48.0	63.6	50.1	48.2	49.0	53.9
Existing 2025		4	0	21,663	45	100	0	0	1.8%	0.7%	66.2	#####	####	####	341	135	20	4	29	12	69.3	77.6	82.1	-3.0	65.8	57.3	57.8	67.0	62.9	49.7	47.6	63.2	49.7	47.9	48.6	53.5
Existing with Project (2025)		4	0	23,624	45	100	0	0	1.8%	0.7%	66.6	#####	####	####	372	147	21	5	32	13	69.3	77.6	82.1	-3.0	66.2	57.7	58.2	67.3	63.2	50.1	48.0	63.6	50.0	48.2	48.9	53.9
Future 2028		4	0	23,831	45	100	0	0	1.8%	0.7%	66.6	#####	####	####	375	149	22	5	32	13	69.3	77.6	82.1	-3.0	66.3	57.7	58.2	67.4	63.3	50.1	48.1	63.6	50.1	48.3	49.0	53.9
Future with Project (2028)		4	0	25,791	45	100	0	0	1.8%	0.7%	66.9	#####	####	####	406	161	23	5	35	15	69.3	77.6	82.1	-3.0	66.6	58.1	58.6	67.7	63.6	50.5	48.4	63.9	50.4	48.6	49.3	54.3
Rose Avenue s/o Camino Del																																
Existing 2025		4	0	19,281	45	100	0	0	1.8%	0.7%	65.7	#####	####	####	303	120	18	4	26	11	69.3	77.6	82.1	-3.0	65.3	56.8	57.3	66.5	62.4	49.2	47.1	62.7	49.2	47.3	48.1	53.0
Existing with Project (2025)		4	0	20,262	45	100	0	0	1.8%	0.7%	65.9	#####	####	####	319	126	18	4	27	11	69.3	77.6	82.1	-3.0	65.5	57.0	57.5	66.7	62.6	49.4	47.3	62.9	49.4	47.6	48.3	53.2
Future 2028		4	0	23,985	45	100	0	0	1.8%	0.7%	66.6	#####	####	####	377	150	22	5	32	14	69.3	77.6	82.1	-3.0	66.3	57.7	58.2	67.4	63.3	50.2	48.1	63.6	50.1	48.3	49.0	54.0
Future with Project (2028)		4	0	24,966	45	100	0	0	1.8%	0.7%	66.8	#####	####	####	393	156	23	5	34	14	69.3	77.6	82.1	-3.0	66.5	57.9	58.4	67.6	63.5	50.3	48.3	63.8	50.3	48.5	49.2	54.1
Existing 2025		4	0	20,580	45	100	0	0	1.8%	0.7%	66.0	#####	####	####	324	128	19	4	28	12	69.3	77.6	82.1	-3.0	65.6	57.1	57.6	66.7	62.6	49.5	47.4	63.0	49.4	47.6	48.3	53.3
Existing with Project (2025)		4	0	21,982	45	100	0	0	1.8%	0.7%	66.3	#####	####	####	346	137	20	4	30	12	69.3	77.6	82.1	-3.0	65.9	57.4	57.9	67.0	62.9	49.8	47.7	63.2	49.7	47.9	48.6	53.6
Future 2028		4	0	24,278	45	100	0	0	1.8%	0.7%	66.7	#####	####	####	382	151	22	5	33	14	69.3	77.6	82.1	-3.0	66.3	57.8	58.3	67.5	63.4	50.2	48.1	63.7	50.2	48.3	49.1	54.0
Future with Project (2028)		4	0	25,680	45	100	0	0	1.8%	0.7%	66.9	#####	####	####	404	160	23	5	35	14	69.3	77.6	82.1	-3.0	66.6	58.0	58.5	67.7	63.6	50.5	48.4	63.9	50.4	48.6	49.3	54.3
Camino Del Sol e/o Rose																																
Existing 2025		4	0	7,645	45	100	0	0	1.8%	0.7%	61.7	5,940	971	734	120	48	7	2	10	4	69.3	77.6	82.1	-3.0	61.3	52.8	53.3	62.4	58.3	45.2	43.1	58.7	45.1	43.3	44.0	49.0
Existing with Project (2025)		4	0	7,946	45	100	0	0	1.8%	0.7%	61.8	6,174	####	763	125	50	7	2	11	4	69.3	77.6	82.1	-3.0	61.5	52.9	53.4	62.6	58.5	45.4	43.3	58.8	45.3	43.5	44.2	49.2
Future 2028		4	0	13,726	45	100	0	0	1.8%	0.7%	64.2	#####	####	####	216	86	12	3	19	8	69.3	77.6	82.1	-3.0	63.9	55.3	55.8	65.0	60.9	47.7	45.7	61.2	47.7	45.9	46.6	51.5
Future with Project (2028)		4	0	14,027	45	100	0	0	1.8%	0.7%	64.3	#####	####	####	221	87	13	3	19	8	69.3	77.6	82.1	-3.0	63.9	55.4	55.9	65.1	61.0	47.8	45.8	61.3	47.8	46.0	46.7	51.6
Existing 2025		4	0	6,820	45	100	0	0	1.8%	0.7%	61.2	5,299	866	655	107	43	6	1	9	4	69.3	77.6	82.1	-3.0	60.8	52.3	52.8	61.9	57.8	44.7	42.6	58.2	44.6	42.8	43.5	48.5
Existing with Project (2025)		4	0	7,293	45	100	0	0	1.8%	0.7%	61.5	5,667	926	700	115	45	7	1	10	4	69.3	77.6	82.1	-3.0	61.1	52.6	53.1	62.2	58.1	45.0	42.9	58.5	44.9	43.1	43.8	48.8
Future 2028		4	0	10,122	45	100	0	0	1.8%	0.7%	62.9	7,865	####	972	159	63	9	2	14	6	69.3	77.6	82.1	-3.0	62.5	54.0	54.5	63.7	59.6	46.4	44.3	59.9	46.4	44.5	45.3	50.2
Future with Project (2028)		4	0	10,595	45	100	0	0	1.8%	0.7%	63.1	8,232	####	####	167	66	10	2	14	6	69.3	77.6	82.1	-3.0	62.7	54.2	54.7	63.9	59.8	46.6	44.5	60.1	46.6	44.7	45.5	50.4
Camino Del Sol w/o Rose																																
Existing 2025		4	0	7,362	45	100	0	0	1.8%	0.7%	61.5	5,720	935	707	116	46	7	1	10	4	69.3	77.6	82.1	-3.0	61.1	52.6	53.1	62.3	58.2	45.0	43.0	58.5	45.0	43.2	43.9	48.8
Existing with Project (2025)		4	0	7,413	45	100	0	0	1.8%	0.7%	61.5	5,760	941	712	117	46	7	1	10	4	69.3	77.6	82.1	-3.0	61.2	52.6	53.1	62.3	58.2	45.1	43.0	58.5	45.0	43.2	43.9	48.9
Future 2028		4	0	8,342	45	100	0	0	1.8%	0.7%	62.0	6,482	####	801	131	52	8	2	11	5	69.3	77.6	82.1	-3.0	61.7	53.2	53.7	62.8	58.7	45.6	43.5	59.0	45.5	43.7	44.4	49.4
Future with Project (2028)		4	0	8,394	45	100	0	0	1.8%	0.7%	62.1	6,522	####	806	132	52	8	2	11	5	69.3	77.6	82.1	-3.0	61.7	53.2	53.7	62.9	58.7	45.6	43.5	59.1	45.5	43.7	44.5	49.4
Existing 2025		4	0	7,439	45	100	0	0	1.8%	0.7%	61.5	5,780	945	714	117	46	7	1	10	4	69.3	77.6	82.1	-3.0	61.2	52.7	53.2	62.3	58.2	45.1	43.0	58.5	45.0	43.2	43.9	48.9
Existing with Project (2025)		4	0	7,611	45	100	0	0	1.8%	0.7%	61.6	5,914	967	731	120	47	7	2	10	4	69.3	77.6	82.1	-3.0	61.3	52.8	53.3	62.4	58.3	45.2	43.1	58.6	45.1	43.3	44.0	49.0
Future 2028		4	0	7,783	45	100	0	0	1.8%	0.7%	61.7	6,047	988	747	122	49	7	2	11	4	69.3	77.6	82.1	-3.0	61.4	52.9	53.4	62.5	58.4	45.3	43.2	58.7	45.2	43.4	44.1	49.1
Future with Project (2028)		4	0	7,955	45	100	0	0	1.8%	0.7%	61.8	6,181	####	764	125	50	7	2	11	4	69.3	77.6	82.1	-3.0	61.5	53.0	53.5	62.6	58.5	45.4	43.3	58.8	45.3	43.5	44.2	49.2

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 2

Rose Avenue & Cesar Chavez Dr

Rose Avenue

Southbound

	right	through	left
Existing 2025	149	901	6
Existing with Pro	149	916	6
Future 2028	152	1,120	7
Future with Proje	152	1,135	7
Existing 2025	194	1,292	2
Existing with Pro	194	1,345	2
Future 2028	198	1,405	3
Future with Proje	198	1,458	3

Eastbound

	left	through	right
Existing 2025	270	38	122
Existing with Pro	270	38	122
Future 2028	275	39	125
Future with Proje	275	39	125
Existing 2025	105	12	30
Existing with Pro	105	12	30
Future 2028	107	13	31
Future with Proje	107	13	31

Westbound

	right	through	left
Existing 2025	19	44	110
Existing with Pro	66	44	110
Future 2028	20	45	121
Future with Proje	67	45	121
Existing 2025	17	63	121
Existing with Pro	57	63	123
Future 2028	18	65	142
Future with Proje	58	65	144

Cesar Chavez Dr

W E

S

N

Northbound

	left	through	right
Existing 2025	74	1,178	22
Existing with Pro	74	1,223	22
Future 2028	76	1,340	23
Future with Proje	76	1,385	23
Existing 2025	52	1150	20
Existing with Pro	52	1180	20
Future 2028	53	1255	21
Future with Proje	53	1285	21

ADT

Road	Rose Avenue		Cesar Chavez Dr	
Leg	North of	South of	East of	West of
Cross Street	Cesar Chavez Dr		Rose Avenue	
Existing 2025	21,697.8	20,700.2	2,055.4	5,994.2
Existing with Pro	22,618.0	21,216.2	2,459.6	5,994.2
Future 2028	25,060.4	24,123.0	2,193.0	6,123.2
Future with Proje	25,980.6	24,639.0	2,597.2	6,123.2
Existing 2025	23,736.0	22,919.0	2,021.0	3,921.6
Existing with Pro	24,793.8	23,650.0	2,382.2	3,921.6
Future 2028	25,679.6	25,000.2	2,253.2	4,016.2
Future with Proje	26,737.4	25,731.2	2,614.4	4,016.2

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	dB(A) CNEL	Traffic Volumes: Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level: A	MT	HT	Dist Adj	Ld: A	MT	HT	Total	Le: A	MT	HT	Total	Ln: A	MT	HT	Total
Rose Avenue n/o Cesar																																				
Existing 2025		4	0	21,698	40	75	0	0	1.8%	0.7%	66.3	#####	####	####	341	135	20	4	29	12	67.4	76.3	81.2	-1.7	65.7	57.8	58.6	67.0	62.7	50.2	48.5	63.1	49.5	48.4	49.4	53.9
Existing with Project (2025)		4	0	22,618	40	75	0	0	1.8%	0.7%	66.5	#####	####	####	356	141	21	4	31	13	67.4	76.3	81.2	-1.7	65.9	58.0	58.8	67.2	62.9	50.4	48.7	63.3	49.7	48.5	49.6	54.1
Future 2028		4	0	25,060	40	75	0	0	1.8%	0.7%	66.9	#####	####	####	394	156	23	5	34	14	67.4	76.3	81.2	-1.7	66.3	58.4	59.3	67.6	63.3	50.9	49.1	63.7	50.1	49.0	50.0	54.5
Future with Project (2028)		4	0	25,981	40	75	0	0	1.8%	0.7%	67.1	#####	####	####	409	162	24	5	35	15	67.4	76.3	81.2	-1.7	66.5	58.6	59.4	67.8	63.5	51.0	49.3	63.9	50.3	49.1	50.2	54.7
Existing 2025		4	0	23,736	40	75	0	0	1.8%	0.7%	66.7	#####	####	####	374	148	22	5	32	13	67.4	76.3	81.2	-1.7	66.1	58.2	59.0	67.4	63.1	50.6	48.9	63.5	49.9	48.8	49.8	54.3
Existing with Project (2025)		4	0	24,794	40	75	0	0	1.8%	0.7%	66.9	#####	####	####	390	155	23	5	34	14	67.4	76.3	81.2	-1.7	66.3	58.4	59.2	67.6	63.3	50.8	49.1	63.7	50.1	48.9	50.0	54.5
Future 2028		4	0	25,680	40	75	0	0	1.8%	0.7%	67.0	#####	####	####	404	160	23	5	35	14	67.4	76.3	81.2	-1.7	66.4	58.6	59.4	67.8	63.4	51.0	49.2	63.8	50.2	49.1	50.1	54.6
Future with Project (2028)		4	0	26,737	40	75	0	0	1.8%	0.7%	67.2	#####	####	####	421	167	24	5	36	15	67.4	76.3	81.2	-1.7	66.6	58.7	59.6	67.9	63.6	51.1	49.4	64.0	50.4	49.3	50.3	54.8
Rose Avenue s/o Cesar																																				
Existing 2025		4	0	20,700	40	75	0	0	1.8%	0.7%	66.1	#####	####	####	326	129	19	4	28	12	67.4	76.3	81.2	-1.7	65.5	57.6	58.4	66.8	62.5	50.0	48.3	62.9	49.3	48.2	49.2	53.7
Existing with Project (2025)		4	0	21,216	40	75	0	0	1.8%	0.7%	66.2	#####	####	####	334	132	19	4	29	12	67.4	76.3	81.2	-1.7	65.6	57.7	58.5	66.9	62.6	50.1	48.4	63.0	49.4	48.3	49.3	53.8
Future 2028		4	0	24,123	40	75	0	0	1.8%	0.7%	66.7	#####	####	####	380	150	22	5	33	14	67.4	76.3	81.2	-1.7	66.1	58.3	59.1	67.5	63.2	50.7	48.9	63.6	50.0	48.8	49.9	54.4
Future with Project (2028)		4	0	24,639	40	75	0	0	1.8%	0.7%	66.8	#####	####	####	388	154	22	5	33	14	67.4	76.3	81.2	-1.7	66.2	58.4	59.2	67.6	63.3	50.8	49.0	63.6	50.1	48.9	50.0	54.4
Existing 2025		4	0	22,919	40	75	0	0	1.8%	0.7%	66.5	#####	####	####	361	143	21	5	31	13	67.4	76.3	81.2	-1.7	65.9	58.1	58.9	67.3	62.9	50.5	48.7	63.3	49.7	48.6	49.6	54.1
Existing with Project (2025)		4	0	23,650	40	75	0	0	1.8%	0.7%	66.6	#####	####	####	372	148	21	5	32	13	67.4	76.3	81.2	-1.7	66.1	58.2	59.0	67.4	63.1	50.6	48.9	63.5	49.9	48.7	49.8	54.3
Future 2028		4	0	25,000	40	75	0	0	1.8%	0.7%	66.9	#####	####	####	393	156	23	5	34	14	67.4	76.3	81.2	-1.7	66.3	58.4	59.3	67.6	63.3	50.9	49.1	63.7	50.1	49.0	50.0	54.5
Future with Project (2028)		4	0	25,731	40	75	0	0	1.8%	0.7%	67.0	#####	####	####	405	160	23	5	35	15	67.4	76.3	81.2	-1.7	66.4	58.6	59.4	67.8	63.4	51.0	49.2	63.8	50.2	49.1	50.2	54.6
Cesar Chavez Dr e/o Rose																																				
Existing 2025		2	0	2,055	25	30	0	0	1.8%	0.7%	56.0	1,597	261	197	32	13	2	0	3	1	59.4	71.1	78.7	2.2	53.5	48.3	52.0	56.5	50.5	40.8	41.8	51.5	37.3	38.9	42.7	45.0
Existing with Project (2025)		2	0	2,460	25	30	0	0	1.8%	0.7%	56.8	1,911	312	236	39	15	2	0	3	1	59.4	71.1	78.7	2.2	54.3	49.1	52.8	57.3	51.3	41.5	42.6	52.2	38.1	39.7	43.5	45.8
Future 2028		2	0	2,193	25	30	0	0	1.8%	0.7%	56.3	1,704	279	211	35	14	2	0	3	1	59.4	71.1	78.7	2.2	53.8	48.6	52.3	56.8	50.8	41.0	42.1	51.7	37.6	39.2	43.0	45.3
Future with Project (2028)		2	0	2,597	25	30	0	0	1.8%	0.7%	57.0	2,018	330	249	41	16	2	1	4	1	59.4	71.1	78.7	2.2	54.5	49.4	53.0	57.5	51.5	41.8	42.8	52.5	38.3	39.9	43.8	46.1
Existing 2025		2	0	2,021	25	30	0	0	1.8%	0.7%	55.9	1,570	257	194	32	13	2	0	3	1	59.4	71.1	78.7	2.2	53.4	48.3	51.9	56.5	50.4	40.7	41.7	51.4	37.3	38.8	42.7	45.0
Existing with Project (2025)		2	0	2,382	25	30	0	0	1.8%	0.7%	56.7	1,851	303	229	37	15	2	0	3	1	59.4	71.1	78.7	2.2	54.1	49.0	52.6	57.2	51.2	41.4	42.4	52.1	38.0	39.5	43.4	45.7
Future 2028		2	0	2,253	25	30	0	0	1.8%	0.7%	56.4	1,751	286	216	35	14	2	0	3	1	59.4	71.1	78.7	2.2	53.9	48.7	52.4	56.9	50.9	41.2	42.2	51.9	37.7	39.3	43.1	45.4
Future with Project (2028)		2	0	2,614	25	30	0	0	1.8%	0.7%	57.1	2,031	332	251	41	16	2	1	4	1	59.4	71.1	78.7	2.2	54.5	49.4	53.0	57.6	51.6	41.8	42.9	52.5	38.4	39.9	43.8	46.1
Cesar Chavez Dr w/o Rose																																				
Existing 2025		2	0	5,994	25	30	0	0	1.8%	0.7%	60.7	4,657	761	575	94	37	5	1	8	3	59.4	71.1	78.7	2.2	58.2	53.0	56.6	61.2	55.2	45.4	46.5	56.1	42.0	43.5	47.4	49.7
Existing with Project (2025)		2	0	5,994	25	30	0	0	1.8%	0.7%	60.7	4,657	761	575	94	37	5	1	8	3	59.4	71.1	78.7	2.2	58.2	53.0	56.6	61.2	55.2	45.4	46.5	56.1	42.0	43.5	47.4	49.7
Future 2028		2	0	6,123	25	30	0	0	1.8%	0.7%	60.8	4,758	778	588	96	38	6	1	8	3	59.4	71.1	78.7	2.2	58.2	53.1	56.7	61.3	55.3	45.5	46.5	56.2	42.1	43.6	47.5	49.8
Future with Project (2028)		2	0	6,123	25	30	0	0	1.8%	0.7%	60.8	4,758	778	588	96	38	6	1	8	3	59.4	71.1	78.7	2.2	58.2	53.1	56.7	61.3	55.3	45.5	46.5	56.2	42.1	43.6	47.5	49.8
Existing 2025		2	0	3,922	25	30	0	0	1.8%	0.7%	58.8	3,047	498	376	62	24	4	1	5	2	59.4	71.1	78.7	2.2	56.3	51.1	54.8	59.3	53.3	43.6	44.6	54.3	40.1	41.7	45.5	47.8
Existing with Project (2025)		2	0	3,922	25	30	0	0	1.8%	0.7%	58.8	3,047	498	376	62	24	4	1	5	2	59.4	71.1	78.7	2.2	56.3	51.1	54.8	59.3	53.3	43.6	44.6	54.3	40.1	41.7	45.5	47.8
Future 2028		2	0	4,016	25	30	0	0	1.8%	0.7%	58.9	3,121	510	386	63	25	4	1	5	2	59.4	71.1	78.7	2.2	56.4	51.2	54.9	59.4	53.4	43.7	44.7	54.4	40.2	41.8	45.6	48.0
Future with Project (2028)		2	0	4,016	25	30	0	0	1.8%	0.7%	58.9	3,121	510	386	63	25	4	1	5	2	59.4	71.1	78.7	2.2	56.4	51.2	54.9	59.4	53.4	43.7	44.7	54.4	40.2	41.8	45.6	48.0

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 3

Rose Avenue & Gonzalez Road

Rose Avenue

Southbound

	right	through	left
Existing 2025	310	887	246
Existing with Pro	310	911	246
Future 2028	394	1,049	257
Future with Proje	394	1,073	257
Existing 2025	481	1,246	144
Existing with Pro	481	1,324	144
Future 2028	534	1,317	149
Future with Proje	534	1,395	149

Eastbound

	left	through	right
Existing 2025	734	899	218
Existing with Pro	734	899	224
Future 2028	817	1,032	274
Future with Proje	817	1,032	280
Existing 2025	416	492	133
Existing with Pro	416	492	153
Future 2028	473	552	164
Future with Proje	473	552	184

Westbound

	right	through	left
Existing 2025	84	437	88
Existing with Pro	84	437	92
Future 2028	92	490	94
Future with Proje	92	490	98
Existing 2025	162	1,074	255
Existing with Pro	162	1,074	269
Future 2028	167	1,199	273
Future with Proje	167	1199	287

Gonzalez Road

W E

S N

Northbound

	left	through	right
Existing 2025	250	996	164
Existing with Pro	267	1,062	173
Future 2028	292	1,112	173
Future with Proje	309	1,178	182
Existing 2025	362	843	109
Existing with Pro	375	894	115
Future 2028	399	906	118
Future with Proje	412	957	124

ADT

Road	Rose Avenue		Gonzalez Road	
Leg	North of	South of	East of	West of
Cross Street	Gonzalez Road		Rose Avenue	
Existing 2025	28,010.2	22,385.8	16,494.8	24,492.8
Existing with Pro	28,784.2	23,469.4	16,606.6	24,690.6
Future 2028	32,000.6	25,748.4	18,386.8	28,371.4
Future with Proje	32,774.6	26,832.0	18,498.6	28,569.2
Existing 2025	28,311.2	25,352.8	19,229.6	25,438.8
Existing with Pro	29,420.6	26,918.0	19,401.6	25,722.6
Future 2028	30,495.6	27,322.2	21,138.8	28,560.6
Future with Proje	31,605.0	28,887.4	21,310.8	28,844.4

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME					Design Speed	Dist. from Center tc	Alpha	Barrier Attn.	Vehicle Mix Medium	Heavy	dB(A)	Traffic Volumes								Ref. Energy Level			Dist	Ld			Le			Ln			
Segment	Land Use	Lanes	Median Width	ADT Volume	(mph)	Receptor	Factor (1	dB(A)	Trucks	Trucks	CNEL	Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	A	MT	HT	Adj	A	MT	HT	Total	A	MT	HT	Total	A	MT	HT	Total
Rose Avenue n/o Gonzalez																																			
Existing 2025		6	0	28,010	45	75	0	0	1.8%	0.7%	68.9	#####	####	####	441	175	25	6	38	16	69.3	77.6	82.1	-1.5	68.5	60.0	60.5	69.6	65.5	52.4	50.3	65.9	52.3	50.5	51.2	56.2
Existing with Project (2025)		6	0	28,784	45	75	0	0	1.8%	0.7%	69.0	#####	####	####	453	180	26	6	39	16	69.3	77.6	82.1	-1.5	68.6	60.1	60.6	69.8	65.6	52.5	50.4	66.0	52.5	50.6	51.4	56.3
Future 2028		6	0	32,001	45	75	0	0	1.8%	0.7%	69.4	#####	####	####	504	200	29	6	43	18	69.3	77.6	82.1	-1.5	69.1	60.6	61.1	70.2	66.1	53.0	50.9	66.4	52.9	51.1	51.8	56.8
Future with Project (2028)		6	0	32,775	45	75	0	0	1.8%	0.7%	69.5	#####	####	####	516	204	30	7	44	18	69.3	77.6	82.1	-1.5	69.2	60.7	61.2	70.3	66.2	53.1	51.0	66.5	53.0	51.2	51.9	56.9
Existing 2025		6	0	28,311	45	75	0	0	1.8%	0.7%	68.9	#####	####	####	446	177	26	6	38	16	69.3	77.6	82.1	-1.5	68.6	60.0	60.5	69.7	65.6	52.4	50.4	65.9	52.4	50.6	51.3	56.2
Existing with Project (2025)		6	0	29,421	45	75	0	0	1.8%	0.7%	69.1	#####	####	####	463	183	27	6	40	17	69.3	77.6	82.1	-1.5	68.7	60.2	60.7	69.9	65.7	52.6	50.5	66.1	52.5	50.7	51.5	56.4
Future 2028		6	0	30,496	45	75	0	0	1.8%	0.7%	69.2	#####	####	####	480	190	28	6	41	17	69.3	77.6	82.1	-1.5	68.9	60.3	60.8	70.0	65.9	52.8	50.7	66.2	52.7	50.9	51.6	56.6
Future with Project (2028)		6	0	31,605	45	75	0	0	1.8%	0.7%	69.4	#####	####	####	497	197	29	6	43	18	69.3	77.6	82.1	-1.5	69.0	60.5	61.0	70.2	66.1	52.9	50.8	66.4	52.9	51.0	51.8	56.7
Rose Avenue s/o Gonzalez																																			
Existing 2025		6	0	22,386	45	75	0	0	1.8%	0.7%	67.9	#####	####	####	352	140	20	4	30	13	69.3	77.6	82.1	-1.5	67.5	59.0	59.5	68.7	64.6	51.4	49.3	64.9	51.4	49.5	50.3	55.2
Existing with Project (2025)		6	0	23,469	45	75	0	0	1.8%	0.7%	68.1	#####	####	####	369	146	21	5	32	13	69.3	77.6	82.1	-1.5	67.7	59.2	59.7	68.9	64.8	51.6	49.5	65.1	51.6	49.8	50.5	55.4
Future 2028		6	0	25,748	45	75	0	0	1.8%	0.7%	68.5	#####	####	####	405	161	23	5	35	15	69.3	77.6	82.1	-1.5	68.1	59.6	60.1	69.3	65.2	52.0	49.9	65.5	52.0	50.2	50.9	55.8
Future with Project (2028)		6	0	26,832	45	75	0	0	1.8%	0.7%	68.7	#####	####	####	422	167	24	5	36	15	69.3	77.6	82.1	-1.5	68.3	59.8	60.3	69.5	65.3	52.2	50.1	65.7	52.1	50.3	51.1	56.0
Existing 2025		6	0	25,353	45	75	0	0	1.8%	0.7%	68.4	#####	####	####	399	158	23	5	34	14	69.3	77.6	82.1	-1.5	68.1	59.5	60.0	69.2	65.1	52.0	49.9	65.4	51.9	50.1	50.8	55.8
Existing with Project (2025)		6	0	26,918	45	75	0	0	1.8%	0.7%	68.7	#####	####	####	424	168	24	5	36	15	69.3	77.6	82.1	-1.5	68.3	59.8	60.3	69.5	65.4	52.2	50.1	65.7	52.2	50.4	51.1	56.0
Future 2028		6	0	27,322	45	75	0	0	1.8%	0.7%	68.8	#####	####	####	430	170	25	5	37	15	69.3	77.6	82.1	-1.5	68.4	59.9	60.4	69.5	65.4	52.3	50.2	65.8	52.2	50.4	51.1	56.1
Future with Project (2028)		6	0	28,887	45	75	0	0	1.8%	0.7%	69.0	#####	####	####	455	180	26	6	39	16	69.3	77.6	82.1	-1.5	68.6	60.1	60.6	69.8	65.7	52.5	50.4	66.0	52.5	50.7	51.4	56.3
Gonzalez e/o Rose Avenue																																			
Existing 2025		6	0	16,495	30	40	0	0	1.8%	0.7%	67.1	#####	####	####	260	103	15	3	22	9	62.5	73.1	80.3	2.7	65.3	59.1	62.2	67.7	62.3	51.5	52.0	63.0	49.1	49.6	53.0	55.7
Existing with Project (2025)		6	0	16,607	30	40	0	0	1.8%	0.7%	67.1	#####	####	####	261	104	15	3	22	9	62.5	73.1	80.3	2.7	65.3	59.1	62.2	67.7	62.3	51.5	52.1	63.0	49.1	49.7	53.0	55.7
Future 2028		6	0	18,387	30	40	0	0	1.8%	0.7%	67.6	#####	####	####	289	115	17	4	25	10	62.5	73.1	80.3	2.7	65.8	59.6	62.7	68.1	62.8	52.0	52.5	63.5	49.6	50.1	53.4	56.2
Future with Project (2028)		6	0	18,499	30	40	0	0	1.8%	0.7%	67.6	#####	####	####	291	115	17	4	25	10	62.5	73.1	80.3	2.7	65.8	59.6	62.7	68.2	62.8	52.0	52.5	63.5	49.6	50.1	53.5	56.2
Existing 2025		6	0	19,230	30	40	0	0	1.8%	0.7%	67.8	#####	####	####	303	120	17	4	26	11	62.5	73.1	80.3	2.7	66.0	59.7	62.9	68.3	63.0	52.2	52.7	63.7	49.8	50.3	53.6	56.4
Existing with Project (2025)		6	0	19,402	30	40	0	0	1.8%	0.7%	67.8	#####	####	####	305	121	18	4	26	11	62.5	73.1	80.3	2.7	66.0	59.8	62.9	68.4	63.0	52.2	52.7	63.7	49.8	50.3	53.7	56.4
Future 2028		6	0	21,139	30	40	0	0	1.8%	0.7%	68.2	#####	####	####	333	132	19	4	29	12	62.5	73.1	80.3	2.7	66.4	60.2	63.3	68.7	63.4	52.6	53.1	64.1	50.2	50.7	54.0	56.8
Future with Project (2028)		6	0	21,311	30	40	0	0	1.8%	0.7%	68.2	#####	####	####	335	133	19	4	29	12	62.5	73.1	80.3	2.7	66.4	60.2	63.3	68.8	63.4	52.6	53.2	64.1	50.2	50.7	54.1	56.8
Gonzalez w/o Rose Avenue																																			
Existing 2025		6	0	24,493	30	40	0	0	1.8%	0.7%	68.8	#####	####	####	385	153	22	5	33	14	62.5	73.1	80.3	2.7	67.0	60.8	63.9	69.4	64.0	53.2	53.8	64.7	50.8	51.3	54.7	57.4
Existing with Project (2025)		6	0	24,691	30	40	0	0	1.8%	0.7%	68.8	#####	####	####	389	154	22	5	33	14	62.5	73.1	80.3	2.7	67.0	60.8	64.0	69.4	64.1	53.2	53.8	64.8	50.9	51.4	54.7	57.5
Future 2028		6	0	28,371	30	40	0	0	1.8%	0.7%	69.4	#####	####	####	446	177	26	6	38	16	62.5	73.1	80.3	2.7	67.6	61.4	64.6	70.0	64.7	53.9	54.4	65.4	51.5	52.0	55.3	58.1
Future with Project (2028)		6	0	28,569	30	40	0	0	1.8%	0.7%	69.5	#####	####	####	450	178	26	6	39	16	62.5	73.1	80.3	2.7	67.7	61.5	64.6	70.1	64.7	53.9	54.4	65.4	51.5	52.0	55.4	58.1
Existing 2025		6	0	25,439	30	40	0	0	1.8%	0.7%	69.0	#####	####	####	400	159	23	5	34	14	62.5	73.1	80.3	2.7	67.2	61.0	64.1	69.6	64.2	53.4	53.9	64.9	51.0	51.5	54.9	57.6
Existing with Project (2025)		6	0	25,723	30	40	0	0	1.8%	0.7%	69.0	#####	####	####	405	160	23	5	35	15	62.5	73.1	80.3	2.7	67.2	61.0	64.1	69.6	64.2	53.4	54.0	64.9	51.0	51.6	54.9	57.6
Future 2028		6	0	28,561	30	40	0	0	1.8%	0.7%	69.5	#####	####	####	449	178	26	6	39	16	62.5	73.1	80.3	2.7	67.7	61.5	64.6	70.1	64.7	53.9	54.4	65.4	51.5	52.0	55.4	58.1
Future with Project (2028)		6	0	28,844	30	40	0	0	1.8%	0.7%	69.5	#####	####	####	454	180	26	6	39	16	62.5	73.1	80.3	2.7	67.7	61.5	64.6	70.1	64.7	53.9	54.5	65.4	51.5	52.1	55.4	58.1

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 4

Rose Avenue & US-101 SB Off Ramp

Rose Avenue

Southbound

	right	through	left
Existing 2025	0	1,234	0
Existing with Pro	0	1,240	0
Future 2028	0	1,379	0
Future with Proje	0	1,385	0
Existing 2025	95	1,410	0
Existing with Pro	95	1,430	0
Future 2028	97	1,499	0
Future with Proje	97	1,519	0

Eastbound

	left	through	right
Existing 2025	208	0	585
Existing with Pro	208	0	603
Future 2028	245	0	683
Future with Proje	245	0	701
Existing 2025	328	0	894
Existing with Pro	328	0	952
Future 2028	345	0	947
Future with Proje	345	0	1,005

US-101 SB Off Ramp

Westbound

	right	through	left
Existing 2025	0	0	0
Existing with Pro	0	0	0
Future 2028	0	0	0
Future with Proje	0	0	0
Existing 2025	0	0	0
Existing with Pro	0	0	0
Future 2028	0	0	0
Future with Proje	0	0	0

W E S N

Northbound

	left	through	right
Existing 2025	0	1,771	0
Existing with Pro	0	1,837	0
Future 2028	0	1,979	0
Future with Proje	0	2,045	0
Existing 2025	0	1739	275
Existing with Pro	0	1790	275
Future 2028	0	1846	280
Future with Proje	0	1897	280

ADT

Road	Rose Avenue		US-101 SB Off Ramp	
Leg	North of	South of	East of	West of
Cross Street	US-101 SB Off Ramp		Rose Avenue	
Existing 2025	27,631.8	30,874.0	0.0	6,819.8
Existing with Pro	28,251.0	31,648.0	0.0	6,974.6
Future 2028	30,985.8	34,752.6	0.0	7,980.8
Future with Proje	31,605.0	35,526.6	0.0	8,135.6
Existing 2025	30,719.2	37,134.8	2,365.0	11,326.2
Existing with Pro	31,329.8	38,244.2	2,365.0	11,825.0
Future 2028	32,568.2	39,319.2	2,408.0	11,945.4
Future with Proje	33,178.8	40,428.6	2,408.0	12,444.2

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1)	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	dB(A) CNEL	Traffic Volumes: Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level: A	MT	HT	Dist Adj	Ld: A	MT	HT	Total	Le: A	MT	HT	Total	Ln: A	MT	HT	Total
Rose Avenue n/o US-101 SB																																				
Existing 2025		4	0	27,632	45	25	0	0	1.8%	0.7%	74.8	#####	####	####	435	172	25	5	37	16	69.3	77.6	82.1	4.5	74.4	65.9	66.4	75.6	71.5	58.3	56.2	71.8	58.3	56.4	57.2	62.1
Existing with Project (2025)		4	0	28,251	45	25	0	0	1.8%	0.7%	74.9	#####	####	####	445	176	26	6	38	16	69.3	77.6	82.1	4.5	74.5	66.0	66.5	75.7	71.5	58.4	56.3	71.9	58.4	56.5	57.3	62.2
Future 2028		4	0	30,986	45	25	0	0	1.8%	0.7%	75.3	#####	####	####	488	193	28	6	42	17	69.3	77.6	82.1	4.5	74.9	66.4	66.9	76.1	72.0	58.8	56.7	72.3	58.8	56.9	57.7	62.6
Future with Project (2028)		4	0	31,605	45	25	0	0	1.8%	0.7%	75.4	#####	####	####	497	197	29	6	43	18	69.3	77.6	82.1	4.5	75.0	66.5	67.0	76.1	72.0	58.9	56.8	72.4	58.8	57.0	57.7	62.7
Existing 2025		4	0	30,719	45	25	0	0	1.8%	0.7%	75.2	#####	####	####	483	192	28	6	42	17	69.3	77.6	82.1	4.5	74.9	66.4	66.9	76.0	71.9	58.8	56.7	72.2	58.7	56.9	57.6	62.6
Existing with Project (2025)		4	0	31,330	45	25	0	0	1.8%	0.7%	75.3	#####	####	####	493	195	28	6	42	18	69.3	77.6	82.1	4.5	75.0	66.4	66.9	76.1	72.0	58.9	56.8	72.3	58.8	57.0	57.7	62.7
Future 2028		4	0	32,568	45	25	0	0	1.8%	0.7%	75.5	#####	####	####	513	203	30	6	44	18	69.3	77.6	82.1	4.5	75.1	66.6	67.1	76.3	72.2	59.0	56.9	72.5	59.0	57.2	57.9	62.8
Future with Project (2028)		4	0	33,179	45	25	0	0	1.8%	0.7%	75.6	#####	####	####	522	207	30	7	45	19	69.3	77.6	82.1	4.5	75.2	66.7	67.2	76.4	72.2	59.1	57.0	72.6	59.1	57.2	58.0	62.9
Rose Avenue s/o US-101 SB																																				
Existing 2025		6	0	30,874	45	100	0	0	1.8%	0.7%	67.9	#####	####	####	486	193	28	6	42	17	69.3	77.6	82.1	-2.9	67.5	59.0	59.5	68.6	64.5	51.4	49.3	64.9	51.3	49.5	50.2	55.2
Existing with Project (2025)		6	0	31,648	45	100	0	0	1.8%	0.7%	68.0	#####	####	####	498	197	29	6	43	18	69.3	77.6	82.1	-2.9	67.6	59.1	59.6	68.7	64.6	51.5	49.4	65.0	51.4	49.6	50.3	55.3
Future 2028		6	0	34,753	45	100	0	0	1.8%	0.7%	68.4	#####	####	####	547	217	32	7	47	20	69.3	77.6	82.1	-2.9	68.0	59.5	60.0	69.2	65.0	51.9	49.8	65.4	51.8	50.0	50.8	55.7
Future with Project (2028)		6	0	35,527	45	100	0	0	1.8%	0.7%	68.5	#####	####	####	559	222	32	7	48	20	69.3	77.6	82.1	-2.9	68.1	59.6	60.1	69.2	65.1	52.0	49.9	65.5	51.9	50.1	50.9	55.8
Existing 2025		6	0	37,135	45	100	0	0	1.8%	0.7%	68.7	#####	####	####	584	232	34	7	50	21	69.3	77.6	82.1	-2.9	68.3	59.8	60.3	69.4	65.3	52.2	50.1	65.7	52.1	50.3	51.0	56.0
Existing with Project (2025)		6	0	38,244	45	100	0	0	1.8%	0.7%	68.8	#####	####	####	602	239	35	8	52	22	69.3	77.6	82.1	-2.9	68.4	59.9	60.4	69.6	65.5	52.3	50.2	65.8	52.3	50.5	51.2	56.1
Future 2028		6	0	39,319	45	100	0	0	1.8%	0.7%	68.9	#####	####	####	619	245	36	8	53	22	69.3	77.6	82.1	-2.9	68.6	60.0	60.5	69.7	65.6	52.4	50.4	65.9	52.4	50.6	51.3	56.3
Future with Project (2028)		6	0	40,429	45	100	0	0	1.8%	0.7%	69.0	#####	####	####	636	252	37	8	55	23	69.3	77.6	82.1	-2.9	68.7	60.1	60.6	69.8	65.7	52.6	50.5	66.0	52.5	50.7	51.4	56.4
US-101 SB Off Ramp e/o																																				
Existing 2025		2	0	0	45	50	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	0.0	####	####	####	####	####	####	####	####	####	####	####	####
Existing with Project (2025)		2	0	0	45	50	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	0.0	####	####	####	####	####	####	####	####	####	####	####	####
Future 2028		2	0	0	45	50	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	0.0	####	####	####	####	####	####	####	####	####	####	####	####
Future with Project (2028)		2	0	0	45	50	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	0.0	####	####	####	####	####	####	####	####	####	####	####	####
Existing 2025		2	0	2,365	45	50	0	0	1.8%	0.7%	59.5	1,838	300	227	37	15	2	0	3	1	69.3	77.6	82.1	0.0	59.2	50.7	51.2	60.3	56.2	43.1	41.0	56.5	43.0	41.2	41.9	46.9
Existing with Project (2025)		2	0	2,365	45	50	0	0	1.8%	0.7%	59.5	1,838	300	227	37	15	2	0	3	1	69.3	77.6	82.1	0.0	59.2	50.7	51.2	60.3	56.2	43.1	41.0	56.5	43.0	41.2	41.9	46.9
Future 2028		2	0	2,408	45	50	0	0	1.8%	0.7%	59.6	1,871	306	231	38	15	2	0	3	1	69.3	77.6	82.1	0.0	59.3	50.7	51.2	60.4	56.3	43.2	41.1	56.6	43.1	41.3	42.0	47.0
Future with Project (2028)		2	0	2,408	45	50	0	0	1.8%	0.7%	59.6	1,871	306	231	38	15	2	0	3	1	69.3	77.6	82.1	0.0	59.3	50.7	51.2	60.4	56.3	43.2	41.1	56.6	43.1	41.3	42.0	47.0
US-101 SB Off Ramp w/o																																				
Existing 2025		2	0	6,820	45	50	0	0	1.8%	0.7%	64.1	5,299	866	655	107	43	6	1	9	4	69.3	77.6	82.1	0.0	63.8	55.3	55.8	64.9	60.8	47.7	45.6	61.1	47.6	45.8	46.5	51.5
Existing with Project (2025)		2	0	6,975	45	50	0	0	1.8%	0.7%	64.2	5,419	886	670	110	44	6	1	9	4	69.3	77.6	82.1	0.0	63.9	55.4	55.9	65.0	60.9	47.8	45.7	61.2	47.7	45.9	46.6	51.6
Future 2028		2	0	7,981	45	50	0	0	1.8%	0.7%	64.8	6,201	####	766	126	50	7	2	11	5	69.3	77.6	82.1	0.0	64.5	55.9	56.4	65.6	61.5	48.4	46.3	61.8	48.3	46.5	47.2	52.2
Future with Project (2028)		2	0	8,136	45	50	0	0	1.8%	0.7%	64.9	6,321	####	781	128	51	7	2	11	5	69.3	77.6	82.1	0.0	64.6	56.0	56.5	65.7	61.6	48.4	46.4	61.9	48.4	46.6	47.3	52.2
Existing 2025		2	0	11,326	45	50	0	0	1.8%	0.7%	66.3	8,800	####	####	178	71	10	2	15	6	69.3	77.6	82.1	0.0	66.0	57.5	58.0	67.1	63.0	49.9	47.8	63.3	49.8	48.0	48.7	53.7
Existing with Project (2025)		2	0	11,825	45	50	0	0	1.8%	0.7%	66.5	9,188	####	####	186	74	11	2	16	7	69.3	77.6	82.1	0.0	66.2	57.6	58.1	67.3	63.2	50.1	48.0	63.5	50.0	48.2	48.9	53.9
Future 2028		2	0	11,945	45	50	0	0	1.8%	0.7%	66.6	9,282	####	####	188	75	11	2	16	7	69.3	77.6	82.1	0.0	66.2	57.7	58.2	67.4	63.2	50.1	48.0	63.6	50.0	48.2	49.0	53.9
Future with Project (2028)		2	0	12,444	45	50	0	0	1.8%	0.7%	66.7	9,669	####	####	196	78	11	2	17	7	69.3	77.6	82.1	0.0	66.4	57.9	58.4	67.5	63.4	50.3	48.2	63.7	50.2	48.4	49.1	54.1

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 5

Rose Avenue & US-101 NB Off Ramp

Rose Avenue

Southbound

	right	through	left
Existing 2025	0	1,082	0
Existing with Pro	0	1,088	0
Future 2028	0	1,234	0
Future with Proje	0	1,240	0
Existing 2025	446	1,191	0
Existing with Pro	446	1,211	0
Future 2028	454	1,269	0
Future with Proje	454	1,289	0

Eastbound

US-101 NB Off Ramp

	left	through	right
Existing 2025	0	0	0
Existing with Pro	0	0	0
Future 2028	0	0	0
Future with Proje	0	0	0
Existing 2025	0	0	0
Existing with Pro	0	0	0
Future 2028	0	0	0
Future with Proje	0	0	0

W N S E

Westbound

	right	through	left
Existing 2025	112	0	345
Existing with Pro	112	0	345
Future 2028	135	0	359
Future with Proje	135	0	359
Existing 2025	90	0	285
Existing with Pro	90	0	285
Future 2028	101	0	306
Future with Proje	101	0	306

Northbound

	left	through	right
Existing 2025	0	1,111	0
Existing with Pro	0	1,128	0
Future 2028	0	1,279	0
Future with Proje	0	1,296	0
Existing 2025	0	1316	800
Existing with Pro	0	1329	800
Future 2028	0	1396	815
Future with Proje	0	1409	815

ADT

Road	Rose Avenue		US-101 NB Off Ramp	
Leg	North of	South of	East of	West of
Cross Street	US-101 NB Off Ramp		Rose Avenue	
Existing 2025	19,823.0	21,826.8	3,930.2	0.0
Existing with Pro	20,020.8	22,024.6	3,930.2	0.0
Future 2028	22,772.8	24,699.2	4,248.4	0.0
Future with Proje	22,970.6	24,897.0	4,248.4	0.0
Existing 2025	26,169.8	30,891.2	10,105.0	3,835.6
Existing with Pro	26,453.6	31,175.0	10,105.0	3,835.6
Future 2028	27,692.0	32,559.6	10,509.2	3,904.4
Future with Proje	27,975.8	32,843.4	10,509.2	3,904.4

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Traffic Volumes Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level: A	MT	HT	Dist Adj	Ld A	MT	HT	Total	Le A	MT	HT	Total	Ln A	MT	HT	Total
Rose Avenue n/o US-101 NB																																			
Existing 2025		4	0	19,823	45	25	0	0	1.8%	0.7%	73.3	#####	####	####	312	124	18	4	27	11	69.3	77.6	82.1	4.5	73.0	64.5	65.0	74.1	70.0	56.9	54.8	70.3	56.8	55.0	55.7	60.7
Existing with Project (2025)		4	0	20,021	45	25	0	0	1.8%	0.7%	73.4	#####	####	####	315	125	18	4	27	11	69.3	77.6	82.1	4.5	73.0	64.5	65.0	74.2	70.1	56.9	54.8	70.4	56.9	55.0	55.8	60.7
Future 2028		4	0	22,773	45	25	0	0	1.8%	0.7%	73.9	#####	####	####	358	142	21	5	31	13	69.3	77.6	82.1	4.5	73.6	65.1	65.6	74.7	70.6	57.5	55.4	70.9	57.4	55.6	56.3	61.3
Future with Project (2028)		4	0	22,971	45	25	0	0	1.8%	0.7%	74.0	#####	####	####	361	143	21	5	31	13	69.3	77.6	82.1	4.5	73.6	65.1	65.6	74.8	70.7	57.5	55.4	71.0	57.5	55.6	56.4	61.3
Existing 2025		4	0	26,170	45	25	0	0	1.8%	0.7%	74.5	#####	####	####	412	163	24	5	35	15	69.3	77.6	82.1	4.5	74.2	65.7	66.2	75.3	71.2	58.1	56.0	71.5	58.0	56.2	56.9	61.9
Existing with Project (2025)		4	0	26,454	45	25	0	0	1.8%	0.7%	74.6	#####	####	####	416	165	24	5	36	15	69.3	77.6	82.1	4.5	74.2	65.7	66.2	75.4	71.3	58.1	56.0	71.6	58.1	56.3	57.0	61.9
Future 2028		4	0	27,692	45	25	0	0	1.8%	0.7%	74.8	#####	####	####	436	173	25	6	37	16	69.3	77.6	82.1	4.5	74.4	65.9	66.4	75.6	71.5	58.3	56.2	71.8	58.3	56.5	57.2	62.1
Future with Project (2028)		4	0	27,976	45	25	0	0	1.8%	0.7%	74.8	#####	####	####	440	174	25	6	38	16	69.3	77.6	82.1	4.5	74.5	66.0	66.5	75.6	71.5	58.4	56.3	71.8	58.3	56.5	57.2	62.2
Rose Avenue s/o US-101 NB																																			
Existing 2025		6	0	21,827	45	100	0	0	1.8%	0.7%	66.4	#####	####	####	343	136	20	4	30	12	69.3	77.6	82.1	-2.9	66.0	57.5	58.0	67.1	63.0	49.9	47.8	63.4	49.8	48.0	48.7	53.7
Existing with Project (2025)		6	0	22,025	45	100	0	0	1.8%	0.7%	66.4	#####	####	####	347	137	20	4	30	12	69.3	77.6	82.1	-2.9	66.0	57.5	58.0	67.2	63.1	49.9	47.8	63.4	49.9	48.1	48.8	53.7
Future 2028		6	0	24,699	45	100	0	0	1.8%	0.7%	66.9	#####	####	####	389	154	22	5	33	14	69.3	77.6	82.1	-2.9	66.5	58.0	58.5	67.7	63.6	50.4	48.3	63.9	50.4	48.6	49.3	54.2
Future with Project (2028)		6	0	24,897	45	100	0	0	1.8%	0.7%	66.9	#####	####	####	392	155	23	5	34	14	69.3	77.6	82.1	-2.9	66.6	58.0	58.5	67.7	63.6	50.5	48.4	63.9	50.4	48.6	49.3	54.3
Existing 2025		6	0	30,891	45	100	0	0	1.8%	0.7%	67.9	#####	####	####	486	193	28	6	42	17	69.3	77.6	82.1	-2.9	67.5	59.0	59.5	68.6	64.5	51.4	49.3	64.9	51.3	49.5	50.2	55.2
Existing with Project (2025)		6	0	31,175	45	100	0	0	1.8%	0.7%	67.9	#####	####	####	491	194	28	6	42	18	69.3	77.6	82.1	-2.9	67.6	59.0	59.5	68.7	64.6	51.4	49.4	64.9	51.4	49.6	50.3	55.2
Future 2028		6	0	32,560	45	100	0	0	1.8%	0.7%	68.1	#####	####	####	512	203	30	6	44	18	69.3	77.6	82.1	-2.9	67.7	59.2	59.7	68.9	64.8	51.6	49.5	65.1	51.6	49.8	50.5	55.4
Future with Project (2028)		6	0	32,843	45	100	0	0	1.8%	0.7%	68.1	#####	####	####	517	205	30	7	44	19	69.3	77.6	82.1	-2.9	67.8	59.2	59.7	68.9	64.8	51.7	49.6	65.1	51.6	49.8	50.5	55.5
US-101 NB Off Ramp e/o																																			
Existing 2025		2	0	3,930	45	100	0	0	1.8%	0.7%	58.7	3,054	499	377	62	25	4	1	5	2	69.3	77.6	82.1	-3.1	58.4	49.8	50.3	59.5	55.4	42.2	40.2	55.7	42.2	40.4	41.1	46.1
Existing with Project (2025)		2	0	3,930	45	100	0	0	1.8%	0.7%	58.7	3,054	499	377	62	25	4	1	5	2	69.3	77.6	82.1	-3.1	58.4	49.8	50.3	59.5	55.4	42.2	40.2	55.7	42.2	40.4	41.1	46.1
Future 2028		2	0	4,248	45	100	0	0	1.8%	0.7%	59.0	3,301	540	408	67	26	4	1	6	2	69.3	77.6	82.1	-3.1	58.7	50.2	50.7	59.8	55.7	42.6	40.5	56.0	42.5	40.7	41.4	46.4
Future with Project (2028)		2	0	4,248	45	100	0	0	1.8%	0.7%	59.0	3,301	540	408	67	26	4	1	6	2	69.3	77.6	82.1	-3.1	58.7	50.2	50.7	59.8	55.7	42.6	40.5	56.0	42.5	40.7	41.4	46.4
Existing 2025		2	0	10,105	45	100	0	0	1.8%	0.7%	62.8	7,852	####	970	159	63	9	2	14	6	69.3	77.6	82.1	-3.1	62.5	53.9	54.4	63.6	59.5	46.3	44.3	59.8	46.3	44.5	45.2	50.2
Existing with Project (2025)		2	0	10,105	45	100	0	0	1.8%	0.7%	62.8	7,852	####	970	159	63	9	2	14	6	69.3	77.6	82.1	-3.1	62.5	53.9	54.4	63.6	59.5	46.3	44.3	59.8	46.3	44.5	45.2	50.2
Future 2028		2	0	10,509	45	100	0	0	1.8%	0.7%	63.0	8,166	####	####	165	66	10	2	14	6	69.3	77.6	82.1	-3.1	62.6	54.1	54.6	63.8	59.7	46.5	44.4	60.0	46.5	44.6	45.4	50.3
Future with Project (2028)		2	0	10,509	45	100	0	0	1.8%	0.7%	63.0	8,166	####	####	165	66	10	2	14	6	69.3	77.6	82.1	-3.1	62.6	54.1	54.6	63.8	59.7	46.5	44.4	60.0	46.5	44.6	45.4	50.3
US-101 NB Off Ramp w/o																																			
Existing 2025		2	0	0	45	100	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	-3.1	####	####	####	####	####	####	####	####	####	####	####	####
Existing with Project (2025)		2	0	0	45	100	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	-3.1	####	####	####	####	####	####	####	####	####	####	####	####
Future 2028		2	0	0	45	100	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	-3.1	####	####	####	####	####	####	####	####	####	####	####	####
Future with Project (2028)		2	0	0	45	100	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	-3.1	####	####	####	####	####	####	####	####	####	####	####	####
Existing 2025		2	0	3,836	45	100	0	0	1.8%	0.7%	58.6	2,980	487	368	60	24	3	1	5	2	69.3	77.6	82.1	-3.1	58.3	49.7	50.2	59.4	55.3	42.1	40.1	55.6	42.1	40.3	41.0	45.9
Existing with Project (2025)		2	0	3,836	45	100	0	0	1.8%	0.7%	58.6	2,980	487	368	60	24	3	1	5	2	69.3	77.6	82.1	-3.1	58.3	49.7	50.2	59.4	55.3	42.1	40.1	55.6	42.1	40.3	41.0	45.9
Future 2028		2	0	3,904	45	100	0	0	1.8%	0.7%	58.7	3,034	496	375	61	24	4	1	5	2	69.3	77.6	82.1	-3.1	58.3	49.8	50.3	59.5	55.4	42.2	40.1	55.7	42.2	40.3	41.1	46.0
Future with Project (2028)		2	0	3,904	45	100	0	0	1.8%	0.7%	58.7	3,034	496	375	61	24	4	1	5	2	69.3	77.6	82.1	-3.1	58.3	49.8	50.3	59.5	55.4	42.2	40.1	55.7	42.2	40.3	41.1	46.0

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 6

Rice Avenue & Gonzales Road

Rice Avenue

Southbound	right	through	left
Existing 2025	953	1,360	0
Existing with Pro	971	1,360	0
Future 2028	1,003	1,981	0
Future with Proje	1,021	1,981	0
Existing 2025	723	1,240	3
Existing with Pro	781	1,240	3
Future 2028	765	1,482	4
Future with Proje	823	1,482	4

Eastbound	left	through	right
Existing 2025	644	0	243
Existing with Pro	685	0	243
Future 2028	682	0	340
Future with Proje	723	0	340
Existing 2025	920	0	357
Existing with Pro	956	0	357
Future 2028	974	0	387
Future with Proje	1,010	0	387

Gonzales Road

W E

S N

Westbound	right	through	left
Existing 2025	0	0	0
Existing with Pro	0	0	0
Future 2028	0	0	0
Future with Proje	0	0	0
Existing 2025	0	0	0
Existing with Pro	0	0	0
Future 2028	0	0	0
Future with Proje	0	0	0

Northbound	left	through	right
Existing 2025	282	1,157	0
Existing with Pro	282	1,157	0
Future 2028	305	1,366	0
Future with Proje	305	1,366	0
Existing 2025	426	1337	0
Existing with Pro	426	1337	0
Future 2028	517	1901	0
Future with Proje	517	1901	0

ADT

Road	Rice Avenue		Gonzales Road	
Leg	North of	South of	East of	West of
Cross Street	Gonzales Road		Rice Avenue	
Existing 2025	35,380.4	26,161.2	0.0	18,249.2
Existing with Pro	35,887.8	26,161.2	0.0	18,756.6
Future 2028	43,275.2	34,331.2	0.0	20,038.0
Future with Proje	43,782.6	34,331.2	0.0	20,545.4
Existing 2025	36,317.8	28,896.0	25.8	20,863.6
Existing with Pro	37,126.2	28,896.0	25.8	21,672.0
Future 2028	44,083.6	36,868.2	34.4	22,729.8
Future with Proje	44,892.0	36,868.2	34.4	23,538.2

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	dB(A) CNEL	Traffic Volumes: Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Levels: A	MT	HT	Dist Adj	Ld: A	MT	HT	Total	Le: A	MT	HT	Total	Ln: A	MT	HT	Total
Rice Avenue n/o Gonzales Rd																																				
Existing 2025		6	0	35,380	50	100	0	0	1.8%	0.7%	69.6	#####	####	####	557	221	32	7	48	20	71.1	78.8	83.0	-2.9	69.4	60.3	60.5	70.4	66.4	52.7	50.3	66.7	53.2	50.8	51.3	56.7
Existing with Project (2025)		6	0	35,888	50	100	0	0	1.8%	0.7%	69.6	#####	####	####	565	224	33	7	49	20	71.1	78.8	83.0	-2.9	69.5	60.3	60.6	70.4	66.5	52.8	50.4	66.8	53.3	50.9	51.3	56.7
Future 2028		6	0	43,275	50	100	0	0	1.8%	0.7%	70.5	#####	####	####	681	270	39	9	59	24	71.1	78.8	83.0	-2.9	70.3	61.2	61.4	71.3	67.3	53.6	51.2	67.6	54.1	51.7	52.1	57.6
Future with Project (2028)		6	0	43,783	50	100	0	0	1.8%	0.7%	70.5	#####	####	####	689	273	40	9	59	25	71.1	78.8	83.0	-2.9	70.3	61.2	61.4	71.3	67.4	53.6	51.2	67.6	54.2	51.8	52.2	57.6
Existing 2025		6	0	36,318	50	100	0	0	1.8%	0.7%	69.7	#####	####	####	572	227	33	7	49	20	71.1	78.8	83.0	-2.9	69.5	60.4	60.6	70.5	66.6	52.8	50.4	66.8	53.4	50.9	51.4	56.8
Existing with Project (2025)		6	0	37,126	50	100	0	0	1.8%	0.7%	69.8	#####	####	####	584	232	34	7	50	21	71.1	78.8	83.0	-2.9	69.6	60.5	60.7	70.6	66.6	52.9	50.5	66.9	53.5	51.0	51.5	56.9
Future 2028		6	0	44,084	50	100	0	0	1.8%	0.7%	70.5	#####	####	####	694	275	40	9	60	25	71.1	78.8	83.0	-2.9	70.4	61.2	61.4	71.3	67.4	53.7	51.3	67.7	54.2	51.8	52.2	57.6
Future with Project (2028)		6	0	44,892	50	100	0	0	1.8%	0.7%	70.6	#####	####	####	706	280	41	9	61	25	71.1	78.8	83.0	-2.9	70.5	61.3	61.5	71.4	67.5	53.7	51.4	67.8	54.3	51.9	52.3	57.7
Rice Avenue s/o Gonzales Rd																																				
Existing 2025		6	0	26,161	50	100	0	0	1.8%	0.7%	68.3	#####	####	####	412	163	24	5	35	15	71.1	78.8	83.0	-2.9	68.1	59.0	59.2	69.1	65.1	51.4	49.0	65.4	51.9	49.5	49.9	55.4
Existing with Project (2025)		6	0	26,161	50	100	0	0	1.8%	0.7%	68.3	#####	####	####	412	163	24	5	35	15	71.1	78.8	83.0	-2.9	68.1	59.0	59.2	69.1	65.1	51.4	49.0	65.4	51.9	49.5	49.9	55.4
Future 2028		6	0	34,331	50	100	0	0	1.8%	0.7%	69.4	#####	####	####	540	214	31	7	46	19	71.1	78.8	83.0	-2.9	69.3	60.2	60.4	70.3	66.3	52.6	50.2	66.6	53.1	50.7	51.1	56.5
Future with Project (2028)		6	0	34,331	50	100	0	0	1.8%	0.7%	69.4	#####	####	####	540	214	31	7	46	19	71.1	78.8	83.0	-2.9	69.3	60.2	60.4	70.3	66.3	52.6	50.2	66.6	53.1	50.7	51.1	56.5
Existing 2025		6	0	28,896	50	100	0	0	1.8%	0.7%	68.7	#####	####	####	455	180	26	6	39	16	71.1	78.8	83.0	-2.9	68.5	59.4	59.6	69.5	65.6	51.8	49.4	65.8	52.4	49.9	50.4	55.8
Existing with Project (2025)		6	0	28,896	50	100	0	0	1.8%	0.7%	68.7	#####	####	####	455	180	26	6	39	16	71.1	78.8	83.0	-2.9	68.5	59.4	59.6	69.5	65.6	51.8	49.4	65.8	52.4	49.9	50.4	55.8
Future 2028		6	0	36,868	50	100	0	0	1.8%	0.7%	69.8	#####	####	####	580	230	34	7	50	21	71.1	78.8	83.0	-2.9	69.6	60.5	60.7	70.6	66.6	52.9	50.5	66.9	53.4	51.0	51.4	56.9
Future with Project (2028)		6	0	36,868	50	100	0	0	1.8%	0.7%	69.8	#####	####	####	580	230	34	7	50	21	71.1	78.8	83.0	-2.9	69.6	60.5	60.7	70.6	66.6	52.9	50.5	66.9	53.4	51.0	51.4	56.9
Gonzales Rd e/o Rice Avenue																																				
Existing 2025		0	0	0	45	100	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	-3.1	####	####	####	####	####	####	####	####	####	####	####	####
Existing with Project (2025)		0	0	0	45	100	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	-3.1	####	####	####	####	####	####	####	####	####	####	####	####
Future 2028		0	0	0	45	100	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	-3.1	####	####	####	####	####	####	####	####	####	####	####	####
Future with Project (2028)		0	0	0	45	100	0	0	1.8%	0.7%	#NUM!	0	0	0	0	0	0	0	0	0	69.3	77.6	82.1	-3.1	####	####	####	####	####	####	####	####	####	####	####	####
Existing 2025		0	0	26	45	100	0	0	1.8%	0.7%	36.9	20	3	2	0	0	0	0	0	0	69.3	77.6	82.1	-3.1	36.5	28.0	28.5	37.7	33.6	20.4	18.3	33.9	20.4	18.5	19.3	24.2
Existing with Project (2025)		0	0	26	45	100	0	0	1.8%	0.7%	36.9	20	3	2	0	0	0	0	0	0	69.3	77.6	82.1	-3.1	36.5	28.0	28.5	37.7	33.6	20.4	18.3	33.9	20.4	18.5	19.3	24.2
Future 2028		0	0	34	45	100	0	0	1.8%	0.7%	38.1	27	4	3	1	0	0	0	0	0	69.3	77.6	82.1	-3.1	37.8	29.2	29.7	38.9	34.8	21.7	19.6	35.1	21.6	19.8	20.5	25.5
Future with Project (2028)		0	0	34	45	100	0	0	1.8%	0.7%	38.1	27	4	3	1	0	0	0	0	0	69.3	77.6	82.1	-3.1	37.8	29.2	29.7	38.9	34.8	21.7	19.6	35.1	21.6	19.8	20.5	25.5
Gonzales Rd w/o Rice																																				
Existing 2025		6	0	18,249	45	100	0	0	1.8%	0.7%	65.6	#####	####	####	287	114	17	4	25	10	69.3	77.6	82.1	-2.9	65.2	56.7	57.2	66.4	62.2	49.1	47.0	62.6	49.1	47.2	48.0	52.9
Existing with Project (2025)		6	0	18,757	45	100	0	0	1.8%	0.7%	65.7	#####	####	####	295	117	17	4	25	11	69.3	77.6	82.1	-2.9	65.3	56.8	57.3	66.5	62.4	49.2	47.1	62.7	49.2	47.4	48.1	53.0
Future 2028		6	0	20,038	45	100	0	0	1.8%	0.7%	66.0	#####	####	####	315	125	18	4	27	11	69.3	77.6	82.1	-2.9	65.6	57.1	57.6	66.8	62.7	49.5	47.4	63.0	49.5	47.6	48.4	53.3
Future with Project (2028)		6	0	20,545	45	100	0	0	1.8%	0.7%	66.1	#####	####	####	323	128	19	4	28	12	69.3	77.6	82.1	-2.9	65.7	57.2	57.7	66.9	62.8	49.6	47.5	63.1	49.6	47.8	48.5	53.4
Existing 2025		6	0	20,864	45	100	0	0	1.8%	0.7%	66.2	#####	####	####	328	130	19	4	28	12	69.3	77.6	82.1	-2.9	65.8	57.3	57.8	66.9	62.8	49.7	47.6	63.2	49.6	47.8	48.5	53.5
Existing with Project (2025)		6	0	21,672	45	100	0	0	1.8%	0.7%	66.3	#####	####	####	341	135	20	4	29	12	69.3	77.6	82.1	-2.9	66.0	57.4	57.9	67.1	63.0	49.9	47.8	63.3	49.8	48.0	48.7	53.7
Future 2028		6	0	22,730	45	100	0	0	1.8%	0.7%	66.5	#####	####	####	358	142	21	5	31	13	69.3	77.6	82.1	-2.9	66.2	57.6	58.1	67.3	63.2	50.1	48.0	63.5	50.0	48.2	48.9	53.9
Future with Project (2028)		6	0	23,538	45	100	0	0	1.8%	0.7%	66.7	#####	####	####	370	147	21	5	32	13	69.3	77.6	82.1	-2.9	66.3	57.8	58.3	67.5	63.4	50.2	48.1	63.7	50.2	48.3	49.1	54.0

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 7

Rice Avenue & Camino Del Sol

Camino Del Sol	left	through	right
Existing 2025	208	190	101
Existing with Pro	208	190	118
Future 2028	268	299	117
Future with Proje	268	299	134
Existing 2025	149	118	69
Existing with Pro	149	118	82
Future 2028	184	140	80
Future with Proje	184	140	93

Rice Avenue

Southbound	right	through	left
Existing 2025	119	1,164	183
Existing with Pro	119	1,164	183
Future 2028	122	1,291	187
Future with Proje	122	1,291	187
Existing 2025	210	1,194	45
Existing with Pro	210	1,194	45
Future 2028	214	1,516	46
Future with Proje	214	1,516	46

Northbound	left	through	right
Existing 2025	107	1,174	71
Existing with Pro	113	1,174	71
Future 2028	139	1,470	115
Future with Proje	145	1,470	115
Existing 2025	147	1301	16
Existing with Pro	167	1301	16
Future 2028	156	1487	25
Future with Proje	176	1487	25

Westbound	right	through	left
Existing 2025	51	67	42
Existing with Pro	51	67	42
Future 2028	52	84	49
Future with Proje	52	84	49
Existing 2025	214	287	98
Existing with Pro	214	287	98
Future 2028	218	387	137
Future with Proje	218	387	137

ADT

Road	Rice Avenue		Camino Del Sol	
Leg	North of	South of	East of	West of
Cross Street	Camino Del Sol		Rice Avenue	
Existing 2025	24,931.4	22,867.4	5,194.4	6,811.2
Existing with Pro	24,931.4	23,065.2	5,194.4	7,009.0
Future 2028	29,154.0	27,356.6	6,759.6	8,849.4
Future with Proje	29,154.0	27,554.4	6,759.6	9,047.2
Existing 2025	26,771.8	24,295.0	6,690.8	8,428.0
Existing with Pro	26,771.8	24,578.8	6,690.8	8,711.8
Future 2028	31,519.0	29,248.6	8,195.8	9,984.6
Future with Proje	31,519.0	29,532.4	8,195.8	10,268.4

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME												Traffic Volumes									Ref. Energy Level			Dist	Ld			Le			Ln			
Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	A	MT	HT	Adj	A	MT	HT	Total	A	MT	HT	Total	A	MT	HT	Total
Rice Avenue n/o Camino Del																																			
Existing 2025		6	0	24,931	50	100	0	0	1.8%	0.7%	68.1	#####	####	####	392	155	23	5	34	14	71.1	78.8	83.0	-2.9	67.9	58.8	59.0	68.9	64.9	51.2	48.8	65.2	51.7	49.3	49.7	55.2
Existing with Project (2025)		6	0	24,931	50	100	0	0	1.8%	0.7%	68.1	#####	####	####	392	155	23	5	34	14	71.1	78.8	83.0	-2.9	67.9	58.8	59.0	68.9	64.9	51.2	48.8	65.2	51.7	49.3	49.7	55.2
Future 2028		6	0	29,154	50	100	0	0	1.8%	0.7%	68.7	#####	####	####	459	182	27	6	39	16	71.1	78.8	83.0	-2.9	68.6	59.4	59.6	69.5	65.6	51.9	49.5	65.9	52.4	50.0	50.4	55.8
Future with Project (2028)		6	0	29,154	50	100	0	0	1.8%	0.7%	68.7	#####	####	####	459	182	27	6	39	16	71.1	78.8	83.0	-2.9	68.6	59.4	59.6	69.5	65.6	51.9	49.5	65.9	52.4	50.0	50.4	55.8
Existing 2025		6	0	26,772	50	100	0	0	1.8%	0.7%	68.4	#####	####	####	421	167	24	5	36	15	71.1	78.8	83.0	-2.9	68.2	59.1	59.3	69.2	65.2	51.5	49.1	65.5	52.0	49.6	50.0	55.5
Existing with Project (2025)		6	0	26,772	50	100	0	0	1.8%	0.7%	68.4	#####	####	####	421	167	24	5	36	15	71.1	78.8	83.0	-2.9	68.2	59.1	59.3	69.2	65.2	51.5	49.1	65.5	52.0	49.6	50.0	55.5
Future 2028		6	0	31,519	50	100	0	0	1.8%	0.7%	69.1	#####	####	####	496	197	29	6	43	18	71.1	78.8	83.0	-2.9	68.9	59.8	60.0	69.9	65.9	52.2	49.8	66.2	52.7	50.3	50.8	56.2
Future with Project (2028)		6	0	31,519	50	100	0	0	1.8%	0.7%	69.1	#####	####	####	496	197	29	6	43	18	71.1	78.8	83.0	-2.9	68.9	59.8	60.0	69.9	65.9	52.2	49.8	66.2	52.7	50.3	50.8	56.2
Rice Avenue s/o Camino Del																																			
Existing 2025		6	0	22,867	50	100	0	0	1.8%	0.7%	67.7	#####	####	####	360	143	21	5	31	13	71.1	78.8	83.0	-2.9	67.5	58.4	58.6	68.5	64.5	50.8	48.4	64.8	51.3	48.9	49.4	54.8
Existing with Project (2025)		6	0	23,065	50	100	0	0	1.8%	0.7%	67.7	#####	####	####	363	144	21	5	31	13	71.1	78.8	83.0	-2.9	67.6	58.4	58.6	68.5	64.6	50.8	48.5	64.9	51.4	49.0	49.4	54.8
Future 2028		6	0	27,357	50	100	0	0	1.8%	0.7%	68.5	#####	####	####	431	171	25	5	37	15	71.1	78.8	83.0	-2.9	68.3	59.2	59.4	69.3	65.3	51.6	49.2	65.6	52.1	49.7	50.1	55.6
Future with Project (2028)		6	0	27,554	50	100	0	0	1.8%	0.7%	68.5	#####	####	####	434	172	25	5	37	16	71.1	78.8	83.0	-2.9	68.3	59.2	59.4	69.3	65.4	51.6	49.2	65.6	52.2	49.7	50.2	55.6
Existing 2025		6	0	24,295	50	100	0	0	1.8%	0.7%	67.9	#####	####	####	382	152	22	5	33	14	71.1	78.8	83.0	-2.9	67.8	58.6	58.9	68.8	64.8	51.1	48.7	65.1	51.6	49.2	49.6	55.0
Existing with Project (2025)		6	0	24,579	50	100	0	0	1.8%	0.7%	68.0	#####	####	####	387	153	22	5	33	14	71.1	78.8	83.0	-2.9	67.8	58.7	58.9	68.8	64.9	51.1	48.7	65.1	51.7	49.2	49.7	55.1
Future 2028		6	0	29,249	50	100	0	0	1.8%	0.7%	68.7	#####	####	####	460	182	27	6	40	17	71.1	78.8	83.0	-2.9	68.6	59.5	59.7	69.6	65.6	51.9	49.5	65.9	52.4	50.0	50.4	55.9
Future with Project (2028)		6	0	29,532	50	100	0	0	1.8%	0.7%	68.8	#####	####	####	465	184	27	6	40	17	71.1	78.8	83.0	-2.9	68.6	59.5	59.7	69.6	65.7	51.9	49.5	65.9	52.5	50.0	50.5	55.9
Camino Del Sol e/o Rice																																			
Existing 2025		6	0	5,194	45	100	0	0	1.8%	0.7%	60.1	4,036	660	499	82	32	5	1	7	3	69.3	77.6	82.1	-2.9	59.8	51.2	51.7	60.9	56.8	43.7	41.6	57.1	43.6	41.8	42.5	47.5
Existing with Project (2025)		6	0	5,194	45	100	0	0	1.8%	0.7%	60.1	4,036	660	499	82	32	5	1	7	3	69.3	77.6	82.1	-2.9	59.8	51.2	51.7	60.9	56.8	43.7	41.6	57.1	43.6	41.8	42.5	47.5
Future 2028		6	0	6,760	45	100	0	0	1.8%	0.7%	61.3	5,252	858	649	106	42	6	1	9	4	69.3	77.6	82.1	-2.9	60.9	52.4	52.9	62.0	57.9	44.8	42.7	58.3	44.7	42.9	43.6	48.6
Future with Project (2028)		6	0	6,760	45	100	0	0	1.8%	0.7%	61.3	5,252	858	649	106	42	6	1	9	4	69.3	77.6	82.1	-2.9	60.9	52.4	52.9	62.0	57.9	44.8	42.7	58.3	44.7	42.9	43.6	48.6
Existing 2025		6	0	6,691	45	100	0	0	1.8%	0.7%	61.2	5,199	850	642	105	42	6	1	9	4	69.3	77.6	82.1	-2.9	60.9	52.3	52.8	62.0	57.9	44.8	42.7	58.2	44.7	42.9	43.6	48.6
Existing with Project (2025)		6	0	6,691	45	100	0	0	1.8%	0.7%	61.2	5,199	850	642	105	42	6	1	9	4	69.3	77.6	82.1	-2.9	60.9	52.3	52.8	62.0	57.9	44.8	42.7	58.2	44.7	42.9	43.6	48.6
Future 2028		6	0	8,196	45	100	0	0	1.8%	0.7%	62.1	6,368	####	787	129	51	7	2	11	5	69.3	77.6	82.1	-2.9	61.7	53.2	53.7	62.9	58.8	45.6	43.6	59.1	45.6	43.8	44.5	49.4
Future with Project (2028)		6	0	8,196	45	100	0	0	1.8%	0.7%	62.1	6,368	####	787	129	51	7	2	11	5	69.3	77.6	82.1	-2.9	61.7	53.2	53.7	62.9	58.8	45.6	43.6	59.1	45.6	43.8	44.5	49.4
Camino Del Sol w/o Rice																																			
Existing 2025		6	0	6,811	45	45	0	0	1.8%	0.7%	65.8	5,292	865	654	107	42	6	1	9	4	69.3	77.6	82.1	1.7	65.5	57.0	57.5	66.6	62.5	49.4	47.3	62.8	49.3	47.5	48.2	53.2
Existing with Project (2025)		6	0	7,009	45	45	0	0	1.8%	0.7%	66.0	5,446	890	673	110	44	6	1	9	4	69.3	77.6	82.1	1.7	65.6	57.1	57.6	66.7	62.6	49.5	47.4	63.0	49.4	47.6	48.3	53.3
Future 2028		6	0	8,849	45	45	0	0	1.8%	0.7%	67.0	6,876	####	850	139	55	8	2	12	5	69.3	77.6	82.1	1.7	66.6	58.1	58.6	67.8	63.6	50.5	48.4	64.0	50.4	48.6	49.4	54.3
Future with Project (2028)		6	0	9,047	45	45	0	0	1.8%	0.7%	67.1	7,030	####	869	142	56	8	2	12	5	69.3	77.6	82.1	1.7	66.7	58.2	58.7	67.9	63.7	50.6	48.5	64.1	50.5	48.7	49.5	54.4
Existing 2025		6	0	8,428	45	45	0	0	1.8%	0.7%	66.8	6,549	####	809	133	53	8	2	11	5	69.3	77.6	82.1	1.7	66.4	57.9	58.4	67.5	63.4	50.3	48.2	63.8	50.2	48.4	49.1	54.1
Existing with Project (2025)		6	0	8,712	45	45	0	0	1.8%	0.7%	66.9	6,769	####	836	137	54	8	2	12	5	69.3	77.6	82.1	1.7	66.6	58.0	58.5	67.7	63.6	50.4	48.4	63.9	50.4	48.6	49.3	54.2
Future 2028		6	0	9,985	45	45	0	0	1.8%	0.7%	67.5	7,758	####	959	157	62	9	2	14	6	69.3	77.6	82.1	1.7	67.1	58.6	59.1	68.3	64.2	51.0	48.9	64.5	51.0	49.2	49.9	54.8
Future with Project (2028)		6	0	10,268	45	45	0	0	1.8%	0.7%	67.6	7,979	####	986	162	64	9	2	14	6	69.3	77.6	82.1	1.7	67.3	58.7	59.2	68.4	64.3	51.2	49.1	64.6	51.1	49.3	50.0	55.0

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 8

Rice Avenue & US-101 SB Off Ramp

Rice Avenue

Southbound

	right	through	left
Existing 2025	0	1,228	112
Existing with Pro	0	1,260	540
Future 2028	0	1,679	114
Future with Proje	0	1,697	114
Existing 2025	0	1,684	568
Existing with Pro	0	1,684	568
Future 2028	0	1,594	246
Future with Proje	0	1,652	246

Eastbound

US-101 SB Off Ramp

	left	through	right
Existing 2025	168	25	1,088
Existing with Pro	168	25	1,088
Future 2028	171	26	1,308
Future with Proje	171	26	1,308
Existing 2025	289	50	607
Existing with Pro	289	50	607
Future 2028	295	51	659
Future with Proje	295	51	659

Westbound

	right	through	left
Existing 2025	0	0	0
Existing with Pro	0	0	0
Future 2028	0	0	0
Future with Proje	0	0	0
Existing 2025	0	0	0
Existing with Pro	0	0	0
Future 2028	0	0	0
Future with Proje	0	0	0

N

W E

S

Northbound

	left	through	right
Existing 2025	0	1,260	540
Existing with Pro	0	1,260	540
Future 2028	0	1,347	550
Future with Proje	0	1,347	550
Existing 2025	0	1684	568
Existing with Pro	0	1684	568
Future 2028	0	1962	579
Future with Proje	0	1962	579

ADT

Road	Rice Avenue		US-101 SB Off Ramp	
Leg	North of	South of	East of	West of
Cross Street	US-101 SB Off Ramp		Rice Avenue	
Existing 2025	23,804.8	35,397.6	5,822.2	11,016.6
Existing with Pro	27,760.8	35,672.8	9,503.0	11,016.6
Future 2028	28,474.6	42,002.4	5,934.0	12,943.0
Future with Proje	28,629.4	42,157.2	5,934.0	12,943.0
Existing 2025	36,335.0	39,069.8	10,199.6	8,135.6
Existing with Pro	36,335.0	39,069.8	10,199.6	8,135.6
Future 2028	35,234.2	41,228.4	7,533.6	8,643.0
Future with Proje	35,733.0	41,727.2	7,533.6	8,643.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	dB(A) CNEL	Traffic Volumes: Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level: A	MT	HT	Dist Adj	Ld: A	MT	HT	Total	Le: A	MT	HT	Total	Ln: A	MT	HT	Total
Rice Avenue n/o US-101 SB																																			
Existing 2025		4	0	23,805	40	100	0	0	1.8%	0.7%	65.4	#####	####	####	375	148	22	5	32	13	67.4	76.3	81.2	-3.0	64.8	56.9	57.7	66.1	61.8	49.3	47.6	62.2	48.6	47.5	48.5	53.0
Existing with Project (2025)		4	0	27,761	40	100	0	0	1.8%	0.7%	66.0	#####	####	####	437	173	25	6	38	16	67.4	76.3	81.2	-3.0	65.4	57.6	58.4	66.8	62.5	50.0	48.2	62.9	49.3	48.1	49.2	53.7
Future 2028		4	0	28,475	40	100	0	0	1.8%	0.7%	66.1	#####	####	####	448	178	26	6	39	16	67.4	76.3	81.2	-3.0	65.6	57.7	58.5	66.9	62.6	50.1	48.4	63.0	49.4	48.2	49.3	53.8
Future with Project (2028)		4	0	28,629	40	100	0	0	1.8%	0.7%	66.2	#####	####	####	451	179	26	6	39	16	67.4	76.3	81.2	-3.0	65.6	57.7	58.5	66.9	62.6	50.1	48.4	63.0	49.4	48.3	49.3	53.8
Existing 2025		4	0	36,335	40	100	0	0	1.8%	0.7%	67.2	#####	####	####	572	227	33	7	49	21	67.4	76.3	81.2	-3.0	66.6	58.8	59.6	68.0	63.6	51.2	49.4	64.0	50.4	49.3	50.3	54.8
Existing with Project (2025)		4	0	36,335	40	100	0	0	1.8%	0.7%	67.2	#####	####	####	572	227	33	7	49	21	67.4	76.3	81.2	-3.0	66.6	58.8	59.6	68.0	63.6	51.2	49.4	64.0	50.4	49.3	50.3	54.8
Future 2028		4	0	35,234	40	100	0	0	1.8%	0.7%	67.1	#####	####	####	554	220	32	7	48	20	67.4	76.3	81.2	-3.0	66.5	58.6	59.4	67.8	63.5	51.0	49.3	63.9	50.3	49.2	50.2	54.7
Future with Project (2028)		4	0	35,733	40	100	0	0	1.8%	0.7%	67.1	#####	####	####	562	223	32	7	48	20	67.4	76.3	81.2	-3.0	66.5	58.7	59.5	67.9	63.6	51.1	49.3	64.0	50.4	49.2	50.3	54.8
Rice Avenue s/o US-101 SB																																			
Existing 2025		6	0	35,398	40	100	0	0	1.8%	0.7%	67.2	#####	####	####	557	221	32	7	48	20	67.4	76.3	81.2	-2.9	66.6	58.8	59.6	68.0	63.7	51.2	49.4	64.0	50.5	49.3	50.4	54.8
Existing with Project (2025)		6	0	35,673	40	100	0	0	1.8%	0.7%	67.3	#####	####	####	561	222	32	7	48	20	67.4	76.3	81.2	-2.9	66.7	58.8	59.6	68.0	63.7	51.2	49.5	64.1	50.5	49.4	50.4	54.9
Future 2028		6	0	42,002	40	100	0	0	1.8%	0.7%	68.0	#####	####	####	661	262	38	8	57	24	67.4	76.3	81.2	-2.9	67.4	59.5	60.3	68.7	64.4	51.9	50.2	64.8	51.2	50.1	51.1	55.6
Future with Project (2028)		6	0	42,157	40	100	0	0	1.8%	0.7%	68.0	#####	####	####	663	263	38	8	57	24	67.4	76.3	81.2	-2.9	67.4	59.5	60.4	68.7	64.4	51.9	50.2	64.8	51.2	50.1	51.1	55.6
Existing 2025		6	0	39,070	40	100	0	0	1.8%	0.7%	67.7	#####	####	####	615	244	36	8	53	22	67.4	76.3	81.2	-2.9	67.1	59.2	60.0	68.4	64.1	51.6	49.9	64.5	50.9	49.7	50.8	55.3
Existing with Project (2025)		6	0	39,070	40	100	0	0	1.8%	0.7%	67.7	#####	####	####	615	244	36	8	53	22	67.4	76.3	81.2	-2.9	67.1	59.2	60.0	68.4	64.1	51.6	49.9	64.5	50.9	49.7	50.8	55.3
Future 2028		6	0	41,228	40	100	0	0	1.8%	0.7%	67.9	#####	####	####	649	257	37	8	56	23	67.4	76.3	81.2	-2.9	67.3	59.4	60.3	68.6	64.3	51.9	50.1	64.7	51.1	50.0	51.0	55.5
Future with Project (2028)		6	0	41,727	40	100	0	0	1.8%	0.7%	67.9	#####	####	####	657	260	38	8	56	24	67.4	76.3	81.2	-2.9	67.3	59.5	60.3	68.7	64.4	51.9	50.1	64.8	51.2	50.0	51.1	55.6
US-101 SB Off Ramp e/o																																			
Existing 2025		2	0	5,822	45	100	0	0	1.8%	0.7%	60.4	4,524	739	559	92	36	5	1	8	3	69.3	77.6	82.1	-3.1	60.1	51.5	52.0	61.2	57.1	44.0	41.9	57.4	43.9	42.1	42.8	47.8
Existing with Project (2025)		2	0	9,503	45	100	0	0	1.8%	0.7%	62.5	7,384	####	912	150	59	9	2	13	5	69.3	77.6	82.1	-3.1	62.2	53.7	54.2	63.3	59.2	46.1	44.0	59.5	46.0	44.2	44.9	49.9
Future 2028		2	0	5,934	45	100	0	0	1.8%	0.7%	60.5	4,611	754	570	93	37	5	1	8	3	69.3	77.6	82.1	-3.1	60.1	51.6	52.1	61.3	57.2	44.0	42.0	57.5	44.0	42.2	42.9	47.8
Future with Project (2028)		2	0	5,934	45	100	0	0	1.8%	0.7%	60.5	4,611	754	570	93	37	5	1	8	3	69.3	77.6	82.1	-3.1	60.1	51.6	52.1	61.3	57.2	44.0	42.0	57.5	44.0	42.2	42.9	47.8
Existing 2025		2	0	10,200	45	100	0	0	1.8%	0.7%	62.9	7,925	####	979	161	64	9	2	14	6	69.3	77.6	82.1	-3.1	62.5	54.0	54.5	63.6	59.5	46.4	44.3	59.9	46.3	44.5	45.2	50.2
Existing with Project (2025)		2	0	10,200	45	100	0	0	1.8%	0.7%	62.9	7,925	####	979	161	64	9	2	14	6	69.3	77.6	82.1	-3.1	62.5	54.0	54.5	63.6	59.5	46.4	44.3	59.9	46.3	44.5	45.2	50.2
Future 2028		2	0	7,534	45	100	0	0	1.8%	0.7%	61.5	5,854	957	723	119	47	7	1	10	4	69.3	77.6	82.1	-3.1	61.2	52.7	53.2	62.3	58.2	45.1	43.0	58.5	45.0	43.2	43.9	48.9
Future with Project (2028)		2	0	7,534	45	100	0	0	1.8%	0.7%	61.5	5,854	957	723	119	47	7	1	10	4	69.3	77.6	82.1	-3.1	61.2	52.7	53.2	62.3	58.2	45.1	43.0	58.5	45.0	43.2	43.9	48.9
US-101 SB Off Ramp w/o																																			
Existing 2025		2	0	11,017	45	45	0	0	1.8%	0.7%	66.7	8,560	####	####	173	69	10	2	15	6	69.3	77.6	82.1	0.4	66.3	57.8	58.3	67.5	63.4	50.2	48.1	63.7	50.2	48.3	49.1	54.0
Existing with Project (2025)		2	0	11,017	45	45	0	0	1.8%	0.7%	66.7	8,560	####	####	173	69	10	2	15	6	69.3	77.6	82.1	0.4	66.3	57.8	58.3	67.5	63.4	50.2	48.1	63.7	50.2	48.3	49.1	54.0
Future 2028		2	0	12,943	45	45	0	0	1.8%	0.7%	67.4	#####	####	####	204	81	12	3	18	7	69.3	77.6	82.1	0.4	67.0	58.5	59.0	68.2	64.1	50.9	48.8	64.4	50.9	49.0	49.8	54.7
Future with Project (2028)		2	0	12,943	45	45	0	0	1.8%	0.7%	67.4	#####	####	####	204	81	12	3	18	7	69.3	77.6	82.1	0.4	67.0	58.5	59.0	68.2	64.1	50.9	48.8	64.4	50.9	49.0	49.8	54.7
Existing 2025		2	0	8,136	45	45	0	0	1.8%	0.7%	65.4	6,321	####	781	128	51	7	2	11	5	69.3	77.6	82.1	0.4	65.0	56.5	57.0	66.2	62.0	48.9	46.8	62.4	48.8	47.0	47.8	52.7
Existing with Project (2025)		2	0	8,136	45	45	0	0	1.8%	0.7%	65.4	6,321	####	781	128	51	7	2	11	5	69.3	77.6	82.1	0.4	65.0	56.5	57.0	66.2	62.0	48.9	46.8	62.4	48.8	47.0	47.8	52.7
Future 2028		2	0	8,643	45	45	0	0	1.8%	0.7%	65.6	6,716	####	830	136	54	8	2	12	5	69.3	77.6	82.1	0.4	65.3	56.7	57.2	66.4	62.3	49.2	47.1	62.6	49.1	47.3	48.0	53.0
Future with Project (2028)		2	0	8,643	45	45	0	0	1.8%	0.7%	65.6	6,716	####	830	136	54	8	2	12	5	69.3	77.6	82.1	0.4	65.3	56.7	57.2	66.4	62.3	49.2	47.1	62.6	49.1	47.3	48.0	53.0

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 9

Santa Clara Ave. & Auto Center Dr./ US-101 NB Off Ramp

Santa Clara Ave.

Southbound

	right	through	left
Existing 2025	140	640	0
Existing with Pro	140	640	0
Future 2028	236	652	0
Future with Proje	236	652	0
Existing 2025	169	672	0
Existing with Pro	169	672	0
Future 2028	200	684	0
Future with Proje	200	684	0

Eastbound

	left	through	right
Existing 2025	127	0	275
Existing with Pro	127	0	275
Future 2028	158	2	280
Future with Proje	158	2	280
Existing 2025	146	0	616
Existing with Pro	146	0	616
Future 2028	216	1	627
Future with Proje	216	1	627

Auto Center Dr./ US-

Westbound

	right	through	left
Existing 2025	11	141	591
Existing with Pro	11	141	591
Future 2028	12	145	602
Future with Proje	12	145	602
Existing 2025	25	314	553
Existing with Pro	25	314	553
Future 2028	26	322	563
Future with Proje	26	322	563

N

W E

S

Northbound

	left	through	right
Existing 2025	199	728	0
Existing with Pro	217	728	0
Future 2028	550	758	0
Future with Proje	568	758	0
Existing 2025	485	636	0
Existing with Pro	543	636	0
Future 2028	679	656	0
Future with Proje	737	656	0

ADT

Road	Santa Clara Ave.		uto Center Dr./ US-101 NB Off Ran	
Leg	North of	South of	East of	West of
Cross Street	uto Center Dr./ US-101 NB Off Ran		Santa Clara Ave.	
Existing 2025	14,155.6	20,923.8	6,389.8	7,585.2
Existing with Pro	14,155.6	21,078.6	6,389.8	7,740.0
Future 2028	15,617.6	24,441.2	6,544.6	11,790.6
Future with Proje	15,617.6	24,596.0	6,544.6	11,945.4
Existing 2025	14,172.8	25,473.2	7,671.2	14,878.0
Existing with Pro	14,172.8	25,972.0	7,671.2	15,376.8
Future 2028	15,325.2	27,597.4	7,843.2	17,587.0
Future with Proje	15,325.2	28,096.2	7,843.2	18,085.8

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	dB(A) CNEL	Traffic Volumes: Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level: A	Dist Adj	Ld: MT	Ld: HT	Ld: Total	Le: A	Le: MT	Le: HT	Le: Total	Ln: A	Ln: MT	Ln: HT	Ln: Total
Santa Clara Avenue n/o Auto																																	
Existing 2025		2	0	14,156	40	75	0	0	1.8%	0.7%	64.3	#####	####	####	223	88	13	3	19	8	67.4	-1.8	63.7	55.9	56.7	65.0	60.7	48.3	46.5	61.1	47.5	46.4	47.4	51.9
Existing with Project (2025)		2	0	14,156	40	75	0	0	1.8%	0.7%	64.3	#####	####	####	223	88	13	3	19	8	67.4	-1.8	63.7	55.9	56.7	65.0	60.7	48.3	46.5	61.1	47.5	46.4	47.4	51.9
Future 2028		2	0	15,618	40	75	0	0	1.8%	0.7%	64.7	#####	####	####	246	97	14	3	21	9	67.4	-1.8	64.1	56.3	57.1	65.5	61.2	48.7	46.9	61.5	48.0	46.8	47.9	52.4
Future with Project (2028)		2	0	15,618	40	75	0	0	1.8%	0.7%	64.7	#####	####	####	246	97	14	3	21	9	67.4	-1.8	64.1	56.3	57.1	65.5	61.2	48.7	46.9	61.5	48.0	46.8	47.9	52.4
Existing 2025		2	0	14,173	40	75	0	0	1.8%	0.7%	64.3	#####	####	####	223	88	13	3	19	8	67.4	-1.8	63.7	55.9	56.7	65.1	60.7	48.3	46.5	61.1	47.5	46.4	47.4	51.9
Existing with Project (2025)		2	0	14,173	40	75	0	0	1.8%	0.7%	64.3	#####	####	####	223	88	13	3	19	8	67.4	-1.8	63.7	55.9	56.7	65.1	60.7	48.3	46.5	61.1	47.5	46.4	47.4	51.9
Future 2028		2	0	15,325	40	75	0	0	1.8%	0.7%	64.7	#####	####	####	241	96	14	3	21	9	67.4	-1.8	64.1	56.2	57.0	65.4	61.1	48.6	46.9	61.5	47.9	46.7	47.8	52.3
Future with Project (2028)		2	0	15,325	40	75	0	0	1.8%	0.7%	64.7	#####	####	####	241	96	14	3	21	9	67.4	-1.8	64.1	56.2	57.0	65.4	61.1	48.6	46.9	61.5	47.9	46.7	47.8	52.3
Santa Clara Avenue s/o Auto																																	
Existing 2025		4	0	20,924	40	100	0	0	1.8%	0.7%	64.8	#####	####	####	329	131	19	4	28	12	67.4	-3.0	64.2	56.4	57.2	65.6	61.2	48.8	47.0	61.6	48.0	46.9	47.9	52.4
Existing with Project (2025)		4	0	21,079	40	100	0	0	1.8%	0.7%	64.8	#####	####	####	332	131	19	4	29	12	67.4	-3.0	64.2	56.4	57.2	65.6	61.3	48.8	47.0	61.7	48.1	46.9	48.0	52.5
Future 2028		4	0	24,441	40	100	0	0	1.8%	0.7%	65.5	#####	####	####	385	152	22	5	33	14	67.4	-3.0	64.9	57.0	57.9	66.2	61.9	49.4	47.7	62.3	48.7	47.6	48.6	53.1
Future with Project (2028)		4	0	24,596	40	100	0	0	1.8%	0.7%	65.5	#####	####	####	387	153	22	5	33	14	67.4	-3.0	64.9	57.1	57.9	66.3	61.9	49.5	47.7	62.3	48.7	47.6	48.6	53.1
Existing 2025		4	0	25,473	40	100	0	0	1.8%	0.7%	65.7	#####	####	####	401	159	23	5	34	14	67.4	-3.0	65.1	57.2	58.0	66.4	62.1	49.6	47.9	62.5	48.9	47.8	48.8	53.3
Existing with Project (2025)		4	0	25,972	40	100	0	0	1.8%	0.7%	65.7	#####	####	####	409	162	24	5	35	15	67.4	-3.0	65.2	57.3	58.1	66.5	62.2	49.7	48.0	62.6	49.0	47.8	48.9	53.4
Future 2028		4	0	27,597	40	100	0	0	1.8%	0.7%	66.0	#####	####	####	434	172	25	5	37	16	67.4	-3.0	65.4	57.6	58.4	66.8	62.4	50.0	48.2	62.8	49.2	48.1	49.1	53.6
Future with Project (2028)		4	0	28,096	40	100	0	0	1.8%	0.7%	66.1	#####	####	####	442	175	26	6	38	16	67.4	-3.0	65.5	57.6	58.5	66.8	62.5	50.1	48.3	62.9	49.3	48.2	49.2	53.7
Auto Center Dr./ US-101 NB																																	
Existing 2025		2	0	6,390	45	50	0	0	1.8%	0.7%	63.9	4,965	812	613	101	40	6	1	9	4	69.3	0.0	63.5	55.0	55.5	64.6	60.5	47.4	45.3	60.9	47.3	45.5	46.2	51.2
Existing with Project (2025)		2	0	6,390	45	50	0	0	1.8%	0.7%	63.9	4,965	812	613	101	40	6	1	9	4	69.3	0.0	63.5	55.0	55.5	64.6	60.5	47.4	45.3	60.9	47.3	45.5	46.2	51.2
Future 2028		2	0	6,545	45	50	0	0	1.8%	0.7%	64.0	5,085	831	628	103	41	6	1	9	4	69.3	0.0	63.6	55.1	55.6	64.7	60.6	47.5	45.4	61.0	47.4	45.6	46.3	51.3
Future with Project (2028)		2	0	6,545	45	50	0	0	1.8%	0.7%	64.0	5,085	831	628	103	41	6	1	9	4	69.3	0.0	63.6	55.1	55.6	64.7	60.6	47.5	45.4	61.0	47.4	45.6	46.3	51.3
Existing 2025		2	0	7,671	45	50	0	0	1.8%	0.7%	64.6	5,961	974	736	121	48	7	2	10	4	69.3	0.0	64.3	55.8	56.3	65.4	61.3	48.2	46.1	61.6	48.1	46.3	47.0	52.0
Existing with Project (2025)		2	0	7,671	45	50	0	0	1.8%	0.7%	64.6	5,961	974	736	121	48	7	2	10	4	69.3	0.0	64.3	55.8	56.3	65.4	61.3	48.2	46.1	61.6	48.1	46.3	47.0	52.0
Future 2028		2	0	7,843	45	50	0	0	1.8%	0.7%	64.7	6,094	996	753	123	49	7	2	11	4	69.3	0.0	64.4	55.9	56.4	65.5	61.4	48.3	46.2	61.7	48.2	46.4	47.1	52.1
Future with Project (2028)		2	0	7,843	45	50	0	0	1.8%	0.7%	64.7	6,094	996	753	123	49	7	2	11	4	69.3	0.0	64.4	55.9	56.4	65.5	61.4	48.3	46.2	61.7	48.2	46.4	47.1	52.1
Auto Center Dr./ US-101 NB																																	
Existing 2025		4	0	7,585	45	45	0	0	1.8%	0.7%	65.4	5,894	963	728	119	47	7	2	10	4	69.3	0.8	65.1	56.5	57.0	66.2	62.1	48.9	46.9	62.4	48.9	47.1	47.8	52.7
Existing with Project (2025)		4	0	7,740	45	45	0	0	1.8%	0.7%	65.5	6,014	983	743	122	48	7	2	10	4	69.3	0.8	65.1	56.6	57.1	66.3	62.2	49.0	46.9	62.5	49.0	47.2	47.9	52.8
Future 2028		4	0	11,791	45	45	0	0	1.8%	0.7%	67.3	9,161	####	####	186	74	11	2	16	7	69.3	0.8	67.0	58.4	58.9	68.1	64.0	50.9	48.8	64.3	50.8	49.0	49.7	54.7
Future with Project (2028)		4	0	11,945	45	45	0	0	1.8%	0.7%	67.4	9,282	####	####	188	75	11	2	16	7	69.3	0.8	67.0	58.5	59.0	68.2	64.0	50.9	48.8	64.4	50.9	49.0	49.8	54.7
Existing 2025		4	0	14,878	45	45	0	0	1.8%	0.7%	68.3	#####	####	####	234	93	14	3	20	8	69.3	0.8	68.0	59.4	59.9	69.1	65.0	51.9	49.8	65.3	51.8	50.0	50.7	55.7
Existing with Project (2025)		4	0	15,377	45	45	0	0	1.8%	0.7%	68.5	#####	####	####	242	96	14	3	21	9	69.3	0.8	68.1	59.6	60.1	69.3	65.1	52.0	49.9	65.5	51.9	50.1	50.9	55.8
Future 2028		4	0	17,587	45	45	0	0	1.8%	0.7%	69.1	#####	####	####	277	110	16	3	24	10	69.3	0.8	68.7	60.2	60.7	69.8	65.7	52.6	50.5	66.1	52.5	50.7	51.4	56.4
Future with Project (2028)		4	0	18,086	45	45	0	0	1.8%	0.7%	69.2	#####	####	####	285	113	16	4	24	10	69.3	0.8	68.8	60.3	60.8	70.0	65.8	52.7	50.6	66.2	52.7	50.8	51.6	56.5

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 10

Rice Avenue & 5th St.

Rice Avenue

Southbound	right	through	left
Existing 2025	101	960	12
Existing with Pro	101	960	29
Future 2028	135	1,039	37
Future with Proje	135	1,039	54
Existing 2025	286	1,279	13
Existing with Pro	286	1,279	26
Future 2028	477	1,409	29
Future with Proje	477	1,409	42

Eastbound	left	through	right
Existing 2025	86	330	32
Existing with Pro	86	330	32
Future 2028	305	591	33
Future with Proje	305	591	33
Existing 2025	77	249	15
Existing with Pro	77	249	15
Future 2028	133	398	16
Future with Proje	133	398	16

Westbound	right	through	left
Existing 2025	22	211	96
Existing with Pro	28	211	96
Future 2028	60	336	99
Future with Proje	66	336	99
Existing 2025	33	450	327
Existing with Pro	53	450	327
Future 2028	48	706	335
Future with Proje	68	706	335

5th St.

W E

S

N

Northbound	left	through	right
Existing 2025	12	1,344	393
Existing with Pro	12	1,344	393
Future 2028	13	1,418	402
Future with Proje	13	1,418	402
Existing 2025	16	1082	220
Existing with Pro	16	1082	220
Future 2028	17	1200	225
Future with Proje	17	1200	225

ADT

Road	Rice Avenue		5th St.	
Leg	North of	South of	East of	West of
Cross Street	5th St.		Rice Avenue	
Existing 2025	21,715.0	24,398.2	9,150.4	6,639.2
Existing with Pro	21,912.8	24,398.2	9,348.2	6,639.2
Future 2028	25,748.4	25,834.4	13,115.0	12,151.8
Future with Proje	25,946.2	25,834.4	13,312.8	12,151.8
Existing 2025	23,822.0	25,275.4	11,111.2	9,399.8
Existing with Pro	24,105.8	25,275.4	11,395.0	9,399.8
Future 2028	28,345.6	27,537.2	14,972.6	15,024.2
Future with Proje	28,629.4	27,537.2	15,256.4	15,024.2

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1)	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	dB(A) CNEL	Traffic Volumes: Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level: A	MT	HT	Dist Adj	Ld: A	MT	HT	Total	Le: A	MT	HT	Total	Ln: A	MT	HT	Total
Rice Avenue n/o 5th St.																																				
Existing 2025		4	0	21,715	50	100	0	0	1.8%	0.7%	67.3	#####	####	####	342	135	20	4	29	12	71.1	78.8	83.0	-3.0	67.2	58.0	58.2	68.1	64.2	50.4	48.1	64.5	51.0	48.6	49.0	54.4
Existing with Project (2025)		4	0	21,913	50	100	0	0	1.8%	0.7%	67.4	#####	####	####	345	137	20	4	30	12	71.1	78.8	83.0	-3.0	67.2	58.1	58.3	68.2	64.2	50.5	48.1	64.5	51.0	48.6	49.0	54.5
Future 2028		4	0	25,748	50	100	0	0	1.8%	0.7%	68.1	#####	####	####	405	161	23	5	35	15	71.1	78.8	83.0	-3.0	67.9	58.8	59.0	68.9	64.9	51.2	48.8	65.2	51.7	49.3	49.7	55.2
Future with Project (2028)		4	0	25,946	50	100	0	0	1.8%	0.7%	68.1	#####	####	####	408	162	24	5	35	15	71.1	78.8	83.0	-3.0	67.9	58.8	59.0	68.9	65.0	51.2	48.8	65.2	51.8	49.3	49.8	55.2
Existing 2025		4	0	23,822	50	100	0	0	1.8%	0.7%	67.7	#####	####	####	375	149	22	5	32	13	71.1	78.8	83.0	-3.0	67.6	58.4	58.6	68.5	64.6	50.8	48.5	64.9	51.4	49.0	49.4	54.8
Existing with Project (2025)		4	0	24,106	50	100	0	0	1.8%	0.7%	67.8	#####	####	####	379	150	22	5	33	14	71.1	78.8	83.0	-3.0	67.6	58.5	58.7	68.6	64.6	50.9	48.5	64.9	51.4	49.0	49.5	54.9
Future 2028		4	0	28,346	50	100	0	0	1.8%	0.7%	68.5	#####	####	####	446	177	26	6	38	16	71.1	78.8	83.0	-3.0	68.3	59.2	59.4	69.3	65.3	51.6	49.2	65.6	52.1	49.7	50.2	55.6
Future with Project (2028)		4	0	28,629	50	100	0	0	1.8%	0.7%	68.5	#####	####	####	451	179	26	6	39	16	71.1	78.8	83.0	-3.0	68.4	59.2	59.4	69.3	65.4	51.6	49.3	65.7	52.2	49.8	50.2	55.6
Rice Avenue s/o 5th St.																																				
Existing 2025		4	0	24,398	50	100	0	0	1.8%	0.7%	67.8	#####	####	####	384	152	22	5	33	14	71.1	78.8	83.0	-3.0	67.7	58.5	58.7	68.6	64.7	51.0	48.6	65.0	51.5	49.1	49.5	54.9
Existing with Project (2025)		4	0	24,398	50	100	0	0	1.8%	0.7%	67.8	#####	####	####	384	152	22	5	33	14	71.1	78.8	83.0	-3.0	67.7	58.5	58.7	68.6	64.7	51.0	48.6	65.0	51.5	49.1	49.5	54.9
Future 2028		4	0	25,834	50	100	0	0	1.8%	0.7%	68.1	#####	####	####	407	161	23	5	35	15	71.1	78.8	83.0	-3.0	67.9	58.8	59.0	68.9	64.9	51.2	48.8	65.2	51.7	49.3	49.8	55.2
Future with Project (2028)		4	0	25,834	50	100	0	0	1.8%	0.7%	68.1	#####	####	####	407	161	23	5	35	15	71.1	78.8	83.0	-3.0	67.9	58.8	59.0	68.9	64.9	51.2	48.8	65.2	51.7	49.3	49.8	55.2
Existing 2025		4	0	25,275	50	100	0	0	1.8%	0.7%	68.0	#####	####	####	398	158	23	5	34	14	71.1	78.8	83.0	-3.0	67.8	58.7	58.9	68.8	64.8	51.1	48.7	65.1	51.7	49.2	49.7	55.1
Existing with Project (2025)		4	0	25,275	50	100	0	0	1.8%	0.7%	68.0	#####	####	####	398	158	23	5	34	14	71.1	78.8	83.0	-3.0	67.8	58.7	58.9	68.8	64.8	51.1	48.7	65.1	51.7	49.2	49.7	55.1
Future 2028		4	0	27,537	50	100	0	0	1.8%	0.7%	68.4	#####	####	####	433	172	25	5	37	16	71.1	78.8	83.0	-3.0	68.2	59.1	59.3	69.2	65.2	51.5	49.1	65.5	52.0	49.6	50.0	55.5
Future with Project (2028)		4	0	27,537	50	100	0	0	1.8%	0.7%	68.4	#####	####	####	433	172	25	5	37	16	71.1	78.8	83.0	-3.0	68.2	59.1	59.3	69.2	65.2	51.5	49.1	65.5	52.0	49.6	50.0	55.5
5th St. e/o Rice Avenue																																				
Existing 2025		4	0	9,150	55	100	0	0	1.8%	0.7%	64.6	7,110	####	878	144	57	8	2	12	5	72.7	79.9	83.8	-3.0	64.6	54.9	54.9	65.4	61.6	47.3	44.7	61.9	48.4	45.5	45.6	51.5
Existing with Project (2025)		4	0	9,348	55	100	0	0	1.8%	0.7%	64.7	7,264	####	897	147	58	8	2	13	5	72.7	79.9	83.8	-3.0	64.7	55.0	55.0	65.5	61.7	47.4	44.8	62.0	48.5	45.6	45.7	51.6
Future 2028		4	0	13,115	55	100	0	0	1.8%	0.7%	66.2	#####	####	####	206	82	12	3	18	7	72.7	79.9	83.8	-3.0	66.2	56.5	56.4	67.0	63.2	48.9	46.3	63.4	50.0	47.0	47.2	53.1
Future with Project (2028)		4	0	13,313	55	100	0	0	1.8%	0.7%	66.2	#####	####	####	210	83	12	3	18	8	72.7	79.9	83.8	-3.0	66.2	56.5	56.5	67.1	63.3	49.0	46.3	63.5	50.1	47.1	47.3	53.1
Existing 2025		4	0	11,111	55	100	0	0	1.8%	0.7%	65.5	8,633	####	####	175	69	10	2	15	6	72.7	79.9	83.8	-3.0	65.4	55.8	55.7	66.3	62.5	48.2	45.5	62.7	49.3	46.3	46.5	52.3
Existing with Project (2025)		4	0	11,395	55	100	0	0	1.8%	0.7%	65.6	8,854	####	####	179	71	10	2	15	6	72.7	79.9	83.8	-3.0	65.6	55.9	55.8	66.4	62.6	48.3	45.7	62.8	49.4	46.4	46.6	52.5
Future 2028		4	0	14,973	55	100	0	0	1.8%	0.7%	66.7	#####	####	####	236	93	14	3	20	8	72.7	79.9	83.8	-3.0	66.7	57.1	57.0	67.6	63.8	49.5	46.8	64.0	50.6	47.6	47.8	53.6
Future with Project (2028)		4	0	15,256	55	100	0	0	1.8%	0.7%	66.8	#####	####	####	240	95	14	3	21	9	72.7	79.9	83.8	-3.0	66.8	57.1	57.1	67.7	63.8	49.6	46.9	64.1	50.6	47.7	47.8	53.7
5th St. w/o Rice Avenue																																				
Existing 2025		4	0	6,639	55	100	0	0	1.8%	0.7%	63.2	5,159	843	637	104	41	6	1	9	4	72.7	79.9	83.8	-3.0	63.2	53.5	53.5	64.1	60.2	45.9	43.3	60.5	47.0	44.1	44.2	50.1
Existing with Project (2025)		4	0	6,639	55	100	0	0	1.8%	0.7%	63.2	5,159	843	637	104	41	6	1	9	4	72.7	79.9	83.8	-3.0	63.2	53.5	53.5	64.1	60.2	45.9	43.3	60.5	47.0	44.1	44.2	50.1
Future 2028		4	0	12,152	55	100	0	0	1.8%	0.7%	65.8	9,442	####	####	191	76	11	2	16	7	72.7	79.9	83.8	-3.0	65.8	56.2	56.1	66.7	62.9	48.6	45.9	63.1	49.7	46.7	46.9	52.7
Future with Project (2028)		4	0	12,152	55	100	0	0	1.8%	0.7%	65.8	9,442	####	####	191	76	11	2	16	7	72.7	79.9	83.8	-3.0	65.8	56.2	56.1	66.7	62.9	48.6	45.9	63.1	49.7	46.7	46.9	52.7
Existing 2025		4	0	9,400	55	100	0	0	1.8%	0.7%	64.7	7,304	####	902	148	59	9	2	13	5	72.7	79.9	83.8	-3.0	64.7	55.0	55.0	65.6	61.7	47.5	44.8	62.0	48.5	45.6	45.7	51.6
Existing with Project (2025)		4	0	9,400	55	100	0	0	1.8%	0.7%	64.7	7,304	####	902	148	59	9	2	13	5	72.7	79.9	83.8	-3.0	64.7	55.0	55.0	65.6	61.7	47.5	44.8	62.0	48.5	45.6	45.7	51.6
Future 2028		4	0	15,024	55	100	0	0	1.8%	0.7%	66.8	#####	####	####	236	94	14	3	20	8	72.7	79.9	83.8	-3.0	66.8	57.1	57.0	67.6	63.8	49.5	46.9	64.0	50.6	47.6	47.8	53.7
Future with Project (2028)		4	0	15,024	55	100	0	0	1.8%	0.7%	66.8	#####	####	####	236	94	14	3	20	8	72.7	79.9	83.8	-3.0	66.8	57.1	57.0	67.6	63.8	49.5	46.9	64.0	50.6	47.6	47.8	53.7

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name

Weekday AM/PM Peak Hour Volumes

rev. (Date)

Intersection: 11

Rose Avenue & 5th St.

Rose Avenue

Southbound

	right	through	left
Existing 2025	110	972	59
Existing with Pro	127	1,006	59
Future 2028	140	1,097	73
Future with Proje	157	1,131	73
Existing 2025	184	1,139	16
Existing with Pro	197	1,165	16
Future 2028	225	1,253	22
Future with Proje	238	1,279	22

Eastbound

	left	through	right
Existing 2025	193	329	31
Existing with Pro	199	329	31
Future 2028	246	618	35
Future with Proje	252	618	35
Existing 2025	196	275	50
Existing with Pro	216	275	50
Future 2028	233	395	53
Future with Proje	253	395	53

Westbound

	right	through	left
Existing 2025	29	198	90
Existing with Pro	29	198	90
Future 2028	39	301	137
Future with Proje	39	301	137
Existing 2025	80	489	171
Existing with Pro	80	489	171
Future 2028	89	759	339
Future with Proje	89	759	339

5th St.

W E

S N

Northbound

	left	through	right
Existing 2025	42	1,164	59
Existing with Pro	42	1,176	59
Future 2028	44	1,317	238
Future with Proje	44	1,329	238
Existing 2025	36	940	67
Existing with Pro	36	980	67
Future 2028	40	1051	147
Future with Proje	40	1091	147

ADT

Road	Rose Avenue		5th St.	
Leg	North of	South of	East of	West of
Cross Street	5th St.		Rose Avenue	
Existing 2025	21,732.2	20,278.8	6,570.4	7,765.8
Existing with Pro	22,325.6	20,674.4	6,570.4	7,963.6
Future 2028	25,043.2	24,664.8	12,091.6	11,902.4
Future with Proje	25,636.6	25,060.4	12,091.6	12,100.2
Existing 2025	21,973.0	20,665.8	9,442.8	10,578.0
Existing with Pro	22,824.4	21,233.4	9,442.8	10,861.8
Future 2028	24,707.8	24,793.8	15,058.6	14,663.0
Future with Proje	25,559.2	25,361.4	15,058.6	14,946.8

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME												Traffic Volumes								Ref. Energy Level			Dist	Ld			Le			Ln		
Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	A	MT	HT	Adj	A	MT	HT	Total	A	MT	HT	Total	A	MT	HT	Total
Rose Avenue n/o 5th St.																																			
Existing 2025		6	0	21,732	40	70	0	0	1.8%	0.7%	66.9	#####	####	####	342	136	20	4	29	12	67.4	76.3	81.2	-1.1	66.3	58.4	59.3	67.6	63.3	50.9	49.1	63.7	50.1	49.0	50.0	54.5
Existing with Project (2025)		6	0	22,326	40	70	0	0	1.8%	0.7%	67.0	#####	####	####	351	139	20	4	30	13	67.4	76.3	81.2	-1.1	66.4	58.6	59.4	67.8	63.4	51.0	49.2	63.8	50.2	49.1	50.1	54.6
Future 2028		6	0	25,043	40	70	0	0	1.8%	0.7%	67.5	#####	####	####	394	156	23	5	34	14	67.4	76.3	81.2	-1.1	66.9	59.1	59.9	68.3	63.9	51.5	49.7	64.3	50.7	49.6	50.6	55.1
Future with Project (2028)		6	0	25,637	40	70	0	0	1.8%	0.7%	67.6	#####	####	####	403	160	23	5	35	14	67.4	76.3	81.2	-1.1	67.0	59.2	60.0	68.4	64.0	51.6	49.8	64.4	50.8	49.7	50.7	55.2
Existing 2025		6	0	21,973	40	70	0	0	1.8%	0.7%	66.9	#####	####	####	346	137	20	4	30	12	67.4	76.3	81.2	-1.1	66.3	58.5	59.3	67.7	63.4	50.9	49.1	63.8	50.2	49.0	50.1	54.6
Existing with Project (2025)		6	0	22,824	40	70	0	0	1.8%	0.7%	67.1	#####	####	####	359	142	21	5	31	13	67.4	76.3	81.2	-1.1	66.5	58.7	59.5	67.9	63.5	51.1	49.3	63.9	50.3	49.2	50.2	54.7
Future 2028		6	0	24,708	40	70	0	0	1.8%	0.7%	67.5	#####	####	####	389	154	22	5	33	14	67.4	76.3	81.2	-1.1	66.9	59.0	59.8	68.2	63.9	51.4	49.7	64.3	50.7	49.5	50.6	55.1
Future with Project (2028)		6	0	25,559	40	70	0	0	1.8%	0.7%	67.6	#####	####	####	402	159	23	5	35	14	67.4	76.3	81.2	-1.1	67.0	59.1	60.0	68.3	64.0	51.6	49.8	64.4	50.8	49.7	50.7	55.2
Rose Avenue s/o 5th St.																																			
Existing 2025		4	0	20,279	45	100	0	0	1.8%	0.7%	65.9	#####	####	####	319	126	18	4	27	11	69.3	77.6	82.1	-3.0	65.6	57.0	57.5	66.7	62.6	49.4	47.4	62.9	49.4	47.6	48.3	53.2
Existing with Project (2025)		4	0	20,674	45	100	0	0	1.8%	0.7%	66.0	#####	####	####	325	129	19	4	28	12	69.3	77.6	82.1	-3.0	65.6	57.1	57.6	66.8	62.7	49.5	47.4	63.0	49.5	47.6	48.4	53.3
Future 2028		4	0	24,665	45	100	0	0	1.8%	0.7%	66.8	#####	####	####	388	154	22	5	33	14	69.3	77.6	82.1	-3.0	66.4	57.9	58.4	67.5	63.4	50.3	48.2	63.7	50.2	48.4	49.1	54.1
Future with Project (2028)		4	0	25,060	45	100	0	0	1.8%	0.7%	66.8	#####	####	####	394	156	23	5	34	14	69.3	77.6	82.1	-3.0	66.5	57.9	58.4	67.6	63.5	50.4	48.3	63.8	50.3	48.5	49.2	54.2
Existing 2025		4	0	20,666	45	100	0	0	1.8%	0.7%	66.0	#####	####	####	325	129	19	4	28	12	69.3	77.6	82.1	-3.0	65.6	57.1	57.6	66.8	62.7	49.5	47.4	63.0	49.5	47.6	48.4	53.3
Existing with Project (2025)		4	0	21,233	45	100	0	0	1.8%	0.7%	66.1	#####	####	####	334	132	19	4	29	12	69.3	77.6	82.1	-3.0	65.8	57.2	57.7	66.9	62.8	49.6	47.6	63.1	49.6	47.8	48.5	53.4
Future 2028		4	0	24,794	45	100	0	0	1.8%	0.7%	66.8	#####	####	####	390	155	23	5	34	14	69.3	77.6	82.1	-3.0	66.4	57.9	58.4	67.6	63.4	50.3	48.2	63.8	50.2	48.4	49.2	54.1
Future with Project (2028)		4	0	25,361	45	100	0	0	1.8%	0.7%	66.9	#####	####	####	399	158	23	5	34	14	69.3	77.6	82.1	-3.0	66.5	58.0	58.5	67.7	63.5	50.4	48.3	63.9	50.3	48.5	49.3	54.2
5th St. e/o Rose Avenue																																			
Existing 2025		4	0	6,570	55	100	0	0	1.8%	0.7%	63.2	5,105	834	631	103	41	6	1	9	4	72.7	79.9	83.8	-3.0	63.2	53.5	53.4	64.0	60.2	45.9	43.3	60.4	47.0	44.0	44.2	50.1
Existing with Project (2025)		4	0	6,570	55	100	0	0	1.8%	0.7%	63.2	5,105	834	631	103	41	6	1	9	4	72.7	79.9	83.8	-3.0	63.2	53.5	53.4	64.0	60.2	45.9	43.3	60.4	47.0	44.0	44.2	50.1
Future 2028		4	0	12,092	55	100	0	0	1.8%	0.7%	65.8	9,395	####	####	190	75	11	2	16	7	72.7	79.9	83.8	-3.0	65.8	56.1	56.1	66.7	62.8	48.5	45.9	63.1	49.6	46.7	46.8	52.7
Future with Project (2028)		4	0	12,092	55	100	0	0	1.8%	0.7%	65.8	9,395	####	####	190	75	11	2	16	7	72.7	79.9	83.8	-3.0	65.8	56.1	56.1	66.7	62.8	48.5	45.9	63.1	49.6	46.7	46.8	52.7
Existing 2025		4	0	9,443	55	100	0	0	1.8%	0.7%	64.7	7,337	####	907	149	59	9	2	13	5	72.7	79.9	83.8	-3.0	64.7	55.1	55.0	65.6	61.8	47.5	44.8	62.0	48.6	45.6	45.8	51.6
Existing with Project (2025)		4	0	9,443	55	100	0	0	1.8%	0.7%	64.7	7,337	####	907	149	59	9	2	13	5	72.7	79.9	83.8	-3.0	64.7	55.1	55.0	65.6	61.8	47.5	44.8	62.0	48.6	45.6	45.8	51.6
Future 2028		4	0	15,059	55	100	0	0	1.8%	0.7%	66.8	#####	####	####	237	94	14	3	20	8	72.7	79.9	83.8	-3.0	66.8	57.1	57.0	67.6	63.8	49.5	46.9	64.0	50.6	47.6	47.8	53.7
Future with Project (2028)		4	0	15,059	55	100	0	0	1.8%	0.7%	66.8	#####	####	####	237	94	14	3	20	8	72.7	79.9	83.8	-3.0	66.8	57.1	57.0	67.6	63.8	49.5	46.9	64.0	50.6	47.6	47.8	53.7
5th St. w/o Rose Avenue																																			
Existing 2025		4	0	7,766	55	100	0	0	1.8%	0.7%	63.9	6,034	986	746	122	48	7	2	11	4	72.7	79.9	83.8	-3.0	63.9	54.2	54.2	64.7	60.9	46.6	44.0	61.2	47.7	44.8	44.9	50.8
Existing with Project (2025)		4	0	7,964	55	100	0	0	1.8%	0.7%	64.0	6,188	####	765	125	50	7	2	11	4	72.7	79.9	83.8	-3.0	64.0	54.3	54.3	64.8	61.0	46.7	44.1	61.3	47.8	44.9	45.0	50.9
Future 2028		4	0	11,902	55	100	0	0	1.8%	0.7%	65.8	9,248	####	####	187	74	11	2	16	7	72.7	79.9	83.8	-3.0	65.7	56.1	56.0	66.6	62.8	48.5	45.8	63.0	49.6	46.6	46.8	52.6
Future with Project (2028)		4	0	12,100	55	100	0	0	1.8%	0.7%	65.8	9,402	####	####	190	75	11	2	16	7	72.7	79.9	83.8	-3.0	65.8	56.1	56.1	66.7	62.8	48.6	45.9	63.1	49.6	46.7	46.8	52.7
Existing 2025		4	0	10,578	55	100	0	0	1.8%	0.7%	65.2	8,219	####	####	166	66	10	2	14	6	72.7	79.9	83.8	-3.0	65.2	55.6	55.5	66.1	62.3	48.0	45.3	62.5	49.1	46.1	46.3	52.1
Existing with Project (2025)		4	0	10,862	55	100	0	0	1.8%	0.7%	65.4	8,440	####	####	171	68	10	2	15	6	72.7	79.9	83.8	-3.0	65.3	55.7	55.6	66.2	62.4	48.1	45.4	62.6	49.2	46.2	46.4	52.2
Future 2028		4	0	14,663	55	100	0	0	1.8%	0.7%	66.7	#####	####	####	231	91	13	3	20	8	72.7	79.9	83.8	-3.0	66.7	57.0	56.9	67.5	63.7	49.4	46.7	63.9	50.5	47.5	47.7	53.6
Future with Project (2028)		4	0	14,947	55	100	0	0	1.8%	0.7%	66.7	#####	####	####	235	93	14	3	20	8	72.7	79.9	83.8	-3.0	66.7	57.1	57.0	67.6	63.8	49.5	46.8	64.0	50.6	47.6	47.8	53.6

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name

Weekday AM/PM Peak Hour Volumes

Intersection: 12

Rose Avenue & Wooley Road

rev. (Date)

Rose Avenue

Southbound

	right	through	left
Existing 2025	239	777	13
Existing with Pro	256	794	13
Future 2028	300	890	14
Future with Proje	317	907	14
Existing 2025	312	1,046	9
Existing with Pro	325	1,059	9
Future 2028	419	1,223	10
Future with Proje	432	1,236	10

Eastbound

	left	through	right
Existing 2025	195	374	30
Existing with Pro	201	374	30
Future 2028	347	381	65
Future with Proje	353	381	65
Existing 2025	210	201	52
Existing with Pro	230	201	52
Future 2028	256	205	84
Future with Proje	276	205	84

Westbound

	right	through	left
Existing 2025	13	154	52
Existing with Pro	13	154	52
Future 2028	14	157	53
Future with Proje	14	157	53
Existing 2025	24	282	88
Existing with Pro	24	282	88
Future 2028	25	288	90
Future with Proje	25	288	90

Wooley Road

W E

S N

Northbound

	left	through	right
Existing 2025	65	1,063	122
Existing with Pro	65	1,069	122
Future 2028	92	1,244	125
Future with Proje	92	1,250	125
Existing 2025	56	817	77
Existing with Pro	56	837	77
Future 2028	92	965	79
Future with Proje	92	985	79

ADT

Road	Rose Avenue		Wooley Road	
Leg	North of	South of	East of	West of
Cross Street	Wooley Road		Rose Avenue	
Existing 2025	19,780.0	18,137.4	6,260.8	9,090.2
Existing with Pro	20,175.6	18,335.2	6,260.8	9,288.0
Future 2028	24,157.4	21,233.4	6,398.4	11,541.2
Future with Proje	24,553.0	21,431.2	6,398.4	11,739.0
Existing 2025	20,794.8	18,369.6	5,856.6	9,571.8
Existing with Pro	21,362.4	18,653.4	5,856.6	9,855.6
Future 2028	24,922.8	21,783.8	5,994.2	11,558.4
Future with Proje	25,490.4	22,067.6	5,994.2	11,842.2

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME												Traffic Volumes									Ref. Energy Level			Dist	Ld			Le			Ln		
Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	A	MT	HT	Adj	A	MT	HT	Total	A	MT	HT	Total	A	MT	HT	Total
Rose Avenue n/o Wooley Rd.																																			
Existing 2025		4	0	19,780	40	75	0	0	1.8%	0.7%	65.9	#####	####	####	311	123	18	4	27	11	67.4	76.3	81.2	-1.7	65.3	57.4	58.2	66.6	62.3	49.8	48.1	62.7	49.1	48.0	49.0	53.5
Existing with Project (2025)		4	0	20,176	40	75	0	0	1.8%	0.7%	66.0	#####	####	####	318	126	18	4	27	11	67.4	76.3	81.2	-1.7	65.4	57.5	58.3	66.7	62.4	49.9	48.2	62.8	49.2	48.0	49.1	53.6
Future 2028		4	0	24,157	40	75	0	0	1.8%	0.7%	66.7	#####	####	####	380	151	22	5	33	14	67.4	76.3	81.2	-1.7	66.1	58.3	59.1	67.5	63.2	50.7	48.9	63.6	50.0	48.8	49.9	54.4
Future with Project (2028)		4	0	24,553	40	75	0	0	1.8%	0.7%	66.8	#####	####	####	386	153	22	5	33	14	67.4	76.3	81.2	-1.7	66.2	58.4	59.2	67.6	63.2	50.8	49.0	63.6	50.0	48.9	49.9	54.4
Existing 2025		4	0	20,795	40	75	0	0	1.8%	0.7%	66.1	#####	####	####	327	130	19	4	28	12	67.4	76.3	81.2	-1.7	65.5	57.6	58.5	66.8	62.5	50.1	48.3	62.9	49.3	48.2	49.2	53.7
Existing with Project (2025)		4	0	21,362	40	75	0	0	1.8%	0.7%	66.2	#####	####	####	336	133	19	4	29	12	67.4	76.3	81.2	-1.7	65.6	57.8	58.6	67.0	62.6	50.2	48.4	63.0	49.4	48.3	49.3	53.8
Future 2028		4	0	24,923	40	75	0	0	1.8%	0.7%	66.9	#####	####	####	392	155	23	5	34	14	67.4	76.3	81.2	-1.7	66.3	58.4	59.2	67.6	63.3	50.8	49.1	63.7	50.1	49.0	50.0	54.5
Future with Project (2028)		4	0	25,490	40	75	0	0	1.8%	0.7%	67.0	#####	####	####	401	159	23	5	35	14	67.4	76.3	81.2	-1.7	66.4	58.5	59.3	67.7	63.4	50.9	49.2	63.8	50.2	49.1	50.1	54.6
Rose Avenue s/o Wooley Rd.																																			
Existing 2025		4	0	18,137	40	100	0	0	1.8%	0.7%	64.2	#####	####	####	285	113	16	4	25	10	67.4	76.3	81.2	-3.0	63.6	55.7	56.6	64.9	60.6	48.2	46.4	61.0	47.4	46.3	47.3	51.8
Existing with Project (2025)		4	0	18,335	40	100	0	0	1.8%	0.7%	64.2	#####	####	####	289	114	17	4	25	10	67.4	76.3	81.2	-3.0	63.6	55.8	56.6	65.0	60.7	48.2	46.4	61.1	47.5	46.3	47.4	51.9
Future 2028		4	0	21,233	40	100	0	0	1.8%	0.7%	64.9	#####	####	####	334	132	19	4	29	12	67.4	76.3	81.2	-3.0	64.3	56.4	57.2	65.6	61.3	48.8	47.1	61.7	48.1	47.0	48.0	52.5
Future with Project (2028)		4	0	21,431	40	100	0	0	1.8%	0.7%	64.9	#####	####	####	337	134	19	4	29	12	67.4	76.3	81.2	-3.0	64.3	56.5	57.3	65.7	61.3	48.9	47.1	61.7	48.1	47.0	48.1	52.5
Existing 2025		4	0	18,370	40	100	0	0	1.8%	0.7%	64.2	#####	####	####	289	115	17	4	25	10	67.4	76.3	81.2	-3.0	63.6	55.8	56.6	65.0	60.7	48.2	46.5	61.1	47.5	46.3	47.4	51.9
Existing with Project (2025)		4	0	18,653	40	100	0	0	1.8%	0.7%	64.3	#####	####	####	294	116	17	4	25	11	67.4	76.3	81.2	-3.0	63.7	55.9	56.7	65.1	60.7	48.3	46.5	61.1	47.5	46.4	47.4	51.9
Future 2028		4	0	21,784	40	100	0	0	1.8%	0.7%	65.0	#####	####	####	343	136	20	4	29	12	67.4	76.3	81.2	-3.0	64.4	56.5	57.4	65.7	61.4	48.9	47.2	61.8	48.2	47.1	48.1	52.6
Future with Project (2028)		4	0	22,068	40	100	0	0	1.8%	0.7%	65.0	#####	####	####	347	138	20	4	30	12	67.4	76.3	81.2	-3.0	64.4	56.6	57.4	65.8	61.5	49.0	47.2	61.9	48.3	47.1	48.2	52.7
Wooley Rd. St. e/o Rose																																			
Existing 2025		2	0	6,261	40	100	0	0	1.8%	0.7%	59.5	4,865	795	601	99	39	6	1	8	4	67.4	76.3	81.2	-3.1	58.9	51.1	51.9	60.3	55.9	43.5	41.7	56.3	42.7	41.6	42.6	47.1
Existing with Project (2025)		2	0	6,261	40	100	0	0	1.8%	0.7%	59.5	4,865	795	601	99	39	6	1	8	4	67.4	76.3	81.2	-3.1	58.9	51.1	51.9	60.3	55.9	43.5	41.7	56.3	42.7	41.6	42.6	47.1
Future 2028		2	0	6,398	40	100	0	0	1.8%	0.7%	59.6	4,972	813	614	101	40	6	1	9	4	67.4	76.3	81.2	-3.1	59.0	51.1	52.0	60.3	56.0	43.6	41.8	56.4	42.8	41.7	42.7	47.2
Future with Project (2028)		2	0	6,398	40	100	0	0	1.8%	0.7%	59.6	4,972	813	614	101	40	6	1	9	4	67.4	76.3	81.2	-3.1	59.0	51.1	52.0	60.3	56.0	43.6	41.8	56.4	42.8	41.7	42.7	47.2
Existing 2025		2	0	5,857	40	100	0	0	1.8%	0.7%	59.2	4,551	744	562	92	37	5	1	8	3	67.4	76.3	81.2	-3.1	58.6	50.8	51.6	60.0	55.6	43.2	41.4	56.0	42.4	41.3	42.4	46.8
Existing with Project (2025)		2	0	5,857	40	100	0	0	1.8%	0.7%	59.2	4,551	744	562	92	37	5	1	8	3	67.4	76.3	81.2	-3.1	58.6	50.8	51.6	60.0	55.6	43.2	41.4	56.0	42.4	41.3	42.4	46.8
Future 2028		2	0	5,994	40	100	0	0	1.8%	0.7%	59.3	4,657	761	575	94	37	5	1	8	3	67.4	76.3	81.2	-3.1	58.7	50.9	51.7	60.1	55.7	43.3	41.5	56.1	42.5	41.4	42.5	46.9
Future with Project (2028)		2	0	5,994	40	100	0	0	1.8%	0.7%	59.3	4,657	761	575	94	37	5	1	8	3	67.4	76.3	81.2	-3.1	58.7	50.9	51.7	60.1	55.7	43.3	41.5	56.1	42.5	41.4	42.5	46.9
Wooley Rd. St. w/o Rose																																			
Existing 2025		4	0	9,090	40	75	0	0	1.8%	0.7%	62.5	7,063	####	873	143	57	8	2	12	5	67.4	76.3	81.2	-1.7	61.9	54.0	54.9	63.2	58.9	46.5	44.7	59.3	45.7	44.6	45.6	50.1
Existing with Project (2025)		4	0	9,288	40	75	0	0	1.8%	0.7%	62.6	7,217	####	892	146	58	8	2	13	5	67.4	76.3	81.2	-1.7	62.0	54.1	55.0	63.3	59.0	46.6	44.8	59.4	45.8	44.7	45.7	50.2
Future 2028		4	0	11,541	40	75	0	0	1.8%	0.7%	63.5	8,968	####	####	182	72	10	2	16	7	67.4	76.3	81.2	-1.7	62.9	55.1	55.9	64.3	60.0	47.5	45.7	60.3	46.8	45.6	46.7	51.2
Future with Project (2028)		4	0	11,739	40	75	0	0	1.8%	0.7%	63.6	9,121	####	####	185	73	11	2	16	7	67.4	76.3	81.2	-1.7	63.0	55.2	56.0	64.4	60.0	47.6	45.8	60.4	46.8	45.7	46.7	51.2
Existing 2025		4	0	9,572	40	75	0	0	1.8%	0.7%	62.7	7,437	####	919	151	60	9	2	13	5	67.4	76.3	81.2	-1.7	62.1	54.3	55.1	63.5	59.1	46.7	44.9	59.5	45.9	44.8	45.9	50.3
Existing with Project (2025)		4	0	9,856	40	75	0	0	1.8%	0.7%	62.8	7,658	####	946	155	61	9	2	13	6	67.4	76.3	81.2	-1.7	62.3	54.4	55.2	63.6	59.3	46.8	45.1	59.7	46.1	44.9	46.0	50.5
Future 2028		4	0	11,558	40	75	0	0	1.8%	0.7%	63.5	8,981	####	####	182	72	11	2	16	7	67.4	76.3	81.2	-1.7	62.9	55.1	55.9	64.3	60.0	47.5	45.7	60.4	46.8	45.6	46.7	51.2
Future with Project (2028)		4	0	11,842	40	75	0	0	1.8%	0.7%	63.6	9,201	####	####	186	74	11	2	16	7	67.4	76.3	81.2	-1.7	63.0	55.2	56.0	64.4	60.1	47.6	45.9	60.5	46.9	45.7	46.8	51.3

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 13

Saviers Road & Wooley Road

Saviers Road

Southbound

	right	through	left
Existing 2025	61	591	475
Existing with Pro	61	591	475
Future 2028	65	617	485
Future with Proje	65	617	485
Existing 2025	38	480	504
Existing with Pro	38	480	504
Future 2028	40	519	514
Future with Proje	40	519	514

Eastbound

	left	through	right
Existing 2025	80	219	193
Existing with Pro	80	225	193
Future 2028	82	405	198
Future with Proje	82	411	198
Existing 2025	193	481	192
Existing with Pro	193	501	192
Future 2028	198	563	196
Future with Proje	198	583	196

Wooley Road

Westbound

	right	through	left
Existing 2025	27	370	88
Existing with Pro	27	387	88
Future 2028	28	458	91
Future with Proje	28	475	91
Existing 2025	30	199	85
Existing with Pro	30	212	85
Future 2028	31	339	87
Future with Proje	31	352	87

N

W E

S

Northbound

	left	through	right
Existing 2025	390	458	517
Existing with Pro	390	458	517
Future 2028	441	483	583
Future with Proje	441	483	583
Existing 2025	510	776	501
Existing with Pro	510	776	501
Future 2028	562	821	568
Future with Proje	562	821	568

ADT

Road	Saviers Road		Wooley Road	
Leg	North of	South of	East of	West of
Cross Street	Wooley Road		Saviers Road	
Existing 2025	14,551.2	19,238.2	14,585.6	11,291.8
Existing with Pro	14,551.2	19,238.2	14,783.4	11,489.6
Future 2028	15,136.0	20,751.8	17,630.0	14,181.4
Future with Proje	15,136.0	20,751.8	17,827.8	14,379.2
Existing 2025	17,380.6	21,878.4	15,480.0	13,871.8
Existing with Pro	17,380.6	21,878.4	15,763.8	14,155.6
Future 2028	18,257.8	23,675.8	18,077.2	16,322.8
Future with Proje	18,257.8	23,675.8	18,361.0	16,606.6

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME												Traffic Volumes									Ref. Energy Level				Dist	Ld			Le				Ln			
Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	A	MT	HT	Adj	A	MT	HT	Total	A	MT	HT	Total	A	MT	HT	Total
Saviers Rd n/o Wooley																																				
Existing 2025		6	0	14,551	40	70	0	0	1.8%	0.7%	65.2	#####	####	####	229	91	13	3	20	8	67.4	76.3	81.2	-1.1	64.6	56.7	57.5	65.9	61.6	49.1	47.4	62.0	48.4	47.2	48.3	52.8
Existing with Project (2025)		6	0	14,551	40	70	0	0	1.8%	0.7%	65.2	#####	####	####	229	91	13	3	20	8	67.4	76.3	81.2	-1.1	64.6	56.7	57.5	65.9	61.6	49.1	47.4	62.0	48.4	47.2	48.3	52.8
Future 2028		6	0	15,136	40	70	0	0	1.8%	0.7%	65.3	#####	####	####	238	94	14	3	20	9	67.4	76.3	81.2	-1.1	64.7	56.9	57.7	66.1	61.7	49.3	47.5	62.1	48.6	47.4	48.5	52.9
Future with Project (2028)		6	0	15,136	40	70	0	0	1.8%	0.7%	65.3	#####	####	####	238	94	14	3	20	9	67.4	76.3	81.2	-1.1	64.7	56.9	57.7	66.1	61.7	49.3	47.5	62.1	48.6	47.4	48.5	52.9
Existing 2025		6	0	17,381	40	70	0	0	1.8%	0.7%	65.9	#####	####	####	274	108	16	3	24	10	67.4	76.3	81.2	-1.1	65.3	57.5	58.3	66.7	62.3	49.9	48.1	62.7	49.2	48.0	49.1	53.5
Existing with Project (2025)		6	0	17,381	40	70	0	0	1.8%	0.7%	65.9	#####	####	####	274	108	16	3	24	10	67.4	76.3	81.2	-1.1	65.3	57.5	58.3	66.7	62.3	49.9	48.1	62.7	49.2	48.0	49.1	53.5
Future 2028		6	0	18,258	40	70	0	0	1.8%	0.7%	66.1	#####	####	####	287	114	17	4	25	10	67.4	76.3	81.2	-1.1	65.5	57.7	58.5	66.9	62.6	50.1	48.3	63.0	49.4	48.2	49.3	53.8
Future with Project (2028)		6	0	18,258	40	70	0	0	1.8%	0.7%	66.1	#####	####	####	287	114	17	4	25	10	67.4	76.3	81.2	-1.1	65.5	57.7	58.5	66.9	62.6	50.1	48.3	63.0	49.4	48.2	49.3	53.8
Saviers Rd s/o Wooley																																				
Existing 2025		6	0	19,238	40	70	0	0	1.8%	0.7%	66.4	#####	####	####	303	120	17	4	26	11	67.4	76.3	81.2	-1.1	65.8	57.9	58.7	67.1	62.8	50.3	48.6	63.2	49.6	48.5	49.5	54.0
Existing with Project (2025)		6	0	19,238	40	70	0	0	1.8%	0.7%	66.4	#####	####	####	303	120	17	4	26	11	67.4	76.3	81.2	-1.1	65.8	57.9	58.7	67.1	62.8	50.3	48.6	63.2	49.6	48.5	49.5	54.0
Future 2028		6	0	20,752	40	70	0	0	1.8%	0.7%	66.7	#####	####	####	327	129	19	4	28	12	67.4	76.3	81.2	-1.1	66.1	58.2	59.1	67.4	63.1	50.7	48.9	63.5	49.9	48.8	49.8	54.3
Future with Project (2028)		6	0	20,752	40	70	0	0	1.8%	0.7%	66.7	#####	####	####	327	129	19	4	28	12	67.4	76.3	81.2	-1.1	66.1	58.2	59.1	67.4	63.1	50.7	48.9	63.5	49.9	48.8	49.8	54.3
Existing 2025		6	0	21,878	40	70	0	0	1.8%	0.7%	66.9	#####	####	####	344	136	20	4	30	12	67.4	76.3	81.2	-1.1	66.3	58.5	59.3	67.7	63.3	50.9	49.1	63.7	50.2	49.0	50.1	54.5
Existing with Project (2025)		6	0	21,878	40	70	0	0	1.8%	0.7%	66.9	#####	####	####	344	136	20	4	30	12	67.4	76.3	81.2	-1.1	66.3	58.5	59.3	67.7	63.3	50.9	49.1	63.7	50.2	49.0	50.1	54.5
Future 2028		6	0	23,676	40	70	0	0	1.8%	0.7%	67.3	#####	####	####	373	148	22	5	32	13	67.4	76.3	81.2	-1.1	66.7	58.8	59.6	68.0	63.7	51.2	49.5	64.1	50.5	49.4	50.4	54.9
Future with Project (2028)		6	0	23,676	40	70	0	0	1.8%	0.7%	67.3	#####	####	####	373	148	22	5	32	13	67.4	76.3	81.2	-1.1	66.7	58.8	59.6	68.0	63.7	51.2	49.5	64.1	50.5	49.4	50.4	54.9
Wooley e/o Saviers Rd																																				
Existing 2025		6	0	14,586	40	70	0	0	1.8%	0.7%	65.2	#####	####	####	230	91	13	3	20	8	67.4	76.3	81.2	-1.1	64.6	56.7	57.5	65.9	61.6	49.1	47.4	62.0	48.4	47.3	48.3	52.8
Existing with Project (2025)		6	0	14,783	40	70	0	0	1.8%	0.7%	65.2	#####	####	####	233	92	13	3	20	8	67.4	76.3	81.2	-1.1	64.6	56.8	57.6	66.0	61.6	49.2	47.4	62.0	48.4	47.3	48.4	52.8
Future 2028		6	0	17,630	40	70	0	0	1.8%	0.7%	66.0	#####	####	####	277	110	16	4	24	10	67.4	76.3	81.2	-1.1	65.4	57.5	58.4	66.7	62.4	49.9	48.2	62.8	49.2	48.1	49.1	53.6
Future with Project (2028)		6	0	17,828	40	70	0	0	1.8%	0.7%	66.0	#####	####	####	281	111	16	4	24	10	67.4	76.3	81.2	-1.1	65.4	57.6	58.4	66.8	62.5	50.0	48.2	62.8	49.3	48.1	49.2	53.7
Existing 2025		6	0	15,480	40	70	0	0	1.8%	0.7%	65.4	#####	####	####	244	97	14	3	21	9	67.4	76.3	81.2	-1.1	64.8	57.0	57.8	66.2	61.8	49.4	47.6	62.2	48.6	47.5	48.6	53.0
Existing with Project (2025)		6	0	15,764	40	70	0	0	1.8%	0.7%	65.5	#####	####	####	248	98	14	3	21	9	67.4	76.3	81.2	-1.1	64.9	57.0	57.9	66.2	61.9	49.5	47.7	62.3	48.7	47.6	48.6	53.1
Future 2028		6	0	18,077	40	70	0	0	1.8%	0.7%	66.1	#####	####	####	284	113	16	4	24	10	67.4	76.3	81.2	-1.1	65.5	57.6	58.5	66.8	62.5	50.1	48.3	62.9	49.3	48.2	49.2	53.7
Future with Project (2028)		6	0	18,361	40	70	0	0	1.8%	0.7%	66.2	#####	####	####	289	115	17	4	25	10	67.4	76.3	81.2	-1.1	65.6	57.7	58.5	66.9	62.6	50.1	48.4	63.0	49.4	48.3	49.3	53.8
Wooley w/o Saviers Rd																																				
Existing 2025		6	0	11,292	40	70	0	0	1.8%	0.7%	64.1	8,774	####	####	178	70	10	2	15	6	67.4	76.3	81.2	-1.1	63.5	55.6	56.4	64.8	60.5	48.0	46.3	60.9	47.3	46.1	47.2	51.7
Existing with Project (2025)		6	0	11,490	40	70	0	0	1.8%	0.7%	64.1	8,927	####	####	181	72	10	2	16	6	67.4	76.3	81.2	-1.1	63.5	55.7	56.5	64.9	60.5	48.1	46.3	60.9	47.4	46.2	47.3	51.7
Future 2028		6	0	14,181	40	70	0	0	1.8%	0.7%	65.0	#####	####	####	223	88	13	3	19	8	67.4	76.3	81.2	-1.1	64.4	56.6	57.4	65.8	61.5	49.0	47.2	61.9	48.3	47.1	48.2	52.7
Future with Project (2028)		6	0	14,379	40	70	0	0	1.8%	0.7%	65.1	#####	####	####	226	90	13	3	19	8	67.4	76.3	81.2	-1.1	64.5	56.6	57.5	65.8	61.5	49.1	47.3	61.9	48.3	47.2	48.2	52.7
Existing 2025		6	0	13,872	40	70	0	0	1.8%	0.7%	64.9	#####	####	####	218	87	13	3	19	8	67.4	76.3	81.2	-1.1	64.3	56.5	57.3	65.7	61.4	48.9	47.2	61.8	48.2	47.0	48.1	52.6
Existing with Project (2025)		6	0	14,156	40	70	0	0	1.8%	0.7%	65.0	#####	####	####	223	88	13	3	19	8	67.4	76.3	81.2	-1.1	64.4	56.6	57.4	65.8	61.5	49.0	47.2	61.8	48.3	47.1	48.2	52.7
Future 2028		6	0	16,323	40	70	0	0	1.8%	0.7%	65.7	#####	####	####	257	102	15	3	22	9	67.4	76.3	81.2	-1.1	65.1	57.2	58.0	66.4	62.1	49.6	47.9	62.5	48.9	47.7	48.8	53.3
Future with Project (2028)		6	0	16,607	40	70	0	0	1.8%	0.7%	65.7	#####	####	####	261	104	15	3	22	9	67.4	76.3	81.2	-1.1	65.1	57.3	58.1	66.5	62.1	49.7	47.9	62.5	49.0	47.8	48.9	53.3

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 14

Oxnard Boulevard & 5th Street

Oxnard Boulevard

Southbound	right	through	left
Existing 2025	23	814	135
Existing with Pro	23	814	135
Future 2028	32	907	174
Future with Proje	32	907	174
Existing 2025	48	1,178	108
Existing with Pro	48	1,178	108
Future 2028	69	1,285	138
Future with Proje	69	1,285	138

Eastbound	left	through	right
Existing 2025	29	353	7
Existing with Pro	29	359	7
Future 2028	30	653	11
Future with Proje	30	659	11
Existing 2025	35	233	30
Existing with Pro	35	253	30
Future 2028	36	358	40
Future with Proje	36	378	40

Westbound	right	through	left
Existing 2025	42	138	30
Existing with Pro	42	155	30
Future 2028	43	245	31
Future with Proje	43	262	31
Existing 2025	118	305	73
Existing with Pro	118	318	73
Future 2028	121	576	77
Future with Proje	121	589	77

Northbound	left	through	right
Existing 2025	14	836	40
Existing with Pro	14	836	40
Future 2028	26	851	47
Future with Proje	26	851	47
Existing 2025	50	982	61
Existing with Pro	50	982	61
Future 2028	57	1000	65
Future with Proje	57	1000	65

5th Street

W E

N

S

ADT

Road	Oxnard Boulevard		5th Street	
Leg	North of	South of	East of	West of
Cross Street	5th Street		Oxnard Boulevard	
Existing 2025	16,159.4	14,972.6	6,346.8	4,850.4
Existing with Pro	16,159.4	14,972.6	6,544.6	5,048.2
Future 2028	17,518.2	16,107.8	10,259.8	8,574.2
Future with Proje	17,518.2	16,107.8	10,457.6	8,772.0
Existing 2025	21,233.4	20,416.4	7,722.8	6,028.6
Existing with Pro	21,233.4	20,416.4	8,006.6	6,312.4
Future 2028	22,781.4	21,706.4	11,481.0	9,769.6
Future with Proje	22,781.4	21,706.4	11,764.8	10,053.4

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	dB(A) CNEL	Traffic Volumes: Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Level: A	MT	HT	Adj	Dist Ld: A	MT	HT	Total	Le: A	MT	HT	Total	Ln: A	MT	HT	Total
Oxnard Blvd n/o 5th St.																																			
Existing 2025		4	0	16,159	30	40	0	0	1.8%	0.7%	65.7	#####	####	####	254	101	15	3	22	9	62.5	73.1	80.3	1.4	63.9	57.7	60.8	66.3	60.9	50.1	50.6	61.6	47.7	48.2	51.6	54.3
Existing with Project (2025)		4	0	16,159	30	40	0	0	1.8%	0.7%	65.7	#####	####	####	254	101	15	3	22	9	62.5	73.1	80.3	1.4	63.9	57.7	60.8	66.3	60.9	50.1	50.6	61.6	47.7	48.2	51.6	54.3
Future 2028		4	0	17,518	30	40	0	0	1.8%	0.7%	66.0	#####	####	####	276	109	16	3	24	10	62.5	73.1	80.3	1.4	64.2	58.0	61.2	66.6	61.3	50.5	51.0	62.0	48.1	48.6	51.9	54.7
Future with Project (2028)		4	0	17,518	30	40	0	0	1.8%	0.7%	66.0	#####	####	####	276	109	16	3	24	10	62.5	73.1	80.3	1.4	64.2	58.0	61.2	66.6	61.3	50.5	51.0	62.0	48.1	48.6	51.9	54.7
Existing 2025		4	0	21,233	30	40	0	0	1.8%	0.7%	66.9	#####	####	####	334	132	19	4	29	12	62.5	73.1	80.3	1.4	65.1	58.9	62.0	67.5	62.1	51.3	51.8	62.8	48.9	49.4	52.8	55.5
Existing with Project (2025)		4	0	21,233	30	40	0	0	1.8%	0.7%	66.9	#####	####	####	334	132	19	4	29	12	62.5	73.1	80.3	1.4	65.1	58.9	62.0	67.5	62.1	51.3	51.8	62.8	48.9	49.4	52.8	55.5
Future 2028		4	0	22,781	30	40	0	0	1.8%	0.7%	67.2	#####	####	####	359	142	21	5	31	13	62.5	73.1	80.3	1.4	65.4	59.2	62.3	67.8	62.4	51.6	52.1	63.1	49.2	49.7	53.1	55.8
Future with Project (2028)		4	0	22,781	30	40	0	0	1.8%	0.7%	67.2	#####	####	####	359	142	21	5	31	13	62.5	73.1	80.3	1.4	65.4	59.2	62.3	67.8	62.4	51.6	52.1	63.1	49.2	49.7	53.1	55.8
Oxnard Blvd s/o 5th St.																																			
Existing 2025		4	0	14,973	30	40	0	0	1.8%	0.7%	65.4	#####	####	####	236	93	14	3	20	8	62.5	73.1	80.3	1.4	63.6	57.4	60.5	65.9	60.6	49.8	50.3	61.3	47.4	47.9	51.2	54.0
Existing with Project (2025)		4	0	14,973	30	40	0	0	1.8%	0.7%	65.4	#####	####	####	236	93	14	3	20	8	62.5	73.1	80.3	1.4	63.6	57.4	60.5	65.9	60.6	49.8	50.3	61.3	47.4	47.9	51.2	54.0
Future 2028		4	0	16,108	30	40	0	0	1.8%	0.7%	65.7	#####	####	####	253	100	15	3	22	9	62.5	73.1	80.3	1.4	63.9	57.7	60.8	66.3	60.9	50.1	50.6	61.6	47.7	48.2	51.6	54.3
Future with Project (2028)		4	0	16,108	30	40	0	0	1.8%	0.7%	65.7	#####	####	####	253	100	15	3	22	9	62.5	73.1	80.3	1.4	63.9	57.7	60.8	66.3	60.9	50.1	50.6	61.6	47.7	48.2	51.6	54.3
Existing 2025		4	0	20,416	30	40	0	0	1.8%	0.7%	66.7	#####	####	####	321	127	19	4	28	12	62.5	73.1	80.3	1.4	64.9	58.7	61.8	67.3	61.9	51.1	51.7	62.6	48.7	49.2	52.6	55.3
Existing with Project (2025)		4	0	20,416	30	40	0	0	1.8%	0.7%	66.7	#####	####	####	321	127	19	4	28	12	62.5	73.1	80.3	1.4	64.9	58.7	61.8	67.3	61.9	51.1	51.7	62.6	48.7	49.2	52.6	55.3
Future 2028		4	0	21,706	30	40	0	0	1.8%	0.7%	67.0	#####	####	####	342	135	20	4	29	12	62.5	73.1	80.3	1.4	65.2	59.0	62.1	67.6	62.2	51.4	51.9	62.9	49.0	49.5	52.9	55.6
Future with Project (2028)		4	0	21,706	30	40	0	0	1.8%	0.7%	67.0	#####	####	####	342	135	20	4	29	12	62.5	73.1	80.3	1.4	65.2	59.0	62.1	67.6	62.2	51.4	51.9	62.9	49.0	49.5	52.9	55.6
5th St. e/o Oxnard Blvd																																			
Existing 2025		4	0	6,347	35	40	0	0	1.8%	0.7%	62.7	4,931	806	609	100	40	6	1	9	4	65.1	74.8	80.0	1.4	61.8	54.7	55.9	63.4	58.8	47.1	45.7	59.3	45.6	45.2	46.6	50.6
Existing with Project (2025)		4	0	6,545	35	40	0	0	1.8%	0.7%	62.8	5,085	831	628	103	41	6	1	9	4	65.1	74.8	80.0	1.4	61.9	54.8	56.0	63.5	58.9	47.2	45.8	59.4	45.7	45.3	46.8	50.8
Future 2028		4	0	10,260	35	40	0	0	1.8%	0.7%	64.8	7,972	####	985	161	64	9	2	14	6	65.1	74.8	80.0	1.4	63.8	56.8	58.0	65.5	60.9	49.2	47.8	61.3	47.7	47.3	48.7	52.7
Future with Project (2028)		4	0	10,458	35	40	0	0	1.8%	0.7%	64.9	8,126	####	####	165	65	10	2	14	6	65.1	74.8	80.0	1.4	63.9	56.8	58.0	65.6	61.0	49.3	47.9	61.4	47.8	47.4	48.8	52.8
Existing 2025		4	0	7,723	35	40	0	0	1.8%	0.7%	63.5	6,001	981	741	122	48	7	2	10	4	65.1	74.8	80.0	1.4	62.6	55.5	56.7	64.2	59.6	47.9	46.6	60.1	46.4	46.1	47.5	51.5
Existing with Project (2025)		4	0	8,007	35	40	0	0	1.8%	0.7%	63.7	6,221	####	769	126	50	7	2	11	5	65.1	74.8	80.0	1.4	62.8	55.7	56.9	64.4	59.8	48.1	46.7	60.3	46.6	46.2	47.6	51.6
Future 2028		4	0	11,481	35	40	0	0	1.8%	0.7%	65.3	8,921	####	####	181	72	10	2	16	6	65.1	74.8	80.0	1.4	64.3	57.2	58.4	66.0	61.4	49.7	48.3	61.8	48.2	47.8	49.2	53.2
Future with Project (2028)		4	0	11,765	35	40	0	0	1.8%	0.7%	65.4	9,141	####	####	185	73	11	2	16	7	65.1	74.8	80.0	1.4	64.4	57.4	58.5	66.1	61.5	49.8	48.4	61.9	48.3	47.9	49.3	53.3
5th St. w/o Oxnard Blvd																																			
Existing 2025		4	0	4,850	35	40	0	0	1.8%	0.7%	61.5	3,769	616	466	76	30	4	1	7	3	65.1	74.8	80.0	1.4	60.6	53.5	54.7	62.2	57.6	45.9	44.5	58.1	44.4	44.0	45.5	49.5
Existing with Project (2025)		4	0	5,048	35	40	0	0	1.8%	0.7%	61.7	3,922	641	485	79	31	5	1	7	3	65.1	74.8	80.0	1.4	60.8	53.7	54.9	62.4	57.8	46.1	44.7	58.3	44.6	44.2	45.6	49.6
Future 2028		4	0	8,574	35	40	0	0	1.8%	0.7%	64.0	6,662	####	823	135	53	8	2	12	5	65.1	74.8	80.0	1.4	63.1	56.0	57.2	64.7	60.1	48.4	47.0	60.6	46.9	46.5	47.9	51.9
Future with Project (2028)		4	0	8,772	35	40	0	0	1.8%	0.7%	64.1	6,816	####	842	138	55	8	2	12	5	65.1	74.8	80.0	1.4	63.2	56.1	57.3	64.8	60.2	48.5	47.1	60.7	47.0	46.6	48.0	52.0
Existing 2025		4	0	6,029	35	40	0	0	1.8%	0.7%	62.5	4,684	766	579	95	38	5	1	8	3	65.1	74.8	80.0	1.4	61.5	54.4	55.6	63.2	58.6	46.9	45.5	59.0	45.4	45.0	46.4	50.4
Existing with Project (2025)		4	0	6,312	35	40	0	0	1.8%	0.7%	62.7	4,905	802	606	99	39	6	1	9	4	65.1	74.8	80.0	1.4	61.7	54.6	55.8	63.4	58.8	47.1	45.7	59.2	45.6	45.2	46.6	50.6
Future 2028		4	0	9,770	35	40	0	0	1.8%	0.7%	64.6	7,591	####	938	154	61	9	2	13	6	65.1	74.8	80.0	1.4	63.6	56.5	57.7	65.3	60.7	49.0	47.6	61.1	47.5	47.1	48.5	52.5
Future with Project (2028)		4	0	10,053	35	40	0	0	1.8%	0.7%	64.7	7,811	####	965	158	63	9	2	14	6	65.1	74.8	80.0	1.4	63.8	56.7	57.9	65.4	60.8	49.1	47.7	61.3	47.6	47.2	48.6	52.6

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 15

Oxnard Boulevard & Gonzales Road

Oxnard Boulevard

Southbound

	right	through	left
Existing 2025	27	964	300
Existing with Pro	27	964	300
Future 2028	64	982	348
Future with Proje	64	982	348
Existing 2025	162	1,206	335
Existing with Pro	162	1,206	335
Future 2028	212	1,228	378
Future with Proje	212	1,228	378

Eastbound

	left	through	right
Existing 2025	178	1,180	68
Existing with Pro	178	1,186	68
Future 2028	228	1,382	70
Future with Proje	228	1,388	70
Existing 2025	256	800	90
Existing with Pro	256	820	90
Future 2028	304	897	92
Future with Proje	304	917	92

Westbound

	right	through	left
Existing 2025	419	801	297
Existing with Pro	419	818	297
Future 2028	465	934	303
Future with Proje	465	951	303
Existing 2025	434	1,112	321
Existing with Pro	434	1,125	321
Future 2028	483	1,258	327
Future with Proje	483	1271	327

Gonzales Road

W E

S

N

Northbound

	left	through	right
Existing 2025	106	1,059	466
Existing with Pro	106	1,059	466
Future 2028	124	1,233	490
Future with Proje	124	1,233	490
Existing 2025	156	1101	283
Existing with Pro	156	1101	283
Future 2028	169	1275	298
Future with Proje	169	1275	298

ADT

Road	Oxnard Boulevard		Gonzales Road	
Leg	North of	South of	East of	West of
Cross Street	Gonzales Road		Oxnard Boulevard	
Existing 2025	25,344.2	25,456.0	29,781.8	20,296.0
Existing with Pro	25,344.2	25,456.0	29,979.6	20,493.8
Future 2028	28,552.0	27,537.2	33,729.2	24,097.2
Future with Proje	28,552.0	27,537.2	33,927.0	24,295.0
Existing 2025	30,048.4	27,150.2	28,251.0	22,153.6
Existing with Pro	30,048.4	27,150.2	28,534.8	22,437.4
Future 2028	33,368.0	29,145.4	31,312.6	25,215.2
Future with Proje	33,368.0	29,145.4	31,596.4	25,499.0

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME / Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	dB(A) CNEL	Traffic Volumes: Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	Ref. Energy Levels: A	MT	HT	Dist Adj	Ld: A	MT	HT	Total	Le: A	MT	HT	Total	Ln: A	MT	HT	Total
Oxnard Blvd n/o Gonzales																																				
Existing 2025		6	0	25,344	45	75	0	0	1.8%	0.7%	68.4	#####	####	####	399	158	23	5	34	14	69.3	77.6	82.1	-1.5	68.1	59.5	60.0	69.2	65.1	52.0	49.9	65.4	51.9	50.1	50.8	55.8
Existing with Project (2025)		6	0	25,344	45	75	0	0	1.8%	0.7%	68.4	#####	####	####	399	158	23	5	34	14	69.3	77.6	82.1	-1.5	68.1	59.5	60.0	69.2	65.1	52.0	49.9	65.4	51.9	50.1	50.8	55.8
Future 2028		6	0	28,552	45	75	0	0	1.8%	0.7%	68.9	#####	####	####	449	178	26	6	39	16	69.3	77.6	82.1	-1.5	68.6	60.1	60.6	69.7	65.6	52.5	50.4	65.9	52.4	50.6	51.3	56.3
Future with Project (2028)		6	0	28,552	45	75	0	0	1.8%	0.7%	68.9	#####	####	####	449	178	26	6	39	16	69.3	77.6	82.1	-1.5	68.6	60.1	60.6	69.7	65.6	52.5	50.4	65.9	52.4	50.6	51.3	56.3
Existing 2025		6	0	30,048	45	75	0	0	1.8%	0.7%	69.2	#####	####	####	473	187	27	6	41	17	69.3	77.6	82.1	-1.5	68.8	60.3	60.8	69.9	65.8	52.7	50.6	66.2	52.6	50.8	51.5	56.5
Existing with Project (2025)		6	0	30,048	45	75	0	0	1.8%	0.7%	69.2	#####	####	####	473	187	27	6	41	17	69.3	77.6	82.1	-1.5	68.8	60.3	60.8	69.9	65.8	52.7	50.6	66.2	52.6	50.8	51.5	56.5
Future 2028		6	0	33,368	45	75	0	0	1.8%	0.7%	69.6	#####	####	####	525	208	30	7	45	19	69.3	77.6	82.1	-1.5	69.3	60.7	61.2	70.4	66.3	53.2	51.1	66.6	53.1	51.3	52.0	57.0
Future with Project (2028)		6	0	33,368	45	75	0	0	1.8%	0.7%	69.6	#####	####	####	525	208	30	7	45	19	69.3	77.6	82.1	-1.5	69.3	60.7	61.2	70.4	66.3	53.2	51.1	66.6	53.1	51.3	52.0	57.0
Oxnard Blvd s/o Gonzales																																				
Existing 2025		6	0	25,456	45	75	0	0	1.8%	0.7%	68.4	#####	####	####	401	159	23	5	34	14	69.3	77.6	82.1	-1.5	68.1	59.6	60.1	69.2	65.1	52.0	49.9	65.4	51.9	50.1	50.8	55.8
Existing with Project (2025)		6	0	25,456	45	75	0	0	1.8%	0.7%	68.4	#####	####	####	401	159	23	5	34	14	69.3	77.6	82.1	-1.5	68.1	59.6	60.1	69.2	65.1	52.0	49.9	65.4	51.9	50.1	50.8	55.8
Future 2028		6	0	27,537	45	75	0	0	1.8%	0.7%	68.8	#####	####	####	433	172	25	5	37	16	69.3	77.6	82.1	-1.5	68.4	59.9	60.4	69.6	65.5	52.3	50.2	65.8	52.3	50.4	51.2	56.1
Future with Project (2028)		6	0	27,537	45	75	0	0	1.8%	0.7%	68.8	#####	####	####	433	172	25	5	37	16	69.3	77.6	82.1	-1.5	68.4	59.9	60.4	69.6	65.5	52.3	50.2	65.8	52.3	50.4	51.2	56.1
Existing 2025		6	0	27,150	45	75	0	0	1.8%	0.7%	68.7	#####	####	####	427	169	25	5	37	15	69.3	77.6	82.1	-1.5	68.4	59.8	60.3	69.5	65.4	52.3	50.2	65.7	52.2	50.4	51.1	56.1
Existing with Project (2025)		6	0	27,150	45	75	0	0	1.8%	0.7%	68.7	#####	####	####	427	169	25	5	37	15	69.3	77.6	82.1	-1.5	68.4	59.8	60.3	69.5	65.4	52.3	50.2	65.7	52.2	50.4	51.1	56.1
Future 2028		6	0	29,145	45	75	0	0	1.8%	0.7%	69.0	#####	####	####	459	182	26	6	39	16	69.3	77.6	82.1	-1.5	68.7	60.1	60.6	69.8	65.7	52.6	50.5	66.0	52.5	50.7	51.4	56.4
Future with Project (2028)		6	0	29,145	45	75	0	0	1.8%	0.7%	69.0	#####	####	####	459	182	26	6	39	16	69.3	77.6	82.1	-1.5	68.7	60.1	60.6	69.8	65.7	52.6	50.5	66.0	52.5	50.7	51.4	56.4
Gonzales Rd. e/o Oxnard																																				
Existing 2025		6	0	29,782	45	75	0	0	1.8%	0.7%	69.1	#####	####	####	469	186	27	6	40	17	69.3	77.6	82.1	-1.5	68.8	60.2	60.7	69.9	65.8	52.7	50.6	66.1	52.6	50.8	51.5	56.5
Existing with Project (2025)		6	0	29,980	45	75	0	0	1.8%	0.7%	69.2	#####	####	####	472	187	27	6	41	17	69.3	77.6	82.1	-1.5	68.8	60.3	60.8	69.9	65.8	52.7	50.6	66.2	52.6	50.8	51.5	56.5
Future 2028		6	0	33,729	45	75	0	0	1.8%	0.7%	69.7	#####	####	####	531	210	31	7	46	19	69.3	77.6	82.1	-1.5	69.3	60.8	61.3	70.4	66.3	53.2	51.1	66.7	53.1	51.3	52.0	57.0
Future with Project (2028)		6	0	33,927	45	75	0	0	1.8%	0.7%	69.7	#####	####	####	534	212	31	7	46	19	69.3	77.6	82.1	-1.5	69.3	60.8	61.3	70.5	66.4	53.2	51.1	66.7	53.2	51.4	52.1	57.0
Existing 2025		6	0	28,251	45	75	0	0	1.8%	0.7%	68.9	#####	####	####	445	176	26	6	38	16	69.3	77.6	82.1	-1.5	68.5	60.0	60.5	69.7	65.6	52.4	50.3	65.9	52.4	50.6	51.3	56.2
Existing with Project (2025)		6	0	28,535	45	75	0	0	1.8%	0.7%	68.9	#####	####	####	449	178	26	6	39	16	69.3	77.6	82.1	-1.5	68.6	60.1	60.6	69.7	65.6	52.5	50.4	65.9	52.4	50.6	51.3	56.3
Future 2028		6	0	31,313	45	75	0	0	1.8%	0.7%	69.3	#####	####	####	493	195	28	6	42	18	69.3	77.6	82.1	-1.5	69.0	60.5	61.0	70.1	66.0	52.9	50.8	66.3	52.8	51.0	51.7	56.7
Future with Project (2028)		6	0	31,596	45	75	0	0	1.8%	0.7%	69.4	#####	####	####	497	197	29	6	43	18	69.3	77.6	82.1	-1.5	69.0	60.5	61.0	70.2	66.1	52.9	50.8	66.4	52.9	51.0	51.8	56.7
Gonzales Rd. w/o Oxnard																																				
Existing 2025		6	0	20,296	40	75	0	0	1.8%	0.7%	66.2	#####	####	####	319	127	18	4	27	11	67.4	76.3	81.2	-1.5	65.6	57.8	58.6	67.0	62.7	50.2	48.4	63.1	49.5	48.3	49.4	53.9
Existing with Project (2025)		6	0	20,494	40	75	0	0	1.8%	0.7%	66.3	#####	####	####	323	128	19	4	28	12	67.4	76.3	81.2	-1.5	65.7	57.8	58.6	67.0	62.7	50.2	48.5	63.1	49.5	48.4	49.4	53.9
Future 2028		6	0	24,097	40	75	0	0	1.8%	0.7%	67.0	#####	####	####	379	150	22	5	33	14	67.4	76.3	81.2	-1.5	66.4	58.5	59.4	67.7	63.4	50.9	49.2	63.8	50.2	49.1	50.1	54.6
Future with Project (2028)		6	0	24,295	40	75	0	0	1.8%	0.7%	67.0	#####	####	####	382	152	22	5	33	14	67.4	76.3	81.2	-1.5	66.4	58.6	59.4	67.8	63.4	51.0	49.2	63.8	50.2	49.1	50.2	54.6
Existing 2025		6	0	22,154	40	75	0	0	1.8%	0.7%	66.6	#####	####	####	349	138	20	4	30	12	67.4	76.3	81.2	-1.5	66.0	58.2	59.0	67.4	63.0	50.6	48.8	63.4	49.8	48.7	49.8	54.2
Existing with Project (2025)		6	0	22,437	40	75	0	0	1.8%	0.7%	66.7	#####	####	####	353	140	20	4	30	13	67.4	76.3	81.2	-1.5	66.1	58.2	59.0	67.4	63.1	50.6	48.9	63.5	49.9	48.8	49.8	54.3
Future 2028		6	0	25,215	40	75	0	0	1.8%	0.7%	67.2	#####	####	####	397	157	23	5	34	14	67.4	76.3	81.2	-1.5	66.6	58.7	59.5	67.9	63.6	51.1	49.4	64.0	50.4	49.3	50.3	54.8
Future with Project (2028)		6	0	25,499	40	75	0	0	1.8%	0.7%	67.2	#####	####	####	401	159	23	5	35	14	67.4	76.3	81.2	-1.5	66.6	58.8	59.6	68.0	63.6	51.2	49.4	64.0	50.5	49.3	50.4	54.8

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Project Name rev. (Date)

Weekday AM/PM Peak Hour Volumes

Intersection: 16

Oxnard Boulevard & Wilshire Boulevard

Oxnard Boulevard

Southbound

	right	through	left
Existing 2025	73	819	95
Existing with Pro	73	819	95
Future 2028	75	954	97
Future with Proje	75	954	97
Existing 2025	182	1,010	144
Existing with Pro	182	1,010	144
Future 2028	186	1,169	147
Future with Proje	186	1,169	147

Eastbound

	left	through	right
Existing 2025	194	869	136
Existing with Pro	194	869	136
Future 2028	198	1,006	139
Future with Proje	198	1,006	139
Existing 2025	186	656	160
Existing with Pro	186	656	160
Future 2028	190	781	163
Future with Proje	190	781	163

Vineyard Avenue

Westbound

	right	through	left
Existing 2025	18	373	487
Existing with Pro	18	373	487
Future 2028	19	473	595
Future with Proje	19	473	595
Existing 2025	38	675	772
Existing with Pro	38	675	772
Future 2028	39	812	909
Future with Proje	39	812	909

N

W E

S

Northbound

	left	through	right
Existing 2025	99	871	839
Existing with Pro	99	871	839
Future 2028	101	1,013	992
Future with Proje	101	1,013	992
Existing 2025	239	879	807
Existing with Pro	239	879	807
Future 2028	244	1035	930
Future with Proje	244	1035	930

ADT

Road	Oxnard Boulevard		Vineyard Avenue	
Leg	North of	South of	East of	West of
Cross Street	Vineyard Avenue		Oxnard Boulevard	
Existing 2025	17,802.0	27,958.6	23,056.6	14,998.4
Existing with Pro	17,802.0	27,958.6	23,056.6	14,998.4
Future 2028	20,261.6	32,628.4	27,365.2	17,131.2
Future with Proje	20,261.6	32,628.4	27,365.2	17,131.2
Existing 2025	20,975.4	33,256.2	26,591.2	18,042.8
Existing with Pro	20,975.4	33,256.2	26,591.2	18,042.8
Future 2028	23,787.6	38,270.0	31,114.8	20,433.6
Future with Proje	23,787.6	38,270.0	31,114.8	20,433.6

2

NOISE LEVEL CONTOURS - Existing Plus Project Weekday Off-Site ADT Volumes

ROADWAY NAME												Traffic Volumes									Ref. Energy Level			Dist	Ld			Le			Ln			
Segment	Land Use	Lanes	Median Width	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor	Alpha Factor (1	Barrier Attn. dB(A)	Vehicle Mix Medium Trucks	Vehicle Mix Heavy Trucks	dB(A) CNEL	Day	Eve	Night	MTd	HTd	MTe	HTe	MTn	HTn	A	MT	HT	Adj	A	MT	HT	Total	A	MT	HT	Total	A	MT	HT	Total
Oxnard Blvd n/o Vineyard																																			
Existing 2025		6	0	17,802	45	75	0	0	1.8%	0.7%	66.9	#####	####	####	280	111	16	4	24	10	69.3	77.6	82.1	-1.5	66.5	58.0	58.5	67.7	63.6	50.4	48.3	63.9	50.4	48.6	49.3	54.2
Existing with Project (2025)		6	0	17,802	45	75	0	0	1.8%	0.7%	66.9	#####	####	####	280	111	16	4	24	10	69.3	77.6	82.1	-1.5	66.5	58.0	58.5	67.7	63.6	50.4	48.3	63.9	50.4	48.6	49.3	54.2
Future 2028		6	0	20,262	45	75	0	0	1.8%	0.7%	67.5	#####	####	####	319	126	18	4	27	11	69.3	77.6	82.1	-1.5	67.1	58.6	59.1	68.2	64.1	51.0	48.9	64.5	50.9	49.1	49.8	54.8
Future with Project (2028)		6	0	20,262	45	75	0	0	1.8%	0.7%	67.5	#####	####	####	319	126	18	4	27	11	69.3	77.6	82.1	-1.5	67.1	58.6	59.1	68.2	64.1	51.0	48.9	64.5	50.9	49.1	49.8	54.8
Existing 2025		6	0	20,975	45	75	0	0	1.8%	0.7%	67.6	#####	####	####	330	131	19	4	28	12	69.3	77.6	82.1	-1.5	67.3	58.7	59.2	68.4	64.3	51.1	49.1	64.6	51.1	49.3	50.0	54.9
Existing with Project (2025)		6	0	20,975	45	75	0	0	1.8%	0.7%	67.6	#####	####	####	330	131	19	4	28	12	69.3	77.6	82.1	-1.5	67.3	58.7	59.2	68.4	64.3	51.1	49.1	64.6	51.1	49.3	50.0	54.9
Future 2028		6	0	23,788	45	75	0	0	1.8%	0.7%	68.2	#####	####	####	374	148	22	5	32	13	69.3	77.6	82.1	-1.5	67.8	59.3	59.8	68.9	64.8	51.7	49.6	65.1	51.6	49.8	50.5	55.5
Future with Project (2028)		6	0	23,788	45	75	0	0	1.8%	0.7%	68.2	#####	####	####	374	148	22	5	32	13	69.3	77.6	82.1	-1.5	67.8	59.3	59.8	68.9	64.8	51.7	49.6	65.1	51.6	49.8	50.5	55.5
Oxnard Blvd s/o Vineyard																																			
Existing 2025		6	0	27,959	45	75	0	0	1.8%	0.7%	68.9	#####	####	####	440	174	25	6	38	16	69.3	77.6	82.1	-1.5	68.5	60.0	60.5	69.6	65.5	52.4	50.3	65.9	52.3	50.5	51.2	56.2
Existing with Project (2025)		6	0	27,959	45	75	0	0	1.8%	0.7%	68.9	#####	####	####	440	174	25	6	38	16	69.3	77.6	82.1	-1.5	68.5	60.0	60.5	69.6	65.5	52.4	50.3	65.9	52.3	50.5	51.2	56.2
Future 2028		6	0	32,628	45	75	0	0	1.8%	0.7%	69.5	#####	####	####	513	204	30	6	44	18	69.3	77.6	82.1	-1.5	69.2	60.6	61.1	70.3	66.2	53.1	51.0	66.5	53.0	51.2	51.9	56.9
Future with Project (2028)		6	0	32,628	45	75	0	0	1.8%	0.7%	69.5	#####	####	####	513	204	30	6	44	18	69.3	77.6	82.1	-1.5	69.2	60.6	61.1	70.3	66.2	53.1	51.0	66.5	53.0	51.2	51.9	56.9
Existing 2025		6	0	33,256	45	75	0	0	1.8%	0.7%	69.6	#####	####	####	523	207	30	7	45	19	69.3	77.6	82.1	-1.5	69.3	60.7	61.2	70.4	66.3	53.1	51.1	66.6	53.1	51.3	52.0	56.9
Existing with Project (2025)		6	0	33,256	45	75	0	0	1.8%	0.7%	69.6	#####	####	####	523	207	30	7	45	19	69.3	77.6	82.1	-1.5	69.3	60.7	61.2	70.4	66.3	53.1	51.1	66.6	53.1	51.3	52.0	56.9
Future 2028		6	0	38,270	45	75	0	0	1.8%	0.7%	70.2	#####	####	####	602	239	35	8	52	22	69.3	77.6	82.1	-1.5	69.9	61.3	61.8	71.0	66.9	53.7	51.7	67.2	53.7	51.9	52.6	57.6
Future with Project (2028)		6	0	38,270	45	75	0	0	1.8%	0.7%	70.2	#####	####	####	602	239	35	8	52	22	69.3	77.6	82.1	-1.5	69.9	61.3	61.8	71.0	66.9	53.7	51.7	67.2	53.7	51.9	52.6	57.6
Vineyard Avenue e/o Oxnard																																			
Existing 2025		6	0	23,057	35	75	0	0	1.8%	0.7%	65.4	#####	####	####	363	144	21	5	31	13	65.1	74.8	80.0	-1.5	64.5	57.4	58.6	66.1	61.5	49.8	48.5	62.0	48.3	48.0	49.4	53.4
Existing with Project (2025)		6	0	23,057	35	75	0	0	1.8%	0.7%	65.4	#####	####	####	363	144	21	5	31	13	65.1	74.8	80.0	-1.5	64.5	57.4	58.6	66.1	61.5	49.8	48.5	62.0	48.3	48.0	49.4	53.4
Future 2028		6	0	27,365	35	75	0	0	1.8%	0.7%	66.2	#####	####	####	431	171	25	5	37	15	65.1	74.8	80.0	-1.5	65.3	58.2	59.4	66.9	62.3	50.6	49.2	62.8	49.1	48.7	50.1	54.1
Future with Project (2028)		6	0	27,365	35	75	0	0	1.8%	0.7%	66.2	#####	####	####	431	171	25	5	37	15	65.1	74.8	80.0	-1.5	65.3	58.2	59.4	66.9	62.3	50.6	49.2	62.8	49.1	48.7	50.1	54.1
Existing 2025		6	0	26,591	35	75	0	0	1.8%	0.7%	66.1	#####	####	####	418	166	24	5	36	15	65.1	74.8	80.0	-1.5	65.1	58.0	59.2	66.8	62.2	50.5	49.1	62.6	49.0	48.6	50.0	54.0
Existing with Project (2025)		6	0	26,591	35	75	0	0	1.8%	0.7%	66.1	#####	####	####	418	166	24	5	36	15	65.1	74.8	80.0	-1.5	65.1	58.0	59.2	66.8	62.2	50.5	49.1	62.6	49.0	48.6	50.0	54.0
Future 2028		6	0	31,115	35	75	0	0	1.8%	0.7%	66.7	#####	####	####	490	194	28	6	42	18	65.1	74.8	80.0	-1.5	65.8	58.7	59.9	67.4	62.8	51.1	49.8	63.3	49.6	49.3	50.7	54.7
Future with Project (2028)		6	0	31,115	35	75	0	0	1.8%	0.7%	66.7	#####	####	####	490	194	28	6	42	18	65.1	74.8	80.0	-1.5	65.8	58.7	59.9	67.4	62.8	51.1	49.8	63.3	49.6	49.3	50.7	54.7
Vineyard Avenue w/o																																			
Existing 2025		6	0	14,998	45	75	0	0	1.8%	0.7%	66.1	#####	####	####	236	94	14	3	20	8	69.3	77.6	82.1	-1.5	65.8	57.3	57.8	66.9	62.8	49.7	47.6	63.1	49.6	47.8	48.5	53.5
Existing with Project (2025)		6	0	14,998	45	75	0	0	1.8%	0.7%	66.1	#####	####	####	236	94	14	3	20	8	69.3	77.6	82.1	-1.5	65.8	57.3	57.8	66.9	62.8	49.7	47.6	63.1	49.6	47.8	48.5	53.5
Future 2028		6	0	17,131	45	75	0	0	1.8%	0.7%	66.7	#####	####	####	270	107	16	3	23	10	69.3	77.6	82.1	-1.5	66.4	57.8	58.3	67.5	63.4	50.3	48.2	63.7	50.2	48.4	49.1	54.1
Future with Project (2028)		6	0	17,131	45	75	0	0	1.8%	0.7%	66.7	#####	####	####	270	107	16	3	23	10	69.3	77.6	82.1	-1.5	66.4	57.8	58.3	67.5	63.4	50.3	48.2	63.7	50.2	48.4	49.1	54.1
Existing 2025		6	0	18,043	45	75	0	0	1.8%	0.7%	66.9	#####	####	####	284	113	16	4	24	10	69.3	77.6	82.1	-1.5	66.6	58.1	58.6	67.7	63.6	50.5	48.4	63.9	50.4	48.6	49.3	54.3
Existing with Project (2025)		6	0	18,043	45	75	0	0	1.8%	0.7%	66.9	#####	####	####	284	113	16	4	24	10	69.3	77.6	82.1	-1.5	66.6	58.1	58.6	67.7	63.6	50.5	48.4	63.9	50.4	48.6	49.3	54.3
Future 2028		6	0	20,434	45	75	0	0	1.8%	0.7%	67.5	#####	####	####	322	127	19	4	28	12	69.3	77.6	82.1	-1.5	67.1	58.6	59.1	68.3	64.2	51.0	48.9	64.5	51.0	49.2	49.9	54.8
Future with Project (2028)		6	0	20,434	45	75	0	0	1.8%	0.7%	67.5	#####	####	####	322	127	19	4	28	12	69.3	77.6	82.1	-1.5	67.1	58.6	59.1	68.3	64.2	51.0	48.9	64.5	51.0	49.2	49.9	54.8

(1) Alpha Factor: Coefficient of absorption relating to the effects of the ground surface. An alpha factor of 0 indicates that the site is an acoustically "hard" site such as aspalt. An alpha factor of 0.5 indicates that the site is an acoustically "soft" site such as vegetative ground cover.

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

APPENDIX 3.0

Construction Noise Worksheets

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/1/2024
Case Desc Maulhardt Stiles (Phase A - Architectural Coating)

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	60	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	76.1	72.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	76.1	72.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	670	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	55.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Multi-famil	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	1570	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	47.7	43.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	47.7	43.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Compressor (air)	No	40	77.7	665	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	55.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.2	51.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	225	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	80	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	73.6	69.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73.6	69.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Del Sol Hig	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	500	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	57.7	53.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.7	53.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/1/2024
Case Desc Maulhardt Stiles (Phase A - Building Construction)

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	60	0
Front End Loader	No	40		79.1	60	0
Front End Loader	No	40		79.1	60	0
Generator	No	50		80.6	60	0
Crane	No	16		80.6	60	0
Welder / Torch	No	40		74	60	0
Tractor	No	40	84		60	0
Tractor	No	40	84		60	0
Tractor	No	40	84		60	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	77.5	73.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	77.5	73.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	77.5	73.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	79	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	72.4	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	82.4	78.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	82.4	78.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	82.4	78.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	82.4	85.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	670	0
Front End Loader	No	40		79.1	670	0
Front End Loader	No	40		79.1	670	0
Generator	No	50		80.6	670	0
Crane	No	16		80.6	670	0
Welder / Torch	No	40		74	670	0
Tractor	No	40	84		670	0
Tractor	No	40	84		670	0
Tractor	No	40	84		670	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	56.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	56.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	56.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	58.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	58	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	51.5	47.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Tractor	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.5	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Multi-famil	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	1570	0
Front End Loader	No	40		79.1	1570	0
Front End Loader	No	40		79.1	1570	0
Generator	No	50		80.6	1570	0
Crane	No	16		80.6	1570	0
Welder / Torch	No	40		74	1570	0
Tractor	No	40	84		1570	0
Tractor	No	40	84		1570	0
Tractor	No	40	84		1570	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	49.2	45.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.2	45.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.2	45.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	50.7	47.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	50.6	42.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	44.1	40.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	54.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	54.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	54.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.1	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	665	0
Front End Loader	No	40		79.1	665	0
Front End Loader	No	40		79.1	665	0
Generator	No	50		80.6	665	0
Crane	No	16		80.6	665	0
Welder / Torch	No	40		74	665	0
Tractor	No	40	84		665	0
Tractor	No	40	84		665	0
Tractor	No	40	84		665	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	56.6	52.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	56.6	52.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	56.6	52.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	58.2	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	58.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	51.5	47.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Total	61.5	64.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	225	0
Front End Loader	No	40		79.1	225	0
Front End Loader	No	40		79.1	225	0
Generator	No	50		80.6	225	0
Crane	No	16		80.6	225	0
Welder / Torch	No	40		74	225	0
Tractor	No	40	84		225	0
Tractor	No	40	84		225	0
Tractor	No	40	84		225	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	66	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	66	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	66	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	67.6	64.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	67.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.9	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.9	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.9	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.9	73.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	80	0
Front End Loader	No	40		79.1	80	0
Front End Loader	No	40		79.1	80	0
Generator	No	50		80.6	80	0
Crane	No	16		80.6	80	0
Welder / Torch	No	40		74	80	0
Tractor	No	40	84		80	0
Tractor	No	40	84		80	0
Tractor	No	40	84		80	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	75	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	75	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	75	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	76.5	73.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	76.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	69.9	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.9	82.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Del Sol Hig	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	500	0
Front End Loader	No	40		79.1	500	0
Front End Loader	No	40		79.1	500	0
Generator	No	50		80.6	500	0
Crane	No	16		80.6	500	0
Welder / Torch	No	40		74	500	0
Tractor	No	40	84		500	0
Tractor	No	40	84		500	0
Tractor	No	40	84		500	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	60.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	60.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	54	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64	66.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/1/2024
Case Desc Maulhardt Stiles (Phase A - Paving)

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Grader	No	40	85		60	0
Excavator	No	40		80.7	60	0
Excavator	No	40		80.7	60	0
Tractor	No	40	84		60	0
Tractor	No	40	84		60	0
Scraper	No	40		83.6	60	0
Scraper	No	40		83.6	60	0
Dozer	No	40		81.7	60	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	83.4	79.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	82.4	78.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	82.4	78.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	82	78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	82	78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	80.1	76.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	83.4	86.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Grader	No	40	85		670	0
Excavator	No	40		80.7	670	0
Excavator	No	40		80.7	670	0
Tractor	No	40	84		670	0
Tractor	No	40	84		670	0
Scraper	No	40		83.6	670	0
Scraper	No	40		83.6	670	0
Dozer	No	40		81.7	670	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	62.5	58.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	61	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	61	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.5	65.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
	Multi-famil	Residentia	90	90	90

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Grader	No	40	85		1570	0
Excavator	No	40		80.7	1570	0
Excavator	No	40		80.7	1570	0
Tractor	No	40	84		1570	0
Tractor	No	40	84		1570	0
Scraper	No	40		83.6	1570	0
Scraper	No	40		83.6	1570	0
Dozer	No	40		81.7	1570	0

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	55.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	50.8	46.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	50.8	46.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	54.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	54.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	53.6	49.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	53.6	49.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	51.7	47.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.1	58.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
	Single-fam	Residentia	90	90	90

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Grader	No	40	85		665	0
Excavator	No	40		80.7	665	0
Excavator	No	40		80.7	665	0
Tractor	No	40	84		665	0
Tractor	No	40	84		665	0
Scraper	No	40		83.6	665	0
Scraper	No	40		83.6	665	0
Dozer	No	40		81.7	665	0

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	62.5	58.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	58.2	54.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	58.2	54.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	61.1	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	61.1	57.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.5	65.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
	Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		225	0
Excavator	No	40		80.7	225	0
Excavator	No	40		80.7	225	0
Tractor	No	40	84		225	0
Tractor	No	40	84		225	0
Scraper	No	40		83.6	225	0
Scraper	No	40		83.6	225	0
Dozer	No	40		81.7	225	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	71.9	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.6	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.6	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.9	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.9	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	68.6	64.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.9	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		80	0
Excavator	No	40		80.7	80	0
Excavator	No	40		80.7	80	0
Tractor	No	40	84		80	0
Tractor	No	40	84		80	0
Scraper	No	40		83.6	80	0
Scraper	No	40		83.6	80	0
Dozer	No	40		81.7	80	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	80.9	76.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	79.5	75.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	79.5	75.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.9	84.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Del Sol Hig	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		500	0

Excavator	No	40		80.7	500	0
Excavator	No	40		80.7	500	0
Tractor	No	40	84		500	0
Tractor	No	40	84		500	0
Scraper	No	40		83.6	500	0
Scraper	No	40		83.6	500	0
Dozer	No	40		81.7	500	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	65	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	60.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	60.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	61.7	57.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/1/2024
Case Desc Maulhardt Stiles (Phase A - Paving)

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	60	0
Paver	No	50		77.2	60	0
Paver	No	50		77.2	60	0
Paver	No	50		77.2	60	0
Roller	No	20		80	60	0
Roller	No	20		80	60	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	75.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	75.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	75.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	75.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	78.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	78.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	78.4	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	670	0
Paver	No	50		77.2	670	0
Paver	No	50		77.2	670	0
Paver	No	50		77.2	670	0
Roller	No	20		80	670	0
Roller	No	20		80	670	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	54.7	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	54.7	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	54.7	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	54.7	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	57.5	50.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	57.5	50.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.5	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Multi-famil	Residentia	90	90	90

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	1570	0
Paver	No	50		77.2	1570	0
Paver	No	50		77.2	1570	0
Paver	No	50		77.2	1570	0
Roller	No	20		80	1570	0
Roller	No	20		80	1570	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	47.3	44.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	47.3	44.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	47.3	44.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	47.3	44.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	50.1	43.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	50.1	43.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	50.1	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	665	0
Paver	No	50		77.2	665	0
Paver	No	50		77.2	665	0
Paver	No	50		77.2	665	0
Roller	No	20		80	665	0
Roller	No	20		80	665	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	54.7	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	54.7	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	54.7	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	54.7	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	57.5	50.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	57.5	50.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.5	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	225	0
Paver	No	50		77.2	225	0
Paver	No	50		77.2	225	0
Paver	No	50		77.2	225	0
Roller	No	20		80	225	0
Roller	No	20		80	225	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	64.2	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Paver	64.2	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	64.2	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	64.2	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.9	59.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.9	59.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.9	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	80	0
Paver	No	50		77.2	80	0
Paver	No	50		77.2	80	0
Paver	No	50		77.2	80	0
Roller	No	20		80	80	0
Roller	No	20		80	80	0

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	73.1	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	73.1	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	73.1	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	73.1	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	75.9	68.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	75.9	68.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.9	77.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Del Sol Hig	Residentia	90	90	90

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Paver	No	50		77.2	500	0
Paver	No	50		77.2	500	0
Paver	No	50		77.2	500	0
Paver	No	50		77.2	500	0
Roller	No	20		80	500	0
Roller	No	20		80	500	0

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	57.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	57.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	57.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	57.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	60	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	60	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60	61.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/1/2024
Case Desc Maulhardt Stiles (Phase C - Architectural Coating)

---- Receptor #1 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	1750	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	46.8	42.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	46.8	42.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	1200	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	50.1	46.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	50.1	46.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Multi-famil	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	300	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.1	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Compressor (air)	No	40	77.7	225	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	1100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	50.8	46.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	50.8	46.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	1685	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	47.1	43.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	47.1	43.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Del Sol Hig	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	71.6	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.6	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/1/2024
Case Desc Maulhardt Stiles (Phase C - Building Construction)

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	1750	0
Front End Loader	No	40		79.1	1750	0
Front End Loader	No	40		79.1	1750	0
Generator	No	50		80.6	1750	0
Crane	No	16		80.6	1750	0
Welder / Torch	No	40		74	1750	0
Tractor	No	40	84		1750	0
Tractor	No	40	84		1750	0
Tractor	No	40	84		1750	0

	Calculated (dBA)		Results Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	48.2	44.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	48.2	44.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	48.2	44.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	49.7	46.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	49.7	41.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	43.1	39.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	53.1	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	1200	0
Front End Loader	No	40		79.1	1200	0
Front End Loader	No	40		79.1	1200	0
Generator	No	50		80.6	1200	0
Crane	No	16		80.6	1200	0
Welder / Torch	No	40		74	1200	0
Tractor	No	40	84		1200	0
Tractor	No	40	84		1200	0
Tractor	No	40	84		1200	0

	Calculated (dBA)		Results Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	51.5	47.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	51.5	47.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	51.5	47.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	53	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	52.9	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	46.4	42.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	56.4	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	56.4	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Tractor	56.4	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	56.4	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Multi-famil	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	300	0
Front End Loader	No	40		79.1	300	0
Front End Loader	No	40		79.1	300	0
Generator	No	50		80.6	300	0
Crane	No	16		80.6	300	0
Welder / Torch	No	40		74	300	0
Tractor	No	40	84		300	0
Tractor	No	40	84		300	0
Tractor	No	40	84		300	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	63.5	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	63.5	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	63.5	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	65.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	65	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	58.4	54.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.4	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.4	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.4	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.4	71.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	225	0
Front End Loader	No	40		79.1	225	0
Front End Loader	No	40		79.1	225	0
Generator	No	50		80.6	225	0
Crane	No	16		80.6	225	0
Welder / Torch	No	40		74	225	0
Tractor	No	40	84		225	0
Tractor	No	40	84		225	0
Tractor	No	40	84		225	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	66	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	66	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	66	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	67.6	64.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	67.5	59.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.9	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.9	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.9	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Total	70.9	73.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	1100	0
Front End Loader	No	40		79.1	1100	0
Front End Loader	No	40		79.1	1100	0
Generator	No	50		80.6	1100	0
Crane	No	16		80.6	1100	0
Welder / Torch	No	40		74	1100	0
Tractor	No	40	84		1100	0
Tractor	No	40	84		1100	0
Tractor	No	40	84		1100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	52.3	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	52.3	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	52.3	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	53.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	53.7	45.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	47.2	43.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.2	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	1685	0
Front End Loader	No	40		79.1	1685	0
Front End Loader	No	40		79.1	1685	0
Generator	No	50		80.6	1685	0
Crane	No	16		80.6	1685	0
Welder / Torch	No	40		74	1685	0
Tractor	No	40	84		1685	0
Tractor	No	40	84		1685	0
Tractor	No	40	84		1685	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	48.6	44.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	48.6	44.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	48.6	44.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	50.1	47.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	50	42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	43.4	39.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	53.4	49.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	53.4	49.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	53.4	49.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	53.4	56.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Del Sol Hig	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	100	0
Front End Loader	No	40		79.1	100	0
Front End Loader	No	40		79.1	100	0
Generator	No	50		80.6	100	0
Crane	No	16		80.6	100	0
Welder / Torch	No	40		74	100	0
Tractor	No	40	84		100	0
Tractor	No	40	84		100	0
Tractor	No	40	84		100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	74.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	74.5	66.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	78	80.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/1/2024
Case Desc Maulhardt Stiles (Phase C - Demolition)

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	1750	0
Dozer	No	40		81.7	1750	0
Excavator	No	40		80.7	1750	0
Excavator	No	40		80.7	1750	0
Excavator	No	40		80.7	1750	0
Concrete Saw	No	20		89.6	1750	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	50.8	46.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	50.8	46.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	49.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	49.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	49.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	58.7	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.7	55.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	1200	0
Dozer	No	40		81.7	1200	0
Excavator	No	40		80.7	1200	0
Excavator	No	40		80.7	1200	0
Excavator	No	40		80.7	1200	0
Concrete Saw	No	20		89.6	1200	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	54.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	54.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	62	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62	58.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Multi-famil	Residentia	90	90	90

Equipment

	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding

Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	300	0
Dozer	No	40		81.7	300	0
Excavator	No	40		80.7	300	0
Excavator	No	40		80.7	300	0
Excavator	No	40		80.7	300	0
Concrete Saw	No	20		89.6	300	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	66.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	66.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	74	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74	70.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Descriptio	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	225	0
Dozer	No	40		81.7	225	0
Excavator	No	40		80.7	225	0
Excavator	No	40		80.7	225	0
Excavator	No	40		80.7	225	0
Concrete Saw	No	20		89.6	225	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	68.6	64.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	68.6	64.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.6	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.6	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.6	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	76.5	69.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	76.5	73.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Descriptio	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	1100	0
Dozer	No	40		81.7	1100	0
Excavator	No	40		80.7	1100	0
Excavator	No	40		80.7	1100	0
Excavator	No	40		80.7	1100	0
Concrete Saw	No	20		89.6	1100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	54.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Dozer	54.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.9	49.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.9	49.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.9	49.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	62.7	55.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.7	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	1685	0
Dozer	No	40		81.7	1685	0
Excavator	No	40		80.7	1685	0
Excavator	No	40		80.7	1685	0
Excavator	No	40		80.7	1685	0
Concrete Saw	No	20		89.6	1685	0

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	51.1	47.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	51.1	47.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	50.2	46.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	50.2	46.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	50.2	46.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	59	52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59	55.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Del Sol Hig	Residentia	90	90	90

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer	No	40		81.7	100	0
Dozer	No	40		81.7	100	0
Excavator	No	40		80.7	100	0
Excavator	No	40		80.7	100	0
Excavator	No	40		80.7	100	0
Concrete Saw	No	20		89.6	100	0

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	75.6	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	83.6	76.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	83.6	80.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/1/2024
Case Desc Maulhardt Stiles (Phase C - Grading)

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Grader	No	40	85		1750	0
Excavator	No	40		80.7	1750	0
Excavator	No	40		80.7	1750	0
Tractor	No	40	84		1750	0
Tractor	No	40	84		1750	0
Scraper	No	40		83.6	1750	0
Scraper	No	40		83.6	1750	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	54.1	50.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	49.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	49.8	45.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	52.7	48.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	52.7	48.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.1	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Grader	No	40	85		1200	0
Excavator	No	40		80.7	1200	0
Excavator	No	40		80.7	1200	0
Tractor	No	40	84		1200	0
Tractor	No	40	84		1200	0
Scraper	No	40		83.6	1200	0
Scraper	No	40		83.6	1200	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.1	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	56.4	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	56.4	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	56	52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	56	52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.4	60.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Multi-famil	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		300	0
Excavator	No	40		80.7	300	0
Excavator	No	40		80.7	300	0
Tractor	No	40	84		300	0
Tractor	No	40	84		300	0
Scraper	No	40		83.6	300	0
Scraper	No	40		83.6	300	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	69.4	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.4	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	68.4	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	69.4	72.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		225	0
Excavator	No	40		80.7	225	0
Excavator	No	40		80.7	225	0
Tractor	No	40	84		225	0
Tractor	No	40	84		225	0
Scraper	No	40		83.6	225	0
Scraper	No	40		83.6	225	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	71.9	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.6	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.6	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.9	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.9	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.9	74.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		1100	0
Excavator	No	40		80.7	1100	0
Excavator	No	40		80.7	1100	0
Tractor	No	40	84		1100	0

Tractor	No	40	84	1100	0
Scraper	No	40	83.6	1100	0
Scraper	No	40	83.6	1100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	58.2	54.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.9	49.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.9	49.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	56.7	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	56.7	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.2	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		1685	0
Excavator	No	40		80.7	1685	0
Excavator	No	40		80.7	1685	0
Tractor	No	40	84		1685	0
Tractor	No	40	84		1685	0
Scraper	No	40		83.6	1685	0
Scraper	No	40		83.6	1685	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	54.4	50.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	50.2	46.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	50.2	46.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	53.4	49.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	53.4	49.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	53	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	53	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.4	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Del Sol Hig	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		100	0
Excavator	No	40		80.7	100	0
Excavator	No	40		80.7	100	0
Tractor	No	40	84		100	0
Tractor	No	40	84		100	0
Scraper	No	40		83.6	100	0
Scraper	No	40		83.6	100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	79	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	78	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	81.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 11/1/2024
Case Desc Maulhardt Stiles (Phase C - Paving)

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1750	0
Paver	No	50		77.2	1750	0
Paver	No	50		77.2	1750	0
Paver	No	50		77.2	1750	0
Roller	No	20		80	1750	0
Roller	No	20		80	1750	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	54.1	51.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	46.3	43.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	46.3	43.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	46.3	43.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	49.1	42.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	49.1	42.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.1	53.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1200	0
Paver	No	50		77.2	1200	0
Paver	No	50		77.2	1200	0
Paver	No	50		77.2	1200	0
Roller	No	20		80	1200	0
Roller	No	20		80	1200	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	57.4	54.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	49.6	46.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	49.6	46.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	49.6	46.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	52.4	45.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	52.4	45.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.4	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Multi-famil	Residentia	90	90	90

		Equipment Spec	Actual	Receptor	Estimated
	Impact	Lmax	Lmax	Distance	Shielding

Description	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		300	0
Paver	No	50		77.2	300	0
Paver	No	50		77.2	300	0
Paver	No	50		77.2	300	0
Roller	No	20		80	300	0
Roller	No	20		80	300	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	69.4	66.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	61.7	58.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	61.7	58.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	61.7	58.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	64.4	57.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	64.4	57.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	69.4	68.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		225	0
Paver	No	50		77.2	225	0
Paver	No	50		77.2	225	0
Paver	No	50		77.2	225	0
Roller	No	20		80	225	0
Roller	No	20		80	225	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	71.9	68.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	64.2	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	64.2	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	64.2	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.9	59.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.9	59.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.9	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1100	0
Paver	No	50		77.2	1100	0
Paver	No	50		77.2	1100	0
Paver	No	50		77.2	1100	0
Roller	No	20		80	1100	0
Roller	No	20		80	1100	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	58.2	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Paver	50.4	47.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	50.4	47.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	50.4	47.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	53.2	46.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	53.2	46.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.2	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single-fam	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		1685	0
Paver	No	50		77.2	1685	0
Paver	No	50		77.2	1685	0
Paver	No	50		77.2	1685	0
Roller	No	20		80	1685	0
Roller	No	20		80	1685	0

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	54.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	46.7	43.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	46.7	43.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	46.7	43.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	49.4	42.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	49.4	42.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.4	53.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #7 ----

	Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Del Sol Hig	Residentia	90	90	90

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		100	0
Paver	No	50		77.2	100	0
Paver	No	50		77.2	100	0
Paver	No	50		77.2	100	0
Roller	No	20		80	100	0
Roller	No	20		80	100	0

	Results													
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	79	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	71.2	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	71.2	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	71.2	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	74	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	74	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	78.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

APPENDIX 4.0

Construction Vibration Worksheets

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(60 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	60	0.024	0.006	76
Jackhammer		1	0.035	60	0.009	0.002	67
Large bulldozer		1	0.089	60	0.024	0.006	76
Loaded trucks		1	0.076	60	0.020	0.005	74
Pile Drive (impact)		1	0.644	60	0.173	0.043	93
Vibratory Roller		1	0.210	60	0.056	0.014	83
Small bulldozer		1	0.003	60	0.001	0.000	46

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(670 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	670	0.001	0.000	44
Jackhammer		1	0.035	670	0.000	0.000	36
Large bulldozer		1	0.089	670	0.001	0.000	44
Loaded trucks		1	0.076	670	0.001	0.000	43
Pile Drive (impact)		1	0.644	670	0.005	0.001	61
Vibratory Roller		1	0.210	670	0.002	0.000	52
Small bulldozer		1	0.003	670	0.000	0.000	15

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(1570 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	1570	0.000	0.000	33
Jackhammer		1	0.035	1570	0.000	0.000	25
Large bulldozer		1	0.089	1570	0.000	0.000	33
Loaded trucks		1	0.076	1570	0.000	0.000	32
Pile Drive (impact)		1	0.644	1570	0.001	0.000	50
Vibratory Roller		1	0.210	1570	0.000	0.000	40
Small bulldozer		1	0.003	1570	0.000	0.000	4

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(665 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	665	0.001	0.000	44
Jackhammer		1	0.035	665	0.000	0.000	36
Large bulldozer		1	0.089	665	0.001	0.000	44
Loaded trucks		1	0.076	665	0.001	0.000	43
Pile Drive (impact)		1	0.644	665	0.005	0.001	61
Vibratory Roller		1	0.210	665	0.002	0.000	52
Small bulldozer		1	0.003	665	0.000	0.000	15

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(225 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	225	0.003	0.001	58
Jackhammer		1	0.035	225	0.001	0.000	50
Large bulldozer		1	0.089	225	0.003	0.001	58
Loaded trucks		1	0.076	225	0.003	0.001	57
Pile Drive (impact)		1	0.644	225	0.024	0.006	76
Vibratory Roller		1	0.210	225	0.008	0.002	66
Small bulldozer		1	0.003	225	0.000	0.000	29

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(80 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	80	0.016	0.004	72
Jackhammer		1	0.035	80	0.006	0.002	64
Large bulldozer		1	0.089	80	0.016	0.004	72
Loaded trucks		1	0.076	80	0.013	0.003	70
Pile Drive (impact)		1	0.644	80	0.113	0.028	89
Vibratory Roller		1	0.210	80	0.037	0.009	79
Small bulldozer		1	0.003	80	0.001	0.000	42

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(500 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	500	0.001	0.000	48
Jackhammer		1	0.035	500	0.000	0.000	40
Large bulldozer		1	0.089	500	0.001	0.000	48
Loaded trucks		1	0.076	500	0.001	0.000	47
Pile Drive (impact)		1	0.644	500	0.007	0.002	65
Vibratory Roller		1	0.210	500	0.002	0.001	55
Small bulldozer		1	0.003	500	0.000	0.000	18

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(60 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	1750	0.000	0.000	32
Jackhammer		1	0.035	1750	0.000	0.000	23
Large bulldozer		1	0.089	1750	0.000	0.000	32
Loaded trucks		1	0.076	1750	0.000	0.000	30
Pile Drive (impact)		1	0.644	1750	0.001	0.000	49
Vibratory Roller		1	0.210	1750	0.000	0.000	39
Small bulldozer		1	0.003	1750	0.000	0.000	2

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(670 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	1200	0.000	0.000	37
Jackhammer		1	0.035	1200	0.000	0.000	28
Large bulldozer		1	0.089	1200	0.000	0.000	37
Loaded trucks		1	0.076	1200	0.000	0.000	35
Pile Drive (impact)		1	0.644	1200	0.002	0.000	54
Vibratory Roller		1	0.210	1200	0.001	0.000	44
Small bulldozer		1	0.003	1200	0.000	0.000	7

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(1570 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	300	0.002	0.001	55
Jackhammer		1	0.035	300	0.001	0.000	46
Large bulldozer		1	0.089	300	0.002	0.001	55
Loaded trucks		1	0.076	300	0.002	0.000	53
Pile Drive (impact)		1	0.644	300	0.015	0.004	72
Vibratory Roller		1	0.210	300	0.005	0.001	62
Small bulldozer		1	0.003	300	0.000	0.000	25

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(665 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	225	0.003	0.001	58
Jackhammer		1	0.035	225	0.001	0.000	50
Large bulldozer		1	0.089	225	0.003	0.001	58
Loaded trucks		1	0.076	225	0.003	0.001	57
Pile Drive (impact)		1	0.644	225	0.024	0.006	76
Vibratory Roller		1	0.210	225	0.008	0.002	66
Small bulldozer		1	0.003	225	0.000	0.000	29

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(225 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	1100	0.000	0.000	38
Jackhammer		1	0.035	1100	0.000	0.000	30
Large bulldozer		1	0.089	1100	0.000	0.000	38
Loaded trucks		1	0.076	1100	0.000	0.000	36
Pile Drive (impact)		1	0.644	1100	0.002	0.001	55
Vibratory Roller		1	0.210	1100	0.001	0.000	45
Small bulldozer		1	0.003	1100	0.000	0.000	8

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(80 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	1685	0.000	0.000	32
Jackhammer		1	0.035	1685	0.000	0.000	24
Large bulldozer		1	0.089	1685	0.000	0.000	32
Loaded trucks		1	0.076	1685	0.000	0.000	31
Pile Drive (impact)		1	0.644	1685	0.001	0.000	49
Vibratory Roller		1	0.210	1685	0.000	0.000	40
Small bulldozer		1	0.003	1685	0.000	0.000	3

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

Meridian Consultants LLC

Maulhardt Stiles Sub-Neighborhood Plan Project (Phase A)
Construction Vibration Model
(500 feet)

Equipment		Pieces of Equipment	PPV at 25 feet (in/sec)	Distance from Equipment	PPV at adjusted distance	RMS velocity amplitude in in/sec at adjusted distance[a]	RMS Vibration level in VdB at adjusted distance
Caisson drilling		1	0.089	100	0.011	0.003	69
Jackhammer		1	0.035	100	0.004	0.001	61
Large bulldozer		1	0.089	100	0.011	0.003	69
Loaded trucks		1	0.076	100	0.010	0.002	68
Pile Drive (impact)		1	0.644	100	0.081	0.020	86
Vibratory Roller		1	0.210	100	0.026	0.007	76
Small bulldozer		1	0.003	100	0.000	0.000	39

*** Suggested Vibration Thresholds per the Federal Transit Administration, United States Department of Transportation, Transit Noise and Vibration Impact Assessment**

APPENDIX P

Water Supply Assessment

DRAFT

WATER SUPPLY ASSESSMENT

MAULHARDT-STILES SUB-NEIGHBORHOOD PLAN PROJECT

Prepared for:

City of Oxnard
Public Works Department
305 W. Third Street
Oxnard, CA 93030

Prepared by:

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APRIL 2026

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Appendices

A City of Oxnard 2020 Urban Water Management Plan (2020 UWMP)

B Calleguas Municipal Water District 2020 Urban Water Management Plan

C United Water Conservation District 2020 Urban Water Management Plan

D Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum

E Public Works Integrated Master Plan (PWIMP) Wastewater Project Memorandum Background Summary

F Groundwater Sustainability Plan (GSP) for the Oxnard Subbasin

G RCLCO Household Size Assumptions for Proposed Maulhardt/Stiles NECSP Sub-Neighborhood Plan Project Memorandum

1.0 INTRODUCTION

California Environmental Quality Act (CEQA) Guidelines Section 15155 defines the standards for assessing the sufficiency of water supplies for proposed projects meeting the definition in section 15155 (a)(1) of a "water-demand project" consistent with the requirements of Section 10910 et seq. of the California Water Code (CWC).

CWC Section 10910 provides, in relevant part:

> *(a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.*

CWC Section 10912 states:

For the purpose of this part, the following terms have the following meanings:

> *(a) "Project" means any of the following:*
>
> *(1) A proposed residential development of more than 500 dwelling units.*
>
> *(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.*
>
> *(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.*
>
> *(4) A proposed hotel or motel, or both, having more than 500 rooms.*
>
> *(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.*
>
> *(6) A mixed-use project that includes one or more of the projects specified in this subdivision.*
>
> *(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.*

Lead agencies conducting the environmental review of water demand projects are required to identify any water system that either: (A) is a public water system that may supply water to the water-demand project, or (B) that may become such a public water system as a result of supplying water to the water-demand project.[1] As part of the environmental review conducted for a water -demand project pursuant to CEQA, the public water supplier or land use agency—in this case the City of Oxnard—must prepare a "water supply assessment" to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan and if projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.

1 CEQA Guidelines, Article 10, Section 15155, Water Supply Analysis.

1.1 Purpose

This Water Supply Assessment (WSA) was prepared to meet the requirements of CEQA Guidelines Section 15155 and CWC Section 10910 et seq. This WSA addresses whether the City's projected supplies for the next 20 years, based on normal, single dry and multiple dry years, will meet the demand projected for the Maulhardt-Stiles Sub-Neighborhood Plan Project (Project) and existing and planned future uses. The water demand for the Project is calculated and the adequacy of water supplies to meet the Project's demand is evaluated in the following sections.

The Project qualifies as a water demand project under the following definition in CEQA Guidelines Section 15155 (a)(1) and CWC Section 10912:[2]

- *"A proposed residential development of more than 500 dwelling units."*
- *"A mixed-use project that includes one or more of the projects specified in this subdivision."*

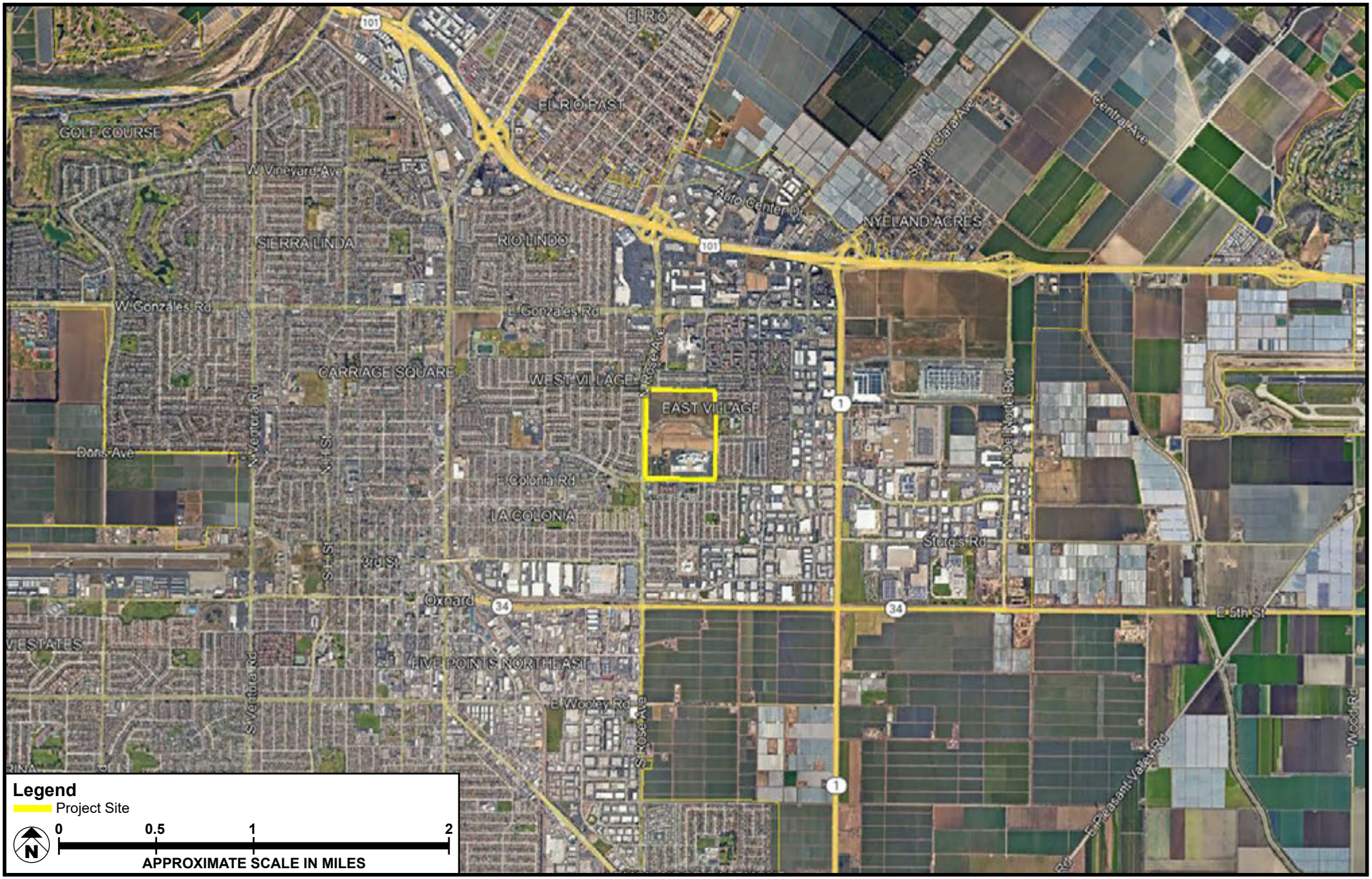
1.2 Background

The Maulhardt-Stiles Sub-Neighborhood Plan is proposed to regulate the development and use of approximately 107-acres of land located in the East Village neighborhood within the City's Northeast Community Specific Plan (NECSP) Area as shown in **Figure 1-1: Regional Location**. The Project Site is bounded to the north by Cesar Chavez Drive, to the east by Gibraltar Street/East Village Park, to the south by Camino Del Sol, and to the west by Rose Avenue, as shown in **Figure 1-2: Project Site Location.** The proposed Sub-Neighborhood Plan would establish three planning areas on the Project Site, identified as Areas A, B and C as shown in **Figure 1-3: Planning Areas Within the Project Site**. The Project Site includes one Assessor Parcel owned by Oxnard Union High School District (OUHSD) (Assessor Parcel Number (APN): 214-0-020-635) and two parcels (APNs 214-0-020-615 and 214-0-020-625) owned by the Maulhardt/Stiles families.

The City of Oxnard (City) Public Works Department manages the potable water, recycled water and wastewater systems for the City.[3] The 2015 Public Works Integrated Master Plan (PWIMP) supports the 2020 Urban Water Management Plan (UWMP), adopted in February 2022, which serves as the primary planning document for the City's Water System. A copy of the 2020 UWMP is provided in **Appendix A**.

2 California Water Code (CWC), Division 6, Part 2.10, Section 10912.

3 City of Oxnard. "System Description." *Urban Water Management Plan*. (p. 3-1). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).



SOURCE: Maulhardt / Stiles – 2024

FIGURE **1-1**

Meridian Consultants

Regional Location Map

408-001-24

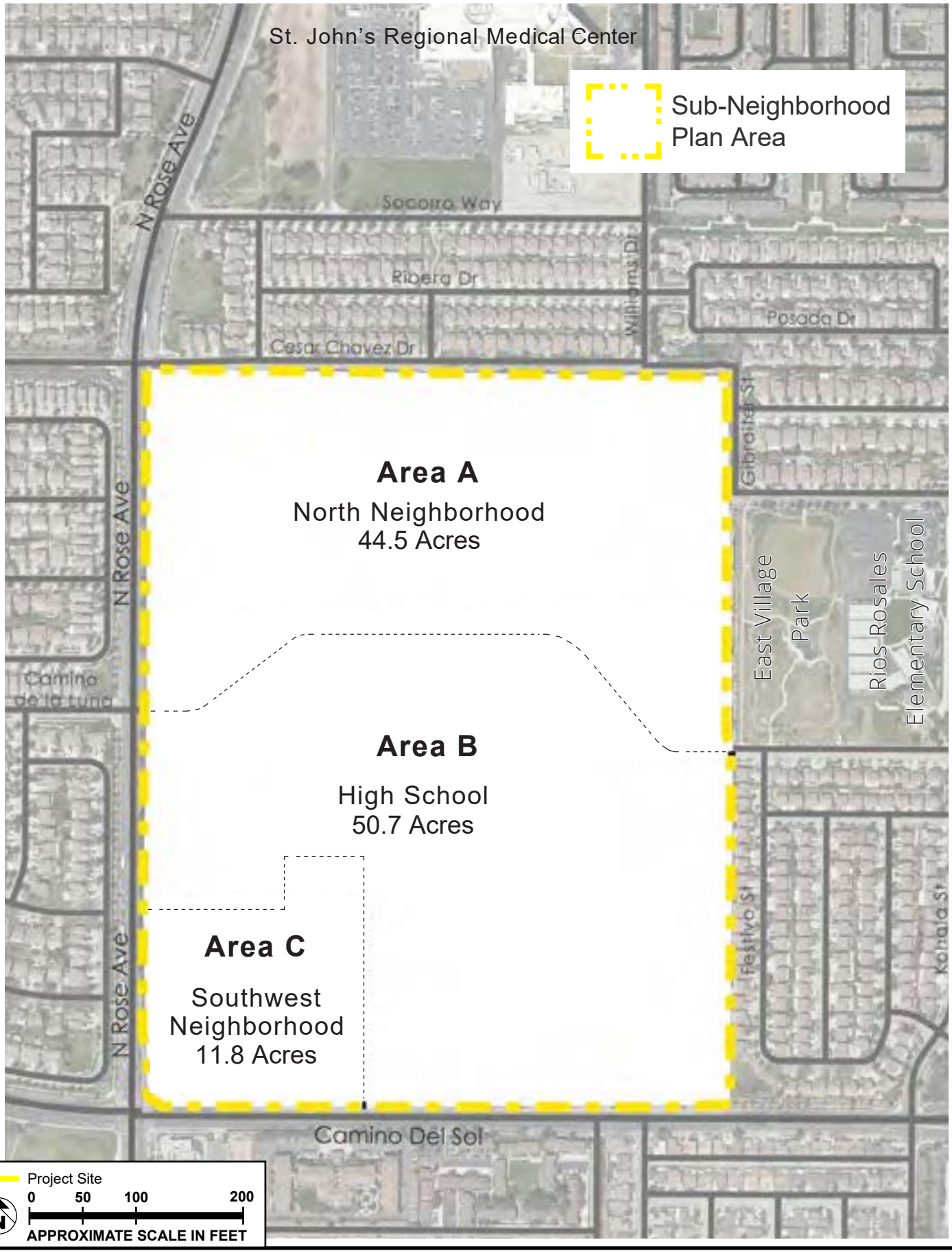
SOURCE: Maulhardt / Stiles – 2024

Figure 1-2

Meridian Consultants

Project Site Location

408-001-24



SOURCE: Maulhardt / Stiles – 2024

Figure 1-3

Planning Areas Within the Sub-Neighborhood Plan

Meridian Consultants

408-001-24

1.3 Proposed Project

The proposed Sub-Neighborhood Plan would allow development of a maximum of 950 residential dwelling units, a maximum of 40,000 square feet of retail and general commercial space, public parks and associated circulation and landscaping as illustrated in **Figure 1-4: Illustrative Plan** and **Figure 1-5: Unit Allocation Plan**, and **Figure 1-6, Maximum Development Scenario**. It should be noted that **Figure 1-5** defines the minimum and maximum number of residential dwelling units that would be allowed within the 12 master lots the proposed Tentative Tract Map would create within the Project Site. Each lot could be developed within these ranges provided that the total number of residential units does not exceed 950 units. **Figure 1-6** depicts the maximum development scenario that would be allowed with 950 units and 40,000 square-feet of commercial space.

Area A: includes the northern 44.5 acres of the Project Site, which is currently undeveloped land. This area, the *North Neighborhood*, is planned as a predominately residential neighborhood including various housing types, multiple parks and open spaces, with neighborhood scale commercial space.

Area B: Del Sol High School, opened by Oxnard Union High School District in July 2023, occupies the central 50.7 acres of the Project Site in Area B. OUHSD prepared and certified the Draft Environmental Impact Report New High School No. 8 (SCH #2019029101) in 2019 for this high school. The Del Sol High School campus currently contains two-story-tall classroom buildings and supporting site improvements, including basketball courts, volleyball courts, and surface parking lots. The northern portion of the campus is only partially developed at this time and consists of vacant land. Additional facilities planned in the northern portion of the campus include softball and baseball fields, sports fields, football field with bleachers, a pool, locker buildings, tennis courts, and three additional surface parking lots.

Area C: consists of the southwestern 11.8 acres of the Project Site, containing the Maulhardt family residence, barn, cottages, outbuildings, other structures and a fallowed lemon orchard associated with the previous agricultural operation of the Project Site. This area, the *Southwest Neighborhood*, is planned to include attached and multi-family housing, along with neighborhood parks and open spaces.

A **General Neighborhood Fabric:** *A human-scale network of streets and blocks make a new, walkable neighborhood.*

B **West Green:** *A neighborhood-serving gathering space near the heart of the North Neighborhood.*

C **East Village Park extension:** *A westward expansion of the existing East Village Park, serving the wider community.*

D **High School:** *A campus including school buildings and athletic fields, some of which will provide public access.*

E **Rose Avenue Improvements:** *In addition to streetscape improvements, Rose Avenue will have a tree-lined multi-use path which ties together its residential, commercial, and high school frontage.*

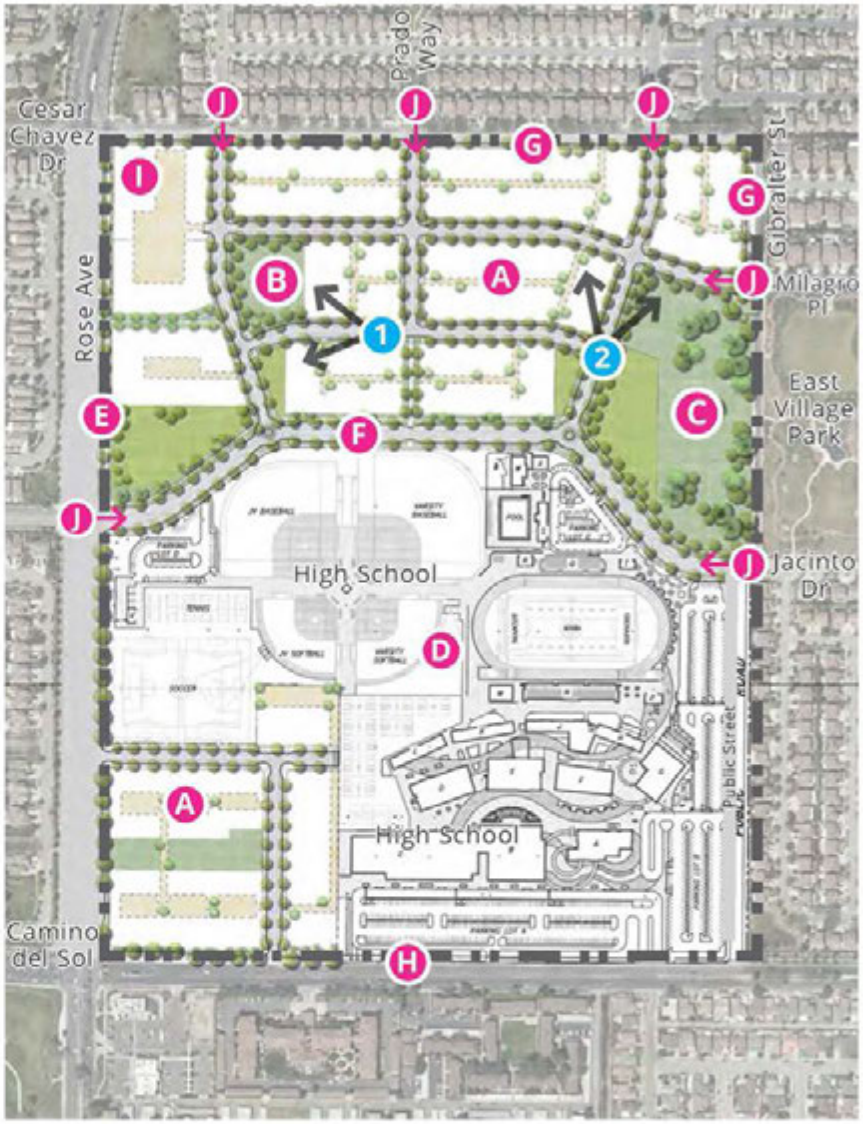
F **Jacinto Drive:** *A comfortable walking and biking connection between Rose Ave, East Village Park, the neighborhoods, and the school.*

G **Neighborhood Edge:** *New housing will transition seamlessly to the existing neighborhoods along Cesar Chavez Dr and Gibralter St.*

H **Camino del Sol:** *Pedestrian and bicycle improvements connecting to Del Norte Blvd to the east and central Oxnard to the west.*

I **Commercial Opportunity:** *Potential for a limited amount of commercial use accessible to the community by multiple modes of transportation.*

J **Neighborhood Connections:** *Calm neighborhood streets form a connected, walkable, bikable network with existing neighborhoods.*



SOURCE: Maulhardt / Stiles – 2024

Figure 1-4

Illustrative Plan

Meridian Consultants

408-001-24

Master Lot numbers are shown in red.

DU = Dwelling Units

0 50 100 200

APPROXIMATE SCALE IN FEET

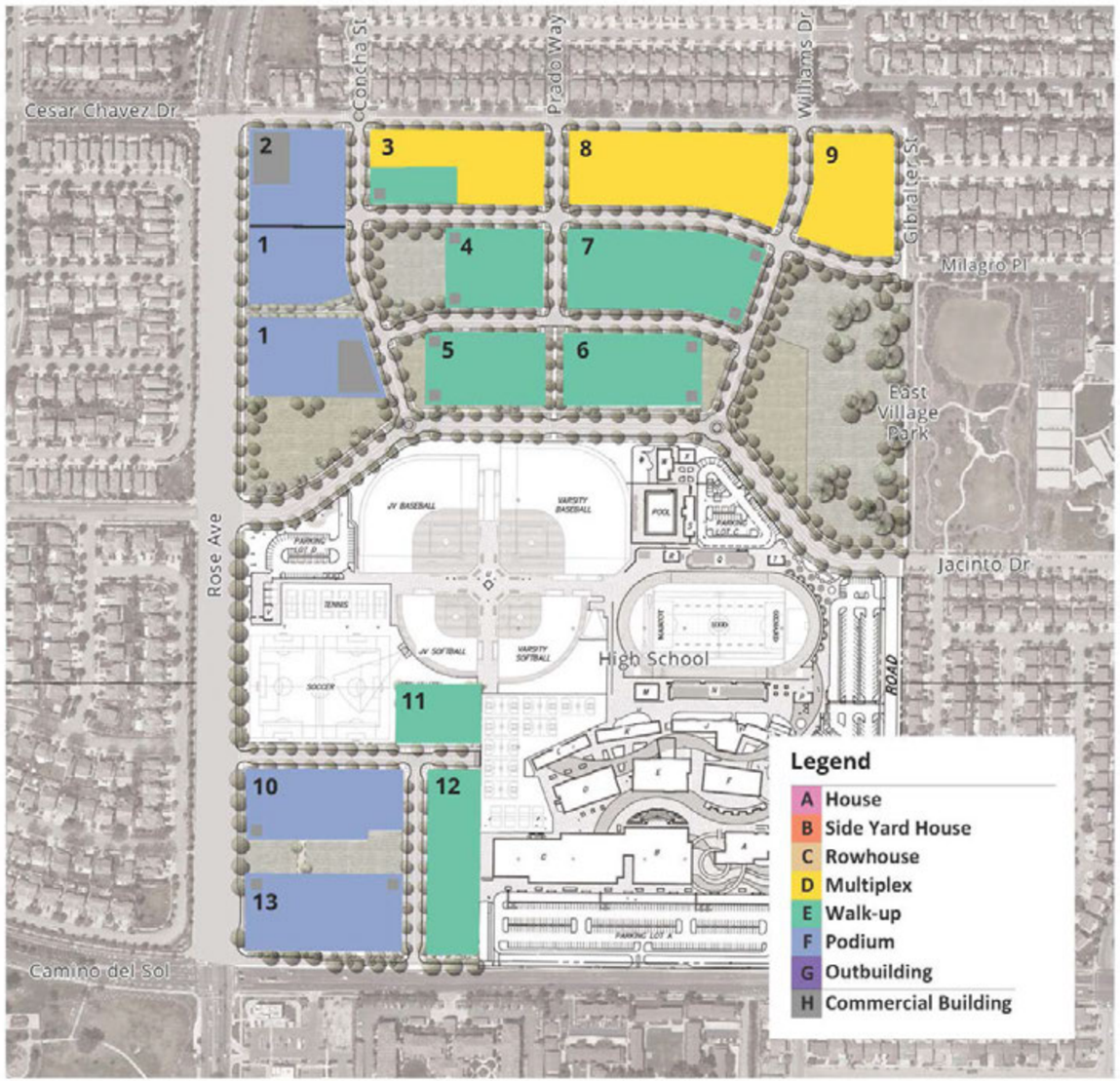
SOURCE: Maulhardt / Stiles – 2024

Figure 1-5

Unit Allocation Plan

Meridian Consultants

408-001-24



Units by Lot

Building Type	Code	Density[3]	Lot 1 (3.53 acres) Mix	Area	Units	Lot 2 (1.74 acres) Mix	Area	Units	Lot 3 (2.4 acres) Mix	Area	Units	Lot 4 (1.47 acres) Mix	Area	Units	Lot 5 (1.64 acres) Mix	Area	Units	Lot 6 (1.89 acres) Mix	Area	Units
A House	§2.6.3	6 to 10	0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00	
B Side Yard House	§2.6.4	10 to 13	0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00	
C Rowhouse	§2.6.5	16 to 24	0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00	
D Multiplex	§2.6.6	20 to 35	0%	0.00		0%	0.00		70%	1.68	48	0%	0.00		0%	0.00		0%	0.00	
E Walk-up	§2.6.7	30 to 40	0%	0.00		0%	0.00		30%	0.72	24	100%	1.47	49	100%	1.64	55	100%	1.89	64
F Podium	§2.6.8	30 to 45	100%	3.53	134	100%	1.74	66	0%	0.00		0%	0.00		0%	0.00		0%	0.00	
G Outbuilding	§2.6.10	1 per house	*0%*	*N/A*		*0%*	*N/A*		*0%*	*N/A*		*0%*	*N/A*		*0%*	*N/A*		*0%*	*N/A*	
TOTAL DWELLINGS:					**134**			**66**			**72**			**49**			**55**			**64**
H Commercial Building (SF)	§2.6.9	.3 to .4 FAR	*N/A*[1]		8,000	*N/A*[1]		20,000	*N/A*[4]		1000	*N/A*[4]		2000	*N/A*[4]		2000	*N/A*[4]		2000
TOTAL COMMERCIAL:					**8,000**			**20,000**			**1000**			**2000**			**2000**			**2000**

(Cont.)

Building Type	Code	Density[3]	Lot 7 (2.83 acres) Mix	Area	Units	Lot 8 (3.18 acres) Mix	Area	Units	Lot 9 (1.85 acres) Mix	Area	Units	Lot 10 (2. acres) Mix	Area	Units	Lot 11 (.99 acres) Mix	Area	Units	Lot 12 (1.78 acres) Mix	Area	Units
A House	§2.6.3	6 to 10	0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00	
B Side Yard House	§2.6.4	10 to 13	0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00	
C Rowhouse	§2.6.5	16 to 24	0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00		0%	0.00	
D Multiplex	§2.6.6	20 to 35	0%	0.00		100%	3.18	76	100%	1.85	44	0%	0.00		0%	0.00		0%	0.00	
E Walk-up	§2.6.7	30 to 40	100%	2.83	96	0%	0.00		0%	0.00		0%	0.00		100%	0.99	45	100%	1.78	63
F Podium	§2.6.8	30 to 45	0%	0.00		0%	0.00		0%	0.00		100%	2.00	92	0%	0.00		0%	0.00	
G Outbuilding	§2.6.10	1 per house	*0%*	*N/A*		*0%*	*N/A*		*0%*	*N/A*		*0%*	*N/A*		*0%*	*N/A*		*0%*	*N/A*	
TOTAL DWELLINGS:					**96**			**76**			**44**			**92**			**45**			**63**
H Commercial Building (SF)	§2.6.9	.3 to .4 FAR	*N/A*[4]		2000	0%	0.00		0%	0.00		*N/A*[4]		1000	0%	0.00		0%	0.00	
TOTAL COMMERCIAL:					**2000**			**0**			**0**			**1000**			**0**			**0**

(Cont.)

Building Type	Code	Density[3]	Lot 13 (2.11 acres) Mix	Area	Units	TOTAL (27.4 acres) Mix	Area	Units
A House	§2.6.3	6 to 10	0%	0.00		0%	0.00	0
B Side Yard House	§2.6.4	10 to 13	0%	0.00		0%	0.00	0
C Rowhouse	§2.6.5	16 to 24	0%	0.00		0%	0.00	0
D Multiplex	§2.6.6	20 to 35	0%	0.00		34%	6.70	168
E Walk-up	§2.6.7	30 to 40	0%	0.00		79%	11.31	396
F Podium	§2.6.8	30 to 45	100%	2.11	94	77%	9.38	386
G Outbuilding	§2.6.10	1 per house	*0%*	*N/A*		*N/A*		0
TOTAL DWELLINGS:					**94**		**DU:**	**950**
H Commercial Building (SF)	§2.6.9	.3 to .4 FAR	*N/A*[4]		2000		0.00	
TOTAL COMMERCIAL:					**2000**		**Comm. SF:**	**40,000**

Notes:

1. In this scenario, commercial space is included within a mixed use podium project spanning Lots 1 and 2.
2. Lot numbers are in black in the Illustrative Plan.
3. Density is expressed in dwelling units per acre (dua) unless otherwise noted. As the shape and size of each Lot differs, each Lot achieves a slightly different density within this range.
4. Corner commercial (1,000 SF each) by open spaces; may be located within a residential building.

SOURCE: Maulhardt / Stiles – 2024

Figure 1-6

Schematic Allocation of Buildings

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408-001-24

1.3.1 Existing Water Facilities and Groundwater Allocation for Project Site

As shown in **Figure 1-7: City of Oxnard Water Service Area**, the Project Site is within the City's water service area. The City supplies water to customers from three sources: imported surface water from the Calleguas Municipal Water District (Calleguas), local groundwater from United Water Conservation District (United), and local groundwater from City wells.

The City blends water from these three sources at six Blending Stations (BS) to achieve an appropriate balance between water quality, quantity, reliability, and cost and blended water is then distributed to customers. Additionally, the City produces recycled water at its Advanced Water Purification Facility (AWPF) and delivers recycled water for agricultural, industrial and irrigation use. Recycled water uses will be expanded to include groundwater recharge and indirect potable reuse.[4]

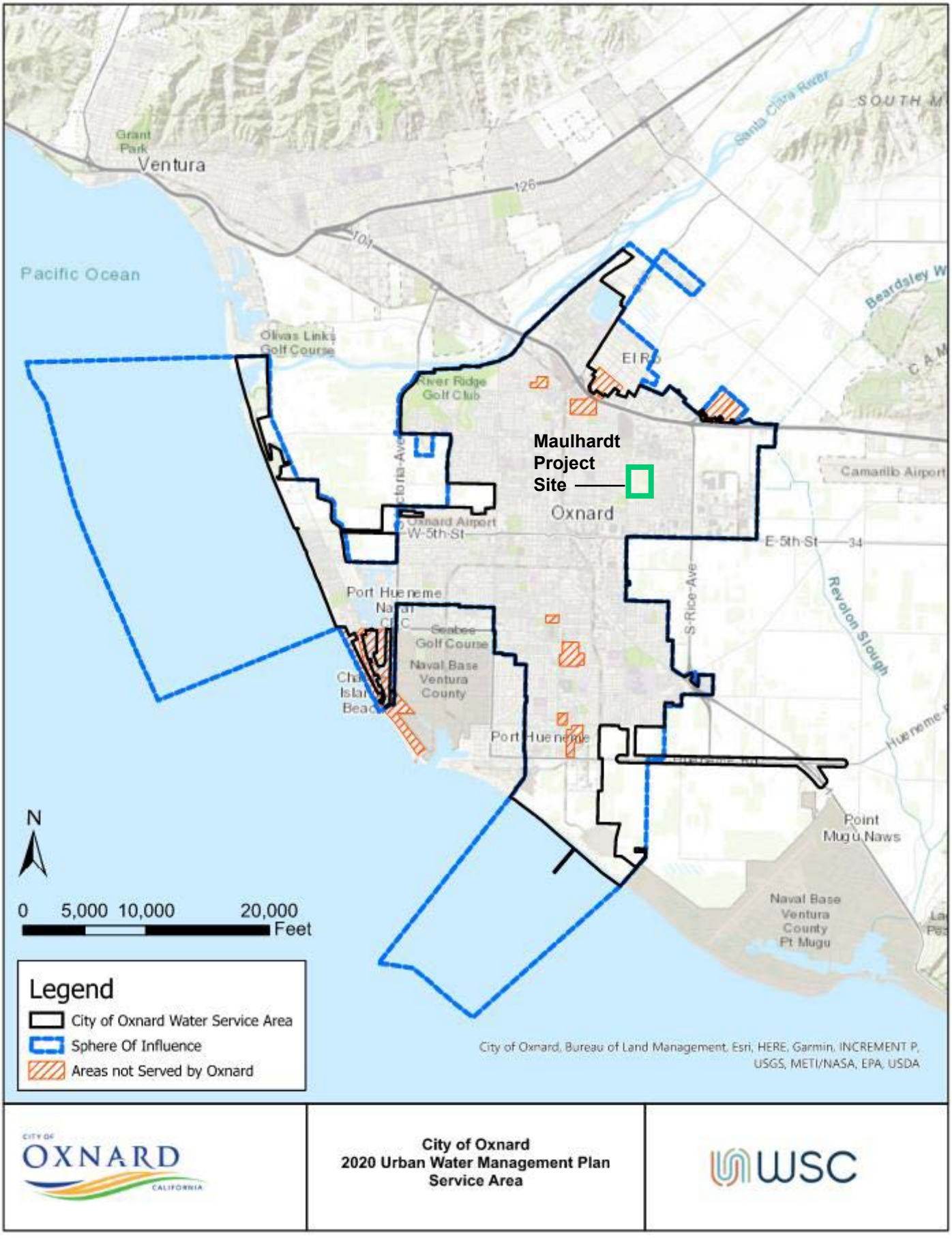
The Project Site has an existing private water well, identified as State Well Number (SWN) 02N22W35K03S, Combined Operation Extraction Facility Code (CombCode) MAUL. In February 2021, the Fox Canyon Groundwater Management Agency (FCGMA), the groundwater sustainability agency for the Oxnard Subbasin, identified a groundwater allocation of 196.485 acre-feet per year (afy) for Well SWN 02N22W35K03S.

FCGMA approved the transfer of 51.300 afy of the groundwater allocation for Well SWN 02N22W35K03S to the City, which included 42.3 afy of water needed for Del Sol High School in Area B and an additional 9.0 afy for Area C (APN 214-0-020-635).[5] After this transfer, a total of 154.185 afy of the water allocation associated with this existing well is available for development in Areas A and C, consisting of the 9 afy for Area C and 145.185 afy for Area A.[6]

4 City of Oxnard. "Water Supply Characterization." *Urban Water Management Plan*. (p. 6-1). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports.

5 Jensen Design & Survey, Inc. "Water Allocation." *Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum*. July 15, 2024. (p. 2). (See **Appendix F**).

6 Jensen Design & Survey, Inc. "Water Allocation." *Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum*. July 15, 2024. (p. 2). (See **Appendix F**).



SOURCE: City of Oxnard - 2024

FIGURE **1-7**

Meridian Consultants

City of Oxnard Water Service Area

408-002-24

1.4 Project Relation to the Urban Water Management Plan

The City is the water supplier for the Project and has adopted the 2020 UWMP, a copy of which is provided in **Appendix A**. The Project Site was included in both the 2030 General Plan and the 2015 Public Works Integrated Master Plan (PWIMP) which are incorporated into the 2020 UWMP. Demand factors in the PWIMP are based on a combined per capita water use and land use factor demand.[7, 8] The Project Site was included and planned for in the PWIMP as "future near and long-term development," under the name of "East Village." The "future near and long-term development" projects, including development of the Project Site, is included in the PWIMP and UWMP population and corresponding water demand forecasts for the City.[9, 10]

According to the Water Code, if the water demand for a project has been accounted for in the water supplier's most recent UWMP, then the WSA may use the UWMP as the source of the information required in the WSA. The determination as to whether the proposed Project's water demand has been accounted for in the most recent UWMP is located in **Section 2**, **Water Demand Analysis**.

Relation of Water Supplier to Other Urban Water Management Plans

The City is a member agency of Calleguas Municipal Water District (Calleguas) and United Water Conservation District (United).[11] Calleguas is a regional wholesaler that obtains their water from the Metropolitan Water District (MWD) and other local sources. United obtains water from the Oxnard groundwater subbasin.

The City prepared the 2020 UWMP in coordination with its wholesale provider, Calleguas, and also coordinated with other water agencies including United and the Port Hueneme Water Agency (PHWA). In 2020, 31 percent of the City's water supply was imported water provided by Calleguas, 39 percent was local groundwater provided by United, and 30 percent was provided from City groundwater wells.[12] Each of these water suppliers adopted individual 2020 UWMPs. Copies of the 2020 UWMPs from Calleguas and United are provided in Appendix B and Appendix C.

Law

CWC section 10910 provides:

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7 Residential demands were estimated using a per capita population methodology, assuming an average usage of 132.4 gallons per person per day (gpd), will all other land uses utilizing a per acre demand factor, as established by Memorandum 2.2, Table 5 of the PWIMP.

8 Jensen Design & Survey, Inc. "Water Allocation." *Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum*. July 15, 2024. (p. 3). (See **Appendix F**).

9 The UWMP assumes that the City's population will increase by approximately 33,451 persons to 238,126 persons.

10 Jensen Design & Survey, Inc. "Water Allocation." *Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum*. July 15, 2024. (p. 3). (See **Appendix F**).

11 City of Oxnard. *Water Division*. Accessed October 2024. https://www.oxnard.gov/public-works/water-division.

12 City of Oxnard. "Plan Preparation." *Urban Water Management Plan*. (p. 2-2). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports.

(c) (1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code [CEQA], shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).

(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).

(3) If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.

(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

1.5 Statewide and Local Water Conservation Efforts

City of Oxnard Water Shortage Contingency Planning

The City plans to meet future demands in periods of drought conditions through a diverse approach including facility improvements, increased deliveries of local ground water and imported water, implementing a recycled water program and supporting water demand management programs. The City expects to meet demands and continue to promote conservation to ensure reliability throughout the future. In addition, conservation mandates are under development as a result of the "2018 Water Conservation Legislation," consisting of Assembly Bill (AB) 1668 and Senate Bill (SB) 606.

The City has established ordinances for permanent water conservation standards to maximize water use efficiency for non-shortage conditions and response actions implemented during water shortage conditions. Further, the City of Oxnard Recycled Water Use Ordinance (Ordinance No. 2728) promotes water conservation and recycled water, which established that recycled water shall be used for suitable, non-potable purposes whenever and wherever recycled water is available at a reasonable cost and of an adequate quality. Improved water use efficiency and water shortage response actions supported by City Ordinances and other conservation efforts, ensure a reliable and sustainable minimum supply of water.

A water shortage occurs when water supply available is insufficient to meet the normally expected customer water use at a given point in time.[13] The CWC Section 10632 requires that every urban water supplier that serves more than 3,000 acre-feet per year or has more than 3,000 connections to prepare and adopt a standalone Water Shortage Contingency Plan (WSCP) as part of its UWMP. The City Council formally adopted the City's WSCP in October 2021. The City's WSCP is a strategic plan used to prepare for and respond to water shortages through a process for annual water supply and demand assessment.

The City's WSCP addresses six (6) stages of water shortages and evaluates the gap in supply compared to normal availability for each stage as shown below in **Table 1-1 Water Shortage Contingency Plan Levels.** Resolution No. 14682, adopted in July 2014, and Resolution No. 14781 adopted in May 2015, declared the City within a Stage 2 Water Shortage Level and imposed mandatory water conservation measures. Currently, the City is within a Stage 1 Water Shortage Level.[14] As defined in the City Code, during a declared water shortage condition, water sources available to the City would be put to maximum beneficial use, and the waste or unreasonable use of water would be prevented. Examples of the City's general water waste prohibitions and restrictions include but are not limited to limits on outdoor irrigation watering houses, and limits on running water duration. The City is in the process of implementing a water conservation and data management portal in order to track consumption and meet efficiency goals more effectively.

TABLE 1-1: WATER SHORTAGE CONTINGENCY PLAN LEVELS

Shortage Level	Percent Shortage Range	Water Shortage Condition
1	Up to 10%	Water Supply Watch
2	Up to 20%	Water Supply Alert
3	Up to 30%	Water Supply Warning
4	Up to 40%	Water Supply Emergency
5	Up to 50%	Severe Water Supply Emergency
6	Up to 60%	Catastrophic Water Supply Emergency

*Source: City of Oxnard 2020 UWMP, Table 2. DWR 8-1 Water Shortage Contingency Plan Levels (**Appendix A**).*

With the signing of AB 1668 and SB 606, the state set a maximum Indoor Residential Standard of 55 gallons per capita per day (GPCD) beginning January 1, 2025, which will decrease to 42 GPCD beginning January 1, 2030.[15] The City will need to achieve State-mandated water use goals in line with AB 1668 and SB 606 in the future. The City's most recent water demand factors are provided in the PWIMP, based on a combined per capita water use and land use factor demand. The residential demands were estimated using a per capita population methodology, assuming an average usage of 132.4 gallons per person per day (gpd), with all other land uses utilizing a per acre demand factor.[16]

13 City of Oxnard. "Water Shortage Contingency Plan." *Urban Water Management Plan*. (p. 8-1). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports.

14 City of Oxnard. *Water Use Restrictions*. Accessed October 2024. https://www.oxnard.gov/public-works/water/water-use-restrictions.

15 CWC, Section 10609.4(a).

16 Jensen Design & Survey, Inc. "Water Allocation." *Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum.* July 15, 2024. (p. 3). (See **Appendix F**).

1.6 Method of Analysis

This Assessment follows the requirements set forth in CEQA section 15155 for water supply analysis. This Assessment also follows the Department of Water Resources (DWR) Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001.[17] Section 1 of this Assessment describes the land use designation of the Project Site, the Project's relation to the water supplier's most recent UWMP. Section 2 provides the water demand analysis of the Project; Section 3 reviews the projected water supplies for the Project; Section 4 contains the required discussion of the water supplier's groundwater supplies; and Section 5 concludes the Assessment by providing overall findings for the Project's water demand.

17 California Department of Water Resources. *Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001 to assist water suppliers, cities, and counties in integrating water and land use planning*. October 8, 2003. Accessed October 2024. https://cawaterlibrary.net/document/guidebook-for-implementation-of-sb-610-and-sb-221-to-assist-water-suppliers-cities-and-counties-in-integrating-water-and-land-use-planning/.

2.0 WATER DEMAND ANALYSIS

This section evaluates whether the Project was considered in the water supplier's planning for water demand. This section identifies: 1) the various water use sectors, 2) water demand by those sectors for the next twenty years, and 3) compares the calculated water demand of the Project to the water demand assumed in the most recent UWMP for the same Project Site.

Law

CWC section 10910 states, in relevant part:

> *(c)(2)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).*
>
> *(3) If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.*

2.1 Citywide Demographic Factors

A variety of demographic factors may affect water use. The UWMP identifies several factors affecting water demand, including climate, current and projected population, density, and the mix of customer types (CWC sections 10631(e)(1)-(2)). These factors are addressed below based on information in the City's 2020 UWMP (**Appendix A**).

Climate

The climate of the City, including the Project Site, can be described as a dry, sub-tropical climate due to its proximity to the Pacific Ocean. The climate consists of generally mild temperatures, with an average temperature of 66 degrees Fahrenheit. The warmest month of the year is August, with an average temperature of 73 degrees Fahrenheit, while the coldest month of the year is December, with an average temperature of 59.7 degrees Fahrenheit. The average annual rainfall is approximately 10 inches, with the majority of rainfall occurring between November through March. The month of December is described as the wettest month with an average rainfall of approximately 2.6 inches.[18]

18 City of Oxnard. "System Description." *Urban Water Management Plan*. (p. 3-4). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

Service Area Population

The City's water service area includes the majority of the incorporated area of the City as well as adjacent portions of unincorporated Ventura County. It does not include portions of southwest Oxnard served by the PHWA; however, the City conveys State imported water to PHWA through a wheeling agreement. The City has a variety of users including single-family residences, multi-family residential, commercial, institutional, industrial, landscape irrigation and agricultural irrigation.

The City's historical population data for 2014 through 2020 as identified in the City's 2020 UWMP is based on the data from the California Department of Finance (DOF) and the City's forecast for population from 2021 through 2045 utilized Southern California Association of Governments (SCAG) data. The water service area population in 2020 was approximately 199,852 persons. [19]

Based on the City General Plan and anticipated development patterns, the City's projected population in 2045 is estimated at 231,626 persons as shown in **Table 2-1: Service Area Population Estimates 2015-2045.** This represents an increase of 10 percent over a 20 year period from 2025 to 2045.[20]

TABLE 2-1: SERVICE AREA POPULATION ESTIMATES 2015-2045

Population Served[a]	2015	2020	2025	2030	2035	2040	2045[b]
	199,012	199,852	210,345	219,220	223,605	227,615	231,626

Source: City of Oxnard 2020 UWMP, p. 3-5, (see **Appendix A**).

[a] Population estimated using DOF or SCAG data.

[b] SCAG's forecast period ends in 2040, so the 2021-2040 growth trend was extended through 2045.

2.2 City of Oxnard's Current and Future Water Demand

The City provides potable and recycled water to nearly 43,000 service connections.[21] In 2020, the City delivered approximately 26,000 afy to its customers. The average water consumption from 2016 to 2020 is approximately 23,000 afy. Approximately 34 percent of the City's total deliveries were to single-family residences, followed by 14 percent to both commercial and institutional customers, and 14 percent to multi-family residences. The rest of the City's water (38 percent) is delivered to industrial users, agricultural users,

19 City of Oxnard. "System Description." *Urban Water Management Plan*. (p. 3-5). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

20 The City's water service area differs from its City limits boundary and therefore has a different population. Table 2-1 depicts the population served by the City, rather than the total City population.

21 City of Oxnard. "Water Use Characterization." *Urban Water Management Plan*. (p. 4-1). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

landscape irrigation uses, and other fire hydrant uses. The City also provides water from Calleguas to PHWA, providing approximately 700 afy to PHWA annually over the last five (5) years.[22]

The City uses recycled water to meet agricultural, industrial and irrigation demands. The City plans to use recycled water as a source to recharge the Oxnard groundwater subbasin and indirect potable reuse (IPR). To meet future supply needs, the City will treat this water for potable reuse. In 2020, recycled water accounted for only one percent of total water deliveries; however, recycled water deliveries are planned to increase to meet future supply needs through the expansion of the City's Advanced Water Purification Facility (AWPF) and developing Aquifer and Storage Recovery (ASR) wells.[23]

Current and projected potable and recycled water demands by customer class are presented in Table 2-2: Current and Projected Potable and Recycled Water Demands for the City. The City's total demand in 2020 was 26,039 AFY, which was met with 25,885 AFY of potable water and 154 AFY of recycled water.[24] The projected 2045 potable and total water demand for the City is 33,349 AFY.

TABLE 2-2: CURRENT AND PROJECTED POTABLE AND RECYCLED WATER DEMANDS FOR THE CITY (AFY)

Use Type	2020	2025	2030	2035	2040	2045
Single Family	8,830	9,939	10,091	10,266	10,436	10,604
Multi-Family	3,613	4,067	4,128	4,200	4,269	4,339
Commercial	3,744	4,215	4,279	4,354	4,425	4,497
Industrial	2,227	2,507	2,545	2,590	2,632	2,675
Landscape	2,915	3,282	3,331	3,390	3,445	3,501
Other	31	35	35	36	37	37
Agricultural Irrigation	1,084	1,221	1,239	1,261	1,281	1,302
Losses	2,434	2,636	2,676	2,723	2,768	2,813
Sales/Transfers/ Exchanges to Other Agencies	1,007	917	1,857	2,704	3,581	3,581
Subtotal Potable Demand	25,885	28,819	30,181	31,524	32,874	33,349
Recycled Water Demand	154					
Total Water Demand	**26,039**	**28,819**	**30,181**	**31,524**	**32,874**	**33,349**

Source: 2020 UWMP, *Table 4-2, Table 4-3, and Table 4-4,* (see **Appendix A**).

22 City of Oxnard. "Water Use Characterization." *Urban Water Management Plan*. (p. 4-2). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

23 City of Oxnard. "Water Use Characterization." *Urban Water Management Plan*. (p. 4-2). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

24 City of Oxnard. "Water Use Characterization." *Urban Water Management Plan*. (p. 4-7). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

The City is located on the Oxnard Plain, which includes unincorporated areas of Ventura County and the Cities of Oxnard and Port Hueneme. Land uses within the Oxnard Plain consists of 47 percent agriculture, 47 percent urban uses, and 6 percent vacant/open space. Existing land use patterns and trends for the Oxnard Plain are projected to continue. As previously described, the City provides water to several adjacent unincorporated County areas and does not serve several areas within City limits served by mutual water companies.[25] The City serves many types of users, primarily single-family residential land uses. Other land uses include multi-family residential, commercial, institutional, industrial, landscape and agricultural irrigation. The City's 2030 General Plan summarizes anticipated land uses within the service area (in acres), as shown below in **Table 2-3: City of Oxnard 2030 General Plan Land Uses**.

TABLE 2-3: CITY OF OXNARD 2030 GENERAL PLAN LAND USES

Land Use Category	Area, Acres	Percent Total Area
Airport Compatible	212	0.5
Agriculture	20,576	51.8
Business Research Park	365	0.9
Commercial Community	72	0.2
Commercial Convenience	6	0.0
Commercial General	561	1.4
Central Industrial Area	268	0.7
Commercial Neighborhood	4	0.0
Commercial Office	55	0.1
Commercial Regional	345	0.9
Downtown Edge	32	0.1
Downtown	142	0.4
Easement	488	1.2
Harbor Channel Islands	87	0.2
Hueneme	2,604	6.6
Industry Priority to Coastal Development	95	0.2
Industrial Heavy	55	0.1
Industrial Limited	586	1.5
Industrial Light	1,491	3.8
Mobile Home Park	238	0.6
Open Space	118	0.3
Planning Reserve	329	0.8
Park	946	2.4
Public Semi Public	381	1.0
Planned Unit Development Residential	184	0.5
Public Utility Energy Facility	153	0.4

25 The water distribution system service area includes the majority of the incorporated area of the City as well as portions of unincorporated Ventura County. It does not include portions of southwest Oxnard, which are served by the PHWA.

TABLE 2-3: CITY OF OXNARD 2030 GENERAL PLAN LAND USES		
Land Use Category	**Area, Acres**	**Percent Total Area**
Recreation Area	354	0.9
Residential Existing	441	1.1
Residential High	18	0.0
Residential High Density	39	0.1
Residential Low	4,313	10.9
Residential Low Medium	780	2.0
Residential Medium	589	1.5
Residential Medium High	267	0.7
Resource Protection	1,681	4.2
School	799	2.0
Visitor Serving Commercial	32	0.1
Total	**39,704**	**100.0**

*Source: 2020 UWMP, Table 3-3: General Plan Land Uses (see **Appendix A**).*

2.3 Project Site Land Use Assumed in the UWMP

The Project Site is located within the City's potable water service area and the primary source of water for the proposed Project would be the existing water supplies used by the City to provide service to its customers. The 2020 UWMP developed future growth trends and population projections based on the 2030 General Plan, DOF Population Projections, and SCAG Growth Forecasts. As previously described, the PWIMP supports the 2020 UWMP, and the 2020 UWMP states that "the water demand factors provided in the PWIMP remain the most recently updated factors for land use planning uses."[26] The most recent water demand factors as noted in the PWIMP are based on a combined per capita water use and land use factor demand. The residential demands were estimated using a per capita population methodology, assuming an average usage of 132.4 gallons per person per day (gpd), with all other land uses utilizing a per acre demand factor.[27]

The Project Site was included and identified in the PWIMP as a "future near and long term development" in "East Village." The PWIMP anticipated 500 residential dwelling units and 6.325 acres of commercial at the Project Site, with an estimated population of 1,616 full time residents.[28] The Project Site and other listed "future near and long term development" projects included in the PWIMP and by extension, the 2020 UWMP, were factored into the PWIMP population and corresponding water demand forecasts for the City. The Project

26 City of Oxnard. "Projected Water Use." *Urban Water Management Plan*. (p. 4-5). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

27 City of Oxnard. *Memorandum 2.2, Table 5*. "2015 Public Works Integrated Master Plan." Accessed October 2024.

28 City of Oxnard. *Memorandum 1.3, Table 2*. "2015 Public Works Integrated Master Plan." Accessed October 2024.

Site was accounted for in the 2020 UWMP projected population increase, which assumed that the City's service population will increase by approximately 21,281 persons between 2025 and 2045 (**Table 2-1** above).[29]

As previously described, the Project Site includes one parcel (APN 214-0-020-635) owned by Oxnard Union High School District (OUHSD) and two parcels (APNs 214-0-020-615 and 214-0-020-625) owned by the Maulhardt/Stiles families. APN 214-0-020-635 contains Del Sol High School, developed by OUHSD and opened in 2023. The proposed Sub-Neighborhood Plan would allow development of up to 950 residential units and 40,000 square feet of commercial uses on other the other two parcels.

As described above in **Existing Water Facilities**, the Project Site has an existing water well, identified as State Well Number (SWN) 02N22W35K03S, CombCode MAUL.

In February 2021, the FCGMA, the groundwater sustainability agency for the Oxnard Subbasin, determined that Well SWN 02N22W35K03S had an initial allocation of 196.485 afy of groundwater. FCGMA approved the transfer of 51.300 afy of this groundwater allocation for SWN 02N22W35K03S to the City, which included 42.3 afy of water needed for Del Sol High School at APN 214-0-020-635 and an additional 9.0 afy for the southwest parcel APN 214-0-020-635, identified as Area C in the proposed Sub-Neighborhood Plan[30] (refer to **Appendix D)**. With this transfer, 154.185 afy of groundwater allocation is available for Area A as defined in the proposed Sub-Neighborhood Plan, as summarized in **Table 2-4: Summary of Project Site Water Allocations**.

29 City of Oxnard. "Population and Housing." *Urban Water Management Plan*. (p. 3-5). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

30 Jensen Design & Survey, Inc. "Water Allocation." *Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum.* July 15, 2024. (p. 2). (See **Appendix D**).

TABLE 2-4: FCGMA GROUNDWATER ALLOCATIONS FOR PROJECT SITE	
Allocation Category	**Annual Usage (AFY)**
High School Groundwater Allocation to the City	42.300 afy
Area C Groundwater Allocation to the City (Maulhardt)	9.000 afy
Remaining Groundwater Allocation for Area A	145.185 afy
Subtotal: Allocation Available for proposed Project[a]	154.185 afy
Total Available Groundwater Allocation:	**196.485 afy**

*Sources: Jensen Design & Survey, Inc. "Water Allocation." Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum. July 15, 2024. (p. 3). (See **Appendix D**).*

[a] (Note: Assumes all current uses on Southwest Farm cease)

The 2020 UWMP 2045 Reasonably Available Volume projection of 33,349 afy accounts for a citywide 45 percent reduction in groundwater extractions in accordance with the FCGMA Groundwater Sustainability Plan.[31] There is no mandate in City policy for individual projects to reduce groundwater usage by 45 percent on a standalone basis, as this future 45 percent reduction in groundwater extraction and use will be met on a citywide basis. Future reductions in groundwater extractions will be offset by recycled water "pump back" allocations and Aquifer Storage and Recover (ASR) recovered water, among other initiatives identified in the 2020 UWMP. Accordingly, the reduction is assessed as a Citywide reduction, and the 2020 UWMP 2045 projected demand of 33,349 afy already includes the water demand for the proposed Project as described above.[32]

The PWIMP assumed the Project Site would be developed with 500 residential units and approximately 6.3 acres of commercial uses. Based upon the demand factors in the PWIMP, the projected water demand for the Project Site is approximately 253.8 AFY as detailed below in **Table 2-5: Project Site Water Demand Assumed in 2015 PWIMP**.

31 City of Oxnard. "Water Supply Characterization." *Urban Water Management Plan*. (p. 6-3). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

32 City of Oxnard. "Water Use Characterization." *Urban Water Management Plan*. (p. 4-5). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

TABLE 2-5: PROJECT SITE WATER DEMAND ASSUMED IN 2015 PWIMP			
Proposed Use	Units (DU or AC)	Unit Usage (AFY/DU or AFY/AC)	Annual Usage (AFY)
Commercial	6.325 acres	2.24[a]	14.168 afy
Residential (Population: 1,616 Persons)[b]	500 dwelling units	0.593[c]	239.628 afy
Total Projected Water Demand:			**253.796 afy**

2.4 Proposed Project Water Demand

The water demand estimate for the Proposed Project was developed based on a population estimate for the proposed residential uses and a per acre demand factor for the commercial uses. A land use study completed for Areas A and C as defined in the Sub-Neighborhood Plan determined the maximum site development, assuming residential lots are developed with the highest density and type of residential units that would be allowed by the proposed Sub-Neighborhood Plan. This land use study identifies 386 units in podium apartments and 564 units in multiplexes and/or walkup apartments for a total of 950 units. Comparable development within the City and County were identified and average household sizes were determined based on population data for the Census Tract each comparable development is located in. For podium apartments, the average household size was determined to 1.84 persons per unit. For the multiplex and walk-up apartments, the average household size was 2.40 persons, with an average of 2.18 persons per unit established.[33,34]

The projected water demand for the proposed Project is shown below in **Table 2-6: Projected Water Demand for Proposed Project.** Accordingly, the proposed Project would utilize 149.950 afy of water, less than an available water allocation of 154.185 afy, resulting in a buffer of 4.235 afy of water.

33 Jensen Design & Survey, Inc. "Water Allocation." *Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum.* July 15, 2024. (p. 5). (See **Appendix B**).

34 RCLCO. "Household Size Assumptions for Proposed Maulhardt/Stiles NECSP Sub-Neighborhood Plan Project Memorandum." June 27, 2024. (See **Appendix G**).

TABLE 2-6: PROJECTED WATER DEMAND FOR PROPOSED PROJECT			
Land Use	**Units (DU or AC)**	**Unit Usage (AFY/DU or AFY/AC)**	**Annual Usage (AFY)**
Areas A & C			
Residential	950 DU 2,064 persons	0.0616 afy/person[a]	127.130 afy
Commercial	0.918 ac	2.240 afy/ac[b]	2.057 afy
Landscaping (non-Parks)	6.309 ac	1.351 afy/ac[c]	8.524 afy
Landscaping (Parks)	14.57 Acres	0.840 afy/ac[d]	12.239 afy
Subtotal Areas A & B			**149.950 afy**
Area B			
High School			42.300 afy
Total Projected Water Demand:			**192.25 afy**

*Sources: Jensen Design & Survey, Inc. "Water Allocation." Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum. July 15, 2024. (p. 5). (See **Appendix D**).*

Notes:

[a] AB 1668/SB 606, which mandates a per person consumption of 55 gpd.

[b] City of Oxnard. *Memorandum 2.2, Table 9.* "2015 Public Works Integrated Master Plan." Accessed October 2024.

[c] ETWU per MEWLO Guidelines, assuming a blend 15% lawn area and 85% drought tolerant areas on all development lots.

[d] City of Oxnard. *Memorandum 2.2, Table 5.* "2015 Public Works Integrated Master Plan." Accessed October 2024.

2.5 Conclusion

This section evaluates whether the Project was included in the projection of future water demands for the City, as described in the OMUC 2020. As per CWC section 10910€(2):

"if the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g)."

Based on the maximum buildout density of the proposed Project with demand factors sourced from local and state guidelines, the estimated water demand for the proposed Project is 192.250 afy as shown in **Table 2-6**. As shown in **Table 2-5**, the UWMP assumes 253.796 afy of water demand for the Project Site based on the water demand estimates in the 2015 PIWMP. Further, as shown in **Table 2-4**, the Project water demand of 192.250 afy is less than the 196.485 afy of groundwater extraction allocation for the Project Site. Therefore, the projected water demand for the Project Site in the 2020 UWMP is sufficient to account for the water needed for the proposed Project.

The City of Oxnard has a water neutrality policy calling for proposed projects not accounted for in the 2030 General Plan or latest UWMP to not result in a net increase in water demand. As the City's water neutrality

policy is not codified, the City may choose to approve a project regardless of its water neutrality status. However, the City has been making planning and permitting decisions pursuant to the water neutrality policy since 2008.[35] "New development" includes all planned (anticipated in the current General Plan) and any unplanned future development occurring in the City. Under the policy, a development can be water neutral by meeting its projected demand. As detailed above, the proposed Project would require less water than assumed in the 2020 UWMP and, for this reason, is consistent with the City's water neutrality policy.

35 City of Oxnard CEQA Guidelines, P. 72.

3.0 WATER SUPPLY ANALYSIS

This section identifies the sources of potable water utilized and available to the water supplier of the proposed Project. A WSA is required to "include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the water system's existing and planned future uses, including agricultural and manufacturing uses."[36]

The purpose of this section is to evaluate the water supplies that could be utilized by the proposed Project during normal, single-dry, and multiple-dry water years during a 20-year projection. The City is the water supplier for the proposed Project. The City has the following sources of water supply: imported surface water from Calleguas, local groundwater from United, and local groundwater from City wells. Additionally, the City produces recycled water at its Advanced Water Purification Facility (AWPF) and delivers recycled water for groundwater recharge and indirect potable reuse.[37]

Law

CWC section 10910(d)(1) states:

The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.

> *(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:*
>
> *(A) Written contracts or other proof of entitlement to an identified water supply.*
>
> *(B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system(C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.*
>
> *(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.*

36 CWC, Division 6, Part 2.10, section 10910(c)(3).

37 City of Oxnard. "Water Supply Characterization." *Urban Water Management Plan*. (p. 6-1). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

3.1 Documenting Wholesale Water Supplies

Many retail water suppliers in California, including the City, receive supplies from one or more water wholesalers. CWC Section 10910(f) requires the WSA to document wholesale supplies received by: 1) describing the quantities of water received from each wholesaler in prior years; 2) identifying existing entitlements, water rights, and/or water service contracts held by the City for the wholesale supply; 3) provide proof of entitlements, water rights, service contracts, relevant capital outlay programs, and construction permits for necessary infrastructure to deliver wholesale supplies, if any; and 4) regulatory approvals required to convey or deliver the wholesale supply.

Wholesale Supplies Received

The City purchases water from two (2) other agencies: Calleguas and United. In 2020, the City received 31% of its supply from imported water from Calleguas and 39% from United. The City purchases imported water from Calleguas, a regional wholesale agency. Calleguas obtains water from MWD and the State Water Project (SWP). The MWD faces several challenges in providing adequate, reliable, and high-quality supplemental water supplies, including dry hydrologic conditions and Sacramento-San Joaquin River Delta issues. The current water supply conditions affecting the quantity of deliveries by the MWD include record low contract supplies that are available from the SWP from drought and Delta issues, an extended drought in the Colorado River watershed, groundwater basins and local reservoirs dropping to very low operating levels, and a reduced available supply for the Los Angeles Aqueduct. The MWD responds to water quality concerns by protecting the quality of the source water and developing water management programs that maintain and enhance water quality. The major regional water quality concerns include salinity, perchlorate, total organic carbon and bromide, nutrients, arsenic, uranium, chromium-6 and constituents of emerging concern. The MWD has taken several actions and adopted programs to address these contaminants and to ensure a safe and reliable water supply.

Calleguas employs a tiered water rate structure, and the City operates to remain below the Tier 1 threshold to conserve costs. The Tier 1 allocation is based on 90 percent of the City's historical base demand, or 10-year average. The City, Calleguas, and the PHWA entered into a Three-Party Agreement in 2002, which provides PHWA with Calleguas water through the City's Calleguas pipeline. As one of the provisions under the Three-Party Agreement, the PHWA transfers 700 afy of FCGMA allocations to the City. MWD and Calleguas expect to meet all normal and dry year demands due to advanced planning for water shortage conditions. As other regional customers rely solely on Calleguas for water, the City also focuses on additional water supply sources as the City anticipates that in a water shortage emergency, Calleguas would supply water to fully reliant customers prior to the City.

The City extracts groundwater from the Oxnard Plain Groundwater Basin (Oxnard Basin) using City wells and through an agreement with United. United supplies groundwater to the City through groundwater extraction from the Oxnard Basin further inland on behalf of the City, to protect against seawater intrusion. Water from United is delivered through the Oxnard-Hueneme (O-H) pipeline. The O-H Pipeline Agreement between United and the City provides the City with 50.47 percent of the total pipeline capacity (26.75 cubic feet per second

(cfs)). As of 2020, in the last five (5) years, the City has utilized an average of 7,950 afy from United. The actual and projected wholesale water supplies that are projected to be available to the City through 2045 are shown in **Table 3-1: Wholesale Projected Water Supplies Available.**

TABLE 3-1: WHOLESALE PROJECTED WATER SUPPLIES AVAILABLE (AFY)

Wholesale Water	2020	2025	2030	2035	2040	2045
Calleguas	7,060	9,630	7,364	6,987	7,387	6,169
United Groundwater	10,074	8,332	7,268	6,204	5,140	5,241

Source: 2020 UWMP (see **Appendix A**).
Note: Reasonably available volume; AFY = acre feet per year

3.2 FCGMA Groundwater Sustainability Plan for the Oxnard Subbasin

As the Groundwater Sustainability Agency for the Oxnard Subbasin, FCFMA adopted a Groundwater Sustainability Plan (GSP) for the Oxnard Subbasin in December 2019 in accordance with the Sustainable Groundwater Management Act (SGMA). The GSP addresses the long-term sustainability of the basin. Over the next 20 years, the goal is to bring the basin to a sustainable level by facilitating a 45 percent overall pumping reduction by 2040.[38] . It is worth noting that the UWMP views this reduction as taking place collectively across the whole of the City's groundwater allocation and does not mandate compliance on the basis of each individual customer/user of City groundwater. The 2020 UWMP identifies that the imported surface water from Calleguas is potentially subject to cutbacks for climatic, legal, environmental, and water quality reasons. Groundwater extracted by United and delivered to the City via the O-H Pipeline is subject to FCGMA and reduced allocations. Reductions in groundwater extractions are offset by recycled water "pump back" allocations and Aquifer Storage and Recover (ASR) recovered water, among other initiatives.[39]

3.3 Documenting Water Supplies

The City provides water service to a variety of users, including residents, commercial, institutional, industrial, landscape irrigation and agricultural irrigation. The City is the water supplier for the proposed Project. The City's water service area population as of 2020 was approximately 199,852 persons. [40] The City has the following sources of water supply: imported surface water from Calleguas, local groundwater from United, and local groundwater from City wells. Additionally, the City produces recycled water at its Advanced Water

38 There is no mandate in City policy for individual projects to reduce groundwater usage by 45 percent on a standalone basis, as the required reduction is assessed as a Citywide reduction.

39 City of Oxnard. "Five-Year Consecutive Drought Supply." *Urban Water Management Plan*. (p. 7-8). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

40 City of Oxnard. "System Description." *Urban Water Management Plan*. (p. 3-5). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

Purification Facility (AWPF) and delivers recycled water for groundwater recharge and indirect potable reuse. As of 2023, the City receives 34.2 percent of its water from City groundwater, 32.8 percent from Calleguas, and 33 percent from United.[41] Actual water supplies provided to the City for the year 2020 are summarized in **Table 3-2: Water Supply Sources for the City in 2020** and **Table 3-3: Projected Water Supplies**, which illustrate projected water supplies available to the City.

TABLE 3-2: WATER SUPPLY SOURCES FOR THE CITY IN 2020

Water Supplier	Water Source	Amount (AFY)
City	Groundwater (not desalinated)	7,744
United	Groundwater (not desalinated)	10,074
Calleguas	Purchased or Imported Water	7,060
Wheeled to PHWA	Purchased or Imported Water	1,007
	Recycled Water	154
Total		**26,039**

*Source: 2020 UWMP (**Appendix A**)*
Note: Water quality of all water supply listed above (except recycled water) consists of drinking water quality.

41 City of Oxnard. Drinking Water Consumer Confidence Report. 2023. Accessed October 2024. https://www.oxnard.gov/wp-content/uploads/2023-Oxnard-CCR-English.pdf.

TABLE 3-3: PROJECTED WATER SUPPLIES (AFY)						
Water Supplier	Water Source	2025	2030	2035	2040	2045
City Groundwater	Groundwater (not desalinated)	6,754	5,892	5,029	4,166	4,258
United Groundwater	Groundwater (not desalinated)	8,332	7,268	6,204	5,140	5,241
Calleguas	Purchased or Imported Water	9,630	7,364	6,987	7,387	6,169
Calleguas- Wheeled to PHWA	Other	917	1,857	2,704	3,581	3,581
ASR Recovered	Other	1,500	4,800	6,600	7,600	9,100
Recycled Water Pumpback Allocation	Other	1,500	3,000	4,000	5,000	5,000
Groundwater Allocation Used	Other	186	0	0	0	0
	Total:	**28,819**	**30,181**	**31,524**	**32,874**	**33,349**

Source: 2020 UWMP; Table 6-11 (see **Appendix A**).
Note: Projected water supply is based on reasonably available volume.

Surface Water

The City does not currently utilize any surface water sources.

Stormwater

The City does not currently utilize any stormwater sources.

Wastewater and Recycled Water

The City utilizes recycled water, when available, to meet agricultural, industrial and irrigation demands. The City plans to use recycled water as a source to recharge the Oxnard groundwater subbasin and indirect potable reuse (IPR) to ensure future reliability and affordable supply of high-quality water through the Groundwater Recharge Enhancement and Treatment (GREAT) Program. The GREAT Program intends to increase water supply reliability, reduce costs of imported sources of water supply, improve dependability in accommodating existing needs and meeting planned growth and demands, and enhanced stewardship of the local water supply through recycling and reusing a substantial portion of the region's wastewater. Components of the GREAT Program include the Desalter, recycled water system, groundwater injection of recycled water and brine collection. The City projects recycled water injections for recharge to be nearly 7,680 afy by 2045.

Effluent from the Oxnard Wastewater Treatment Facility was previously discharged into the ocean. However, the City now utilizes the City's Advanced Water Purification Facility (AWPF) for the City's recycled water

system, which further treats wastewater from the Oxnard Wastewater Treatment Facility. The City's AWPF was constructed utilizing microfiltration (MF), reverse osmosis (RO), and an advanced oxidation process (AOP). The City's AWPF is designed to produce advanced treated recycled water with an ultimate capacity of 25 million gallons per day (mgd); however, is currently equipped to produce 6.25 mgd. Since operation, the AWPF has produced water for "unrestricted reuse," disinfected tertiary recycled water" or "Title 22 reclaimed water," which is used for non-potable supply such as landscape irrigation or industrial process water.

The existing recycled water distribution system consists of approximately 10 miles and delivers to the River Ridge Golf course and to various agricultural users. Recycled water from the AWPF is pumped into the distribution system by finished water pumps at the AWPF. The AWPF facility operates to serve the average day demand for the recycled water customers, with the remainder anticipated to be available for IPR. Although the recycled water distribution system does not currently include any system wide storage tanks, some recycled water users maintain their own on-site storage which reduces the peak demand on the AWPF.

The City collects, treats and disposes of wastewater within its service area, which includes most of the City, the City of Port Hueneme, Naval Bases in Ventura County, and unincorporated areas of the County. The wastewater collection system includes 384 miles of gravity sewer pipelines, 4.7 miles of pressurized pipelines and 15 lift stations. Further information on the City's wastewater collection system can be found in the Public Works Integrated Master Plan (PWIMP) Wastewater Project Memorandum 3.1 Background Summary (located in **Appendix E**). The City has six (6) recycled water accounts, with only four (4) accounts utilizing recycled water in 2020. In 2020, recycled water accounted for only one (1) percent of total water deliveries; however, recycled water deliveries are planned to increase. In order to meet future supply needs, the City will further treat water by injecting it back into the groundwater basin for potable reuse. The City is in the process of expanding the AWPF and developing six (6) Aquifer and Storage Recovery (ASR) wells by 2026 to use advanced treated recycled water for groundwater recharge and IPR. The first ASR well project is planned to be completed by 2023-2024. In order to utilize the recovered water from aquifer storage, the water must meet potable water standards as defined by DDW. It is anticipated that the AWPF will provide up to 11,900 AFY of recycled water for IPR, which was anticipated to be a drinking water source in 2024; however, currently the AWPF's water remains utilized for non-potable uses, such as agricultural irrigation and industrial uses. The use of AWPF water as potable water supply must be demonstrated to water quality regulatory authorities (California Division of Drinking Water and the Los Angeles Water Quality Control Board (RWQCB)), before adding AWPF water as a potable source. **Table 3-4: Current and Future Recycled Water Supply within Service Area** shown below describes current and future recycled water supplies within the City's service area.

TABLE 3-4: CURRENT AND FUTURE RECYCLED WATER SUPPLY WITHIN SERVICE AREA (AFY)						
Beneficial Use Type	2020	2025	2030	2035	2040	2045
Industrial Use	68	780	780	780	780	780
Agricultural Irrigation	56	3,875	3,440	3,440	3,440	3,440
Gold Course Irrigation	30					
Groundwater Recharge (IPR)	-	1,345	7,684	7,684	7,684	7,684
Total	**154**	**6,000**	**11,904**	**11,904**	**11,904**	**11,904**

Source: 2020 UWMP, Tables 6-6 (see **Appendix A**).
Note: The level of water treatment is advanced for all use types.

As discussed in **Section 1.5**, City Ordinance No. 2728, requires that recycled water be used for suitable, non-potable purposes whenever and wherever recycled water is available to further optimize future recycled water. With respect to desalinated water opportunities, the City operates Desalter #1 at its Water Campus, which has a capacity of 8,400 afy with room for planned expansion to 16,800 afy. The Desalter treats groundwater for Total Dissolved Solids (TDS) and nitrate reduction.

Groundwater

The City owns and operates ten (10) wells that pump groundwater from the Oxnard Basin, a subbasin of the Santa Clara River Valley Groundwater Basin. The Oxnard Basin underlies the City in southern Ventura County. The basin is of alluvium with semi-permeable rocks from the Santa Monica Mountains, containing a collection of interconnected aquifers separated by layers of clay strata. The Oxnard Plain Groundwater Basin is categorized in three (3) parts, the Oxnard Forebay, the Upper Aquifer System (UAS), and the Lower Aquifer System (LAS).

The Oxnard Forebay is an unconfined portion of the Oxnard Basin and is located along the Santa Clarita River. The Oxnard Forebay is the primary means by which the Oxnard Basin is recharged through infiltration from the riverbed of the Santa Clarita River. Groundwater is able to seep into the Upper and Lower Aquifer Systems as the clay layers that separate the aquifers are not continuous. The UAS comprises of the upper 500 feet of the confined portions of the Oxnard Basin which includes a semi-perched zone and the Oxnard and Mugu aquifers. The UAS is hydraulically connected to the Pacific Ocean through the Oxnard and Mugu aquifers and is how seawater intrusion enters the Oxnard Basin in periods of overdraft. The LAS includes the deeper confined aquifers including the Hueneme, Fox Canyon, and Grimes Canyon aquifers. The LAS is separated by an approximately 80 feet thick layer of continuous silty clay, except near the Oxnard Forebay.

The City's groundwater is blended with its purchased and imported water at blending stations (BS). The City operates six (6) blending stations throughout the City. Groundwater from three (3) of the wells is treated using reverse osmosis at BS1/BS6. Although the blending ratio operations vary, the City aims to achieve a one to one

surface to groundwater ratio to produce water that has a TDS level between 600 and 700 milligrams per liter (mg/L) in order to meet secondary drinking water standards. Further, as mentioned above, the City obtains groundwater from United, which is accounted for from the City's total groundwater allocations.

The City extracts groundwater from the Oxnard Basin throughout normal and dry years, with a total groundwater allocation of approximately 17,000 AFY from all sources. In the period from 2016 to 2020, the City extracted an average of 7,250 AFY from the Oxnard subbasin; however, the City is required to reduce groundwater extractions over the planning period. The amount of total groundwater pumped by the City, not including groundwater from United, since 2016 is shown in **Table 3-5: Historic Groundwater Production**.

TABLE 3-5: HISTORIC GROUNDWATER PRODUCTION

Year	Groundwater Produced (AFY)
2016	7,212
2017	7,163
2018	6,813
2019	7,317
2020	7,744
Average	***7,250***

Source: 2020 UWMP, Table 6-3 (see **Appendix A**).

Note: All or part of the groundwater from the Alluvial Basin described is desalinated.

A complete description of the City's groundwater rights is provided below in **Section 4, Groundwater Analysis**.

3.4 Water Exchanges and Transfers

Exchanges

As previously described, Oxnard, Calleguas and PHWA entered a Three-Party Agreement in 2002 which provides PHWA with Calleguas water through the City's Calleguas pipeline. The City obtains an annual transfer of 700 afy of FCGMA allocations from PHWA as one of the Agreement's provisions.

Transfers

When private well systems are converted to City water, the private well groundwater allocations are also transferred to the City. The transferred allocations were 2 afy per acre; however, this amount was reduced to 25 percent per Ordinance No. 8, and further reduced to 20 percent through Emergency Ordinance E in 2014.[42] Emergency Ordinance E was replaced in 2020 FCGMA's adopted "Ordinance to Establish a New Pumping Allocation System for the Oxnard and Pleasant Valley Basins," which reset the initial extraction allocations based on the average annual extractions per well during the 2005 and 2014 base period. Consequently, when

42 City of Oxnard. "Water Exchanges and Transfers." *Urban Water Management Plan*. (p. 6-8). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

irrigated acreage changes to Municipal and Industrial (M&I) use, the extraction allocation used to irrigate the acreage shall be transferred from the agricultural operator to the M&I operator on a one-to-one basis. In January of 2015, the City entered into a Full Advanced Treatment Recycled Water Management and Use Agreement to provide recycled water for agricultural irrigation. In this agreement, agricultural pumpers are required to transfer groundwater allocations to the City on a one-to-one basis for delivered recycled water. FCGMA Resolution 13-02 allows the City to accrue the Recycled Water Pumpback Allocations, which can be redeemed by the City when favorable Oxnard Forebay groundwater levels are present.

3.5 Documenting Normal Year Water Supply and Demand

Every urban water supplier is required to assess the reliability of water service provided to its customers under normal, dry, and multiple dry water years. A 'Normal Year' represents the water supplies a supplier considers available during normal conditions, which could be a single year, or averaged range of years that most closely represents the average water supply available. A 'Single Dry Year' is the year that represents the lowest water supply available. 'Five-Consecutive Year Drought' is the driest five-year historical sequence for the water supplier, which may be the lowest average water supply available for five (5) years in a row.[43] The 2020 UWMP used historical rainfall from 2000-2020 to determine historical normal and dry years demand conditions that need to be met with a dynamic supply portfolio considering supply constraints at the given time. The normal year, 2008, was selected as the year with the closest to average rainfall from 2000-2020, as shown in **Table 3-6: Basis for Reliability Assessment**. The City depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure that it has adequate supplies. Water supplies available to the City are projected to meet full-service demands. The normal year water supply and demand projections are shown below in **Table 3-7: Normal Year Supply and Demand**. The 2020 UWMP states that the City expects to meet demands under all water year scenarios between 2025 to 2045 during normal years, single dry years, and multiple dry years as shown in **Table 3-7**, **3-8** and **3-9**.

43 City of Oxnard. "Water Service Reliability and Drought Risk Assessment." *Urban Water Management Plan*. (p. 7-4). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

TABLE 3-6: BASIS FOR RELIABILITY ASSESSMENT (AFY)			
Year Type	Base Year	Volume Available	Percent of Average Supply
Average Year	2008	29,201	
Single-Dry Year	2013	30,454	104%
Consecutive Dry Years 1st Year	2013	30,454	104%
Consecutive Dry Years 2nd Year	2014	28,323	97%
Consecutive Dry Years 3rd Year	2015	25,624	88%
Consecutive Dry Years 4th Year	2016	25,638	88%
Consecutive Dry Years 5th Year	2017	29,016	99%

Source: 2020 UWMP, Table 7-3 (see **Appendix A**).

Note: The City will meet 100 percent of demands that are assumed to fluctuate in dry years with adaptive management of its supply portfolio.

TABLE 3-7: NORMAL YEAR SUPPLY AND DEMAND (AFY)					
	2025	2030	2035	2040	2045
Supply Totals	28,819	30,181	31,524	32,874	33,349
Demand Totals	28,819	30,181	31,524	32,874	33,349
Difference	0	0	0	0	0

Source: 2020 UWMP, Table 7-4 (see **Appendix A**).

3.6 Documenting Dry Year Water Supply and Demand

The 2020 UWMP utilized the year with the least rainfall as the single dry year, 2013. The five-year consecutive drought corresponded to the period of 2013 to 2017. The percent change for each dry year compared to a normal year corresponds to anticipated demand pattern changes, specifically outdoor demands. The City has determined that the water demands during single dry years over the next 25 years will be met, as shown in **Table 3-8: Dry Year Supply and Demand**.

TABLE 3-8: DRY YEAR SUPPLY AND DEMAND (AFY)

	2025	2030	2035	2040	2045
Supply Totals	30,055	31,475	32,876	34,284	34,779
Demand Totals	30,055	31,475	32,876	34,284	34,779
Difference	0	0	0	0	0

Source: 2020 UWMP, Table 7-5 (see **Appendix A**).

3.7 Documenting Multiple Year Water Supply and Demand

The City's projections over a five-year drought period are illustrated below in **Table 3-9: Multiple Dry Year Supply and Demand**, which demonstrates that the City can meet water demands during future five consecutive year drought periods.

TABLE 3-9: MULTIPLE DRY YEAR SUPPLY AND DEMAND (AFY)

		2025	2030	2035	2040	2045
First Year	Supply Totals	30,055	31,475	32,876	34,284	34,779
	Demand Totals	30,055	31,475	32,876	34,284	34,779
	Difference	0	0	0	0	0
Second Year	Supply Totals	28,311	29,533	30,837	31,978	
	Demand Totals	28,311	29,533	30,837	31,978	
	Difference	0	0	0	0	0
Third Year	Supply Totals	25,830	26,954	28,135	29,014	
	Demand Totals	25,830	26,954	28,135	29,014	
	Difference	0	0	0	0	0
Fourth Year	Supply Totals	26,062	27,204	28,387	29,113	
	Demand Totals	26,062	27,204	28,387	29,113	
	Difference	0	0	0	0	0
Fifth Year	Supply Totals	27,150	28,350	29,573	30,165	
	Demand Totals	27,150	28,350	29,573	30,165	
	Difference	0	0	0	0	0

Source: 2020 UWMP, Table 7-6 (see **Appendix A**).

3.8 Comparison of Available Water Supply and Demand

CWC section 10910(c)(3) states:

> *If the projected water demand associated with the proposed project was not accounted for in the most recently adopted UWMP … the water assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.*

As described in **Section 2**, Based on the maximum buildout density of the proposed Project with demand factors sourced from local and state guidelines, the estimated water demand for the proposed Project is 192.250 afy as shown in **Table 2-6**. As shown in **Table 2-5**, the UWMP assumes 253.796 afy of water demand for the Project Site based on the water demand estimates in the 2015 PIWMP. Further, as shown in **Table 2-4**, the Project water demand of 192.250 afy is less than the 196.485 afy of groundwater extraction allocation for the Project Site. Therefore, the projected water demand for the Project Site in the 2020 UWMP is sufficient to account for the water needed for the proposed Project.

Future water supplies available to the City are projected to meet the water demands for the service area (see **Table 3-3**). Further, the Project would represent 0.45 percent of the citywide ultimate 2045 water demand/water supply as estimated by the UWMP (estimated at 33,349 afy) and the Project demand would also be less than the groundwater extraction allocation for the Project Site as determined by the FCGMA.

Tables 3-7 through **3-9** show that the City projects water supplies during single-dry and multiple-dry years in volumes sufficient enough to meet the demand of the service area over the next 20 years. **Section 4** will describe the supply available to the City through rights held to the Oxnard Basin groundwater that are greater than the amount currently extracted.

In conclusion, based on the information provided in the 2020 UWMP, the City has sufficient water supplies to meet the demand of the Project by using existing groundwater supplies and pumping capacities that are more than adequate to meet the water demands of the Project during normal, single-dry, and multiple-dry water years. With the implementation of water conservation efforts, the City will further ensure its ability to provide sufficient supply for the Project.

4.0 GROUNDWATER ANALYSIS

CWC Section 10910(f) requires specific groundwater information to be included in the WSA if groundwater will be a source of water for the Project. A description of any groundwater basin or basins from which the Project will be supplied, in addition to a detailed description and analysis of the amount and location of groundwater pumped by the public water system for the past five years, should be provided.

Law

CWC Section 10910(f) states:

If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment:

(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as over drafted or has projected that the basin will become over drafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water supply assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected

water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

4.1 Review of Urban Water Management Plan (CWC Section 10910(f)(1))

The City's 2020 UWMP, adopted on February 2022, includes information relevant to the identified water supply for the Project and is incorporated herein. Relevant information includes: 1) current and projected water demands (Water Use Characterization) through year 2045; 2) a description of the Oxnard Groundwater Basin (Water Supply Characterization); 3) the reliability of the water supply, projected supply and demand comparisons, and water shortage plans (Water Service Reliability and Drought Risk Assessment and Water Shortage Contingency Plan); and 4) water demand management efforts (Demand Management Measures). The ultimate water demand projections of the City's 2020 UWMP are based on the findings of the City's 2015 PWIMP.

4.2 Groundwater Basin Descriptions (CWC Section 10910(f)(2))

The Oxnard Basin is the direct source of groundwater for the City. The City extracts groundwater from the Oxnard Basin using their own wells and through an agreement with United, which extracts additional groundwater from the Oxnard Basin.

Oxnard Groundwater Basin Description

The City obtains its groundwater from the Oxnard Groundwater Basin, a subbasin to the Santa Clara River Valley Groundwater Basin, defined by the Department of Water Resources (DWR) as Basin 4-4.02. The Oxnard Basin is located within southern Ventura County. The Oxnard Basin is bounded by the Mound and Santa Paula subbasins and the Oak Ridge fault like to the north, the Las Posas Valley Basin to the northeast, the Pleasant Valley Basin to the east, and the Pacific Ocean to the west.[44] The surface area of the Oxnard Basin is approximately 58,000 acres (or 90.6 square miles).[45] The basin is of alluvium with semi-permeable rocks from the Santa Monica Mountains, containing a collection of interconnected aquifers separated by layers of clay strata. The Oxnard Plain Groundwater Basin is categorized in three (3) parts, the Oxnard Forebay, the Upper Aquifer System (UAS), and the Lower Aquifer System (LAS).

The Oxnard Forebay is an unconfined portion of the Oxnard Basin and is located along the Santa Clarita River. The Oxnard Forebay is the primary means by which the Oxnard Basin is recharged through infiltration from the riverbed of the Santa Clarita River. Groundwater is able to seep into the Upper and Lower Aquifer Systems as the clay layers that separate the aquifers are not continuous. The UAS comprises of the upper 500 feet of the confined portions of the Oxnard Basin which includes a semi-perched zone and the Oxnard and Mugu aquifers.

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44 City of Oxnard. "Water Supply Characterization." *Urban Water Management Plan*. (p. 6-6). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

45 California Department of Water Resources. "Santa Clara River Valley Groundwater Basin, Oxnard Subbasin." *Hydrologic Region South Coast Santa Clara River Valley Groundwater Basin*. Accessed October 2024. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_004_02_OxnardSubbasin.pdf.

The UAS is hydraulically connected to the Pacific Ocean through the Oxnard and Mugu aquifers and is how seawater intrusion enters the Oxnard Basin in periods of overdraft. The LAS includes the deeper confined aquifers including the Hueneme, Fox Canyon, and Grimes Canyon aquifers. The LAS is separated by an approximately 80 feet thick layer of continuous silty clay, except near the Oxnard Forebay.

According to the DWR, calculations of the Oxnard Basin's storage capacity vary from approximately 1,800,000 to 10,500,000 acre feet, with an estimated 5,380,000 acre feet of groundwater that was in storage as of 1999.[46]

DWR Bulletin 118[47] describes the Oxnard Basin as follows:[48]

> *The Oxnard Basin is a subbasin of the Santa Clara River Valley Basin, located in southern Ventura County. The northern boundary of the subbasin is the Oak Ridge fault. The southern boundary is formed by contact of permeable alluvium with the semi-permeable rocks of the Santa Monica Mountains. The eastern edge of the subbasin lies against the Pleasant Valley and Las Posas Valley Basins. The western edge of the subbasin is the Pacific Ocean. Ground surface elevations range from sea level in the west to about 150 feet above sea level. Calleguas Creek and other tributary creeks drain the surface waters of the area westward into the Pacific Ocean and the Santa Clara River provides recharge along the northern border of the subbasin. Average precipitation ranges from 14 to 16 inches per year.*

Legal Right to Pump from the Oxnard Basin

Water rights to the Oxnard Basin are managed under a combination of historical allocations, regulatory agreements and requirements managed by the FCGMA in accordance with the SGMA. The FCGMA is an independent special district separate from the County or any municipal government, which was created in 1983 by California Legislature to oversee the County's groundwater resources. The Oxnard Basin serves as the primary source of water supplying the City's service area, providing approximately 50 percent of the City's drinking water.[49] In 2015, FCGMA become the Groundwater Sustainability Agency (GSA) for the basins within its boundaries in accordance with the SGMA.

In compliance with the SGMA, the FCGMA adopted a GSP for the Oxnard Basin in December 2019 to address the long-term sustainability of the basins and future management of groundwater supplies, including the

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46 California Department of Water Resources. "Santa Clara River Valley Groundwater Basin, Oxnard Subbasin." *Hydrologic Region South Coast Santa Clara River Valley Groundwater Basin*. Accessed October 2024. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_004_02_OxnardSubbasin.pdf.

47 DWR collects, summarizes, and evaluates groundwater data in the "Bulletin 118" series, which present the results of basin evaluations and defines the boundaries of California's 515 alluvial groundwater basins. The state Department of Water Resources (DWR) identifies the Oxnard Basin as Basin No. 4-4.02, which is a subbasin of the Santa Clara River Valley Basin.

48 California Department of Water Resources. "Santa Clara River Valley Groundwater Basin, Oxnard Subbasin." *Hydrologic Region South Coast Santa Clara River Valley Groundwater Basin*. Accessed October 2024. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_004_02_OxnardSubbasin.pdf.

49 City of Oxnard. "Water Supply Characterization." *Urban Water Management Plan*. (p. 6-10). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

prevention of seawater intrusion. A copy of the GSP is provided in **Appendix F**. The City holds appropriative groundwater pumping rights to the Oxnard Basin, as governed by the FCGMA's GSP, in accordance with SGMA. The Oxnard Basin has qualified as "critically overdrafted," and due to groundwater depletion and seawater intrusion, FCGMA regulates groundwater extraction and sets limits on pumping in order to maintain the Oxnard Basin's water levels. As a municipal user, the FCGMA sets groundwater allocations for the City based on water demands and groundwater levels. The City is required to adhere to extraction limits and is subject to enforcement actions if extraction limits are exceeded, such as penalties, fees or surcharges.

Accordingly, the GSP sets minimum thresholds for groundwater levels to maintain sustainable yields for the Oxnard Basin. For the Oxnard Basin, sustainable yield was estimated for both the UAS and LOS, with a sustainable yield range of 32,000 afy (+/- 6,000 afy) for the UAS and 7,000 afy (+/- 3,600 afy) for the LOS, for a total 39,000 afy (+/- 9,600 afy).[50] The GSP imposes allocation cutbacks for the City and other basin users, and the City is required to reduce groundwater extractions by 45 percent by 2040, or approximately 2.2 percent per year. This allocation cutback for groundwater is citywide and does not mandate compliance for each individual user of the City's groundwater.

The City extracts groundwater from the Oxnard Plain Groundwater Basin (Oxnard Basin) using City wells and through an agreement with United. As of 2020, in the last five (5) years, the City has utilized an average of 7,950 afy from United. As previously described, the actual and projected wholesale water supplies that are projected to be available to the City through 2045 are shown in **Table 3-1: Wholesale Projected Water Supplies Available.** The City owns and operates ten (10) wells that pump groundwater from the Oxnard Basin, with a total groundwater allocation of approximately 17,000 AFY from all sources.

4.3 Recorded Use of Groundwater (CWC Section 10910(f)(3))

The City owns 10 active groundwater wells located throughout the City's service area within the Oxnard Basin. The City's total allocation for the Oxnard Basin is approximately 17,000 afy, including the City's extraction averaging approximately 7,250 afy, and the approximate 9,750 afy extracted by United on behalf of the City.[51] The amount of total groundwater pumped by the City since 2016, not including groundwater from United, is shown in **Table 3-5: Historic Groundwater Production**.

Projected groundwater use by the City will continue as noted in **Table 3-3**. The use of groundwater will continue to be dependent upon the cost of extracting, treating, and transporting the water to customers. Groundwater from the Oxnard Basin will be utilized by the City by pumping the treated groundwater into its distribution system. In addition to its well production, the City will continue to obtain groundwater from United, which is delivered via the O-H Pipeline and is accounted for in the City's total groundwater allocation.

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50 City of Oxnard. "Water Supply Characterization." *Urban Water Management Plan*. (p. 6-11). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

51 City of Oxnard. "Water Supply Characterization." *Urban Water Management Plan*. (p. 6-3). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

4.4 Sufficiency of Groundwater Basin (CWC Section 10910(f)(5))

Three (3) GSAs have jurisdiction over portions of the Oxnard Subbasin, with FCGMA acting as the GSA for the area of the Subbasin that falls within its jurisdiction, the Camrosa Water District–Oxnard Subbasin GSA with jurisdictional control over the portion of the Camrosa Water District service area in the Subbasin south and east of the Bailey Fault, and the Oxnard Outlying Areas GSA with jurisdictional control over portions of the Subbasin not within FCGMA or Camrosa Water District–Oxnard Subbasin GSA jurisdiction.[52]

The City's right to pump water in an amount necessary to meet demands is managed by the FCGMA, which serves as the GSA for the Oxnard Basin under the SGMA. Since 1982, FCGMA manages and protects aquifers within its jurisdiction, with all parties extracting groundwater subject to the FCGMA GSP, ordinances and policies enacted for the sustainable management of groundwater. The City's rights are coordinated in an established manner with other municipal users of the Oxnard Basin, as overseen by the FCGMA in accordance with SGMA, which has the authority to mandate and proscribe activities whose purpose is to protect the water source and maximize its long-term beneficial use. Under the SGMA, the FCGMA enforces compliance within the Oxnard Basin through regulatory functions, setting forth groundwater extraction regulations and monitoring of water levels.

The Oxnard Basin is overseen by SGMA through the following FCGMA key components:

1. Groundwater Sustainability Plan
2. Annual and Five-Year Progress Assessments
3. Pumping Allocations and Reductions
4. Seawater Intrusion Management
5. Stakeholder Engagement and Dispute Resolution

As stated, the referenced elements collectively comprise of a comprehensive regimen directed at ensuring and maximizing the long-term beneficial use of water in the Oxnard Basin. Key Component No. 1 "Groundwater Sustainability Plan" address the sufficiency of groundwater from the Oxnard Basin. The adoption of FCGMA's GSP addresses long-term sustainability and future management of groundwater supplies by 2040, as required by SGMA. Sustainable groundwater management is the management and use of groundwater in a manner that can be maintained over a 50-year planning and implementation horizon without producing undesirable results.[53] As defined by SGMA, undesirable results include:

- *Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply*
- *Significant and unreasonable reduction of groundwater storage*

52 Fox Canyon Groundwater Management Agency. *Groundwater Sustainability Plan for the Oxnard Subbasin*. 2019. (see **Appendix C**).

53 Fox Canyon Groundwater Management Agency. *Groundwater Sustainability Plan for the Oxnard Subbasin*. 2019. (see **Appendix C**).

- *Significant and unreasonable seawater intrusion*
- *Significant and unreasonable degraded water quality*
- *Significant and unreasonable land subsidence*
- *Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water*

Key Component No. 2 "Annual and Five-Year Progress Assessments" requires that the GSA submit an annual report to the DWR each year following the adoption of the GSP, which should include the general information, detailed descriptions and graphical representations of groundwater elevation data, extraction, change in groundwater storage, surface water supply, total water use and plan progress. Further, evaluation of the GSP is required at a minimum of every five (5) years, following submittal to the DWR. During this evaluation, the sustainable yield for each aquifer system is refined and adjusted to ensure the measurable objective water levels continue groundwater production during drought cycles.[54]

As discussed in SGMA's six (6) sustainability indicators, the chronic lowering of groundwater levels, reduction of groundwater storage and seawater intrusion influence management strategies for Key Component No. 3 and No. 4. Key Component No. 3. "Pumping Allocations and Reductions" includes the FCGMA's allocation of water extraction rights and the enforcement of pumping limits for groundwater users including municipalities such as the City, agricultural and industrial users. Key Component No. 4. "Seawater Intrusion Management" includes regulations to manage seawater intrusion. Seawater intrusion within the Oxnard Basin is of significant concern based on the basin's geographic location and proximity to the Pacific Ocean. The GSP includes monitoring of groundwater quality, limits on extractions in coastal areas, promotion of water reuse, and the implementation of projects to recharge aquifers.

Key Component No. 5. "Stakeholder Engagement and Dispute Resolution," entails stakeholder involvement, as mandated by SGMA through the FCGMA's collaboration and coordination with local agencies and groundwater users. The FCGMA has identified the following project and management actions to address the sufficiency of the groundwater within the Subbasin, as suggested through stakeholders and reviewed by the Operations Committee of the FCGMA Board:[55]

- *Project No. 1 "GREAT Program Advanced Water Purification Facility*
- *Project No. 2 "GREAT Program Advanced Water Purification Facility Expansion Project*
- *Project No. 3 "RiverPark Saticoy GRRP Recycled Water Project*

54 Fox Canyon Groundwater Management Agency. *Groundwater Sustainability Plan for the Oxnard Subbasin*. 2019. (see **Appendix C**).

55 Fox Canyon Groundwater Management Agency. *Groundwater Sustainability Plan for the Oxnard Subbasin*. 2019. P. ES-8. (see **Appendix C**).

- *Project No. 4 Freeman Expansion Project*
- *Project No. 5 Temporary Agricultural Land Following*
- *Management Action No. 1 Reduction in Groundwater Production*
- *Management Action No. 2 Water Market Pilot Program*

Through the City's GREAT Program's AWPF, Project No.1 provides a new source of water for use in the Subbasin. Project No. 2 increases the production of high-quality recycled water, therefore continuing to provide a new water source for the Subbasin. Project No. 3 will convey water produced by the GREAT Program AWPF Expansion Project, which will help ensure the excess flows from the AWPF will be used for groundwater recharge. Project No. 4 expands recharge facilities, consequently improving water quality, reducing pump lift and energy consumption for municipal and agricultural pumpers. Project No. 5 will decrease groundwater production within areas of the Subbasin that are susceptible to seawater intrusion. Management Action No. 1 will reduce groundwater production which would allow the recovery of groundwater elevations that have historically allowed for seawater intrusion. Management Action No. 2 consists of a water market pilot program aimed to increase the operational management of groundwater within the Subbasin.

The sufficiency of the groundwater supply that is available to City is assured due to the key components, management strategies and objectives that prioritize and assure production from the Oxnard Basin as discussed above. Further, the City coordinates with FCGMA in order to achieve the FCGMA's sustainability goals as outlined in the GSP, including the City's requirement to reduce groundwater extractions by 45 percent by 2040, or 2.2 percent per year.

4.5 Conclusion

The City's total annual groundwater production has been held relatively stable at approximately 17,000 afy, including the City's extraction averaging approximately 7,250 afy, and the approximate 9,750 afy extracted by United on behalf of the City.[56] As of 2020, the water supply utilized by the City totaled to approximately 26,039 afy as shown above in **Table 3-2**. As shown in **Table 3-3**, the City's projected water supplies, which include groundwater, are within the City's supply projections, notwithstanding the citywide requirement to reduce groundwater extractions by 45 percent by 2040, or 2.2 percent per year, as outlined in the GSP by FCGMA in adherence with the SGMA. The City expects to meet water demand under all conditions, even with the inclusion of a reduction groundwater extractions, through the City's diverse approaches to meet future water demands including coordination with FCGMA, facility improvements, increased deliveries of local ground water and imported water, implementing a recycled water program and supporting water demand management programs.

56 City of Oxnard. "Water Supply Characterization." *Urban Water Management Plan*. (p. 6-12) Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

In conclusion, the water supplies available to the City currently meet the demand, and in coordination with the FCGMA, the City is working with the FCGMA to achieve the sustainability goals outlined in the GSP in order to attain groundwater balance in the Oxnard Basin. The City is able to supply water to the Project based on the 196.485 afy of groundwater extraction allocations assigned by FCGMA to the Project Site.

5.0 PRIMARY ISSUE FOR ASSESSMENT

The lead agency for a proposed project shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy demands of the project, in addition to existing and planned future uses (CWC section 10911). The lead agency is expected to approve or disapprove the project based on several factors, including but not limited to the WSA.

Law

> *CWC Section 10910(g)(1): Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.*
>
> *CWC Section 10911(b): The city or county shall include the water assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision 9a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.*
>
> *CWC Section 10911(c): The city or county may include in any environmental document an evaluation of any information included in that environmental document provided pursuant to subdivision (b). The city or county shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses. If the city or county determines that water supplies will not be sufficient, the city or county shall include that determination in its findings for the project.*

The lead agency is expected to review the WSA and decide whether additional water supply information is needed for its consideration of the Project.

5.1 Findings

Whereas:

1. The City of Oxnard has been identified as the water supplier for the proposed Maulhardt-Stiles Sub-Neighborhood Plan Project (Project).
2. The City's UWMP and PWIMP estimated water demand of 253.796 afy for the Project Site and describes the site as a "future near and long term development" under the name of East Village".[57]
3. The estimated water demand for the Project is 192.25 AFY.
4. The City owns 10 active groundwater wells within the Oxnard Basin. The City's total allocation for the Oxnard Basin is approximately 17,000 afy from all sources (**Table 3-2**), including the City's extraction

57 Jensen Design & Survey, Inc. "Water Allocation." *Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum.* July 15, 2024. (p. 4). (See **Appendix B**).

averaging approximately 7,250 afy, and the approximate 9,750 afy extracted by United on behalf of the City.[58] The groundwater extraction allocation for the Project Site of 196.50 AFY will be assigned to the City.

5. The City is required to reduce groundwater extractions by 45 percent by 2040, or 2.2 percent per year as regulated by the FCGMA. **Table 3-3** highlights the City's total projected water supply, including the City's projected decrease in groundwater supply extractions.

6. The City utilizes recycled water, when available, to meet agricultural, industrial and irrigation demands. The City has six (6) recycled water accounts, with only four (4) accounts utilizing recycled water in 2020. In 2020, recycled water accounted for only one (1) percent of total water deliveries; however, recycled water deliveries are planned to increase. The City plans to use recycled water as a source to recharge the Oxnard groundwater subbasin and IPR through the GREAT Program. The City expects to increase recycled water injections for recharge up to nearly 7,680 afy by 2045 (Table 3-4), and City anticipates the total future recycled water supply will provide up to 11,904 afy by 2045.

7. The City operates Desalter #1 at its Water Campus, which has a capacity of 8,400 afy with room for planned expansion to 16,800 afy. The Desalter treats groundwater for Total Dissolved Solids (TDS) and nitrate reduction.

8. The City depends on a combination of imported and local supplies to meet its water demands and has taken steps to ensure it has adequate supplies. As of 2020, total citywide water supplies were at 26,039 afy (**Table 3-2**), and the City's total projected water supplies is anticipated to be 33,349 afy by 2045 (**Table 3-3**). Water supplies available to the City are projected to meet full-service demands.

9. The City expects to meet demands under all water scenarios between 2025 to 2045 during normal years, single dry years, and multiple dry years (**Table 3-7** through **3-9**).

10. Based on the evidence provided herein, the total projected potable water supplies available to the City during normal, single dry, and multiple dry water years over a 20-year projection will be sufficient to meet the projected water demand associated with the Project in addition to the water supplier's existing and planned future uses, including agricultural and manufacturing uses. State mandated conservation efforts will also reduce demand in the future.

This WSA was prepared to assess the water demand and supply conditions with implementation of the Project. As shown in **Table 2-6**, the total domestic water demand for the Project is 192.25 afy. According to the City's 2020 UWMP, the City has adequate supplies to serve 100 percent of its customers during normal, dry year, and multiple dry year demand through 2045, accounting for projected population increases and corresponding increases in water demand. Projected water demand for the Project Site in the PWIMP and UWMP was estimated at 253.796 afy. The Project consists of the proposed Sub-Neighborhood Plan, which would allow the development of a maximum of 950 residential dwelling units, a maximum of 40,000 square feet of retail and general commercial space, public parks and associated circulation and landscaping in Areas A and C and

58 City of Oxnard. "Water Supply Characterization." *Urban Water Management Plan*. (p. 6-3). Accessed October 2024. https://www.oxnard.gov/public-works/water/water-quality-reports. (See **Appendix A**).

includes Del Sol High School, developed in Area B as defined in the Sub-Neighborhood Plan. There will be ample water available to meet the Project water demand of 192.25 afy, based on the estimated total water demand for the Project Site accounted for in the 2020 UWMP of 253.796 afy. The Project would represent a 0.58 percent of the City's 2045 water supply as estimated in the UWMP.[59] Consequently, implementation of the Project would not obstruct the City's ability to meet water demands of its customers during all water year scenarios.

This WSA concludes that the City, as the municipal water service provider, will have sufficient water supplies available during normal, single dry, and multiple dry years through the year 2045 to meet all projected water demands associated with its existing and future customers, including the Project. In the unlikely event of a water shortage, implementation of the City's Water Shortage Contingency Plan and water efficiency strategies would ensure that sufficient water supplies were available to serve its customers, including the Project, and existing and future users. The demands set in PWIMP and by extension, the 2020 UWMP, for the Project area include the Project demands and would hypothetically meet future expansion demands if the expansion does not exceed the set Project area.

59 (192.25 afy/33,349 afy) x 100 = 0.58%

6.0 REFERENCES

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APPENDICES A-C; E-F

Provided as weblinks on the following page

Appendices

A City of Oxnard 2020 Urban Water Management Plan (2020 UWMP)

https://www.oxnard.gov/public-works/water/water-quality-reports

B Calleguas Municipal Water District 2020 Urban Water Management Plan

https://www.calleguas.com/documents-reports-and-links/#docaccess-131745e244bfa66ac5092ee61c2b5e83b124c127e2d53da03e12ba696b74c28e

C United Water Conservation District 2020 Urban Water Management Plan

https://www.unitedwater.org/wp-content/uploads/2021/07/UWCD_2020_UWMP_Final-06-08-2021.pdf

D Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum

E Public Works Integrated Master Plan (PWIMP) Wastewater Project Memorandum Background Summary

https://www.oxnard.gov/wp-content/uploads/Public-Works-Integrated-Master-Plan.pdf

F Groundwater Sustainability Plan (GSP) for the Oxnard Subbasin

https://fcgma.org/oxnard-subbasin-gsp-files/#docaccess-1db8b222275b69a81661d58be2e3dfb5

G RCLCO Household Size Assumptions for Proposed Maulhardt/Stiles NECSP Sub-Neighborhood Plan Project Memorandum

APPENDIX D

Maulhardt/Stiles NECSP Sub-Neighborhood Plan Water Allocation and Demand Memorandum

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PAR01.5808
June 7, 2023
Revised July 15, 2024

City Of Oxnard
Attn: Joe Pearson II, AICP & Tai Chau, PE
214 S. 'C' Street
Oxnard, CA 93030

SUBJECT: MAULHARDT/STILES NECSP SUB-NEIGHBORHOOD PLAN
WATER ALLOCATION AND DEMAND MEMORANDUM
Planning & Zoning Permit No. 21-630-01 & 21-300-01 | APNs 214-0-20-615 & -625

Dear Mr. Pearson & Mr. Chau,

Pursuant to Development Advisory Committee (DAC) comment #51 and 52 dated November 10, 2021 and comment #20 dated July 5, 2023, the intent of this memorandum is to 1) identify the amount of water allocated and transferred to the City of Oxnard (City) and 2) compare the quantity to the expected demand for the aforementioned development proposal. Accordingly, this memorandum will begin by discussing applicable City water policies and the relationship of these policies to the proposed development.

Applicable Water Policies & Plans

The City's 2020 Urban Water Management Plan (UWMP), adopted by City Council in February 2022, serves as the primary planning document for the City's Water System. The Maulhardt Ranch property (project site) is located within the UWMP's identified potable water service area[1]. The UWMP developed future growth trends and population projections based upon the 2030 General Plan, California Department of Finance Population Projections, Southern California Association of Government (SCAG) Census Analyses, and 'Near-Term' Developments as projected by the City's Planning and Public Works Divisions[2].

Further, the City's current Public Works Integrated Master Plan (PWIMP) Memorandum 1.3 contains population and growth projections, also sourced from the 2030 General Plan, Department of Finance Population Projections, and SCAG analyses[3]. Based upon these factors, the PWIMP anticipated 500 residential dwelling units and 6.325 acres of commercial at the project site, referred to as 'East Village' throughout the PWIMP; with an estimated population of 1,616 full time residents[4].

[1] 2020 City of Oxnard Urban Water Management Plan, Figure 3-1
[2] 2020 City of Oxnard Urban Water Management Plan, Section 3.4.1
[3] 2015 Public Works Integrated Master Plan, Memorandum 1.3, Table 2
[4] 2015 Public Works Integrated Master Plan, Memorandum 1.3, Table 2

The City implements a water neutrality policy that is not codified; however, the City has been making planning and permitting decisions pursuant to this policy since 2008[5]. This document establishes that there is to be no net increase in the City's water demand for projects not included in the 2030 General Plan EIR or the latest version of the UWMP.

Additionally, the Fox Canyon's Groundwater Management Agency (FCGMA) has developed a Groundwater Sustainability Plan for the Oxnard Sub-Basin in compliance with the 2014 Sustainable Groundwater Management Act. FCGMA is the Groundwater Sustainability Agency (as defined by the Sustainable Groundwater Management Act) which oversees management of the Oxnard Sub-Basin. The Groundwater Sustainability Plan developed by FCGMA imposes allocation cutbacks for the City and other basin users. As a result, the City is required to reduce groundwater extractions by 45% by 2040, or approximately 2.2% per year[6]. It is worth noting that the UWMP views this reduction as taking place collectively across the whole of the City's groundwater allocation, and does not mandate compliance on the basis of each individual customer/user of City groundwater.

Water Allocation

The Maulhardt Ranch totals approximately 108 acres of land. Prior to development, the project site consisted predominately of agricultural uses, with associated residential and agricultural structures. The property has an existing water well, identified as State Well Number (SWN) 02N22W35K03S, CombCode MAUL. The site currently consists three (3) Assessor Parcel Numbers (APN), outlined below:

APN 214-0-020-615 (approximately 44.21 acres)
APN 214-0-020-625 (approximately 11.31 acres)
APN 214-0-020-635 (approximately 52.52 acres)

APN 214-0-020-635 was sold to Oxnard Union High School District. The new Del Sol High School has been completed on the southern half of the parcel. APN 214-0-020-615 & -0625 were retained by the RF-JW Maulhardt Trust, and are slated for future development as a predominately residential "urban village" and associated subdivision Tract No. 6059 (proposed project) in accordance with the vision established by the City of Oxnard General Plan[7].

In February 2021, as part of the Del Sol High School development process, the Fox Canyon Groundwater Management Agency (FCGMA) established that SWN 02N22W35K03S (MAUL) had an initial allocation of 196.485 acre feet per year (AFY) of water. Subsequently, FCGMA approved the transfer of 51.300 acre feet per year (AFY) of water from SWN 02N22W35K03S (MAUL) to the City of Oxnard[8]. This allocation transfer includes the 42.3 AFY needed for Del Sol High School at APN 214-0-020-635, and an additional 9.0 AFY for the remaining southwest farm parcel at APN 214-0-020-635[9]. The 9.0 AFY allocation transferred to the City for the southwest farm parcel was executed to ensure the continued operation of the

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[5] City of Oxnard CEQA Guidelines, Page 72
[6] 2020 Urban Water Management Plan, Section 6.2.1
[7] City of Oxnard 2030 General Plan, Goal CD-7.1 and Page 3-4
[8] Fox Canyon Groundwater Management Agency, "Approval of Transfer of OPV Allocation from SWN 02N22W35K03S to SWN 01N22W03F05S" letter, dated February 11, 2021
[9] Jensen Design & Survey, Inc., Water Demand Calculations for Del Sol High School and Remaining Farm Property, Dated June 19, 2020 and accepted by the City of Oxnard on July 9, 2020.

existing small orchard and residential uses at this location, as this parcel will become separated from the existing onsite well by the construction of the high school. Upon approval of the proposed project, these existing uses will cease and the previously allocated water will become available for use by the proposed development. Please note, the southwest farm parcel remains under Maulhardt family ownership.

In total 154.185 AFY of water allocations are available for future development on the two remaining Maulhardt family holdings, APN 214-0-020-615 & -625. These allocations are summarized in Table 1 below:

Table 1: Summary of Project Site Water Allocations

Allocation Category	**Annual Usage (AFY)**
High School Allocation to City (OUHSD)	42.300 AFY
Southwest Farm Allocation to City (Maulhardt)	9.000 AFY
Remaining Maulhart Well Allocation (Maulhardt)	145.185 AFY
Subtotal: Allocation Available for Maulhardt Development *(Note: Assumes all current uses on Southwest Farm cease)*	**154.185 AFY**
Grand Total:	**196.485 AFY**

Anticipated Water Demand Per City's UWMP & PWIMP

The City's most recently published water demand factors are contained the current Public Works Integrated Master Plan (PWIMP), which was published in May 2016. The 2020 UWMP states that "The water demand factors provided in the PWIMP remain the most recently updated factors for land use planning uses"[10]. Demand factors in the PWIMP are based on a combined per capita water use and land use factor demand. Specifically, residential demands were estimated using a per capita population methodology, assuming an average usage of 132.4 gallons per person per day (GPD)[11], with all other land uses utilizing a per acre demand factor, as established by Memorandum 2.2, Table 5 of the PWIMP.

The project site was included and planned for in the PWIMP as a "future near and long term development" under the name of "East Village"[12]. The listed "future near and long term development" projects included in the PWIMP factored into the PWIMP's (and by extension, the UWMP's) population and corresponding water demand forecasts for the City of Oxnard. The UWMP assumes that the City's population will increase by approximately 33,451 persons to 238,126 persons[13]. The proposed project is included in this projected population increase.

Before beginning an analysis of project specific water demand, it is worth noting that the UWMP's 2045 Reasonably Available Volume projection of 33,349 AFY already accounts for a citywide 45% reduction in groundwater extractions in accordance with FCGMA's Groundwater Sustainability Plan[14]. Reductions in groundwater extractions are offset by recycled water "pump back" allocations and Aquifer Storage and Recover (ASR) recovered water, among other initiatives. Correspondingly, the UWMP's projected 2045 Demand of 33,349 AFY already

[10] 2020 City of Oxnard Urban Water Management Plan, Section 4.2.3
[11] 2015 Public Works Integrated Master Plan, Memorandum 2.2, Section 3.1
[12] 2015 Public Works Integrated Master Plan, Memorandum 1.3, Table 2 & Figure 1; Memorandum 2.2, Section 5.0
[13] 2020 City of Oxnard Urban Water Management Plan, Section 3.4.1
[14] 2020 City of Oxnard Urban Water Management Plan, Table 6-11

includes anticipated project demand, due to its inclusion in the population projections[15]. Again, there is NO mandate in City policy for individual projects to reduce groundwater usage by 45% on a standalone basis, as the required reduction is assessed as a Citywide reduction.

The PWIMP anticipated the proposed project site to accommodate 500 residential units and approximately 6.3 acres of commercial. Based upon the demand factors in the PWIMP, the City's anticipated and planned water demand for the project site is 253.796 AFY. The PWIMP anticipated water demand is outlined in Table 1 below.

Table 1: PWIMP Demand Calculations for East Village (Maulhardt) Site

Maulhardt Urban Village (Tract No. 6059) Water Demand Calculations 2015 PWIMP Demand Calculations			
Proposed Use	**Units**	**Unit Usage**	**Annual Usage**
	(DU or AC)	**(AFY/DU or AFY/AC)**	**(AFY)**
Commercial	6.325 AC	2.24[16]	14.168 AFY
Residential (Population: 1,616 Persons)[17]	500 DU	0.593[18]	239.628 AFY
		Total Projected Water Demand:	**253.796 AFY**

Water Demand Calculations

Water demand calculations for the maximum buildout scenario permitted by the proposed Sub-Neighborhood plan are attached to this memorandum as Appendix 'A". The water demand calculations contained in the appendix are based on a similar population based methodology to those employed for the recent RiverPark Specific Plan amendment. For background, in early 2022, the City approved an amendment to the RiverPark Specific Plan that authorized the construction of an additional 1,025 units of housing. As part of this effort, an addendum to the previously adopted RiverPark FEIR was prepared[19]. This addendum contained a detailed assessment of water demand and distribution, on which the methodology for the calculations for the proposed Sub-Neighborhood plan were based[20].

The projected water demand for the proposed Maulhardt/Stiles NECSP Sub-Neighborhood plan was calculated using a population based approach. The methodology employed is summarized below:

> Step 1: Determine maximum buildout density. The proposed Sub-Neighborhood plan was analyzed, and a land use study was conducted to determine the maximum site buildout

[15] 2020 City of Oxnard Urban Water Management Plan, Figure 4-2
[16] 2015 Public Works Integrated Master Plan, Memorandum 2.2, Table 9, Item 5B
[17] 2015 Public Works Integrated Master Plan, Memorandum 2.2, Table 9, Item 5A
[18] 2015 Public Works Integrated Master Plan, Memorandum 2.2, Table 9, Footnote #2 (4.0 persons/unit X 132.4 gallons per person/per day)
[19] Meridian Consultants & City of Oxnard, Addendum #15 to the River Park Final Environmental Impact Report, State Clearinghouse No. 20000051046, dated December 2021
[20] Specifically, Section 3.17, Table 17

density, assuming that each residential lot is developed with the highest density/unit typology while remaining within the parameters of the specific plan. This study yielded a maximum density of 950 units, with approximately 386 units in podium apartments and 564 units in multi-plexes and/or walkup apartments[21]. As the maximum density allowed by the proposed Sub-Neighborhood plan, this represents a "worst case" water consumption scenario.

Step 2: Identify comparable unit typologies and developments. The project team reviewed the maximum buildout land use study, and based upon the unit and building typologies incorporated into the study, identified comparable developments in Oxnard and Ventura County. The Census Tract for each comparable development was identified, from which population data was derived. The population was divided by the number of units in each Census Tract to establish an average household size, or number of persons per unit. For podium apartments, the average household size was 1.84 persons per unit. For the multiplex/walk-up apartment typology, the average household size was 2.40 persons. From these figures, an average of 2.18 persons per unit was established[22].

Step 3: Perform water demand calculations. Based upon the number of persons per unit, water demand calculations were run for the maximum buildout scenario. Demand factors/multipliers were sourced from local and state guidelines, and agreed upon by both the proposed project applicant and the City in previous iterations of water demand forecasting exercises.

The proposed project's anticipated water demand is outlined in Table 2 below. Complete calculations can be found in Appendix 'A'.

Table 2: Projected Water Demand for Proposed Project

Maulhardt Urban Village (Tract No. 6059) Water Demand Calculations			
Proposed Use	**Units (DU or AC)**	**Unit Usage (AFY/DU or AFY/AC)**	**Annual Usage (AFY)**
Residential	950 DU 2,064 persons	0.0616 AFY/Person[23]	127.130 AFY
Commercial	0.918 AC	2.240 AFY/AC[24]	2.057 AFY
Landscaping (Non-Parks)	6.309 AC	1.351 AFY/AC[25]	8.524 AFY
Landscaping (Parks)	14.57 Acres	0.840 AFY/AC[26]	12.239 AFY
		Total Projected Water Demand:	**149.950 AFY**

Based upon the assumptions outlined above, and the calculations and demand factors summarized in Table 2; the proposed project would utilize 149.950 AFY of water. The Maulhardt

[21] Plan Maximum Buildout Scenario, Sargent Town Planning.
[22] Household Size Assumptions for the Proposed Maulhardt/Stiles NECSP Sub-Neighborhood Plan, Pg. 3
[23] AB 1668/SB 606, which mandates a per person consumption of 55 GPD.
[24] 2015 Public Works Integrated Master Plan, Memorandum 2.2, Table 9
[25] ETWU per MEWLO Guidelines, assuming a blend 15% lawn area and 85% drought tolerant areas on all development lots.
[26] 2015 Public Works Integrated Master Plan, Memorandum 2.2, Table 5

development has an available water allocation of 154.185 AFY, resulting in a "buffer" of 4.235 AFY of water.

Conclusion

The available water allocation for the proposed Maulhardt "urban village" development and subdivision (Tract No. 6059) is 154.185 AFY. This allocation is sufficient to provide all water needs for the proposed project's 14.57 acres of public/private parks, 1.04 acres of commercial uses, and 26 acres of residential areas, assuming a maximum buildout of 950 units.

Should you have any questions regarding the contents of this memorandum, please do not hesitate to contact our office at (805) 654-6977. Thank you.

Sincerely,
JENSEN DESIGN & SURVEY, INC.

Tanner Shelton, AICP
Senior Planner

Ava Ediger, P.E.
Senior Civil Engineer

Attachments: Appendix A: Water Demand Calculations

Scenario- Max Buildout: 950 Dwelling Units

Unit Type	# of Units	# of Bedrooms	Persons/Unit	Total Persons
Podium	386		1.84	710
Multiplex/ Walk Up	564		2.4	1354
TOTALS:	**950**		**2.18**	**2064**

Proposed Land Use	Unit	Unit Type	Demand Factor (AFY)	Annual Usage (AFY)
Residential	2,064	Persons	0.0616	127.130
Commercial	0.918	Acres	2.240	2.057
Landscaping (Non-Parks)	6.309	Acres	1.351	8.524
Landscaping (Parks)	14.57	Acres	0.84	12.239
		TOTAL WATER DEMAND (AFY):		**149.950**

I. Residential Methodology

	55	GPD/Person	per State Law (AB 1668/SB 606)
	20075	GPY/Person	
Demand Factor:	0.0616	AFY/Person	

Demand Factor "Per Unit" 0.143 AFY/Unit (Average)
Res+Res Landscape/# of Units

Average of 2.18 persons/unit per June 27 RCLCO Memorandum, Page 3

II. Commercial Methodology

40000	SF	
0.918	Acres	
2000	GPD/AC	per 2015 PWIMP, Memo 2.2, Table 9 East Village
730000	GPY/Acre	
Demand Factor: 2.240	AFY/Acre	

III. Landscaping Methodology

274827 SF
6.309 Acres

LINK TO MWELO GUIDELINES

MAWA = (ETo) × (0.62) × [(ETAF × LA) + ((1 - ETAF) × SLA)] (Maximum Applied Water Allowance)

46.6 Eto for Oxnard (in/year), see https://wwwcimis.water.ca.gov/Content/pdf/CimisRefEvapZones.pdf
0.55 Maximum ETAF for residential projects
43,560 Landscape Area (1 AC For Multiplier)
0 Special Landscape Area

MAWA = [(46.6)x(0.62)X[(0.55 x 43,560)+((1-0.55)x0)]

692,195 MAWA (GPY)

MAX ALLOWED PER STATE: 2.124 MAWA (AFY)

ETWU (Estimated Total Water Use) MUST BE LESS THAN MAWA

1) 15% lawn ***ETWU = (ETo)(0.62)((SF x PF/IE)+SLA)***

46.6 Eto for Oxnard (in/year)
6534 Hydrozone Area (0.15 ACRES)
0.7 Plant Factor
0.75 Irrigation Effeciency

	0	Special Landscape Area	
	176,195	ETWU Lawns (GPY)	
	0.541	ETWU Lawns (AFY)	
2) 85% Drought Tolerant	46.6	Eto for Oxnard (in/year)	
	37026	Hydrozone Area (0.85 ACRES)	
	0.2	Plant Factor	
	0.81	Irrigation Effeciency	
	0	Special Landscape Area	
	264,137	ETWU Dought Tolerant(GPY)	
	0.810	ETWU Drought Tolerant (AFY)	
Demand Factor:	1.351	ETWU (AFY)	

IV. Parks Methodology

	14.57	Acres	Includes Rose, Jacinto, and Camino Del Sol linear parks from back of curb.
	750	GPD/AC	Per 2015 PWIMP, Memo 2.2, Table 5
	273750	GPY/AC	
Demand Factor	0.840	AFY/AC	

APPENDIX G

RCLCO Household Size Assumptions for Proposed Maulhardt/Stiles NECSP Sub-Neighborhood Plan Project Memorandum

RCLCO
REAL ESTATE CONSULTING

MEMORANDUM

DATE: June 27, 2024

TO: Maulhardt Stiles Families
c/o Parkstone Companies – Chad Penrod; Project Manager

FROM: Derek Wyatt, Managing Director and Nicholas Stefanoni, Senior Associate

SUBJECT: Household Size Assumptions for the Proposed Maulhardt/Stiles NECSP Sub-Neighborhood Plan Project; Oxnard, California.

INTRODUCTION

The Maulhardt/Stiles Sub-Neighborhood Plan is proposed within the City of Oxnard Northeast Community Specific Plan (NECSP) Area. The proposed Sub-Neighborhood Plan would amend the NECSP to allow development of up to a maximum of 950 residential units on the Project Site. This memo provides an estimate of the potential growth in population that would be associated with the 950 residential units proposed. The conceptual development program for the Project Site includes a total of 950 units, including 386 units in podium product (estimated to range from 30 to 45 units per acre) and 564 units in multiplex/walk-up product (estimated to range from 20 to 40 units per acre). While the proposed Sub-Neighborhood Plan would allow development of a maximum of 950 residential units, the Project Site could also be developed at a lower density, such as single-family house product (estimated to range from 6 to 13 units per acre).

RCLCO completed a demographic analysis using detailed Census data for neighborhoods in the City of Oxnard and nearby communities in Ventura County to determine appropriate household sizes for the various types of residential units that would be allowed by the proposed Sub-Neighborhood Plan. To explore the demographics of the market for the various residential product types at a deeper level, RCLCO relied on the 2020 U.S. Census Redistricting Data.

ANALOGOUS PODIUM PRODUCT

To evaluate the appropriate household size for the podium residential units (30 to 45 units per acre) that would be allowed by the Sub-Neighborhood Plan, RCLCO analyzed occupancy characteristics for communities with a comparable density in the surrounding area. RCLCO relied on CoStar to determine the number of units in each community and the County of Ventura GIS Assessor's Map (https://maps.ventura.org/countyview/) to determine the acreage per parcel. RCLCO divided the number of units by the parcel acreage to determine the dwelling units per acre, or DU/AC. With Client targeting podium product at a DU/AC of 30 to 45, RCLCO selected comparable communities that generally align with that range.

Podium Product Comparables and Average Household Size

MAP KEY	COMMUNITY	CENSUS TRACT AND (BLOCK)	UNITS	ACRES	DU/AC	TOTAL POPULATION	OCCUPIED HOUSEHOLDS	AVG. HH SIZE
1	Mosaic	50.04 (1090)	224	5.5	40.4	343	209	1.64
2	Tempo & Sonata	50.04 (1104)	288	7.3	39.3	545	283	1.93
3	Parklands Apartments	12.01 (3000, 3002, 3003)	173	4.4	39.2	296	150	1.97
	AVERAGE		**228**	**5.8**	**39.7**	**395**	**214**	**1.84**

RCLCO sourced population and occupied household data from the 2020 U.S. Census Redistricting Data. The three comparable podium projects have an average population of 395 people across an average of 214 occupied households, resulting in an average household size across the relevant projects of 1.84 people per household.

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ANALOGOUS MULTIPLEX / WALK-UP PRODUCT

To evaluate the appropriate household size for the multiplex and walk-up product (20 to 40 units per acre) that would be allowed by the Sub-Neighborhood Plan, RCLCO analyzed occupancy characteristics for communities with a comparable density in the surrounding area. RCLCO relied on CoStar to determine the number of units in each community and the County of Ventura GIS Assessor's Map (https://maps.ventura.org/countyview/) to determine the acreage per parcel. RCLCO divided the number of units by the parcel acreage to determine the dwelling units per acre, or DU/AC. With Client targeting podium product at a DU/AC of 20 to 40, RCLCO selected comparable communities that generally align with that range.

Multiplex and Walk-Up Product Comparables and Average Household Size

MAP KEY	COMMUNITY	CENSUS TRACT AND (BLOCK)	UNITS	ACRES	DU/AC	TOTAL POPULATION	OCCUPIED HOUSEHOLDS	AVG. HH SIZE
4	The Artisan at East Village Apartments	49.01 (3001, 3002)	272	15.1	18.0	579	252	2.30
5	Tierra Vista [1]	49.01 (3015 - 3018)	404	16.6	24.4	741	301	2.46
6	Cedar Glen Apartments [2]	30.1 (1014)	196	8.54	23.0	707	238	2.97
7	Capes at Ventura	15.1 (1006)	400	14.34	27.9	749	365	2.05
	AVERAGE		**318**	**13.6**	**23.3**	**694**	**289**	**2.40**

RCLCO sourced population and occupied household data from the 2020 U.S. Census Redistricting Data. The four comparable multiplex/walk-up projects have an average population of 694 people across an average of 289 occupied households, resulting in an average household size across the relevant projects of 2.40 people per household.

ANALOGOUS SINGLE-FAMILY HOUSE PRODUCT

RCLCO also reviewed analogous single-family comparables to determine what would be an appropriate household size for these units. Like the other analogous product analyses, RCLCO analyzed occupancy characteristics for communities with a comparable density in the surrounding area. RCLCO relied on the County of Ventura GIS Assessor's Map (https://maps.ventura.org/countyview/) to determine the number of units and the total acreage across the respective census blocks. RCLCO divided the number of units by the parcel acreage to determine the dwelling units per acre, or DU/AC. With the specific plan outlining densities for single-family house product at a DU/AC of 6 to 13, RCLCO selected comparable communities that generally align with that range.

Single-Family House Product Comparables and Average Household Size

MAP KEY	COMMUNITY	CENSUS TRACT AND (BLOCK)	UNITS	ACRES	DU/AC	TOTAL POPULATION	OCCUPIED HOUSEHOLDS	AVG. HH SIZE
8	River Park	50.04 (1011)	15	1.8	8.4	57	15	3.80
9	East Ventura	13.03 (2012)	24	3.3	7.4	63	18	3.50
10	San Tropez	30.13 (2001, 2002)	58	10.2	5.7	194	58	3.34
	AVERAGE		**32**	**5.1**	**7.2**	**105**	**30**	**3.45**

RCLCO sourced population and occupied household data from the 2020 U.S. Census Redistricting Data. The three comparable single-family house projects have an average population of 105 people across an average of 30 occupied households, resulting in an average household size across the relevant projects of 3.45 people per household.

[1] Tierra Vista is comprised of 404 total units, of which an estimated 313 are encompassed by the selected census blocks.

[2] The census block encompassing Cedar Glen Apartments includes additional housing units not related to the community.

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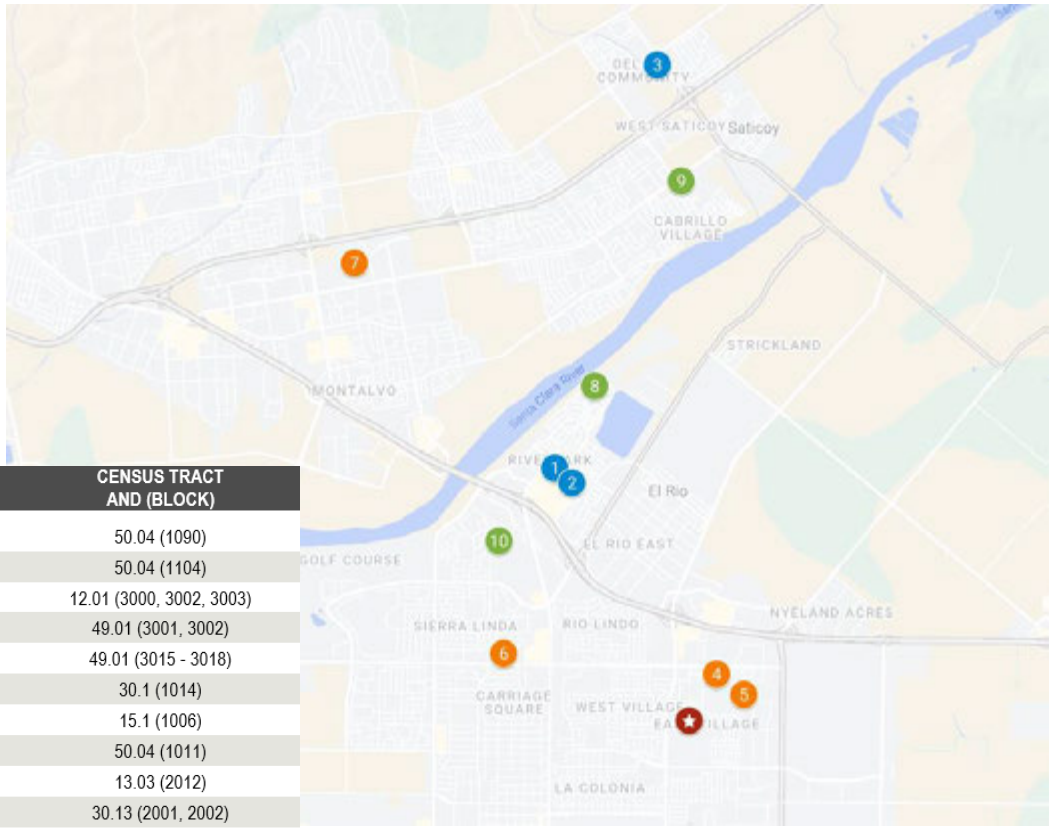
COMPARABLE COMMUNITIES

For each of the analog analyses, RCLCO relied on comparable communities proximate to the Subject Property, as shown in the map below.

Map of Comparable Communities



MAP KEY	COMMUNITY	CENSUS TRACT AND (BLOCK)
1	Mosaic	50.04 (1090)
2	Tempo & Sonata	50.04 (1104)
3	Parklands Apartments	12.01 (3000, 3002, 3003)
4	The Artisan at East Village Apartments	49.01 (3001, 3002)
5	Tierra Vista	49.01 (3015 - 3018)
6	Cedar Glenn Apartments	30.1 (1014)
7	Capes at Ventura	15.1 (1006)
8	River Park	50.04 (1011)
9	East Ventura	13.03 (2012)
10	San Tropez	30.13 (2001, 2002)

HOUSEHOLD SIZE APPLICATION TO SUBJECT PROPERTY

To determine an overall population estimate at the Project Site, RCLCO applied the average household sizes presented above for both podium product (1.84) and multiplex and walk-up product (2.40) to the conceptual development program for 950 units. This results in a population of 710 people across 386 podium units and a population of 1,354 across 564 multiplex and walk-up units. This household size application yields a total population of 2,064 across 950 units, resulting in a total average household size of 2.17 people per household. Note, these figures assume a 100% occupancy rate for all units in calculating maximum population in the development.

Application of Analogous Household Size to Subject Property

PRODUCT TYPE	AVG HH. SIZE	UNITS	POPULATION
PODIUM	1.84	386	710
MULTIPLEX / WALK-UP	2.40	564	1,354
TOTAL	**2.17**	**950**	**2,064**

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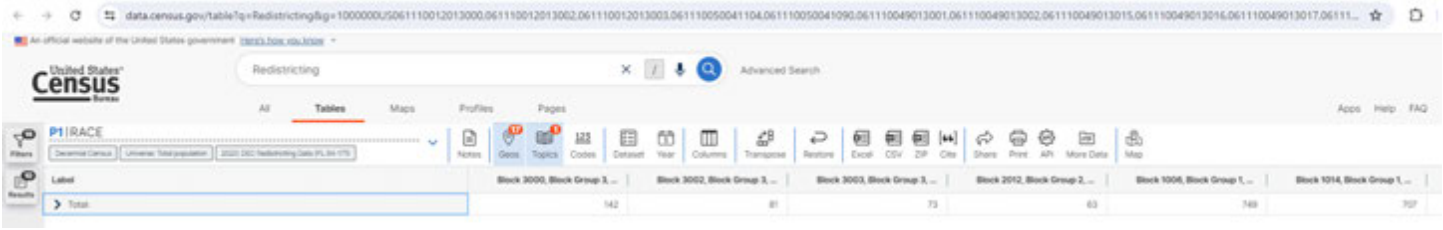
METHODOLOGY

The analysis relies on the U.S. Census Redistricting 2020 data found at https://data.census.gov/cedsci/all?q=Redistricting.

The following links provides access directly to the population and household data used for the census blocks shown above:

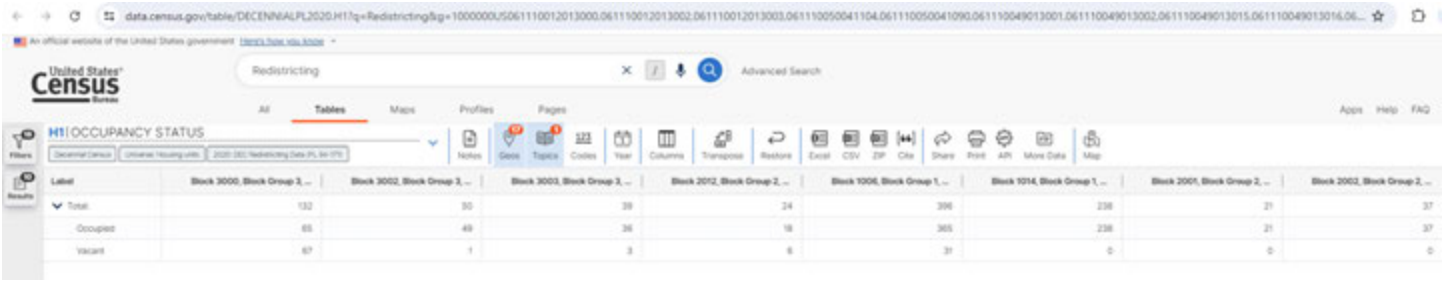
Population

https://data.census.gov/table?q=Redistricting&g=1000000US061110012013000,061110012013002,061110012013003,061110050041104,061110050041090,061110049013001,061110049013002,061110049013015,061110049013016,061110049013017,061110049013018,061110030101014,061110015101006,061110050041011,061110013032012,061110030132001,061110030132002



Households

https://data.census.gov/table/DECENNIALPL2020.H1?q=Redistricting&g=1000000US061110012013000,061110012013002,061110012013003,061110050041104,061110050041090,061110049013001,061110049013002,061110049013015,061110049013016,061110049013017,061110049013018,061110030101014,061110015101006,061110050041011,061110013032012,061110030132001,061110030132002



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APPENDIX Q

Vehicle Miles Traveled (VMT) Analysis

FEHR PEERS

Memorandum

Date: December 9, 2025

To: Tony Locacciato and Victor Paitimusa, Meridan Consultants

From: John Muggridge, AICP and Eneyda Hernandez, Fehr & Peers

Subject: CEQA Transportation Analysis for the Oxnard Maulhardt-Stiles Sub-Neighborhood Plan Residential Mixed-Use Project

LA24-3553

This memorandum has been prepared for the City of Oxnard and evaluates the potential for the Maulhardt-Stiles Sub-Neighborhood Plan Project to result in a significant transportation impact as defined in the California Environmental Quality Act (CEQA). In addition to describing the Vehicle Miles Traveled (VMT) analysis conducted for the Project, this memorandum also summarizes the analyses that was undertaken for the other items in the City of Oxnard's CEQA guidelines including compliance with plans, programs, ordinances, and policies; increased hazards due to geometric design features or incompatible uses; emergency access; and changes to air traffic patterns.

Project Description

The Maulhardt-Stiles Sub-Neighborhood Plan Project is proposed in the East Village neighborhood in the City of Oxnard Northeast Community Specific Plan (NECSP). The 107-acre Project Site is bounded to the north by Cesar Chavez Drive, to the east by Gibraltar Street/East Village Park, to the south by Camino Del Sol, and to the west by Rose Avenue.

The proposed Sub-Neighborhood Plan defines three Planning Areas (A, B, and C) located on the Project Site. Area B contains Del Sol High School, opened in 2023 by the Oxnard Union High School District. A residential mixed-use urban village containing up to 950 dwelling units and 40,000 square feet of commercial/retail space.

Planning Area A, the *North Neighborhood*, includes 44.5 acres in the northern portion of the site. This area would be predominantly a residential neighborhood including various housing types, multiple parks, and open spaces, with neighborhood scale commercial space. This area is currently undeveloped agricultural land.

Source: NECSP Sub Neighborhood Plan - Maulhardt /Stiles Site

Project Site

Figure 1
Project Site

Planning Area B includes the central 50.7 acres of Project site owned by Oxnard Unified High School District (OUHSD). This area contains the existing Del Sol High School and no changes are proposed to these facilities as part of the Project.

Planning Area C, the *Southwest Neighborhood*, consists of the southwestern 11.8 acres of the Project site, located near the intersection of Camino Del Sol and Rose Avenue. This area is planned to include multi-family housing, along with neighborhood parks and open spaces. Currently it consists of underdeveloped agricultural land with an existing home, additional residential units and accessory buildings associated with the agricultural use of the site.

Vehicle Miles Traveled

The City's CEQA guidelines require evaluation of proposed land-use projects to determine if the project would result in a substantial vehicle-miles traveled (VMT) impact.

The City of Oxnard has developed recommendations[1] for proposed project screening criteria, vehicle miles traveled (VMT) metrics and thresholds of significance. The City's VMT methodology for land use projects and plans is consistent with the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (California Governor's Office of Planning and Research (OPR), December 2018) for office, retail, and residential land uses.

The following describes how the Project has been evaluated under the screening methodology in order to determine if it may have a VMT impact requiring further evaluation.

VMT Screening Criteria

The first step in the VMT evaluation is to determine what type of analysis, if any, is needed. The City of Oxnard has various screening criteria that can be used to identify whether a proposed project is expected to result in a less-than-significant impact without conducting a detailed study. Examples of these include (1) small project screening, (2) location in an efficient, low VMT area (3) location close to transit, and (4) projects including affordable housing and/or local serving retail. All the screening criteria are identified in Table 2, VMT Screening Criteria. If a project satisfies one or more of the criteria shown in Table 2, it can be considered to result in a less than significant impact and further evaluation of VMT impacts is not required.

[1] *Memorandum - SB 743 Implementation in Oxnard*, Fehr & Peers (July 2024)

Table 2. VMT Screening Criteria

Screening Criteria	Project Requirements to Meet Screening Criteria
Project Size	A residential or office project that generates 110 or fewer daily trips.
Locally Serving Project	A project that has locally serving retail uses that are 50,000 square feet or less. Locally serving retail is retail development that generally improves the convenience of shopping close to home, such as specialty retail, shopping center, grocery store, pharmacy, day care centers, financial services/banks, fitness center or health club, restaurant, and café. This screening criteria may also include locally serving uses such as locally serving assembly uses (places of worship and community organizations) and locally serving community institutions such as K-12 schools, public libraries, fire stations, local government, local parks and similar uses. For non-retail uses that are local serving, evidence should be provided to City staff to substantiate the local serving nature of a project. If the project contains other land uses such as housing or larger retail centers, those uses need to be considered under one of the other screening criteria below.
Project Located in a Low VMT Area	A residential or office project that is located in an area that is already 15% below the Ventura County Existing VMT (See VMT screening maps in Appendix B for residential and employment projects – Zones colored in blue are already 15% or more below the Ventura County Existing VMT). For mixed-use projects that include both residential and office/commercial land uses, all project land uses should be evaluated against both low VMT screening thresholds.
Transit Proximity	A residential, office, or retail project that is located within a ½ mile of the Metrolink station or within a ½ mile of a bus stop with service frequency of 15 minutes or less during commute periods (Public Resource Code § 21064.3). In addition, the project should have all of the following characteristics: • A floor Area Ratio (FAR) of 0.75 or greater • Is consistent with the applicable current SCAG SCS (as determined by the City) • Does not provide more parking than is required under the City of Oxnard Municipal Code or Specific Plan parking requirements • Does not replace affordable housing units with moderate or high-income residential units
Affordable Housing	A residential project that provides affordable housing units; if part of a larger development, only those units that meet the definition of affordable housing satisfy the screening criteria.
Transportation Facilities	Transportation projects that promote non-auto travel, improve safety, or improve traffic operations at current bottlenecks. Such transportation projects include mass transit, bicycle and pedestrian facilities, intersection traffic control (e.g., traffic signals or roundabouts), or widening at intersections to provide new turn lanes.

[1]Fehr & Peers, *Memorandum - SB 743 Implementation in Oxnard*, July 2024, Table 2, 8-12

Screening Criteria: Locally Serving Project

For mixed-use projects that include both residential and commercial land uses, all project land uses are evaluated. The commercial component of the Project is designed to include local serving retail uses and is less than 50,000 square feet in total. Therefore, this component of the Project can be presumed to have a less than significant impact.

Screening Criteria: Project Located in a Low VMT Area

The City of Oxnard's Traffic Study Guidelines state that residential and office projects located within a low VMT generating area may be presumed to have a less than significant impact. Low VMT areas are defined by the city as areas that are currently generating VMT per Capita 15% or more below the City's VMT threshold. Proposed land use development projects can be screened out from needing further evaluation if the project will generate VMT similar to the existing land uses in a low VMT area.

Based on the City of Oxnard's VMT guidance, a residential low VMT (Home-Base VMT) per Capita area is defined as a Traffic Analysis Zone (TAZ) (as defined in the Ventura County Transportation Commission (VCTC) Travel Model) that is 15% lower than the existing average VMT per Capita for Ventura County. Figure 2 shows a map of the City of Oxnard and compares the area that the project is in, to the Ventura County average for Home-Based VMT per Capita.

A residential project located in an area that is already 15% below the Ventura County VMT per Capita can be presumed to have a less than significant impact.

Impact Assessment

As the Project consists of local serving retail uses and residential uses located in an area of the city that is already 15% below the average County VMT per Capita, no further evaluation of the potential VMT impacts of the Project.

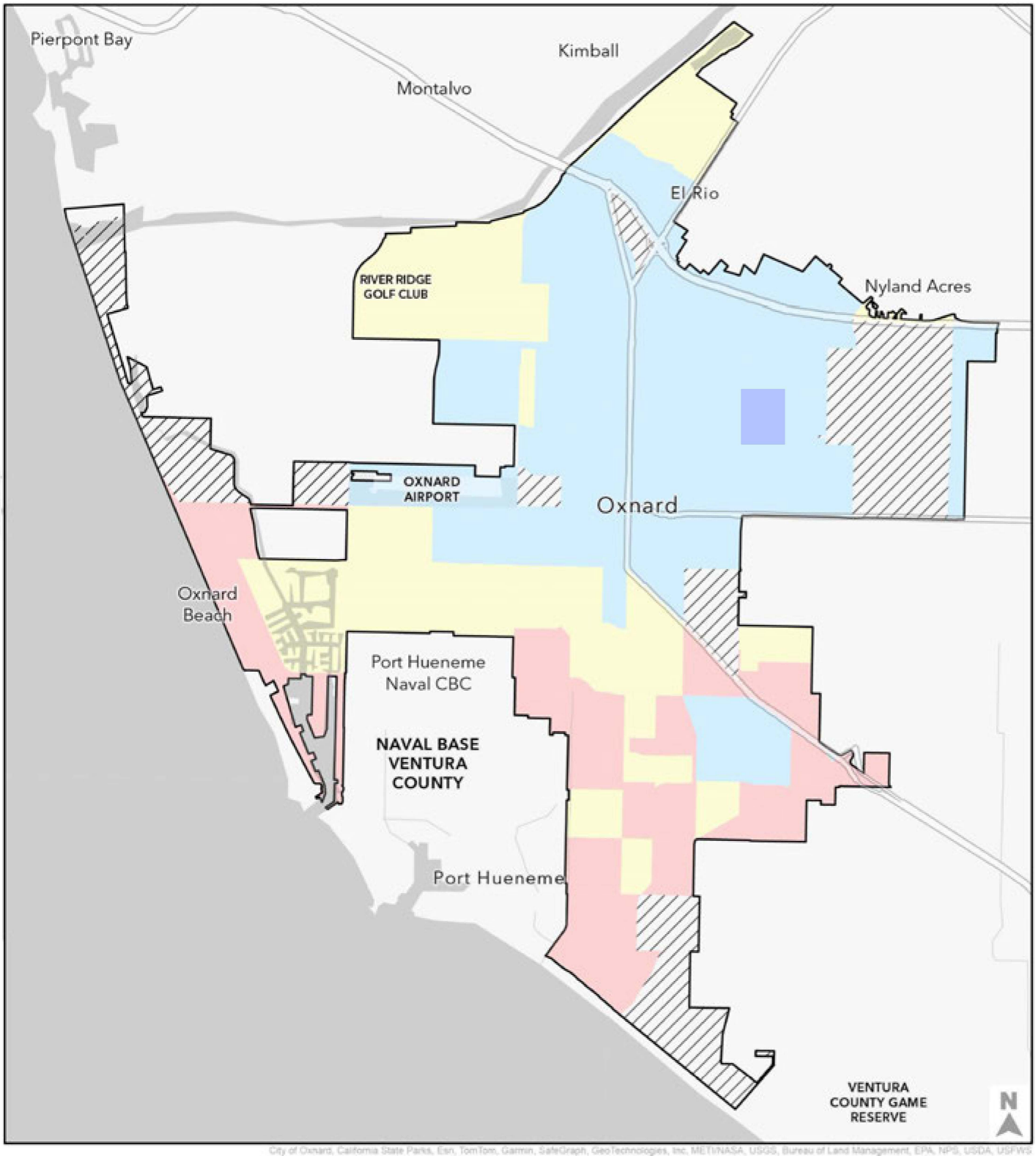


Figure 2
City of Oxnard
Residential Low VMT Screening
Comparison to County Average

Plans, Programs, Ordinances, and Policies Review

The purpose of this section is to determine whether the Project conflicts with adopted plans, policies, ordinances, and programs related to existing or proposed public transit, bicycle, or pedestrian facilities. A significant impact would occur if the Project conflicts or decreases the performance or safety of such facilities. Under CEQA, a project does not conflict with an applicable plan if it is consistent with the overall intent of the plan and would not preclude the attainment of its primary goals.

The evaluation was conducted by reviewing City documents including the *City of Oxnard 2030 General Plan Land Use Element and Circulation Element (Goals & Policies)* and the *City of Oxnard Bicycle & Pedestrian Facilities Master Plan*. The *Southern California Association of Governments (SCAG) 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) was also reviewed*.

Transit System Project Impacts

This section evaluates potential impacts related to the transit system including disruptions to existing transit service, interference with planned transit facilities, conflict with adopted transit system plans, guidelines, policies, or standards, or create demand for public transit above the available capacity.

Disruptions to Existing Transit Service

Significance Criteria

A significant impact would occur if a project or project-related mitigation disrupts existing transit services or facilities. This includes disruptions on transit streets caused by proposed project driveways, impacts to transit stops/shelters, and impacts to transit operations from traffic improvements proposed or resulting from a project.

Project Impact

Gold Coast Transit District's (GCTD) Route 4B and Route 17 have a stop along the Project's southwest frontage. GTCD Route 4B travels counterclockwise from the Oxnard Transit Center (OTC) towards Rose Avenue and Gonzales Road to the northern communities of Oxnard on F Street. GTCD Route 17 is an interlined service that continues as Route 23 at the end of the line at Esplanade & Spur. It provides service from the Esplanade to the Riverpark and Oxnard College communities via Oxnard Boulevard, Ventura Boulevard and Rose Avenue. Gold Coast Transit District's (GCTD) Route 2 is a transit route that stops near the Project on the far side of Rose Avenue and Camino del Sol, heading southbound. This bus route is an interlined service that continues as Route 3 at the end of the line. It provides service from the OTC through the Colonia and Rose Park communities.

In accordance with a prior development agreement between the City of Oxnard, Gold Coast Transit, OUHSD, and any future developers of the Project Site, the proposed development would include reconstruction of the existing bus stop along Rose Avenue adjacent to Del Sol Park (Study Intersection #1), as well as the installation of new bus stops at the following intersections:

- Rose Avenue & Cesar Chavez Drive (Int. 2)
    - Construction of a bus stop at the northeast corner
    - Construction of a bus stop at the southwest corner
- Rose Avenue & Camino de la Luna/Jacinto Drive
    - Construction of a bus stop at the southwest corner
    - Construction of a bus stop at the northeast corner

With these improvements, the Project will positively impact transit circulation on the above streets. Therefore, the impact is less than significant.

Interference with the Planned Transit Services

Significance Criteria

A significant impact occurs if a project interferes with planned transit services or facilities.

Project Impact

Based on a review of available documents, including Gold Coast Transit's website, a transition plan is currently being developed to reach Zero Emissions by 2040. As a recipient of federal funds under Federal Transit Administration (FTA) Programs 5,307 and 5,339, GCTD is responsible for ensuring compliance with federal requirements related to fleet acquisition, operations, and maintenance. The City of Oxnard 2030 General Plan includes a policy to promote transit use. The Project will not disrupt any planned transit services, so the impact is less than significant.

Inconsistencies with Adopted Transit System Plans, Guidelines, Policies, or Standards

Significance Criteria

A significant impact occurs if a project conflicts or creates inconsistencies with adopted transit system plans, guidelines, policies, or standards.

Project Impact

The City of Oxnard 2030 General Plan Land Use Element and Circulation Element includes policies supporting the development of alternative transportation programs. Key goals and objectives described by the Circulation Element are to:

- Policy ICS-7.2 – Reduce single-occupancy automobile use and increase the use of alternative forms of transportation as a means of reducing energy consumption and vehicle emissions.

In addition, increased transit usage is a key goal of regional transportation plans and policies:

- The SCAG Connect SoCal (2024-2050 Regional Transportation Plan/Sustainable Communities Strategy) (2024) includes specific goals of sustainable mobility. This includes plans to improve air quality and public health, reduce greenhouse gas emissions, and promote transit-friendly development.

The proposed project will not result in any conflicts or create inconsistencies with adopted transit system plans, guidelines, policies, or standards significant impacts. Therefore, the impact is less than significant.

Bicycle Network Project Impacts

This section reviews project-related impacts on the bicycle network in the study area. Potential impacts include disruptions to existing facilities, interference with planned facilities, and conflicts with adopted plans, guidelines, policies, or standards relating to bicycles.

Disruptions to Existing Facilities

Significance Criteria

A significant impact occurs if a project disrupts existing bicycle facilities.

Project Impact

The nearest bicycle facilities to the project include Class II bike lanes on Jacinto Drive, Camino Del Sol (to the south), Rose Avenue (to the west), Gonzales Road (to the north), and Graves Avenue and Lombard Street (to the east). Nearly all streets within the neighborhood are planned to have bike lanes, completing the active transportation connection from Rose Avenue to the expanded East Village Park.

No Project features or physical mitigation measures have been proposed that would affect existing facilities; therefore, no existing bicycle facilities would be impacted by the development of the Project Site. Therefore, the impact is less than significant.

Interference with the Planned Bicycle Services

Significance Criteria

A significant impact occurs if a project interferes with planned bicycle facilities. This includes failure to dedicate rights-of-way for planned on- and off-street bicycle facilities included in an adopted Bicycle Specific Plan or to contribute towards construction of planned bicycle facilities along the project frontage.

Project Impact

Per the Northeast Community Specific Plan (NECSP) and the Bicycle and Pedestrian Master Plan, Rose Avenue is planned to be a multi-use path with a roadway and bike lane configuration that will vary from about 104 feet wide per improvement agreement with City. It will also have connections to Del Sol Park south of the Project.

Cesar Chavez Drive & Gibraltar Street are planned to be designed as bicycle boulevards per the Bicycle and Pedestrian Master Plan. The Project will add Class II bike lanes along these streets and connect them to a multi-use path west of the Project area.

On Jacinto Drive, a 10-foot-wide multi-use path and 6-foot-wide Class II bike lanes are planned. These are intended to support the "greenbelt" system envisioned in the NECSP (Section 3.5.2), offering bike access through the development to surrounding areas.

The roadway and bike lane configuration along Camino del Sol will vary, but it is expected to be approximately eighty-four feet wide, as per the improvement agreement with the City. Paseos, exclusively for bikes and pedestrians, will be located along the north and northwestern edges of the neighborhood, with a minimum 15-foot-wide walkway. Additionally, the Project will include dedicated 5-foot-wide Class II bike lanes on several neighborhood streets, including Milagro Place, Concha Street, Prado Way, and Williams Drive.

The Project will not interfere with planned in-street bicycle facilities that may be contemplated either as an implementation of the Northeast Community Specific Plan (NECSP) or the Bicycle and Pedestrian Master Plan. Therefore, the impact is less than significant.

Conflicts with Adopted Bicycle Plans, Guidelines, Policies, or Standards

Significance Criteria

A significant impact occurs if the project conflicts or creates inconsistencies with the adopted bicycle system, plans, guidelines, policies, or standards.

Project Impact

The City of Oxnard 2030 General Plan Land Use Element and Circulation Element includes policies supporting the development of alternative transportation programs. Key goals and objectives described by the Circulation Element are to:

- Policy ICS-8.14 – Create a physical link for pedestrian and bicycle traffic between parks and recreation facilities as specified in the Bike and Pedestrian Master Plan.

In addition, improvement of bicycling and walking in the City is a key goal of the City of Oxnard Bicycle & Pedestrian Facilities Master Plan:

- Goal 2.1 – The Oxnard Bicycle and Pedestrian Facilities Master Plan intends to make bicycling and walking integral modes of transportation in Oxnard through a safe, interconnected system of bicycle and pedestrian facilities.

The recently updated plan for Downtown Oxnard includes pedestrian and bicycle improvements intended to better connect to Colonia Road and to A Street. A Street is the historic main shopping street of Downtown Oxnard, just over one mile (or a 10-minute bike ride) from the Southwest Neighborhood of the Maulhardt Ranch. Accordingly, active transportation improvements to Camino del Sol are proposed, including bike lanes and new sidewalks.

The proposed project will not result in any conflicts or create inconsistencies with the adopted bicycle system plans, guidelines, policies, or standards. Therefore, the impact is less than significant.

Pedestrian Network Project Impacts

This section reviews project-related impacts on the pedestrian network in the study area. Potential impacts include disruptions on existing facilities, interference with planned facilities, and conflicts with adopted plans, guidelines, policies, or standards relating to pedestrians.

Disruptions to Existing Facilities

Significance Criteria

A significant impact occurs if a project disrupts existing pedestrian facilities. This can include adding new vehicular, pedestrian, or bicycle traffic at locations experiencing pedestrian safety concerns including: reduction in the number of pedestrian-acceptable gaps at unsignalized crossings or queues spilling back through pedestrian crossings.

Project Impact

Sidewalks are provided along both sides of Rose Avenue, including an additional east side sidewalk as part of the six-lane expansion completed as part of the construction of Del Sol High School. Additionally, sidewalks are present on the north side of Cesar Chavez Drive, South Jacinto Drive, South Camino Del Sol, and both sides of Jaguar Way, with the improvements to Jaguar Way constructed with Del Sol High School.

The proposed project will not result in any disruptions to these existing pedestrian facilities. Therefore, the impact is less than significant.

Interference with the Planned Pedestrian Facilities

Significance Criteria

A significant impact occurs if a project interferes with planned pedestrian facilities. In existing or planned urbanized areas, main streets, or pedestrian districts, this can include impacts to the quality of the walking environment.

Project Impact

Rose Avenue will feature a minimum of a 10-to 15-foot-wide parkway, providing pedestrian access from the multi-use parkway to the private frontage along Rose Avenue and to any Paseos connecting to the avenue.

On Cesar Chavez Drive and Gibraltar Street, a five foot-wide sidewalk will be added along the southern section of Cesar Chavez Drive and the western part of Gibraltar Street. The northern part of Cesar Chavez Drive and the eastern part of Gibraltar Street will maintain the existing sidewalk and landscaping. These streets will also include connections to the existing pedestrian network and link to the multi-use path west of the project. Additionally, intersection crossing treatments and corner bulb-outs are planned along these streets.

Jacinto Drive will feature 7-foot-wide sidewalks on the south side and a 10-foot-wide multi-use path. The street will also provide connections to the existing pedestrian network to the east and west of the project.

Camino Del Sol will have sidewalks on both sides of the street, along with connections to the existing pedestrian network on both the east and west sides of the project. One side of the street will also have a connection to the multi-use path west of the project.

Neighborhood streets, including Milagro Place, Concha Street, Prado Way, and Williams Drive, will have five foot-wide sidewalks within pedestrian zones. These areas will be well-shaded with trees and feature human-scale street lighting to enhance the pedestrian experience. Connections to the existing pedestrian network will be provided for Concha Street, Prado Way, Williams Drive, and Milagro Place.

Paseos, designed exclusively for pedestrians and cyclists, will run along the northern and northwestern edges of the neighborhood. These Paseos will have a minimum 15-foot-wide walkway, with sidewalks within the walkway area being at least 5 feet wide.

The proposed project will not interfere with planned pedestrian facilities. Therefore, the impact is less than significant.

Conflicts with Adopted Pedestrian Plans, Guidelines, Policies, or Standards

Significance Criteria

A significant impact occurs if a project conflicts or creates inconsistencies with adopted pedestrian system plans, guidelines, policies, or standards.

Project Impact

The City of Oxnard 2030 General Plan Land Use Element and Circulation Element includes policies supporting the development of alternative transportation programs. Key goals and objectives described by the Circulation Element are to:

- Policy ICS-8.14 – Create a physical link for pedestrian and bicycle traffic between parks and recreation facilities as specified in the Bike and Pedestrian Master Plan.

- Policy ICS-8.5 – Consider and require where appropriate and feasible the enhancement of the pedestrian environment as part of private development and public works projects, especially for public sidewalks.

In addition, improvement of bicycling and walking in the City is a key goal of the City of Oxnard Bicycle & Pedestrian Facilities Master Plan:

- Goal 2.1 – The Oxnard Bicycle and Pedestrian Facilities Master Plan intends to make bicycling and walking integral modes of transportation in Oxnard through a safe, interconnected system of bicycle and pedestrian facilities.

The project will not conflict or create inconsistencies with adopted pedestrian system plans, guidelines, policies, or standards. Therefore, the impact is less than significant.

Impact Assessment

Based on the evidence presented above, the Project would result in less than significant impacts.

Geometric Hazards Review

Impacts regarding the potential increase of hazards due to a geometric design feature generally relate to the design of access points to and from the Project site. Impacts can be related to vehicle/vehicle, vehicle/bicycle, or vehicle/pedestrian conflicts. These conflicts may be created by the driveway configuration or through the placement of project driveway(s) in areas of inadequate visibility or adjacent to bicycle or pedestrian facilities.

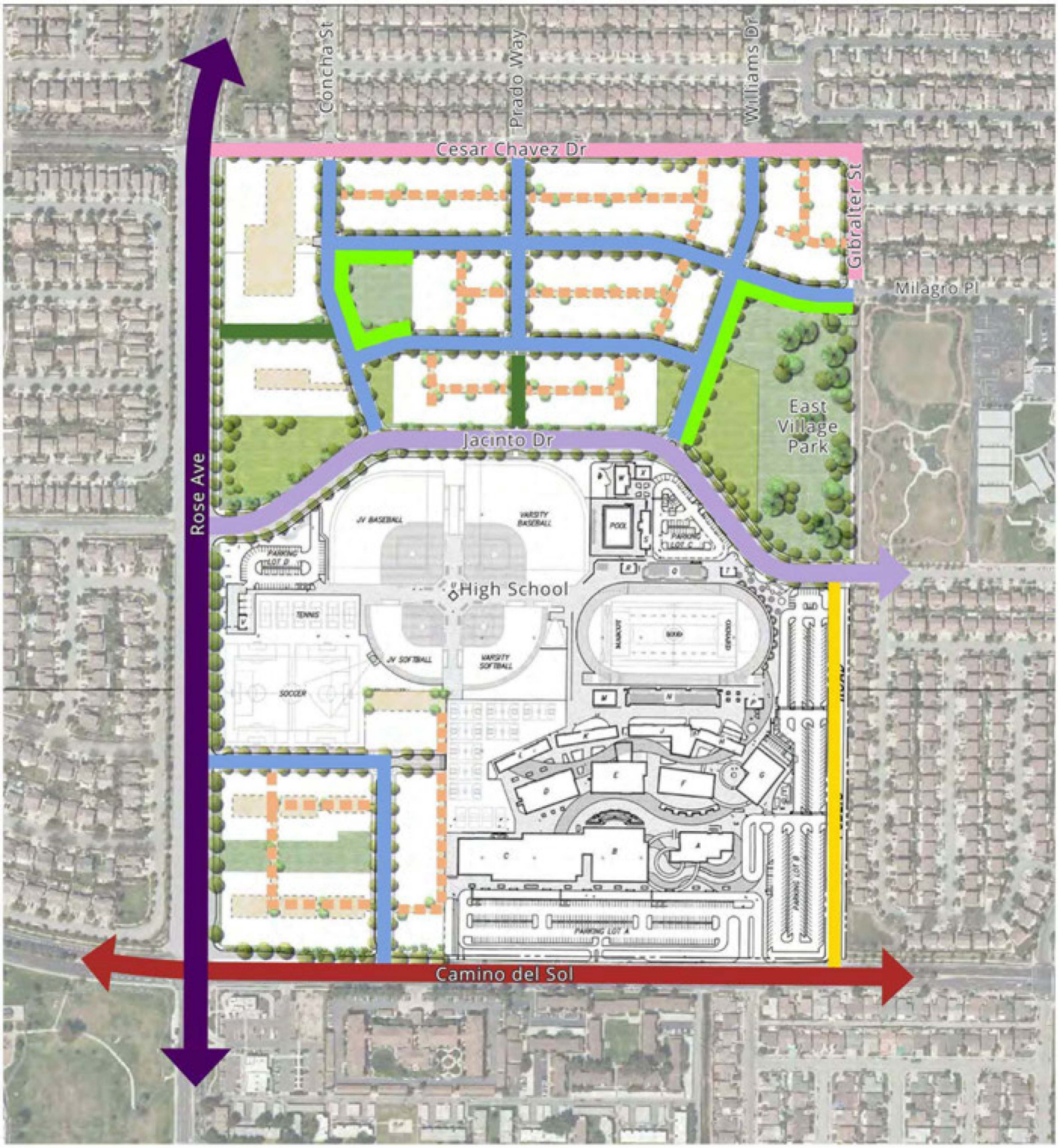
To access Planning Area 'A', the project is adding new private streets with an alignment perpendicular to the public right-of-way along Cesar Chavez Drive, Gibraltar Street, and Jacinto Drive. To access Planning Area 'C', the project is adding two new private streets with an alignment perpendicular to the public right-of-way along Camino del Sol and Rose Avenue. These new streets will provide access to the Project Site as shown in Figure 3. Additionally, the Project does not introduce land uses that are incompatible with the surrounding community.

The Project's tentative tract map does not include internal roadway design detail, as those would be determined during individual development project planning. At that stage, the internal roadways, pedestrian walkways, and driveways would be designed to comply with the City of Oxnard's standards for the design of new streets and driveways.

The Project would not include permanent lane or street closures that would impede emergency access to nearby properties. Oxnard Fire Station 5 is located west of Rose Avenue and Camino del Sol, less than half a mile from the Project Site.

Impact Assessment

Based on the evidence presented above, the Project would have a less than significant impact.



Source: NECSP Sub Neighborhood Plan - Maulhardt /Stiles Site

- ***Rose Ave.***
- ***Camino del Sol***
- ***Jacinto Dr.***
- ***Cesar Chavez Dr. & Gibraltar St.***
- ***Neighborhood Street***
- ***High School Public Road***
  Per improvement agreement with the City
- ***Paseo***
- ***Alley***
- ***Park Edge***

Figure 3

New Street System

Would the project result in inadequate emergency access?

The proposed circulation plan was reviewed for impacts to emergency access both at the site itself and along the public right-of-way adjacent to the Project Site. The Project would increase the number of vehicles on the surrounding roadways primarily during the morning and afternoon peak hours compared with existing conditions. The Project would not include permanent lane or street closures that would impede emergency access to nearby properties. Oxnard Fire Station 5 is located less than half a mile from the Project Site, west of Rose Avenue along Camino del Sol. Fire Station 5 has direct driveway access to Camino del Sol. As such, the Project is not expected to result in inadequate emergency access.

Impact Assessment

Based on the evidence presented above, it is concluded that the Project would result in a less than significant impact.

Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

The Oxnard Airport is approximately 2.20 miles southwest of the project site. The project site is outside of the airport's sphere of influence, defined in the Municipal Code as bounded by "B" Street, approximately 1.19 miles southwest of the project site (City of Oxnard, 2024). Because the project site is not within the airport sphere of influence, the aquatics center would not interfere with air traffic from Oxnard Airport.

The project site is located approximately 6.03 miles southeast of the airport landing strip on the Naval Base Ventura County (NBVC) Point Mugu. The project site is within the 500-foot airfield imaginary surface but is not within the flight path for the NBVC Point Mugu. The proposed building would not exceed 25 feet in height and would not interfere with air traffic from the NBVC Point Mugu.

Additionally, the Project does not feature a helicopter landing pad and would therefore not generate new air traffic or divert existing air traffic. For these reasons, it is not anticipated that the Project would result in a change in air traffic patterns.

Impact Assessment

Based on the evidence presented above, it is concluded the Project would result in a less than significant impact.

APPENDIX R

Traffic Analysis

Maulhardt–Stiles Sub–Neighborhood Plan Traffic Analysis

Prepared for:
Meridan Consultants, LLC

Submitted on:
April 1, 2026

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1 Introduction

This report documents the assumptions, methodologies, and findings of the transportation assessment to evaluate the potential transportation effects of the proposed Maulhardt-Stiles Sub-Neighborhood Plan (Project). The proposed Sub-Neighborhood Plan would implement the City's approved Northeast Community Specific Plan by allowing the development of residential and commercial uses.

1.1 Project Description

The Maulhardt-Stiles Sub-Neighborhood Plan is proposed in the East Village neighborhood in the City of Oxnard (City) Northeast Community Specific Plan (NECSP). The 107-acre site is bounded to the north by Cesar Chavez Drive, to the east by Gibraltar Street/East Village Park, to the south by Camino Del Sol, and to the west by Rose Avenue.

The proposed Sub-Neighborhood Plan defines three Planning Areas (A, B, and C) on the Project Site, as shown in **Figure 1**. The Sub-Neighborhood Plan would allow development of a mixed-use urban village containing up to 950 dwelling units and 40,000 square feet of commercial/retail space.

Planning Area A, the *North Neighborhood*, includes 44.5 acres in the northern portion of the site. This area would be predominantly a residential neighborhood including various housing types, multiple parks, and open spaces, with neighborhood scale commercial space. This area is currently undeveloped agricultural land.

Planning Area B includes the central 50.7 acres of Project site owned by Oxnard Union High School District (OUHSD). This area contains the existing Del Sol High School and no changes are proposed to these facilities as part of the Project.

Planning Area C, the *Southwest Neighborhood*, consists of the southwestern 11.8 acres of the Project site, located near the intersection of Camino Del Sol and Rose Avenue. This area is planned to include multi-family housing, along with neighborhood parks and open spaces. Currently it consists of underdeveloped agricultural land with an existing home, additional residential units and accessory buildings associated with the agricultural use of the site.

Figure 1. Study Area

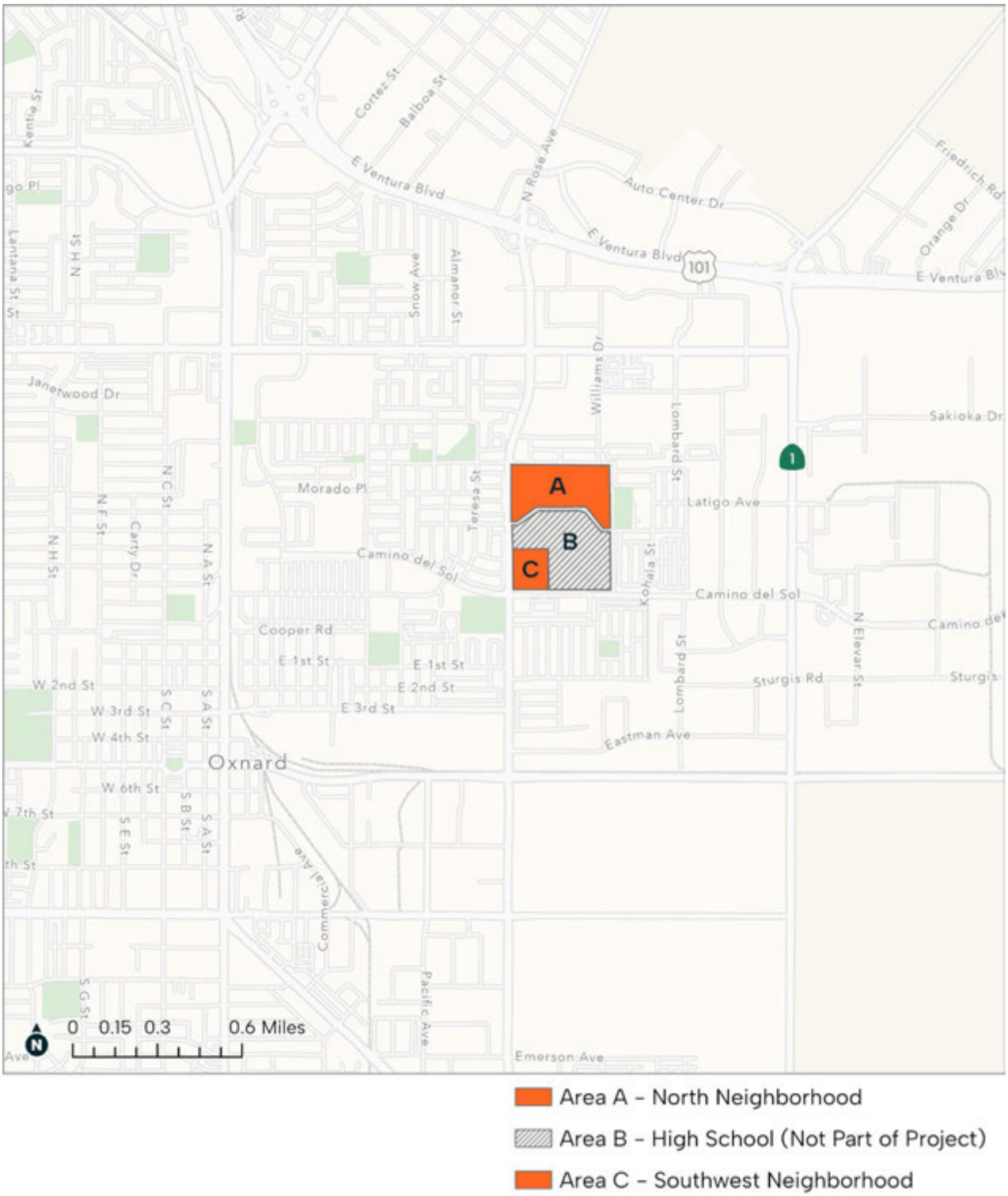


Figure 2: Street System and Site Plan

Source: NECSP Sub Neighborhood Pion - Maulhardt /Stiles Site

2 Existing Transportation Network

This section describes the roadway system, transit service, and active transportation infrastructure in the vicinity of the Project site.

2.1 Existing Street System

The existing transportation network within the study area is described below:

Rose Avenue is a six-lane, north-south primary arterial. Its northern terminus is State Route 118, and its southern terminus is East Pleasant Valley Road.

Camino Del Sol is a four-lane, east-west secondary arterial. Its western terminus is Garfield Avenue, and its eastern terminus is Del Norte Boulevard. Camino Del Sol provides access to industrial land uses east of Rice Avenue, James Foster Middle School, RJ Frank Middle School, and the commercial corridor along Oxnard Boulevard.

Cesar Chavez Drive is a two-lane, east-west neighborhood street. Its western terminus is Juanita Avenue, and its eastern terminus is Gibraltar Street. Cesar Chavez Drive forms the northern boundary of Planning Area A, with a single-family home subdivision located north of the street. The street provides access to Norman Brekke Elementary School and the adjacent Oxnard Historic Farm Park.

Jacinto Drive is a two-lane, east-west local street. Its western terminus is Rose Avenue, and its eastern terminus is Paseo Ortega. It forms the boundary between Planning Area A and Planning Areas B and C. Originally Jacinto Drive terminated at the eastern boundary of the Project site but was extended to Rose Avenue as part of the site development. Besides providing access to the Project site, Jacinto Drive provides access to East Village Park and Rio Rosales Elementary School.

Jaguar Way is a two-lane roadway along the east edge of Del Sol High School. Its northern terminus is Jacinto Drive, and its southern terminus is Camino Del Sol. Jaguar Way provides right-in, right-out access at Camino Del Sol.

Additional local streets are planned as part of the Project development. This includes a pedestrian paseo, neighborhood streets serving residential and commercial sites, and a network of alleyways. A public road providing access to Del Sol High School is also included in Project development, connecting Jacinto Drive to Camino Del Sol.

2.2 Alternative Transportation

2.2.1 Public Transit

Gold Coast Transit bus routes 2 (Colonia-Downtown Oxnard) and 4 (North Oxnard) serve the Project site. Route 2 and Route 4 have transit stops located at the intersection of Rose Avenue & Camino Del Sol, with Route 2 having an additional stop at the intersection of Colonia Road and Camino Del Sol within the vicinity of the Project site. Route 2 travels from the Oxnard Transit Center (OTC) through the Colonia and Rose Park communities every 40-45 minutes, with transfers at the OTC to the following routes: 4, 5, 6, 8, 18 and 19[1]. Route 4 travels from the OTC towards Rose Avenue and

[1] Route 2 – Gold Coast Transit District

Gonzales Road to the northern communities of Oxnard on F Street every 45 minutes, with transfers at the OTC to the following routes: 1, 2, 3, 5, 6, 18 and 19[2].

Regional transit is available via the Metrolink Ventura County and Amtrak Pacific Surfliner rail lines, available at the Oxnard Transit Center (OTC), which is located just over one mile southwest of the Project site.

2.2.2 Bicycle Facilities

Class II bike lanes are located on the following roadways in both directions:

- Rose Avenue, from the northern City limits to Camino Del Sol serving as a connection to the Class II bike lanes on Gonzales Road
- Camino Del Sol for the entire roadway extents which connect to the Oxnard Trail via sidewalks along the Camino Del Sol Community Garden
- Jacinto Drive between Rose Avenue and Jaguar Way

2.2.3 Pedestrian Facilities

Pedestrian facilities are present along Rose Avenue, Camino Del Sol, Cesar Chavez Drive, Jacinto Drive, and Jaguar Way. These facilities include sidewalks, curb ramps, crosswalks, pedestrian (walk/don't walk) signals, and landscaping. Under existing conditions, pedestrian facilities are only present on one side of the street for Jaguar Way (western side), Cesar Chavez Drive (northern side), and Jacinto Drive (southern side).

[2] Route 4A – Gold Coast Transit District

3 Transportation Analysis

This section of the report discusses the methodologies and thresholds used in the transportation analysis as well as the effects of the Project on intersection operations.

3.1 Intersection Level of Service Criteria

The quality of traffic operations is characterized by the concept of Level of Service (LOS). LOS is defined by a range of grades from A (best) to F (worst). At intersections, LOS A represents relatively free flow operating conditions with little or no delay. LOS F is characterized by unstable flow conditions, severe congestion, and delay, with traffic volumes at or near an intersection's design capacity. This typically results in long vehicular queues extending from all approaches of an intersection.

The LOS analysis was performed using the Highway Capacity Manual (HCM) methodology as requested by the City Traffic Engineer. Table 3-1 presents a brief description of each LOS [Source: Highway Capacity Manual, 7th Edition (2022)]. The City of Oxnard considers LOS C or better acceptable for intersection operations, except for the following intersections listed below with their respective standard in parenthesis[3].

- C Street & Wooley Road (D) (not a study intersection)
- Gonzales Road and Rose Avenue (D) (Study Intersection 3)
- Five Points (Oxnard Boulevard/Saviers Road/Wooley Road) (F) (Study Intersection 13)
- Oxnard Boulevard and Gonzales Road (D) (Study Intersection 15)
- Oxnard Boulevard and Vineyard Avenue (D) (Study Intersection 16)

[3] Oxnard General Plan 2030, pp. 4-7

Table 3-1: Intersection Level of Service Criteria

LOS	Description	Signalized Intersections (Delay per vehicle)
A	*Excellent*. No vehicle waits longer than one red light and no approach phase is fully used.	≤10.0
B	*Very Good*. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles	>10 and ≤20
C	*Good*. Occasionally drivers may have to wait through more than one red light; backups develop behind turning vehicles.	>20 and ≤35
D	*Fair*. Delays may be substantial during portions of the rush hours, but enough lower volumes periods occur to permit clearing of developing lines, preventing excessive backups.	>35 and ≤55
E	*Poor*. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.	>55 and ≤80
F	*Failure*. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with increasing queue lengths.	>80

Source: Highway Capacity Manual, Transportation Research Board 2022

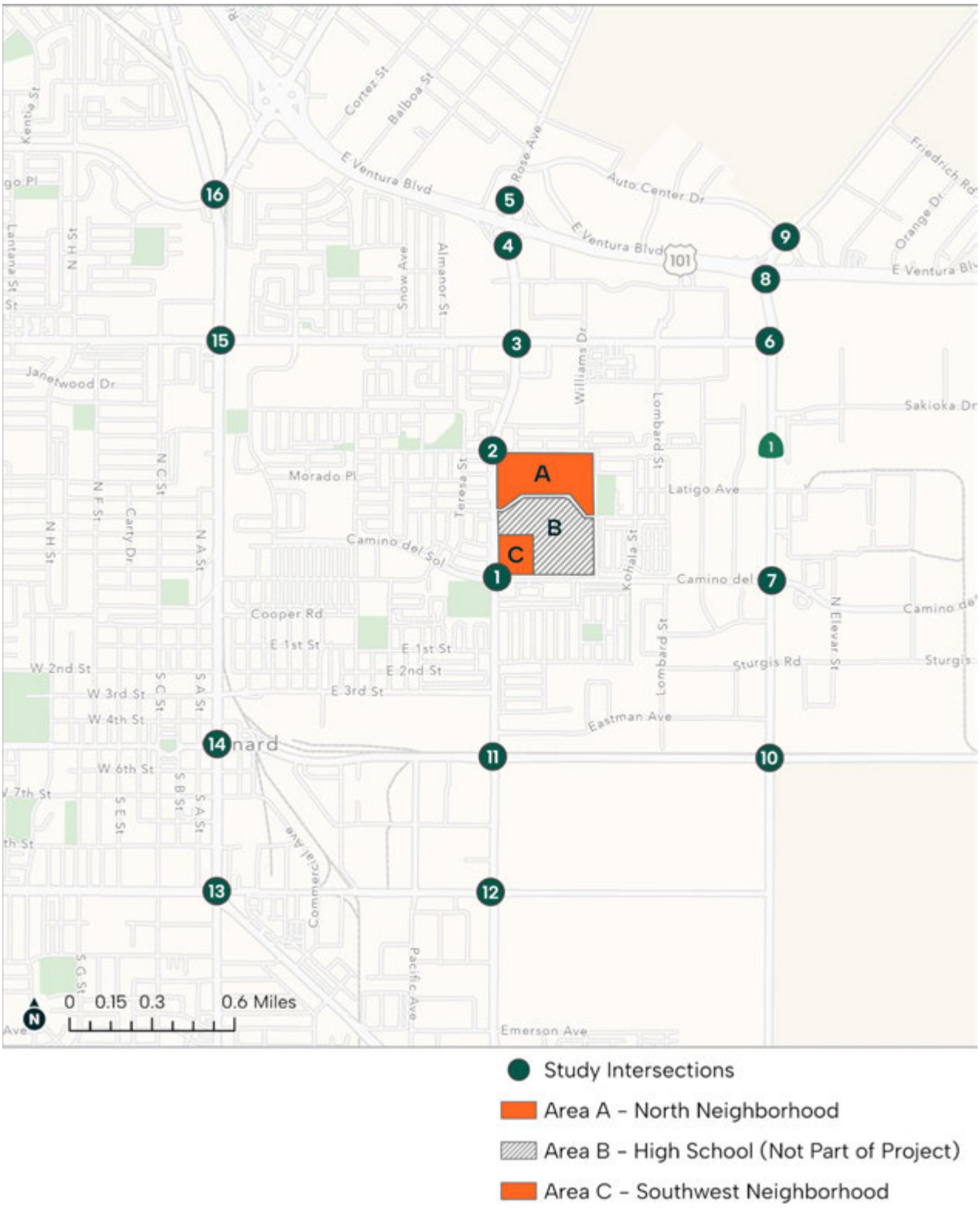
3.2 Study Intersections

The study area for analysis includes the following sixteen (16) signalized intersections in the vicinity of the Project site. These intersections were included in the analysis based on recommendations from the City of Oxnard Traffic Engineer.

1. Rose Avenue & Camino Del Sol
2. Rose Avenue & Cesar Chavez Drive
3. Rose Avenue & Gonzales Road
4. Rose Avenue & US-101 SB Off-Ramp
5. Rose Avenue & US-101 NB Off-Ramp
6. Rice Avenue/SR-1 & Gonzales Road
7. Rice Avenue/SR-1 & Camino Del Sol
8. Rice Avenue/SR-1 & US-101 SB Off-Ramp
9. Santa Clara Avenue & Auto Center Drive/US-101 NB Off-Ramp
10. Rice Avenue/SR-1 & 5th Street
11. Rose Avenue & 5th Street
12. Rose Avenue & Wooley Road
13. Oxnard Boulevard & Wooley Road/Saviers Road
14. Oxnard Boulevard & 5th Street
15. Oxnard Boulevard & Gonzales Road
16. Oxnard Boulevard & Vineyard Avenue

The Project site and study intersections are shown in **Figure 3.**

Figure 3. Study Intersections



3.3 Study Scenarios

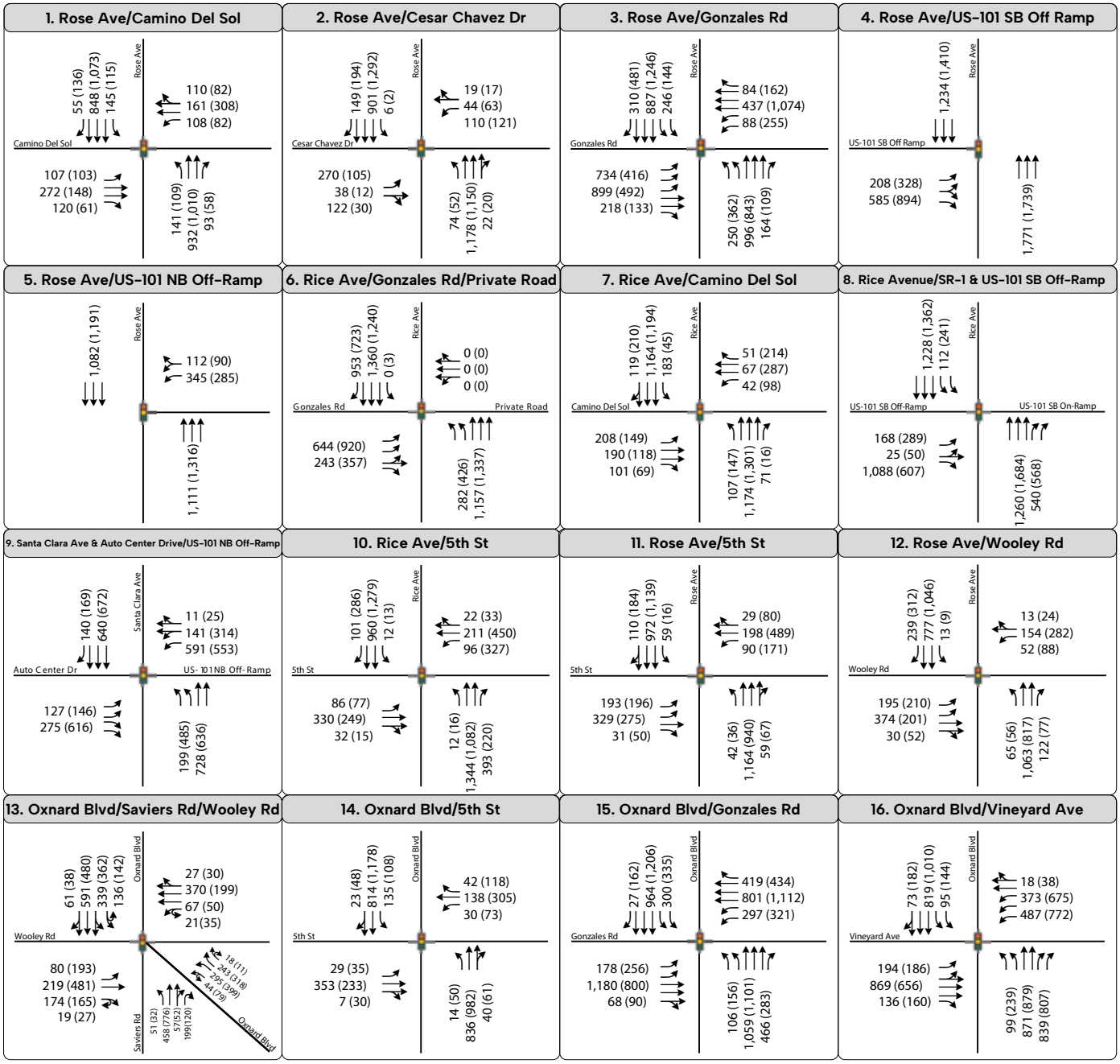
Traffic operations were evaluated for each of the following scenarios during weekday AM and PM peak hours:

- Existing Conditions (2025)
- Existing Plus Project Conditions (2025)
- Cumulative Base Conditions (2032)
- Cumulative Plus Project Conditions (2032)

3.4 Existing Traffic Volumes

Existing traffic counts at the study intersections were collected on Wednesday, April 2, 2025. Counts were conducted during AM and PM peak periods (6:30 – 8:30 AM, 4 – 6 PM). The traffic operations analysis is based on the highest single hour of traffic during each time period at each location. Detailed vehicle turning movement data is included in **Appendix A. Figure 4** shows the existing peak hour volumes at the study intersections.

Figure 4. Existing Conditions Intersection Traffic Volumes



3.5 Cumulative Year (2032) Traffic

Cumulative Base (2032) traffic volume was estimated for the study intersections by applying a forecasted growth rate (referred to as "ambient growth") to the Existing volumes, as well as the addition of trips generated by other known projects in the City, referred to as "cumulative" or "related" projects. These components are described in the following sections.

3.5.1 Ambient Growth

An ambient growth rate of 0.59% per year was applied to the Existing traffic volumes through the opening year of 2032. This rate was derived from the Ventura County Transportation Model (VCTM). The VCTM considers regional travel behavior, including socioeconomic data (population, employment and households) through 2040 and future transportation projects.

3.5.2 Cumulative Projects

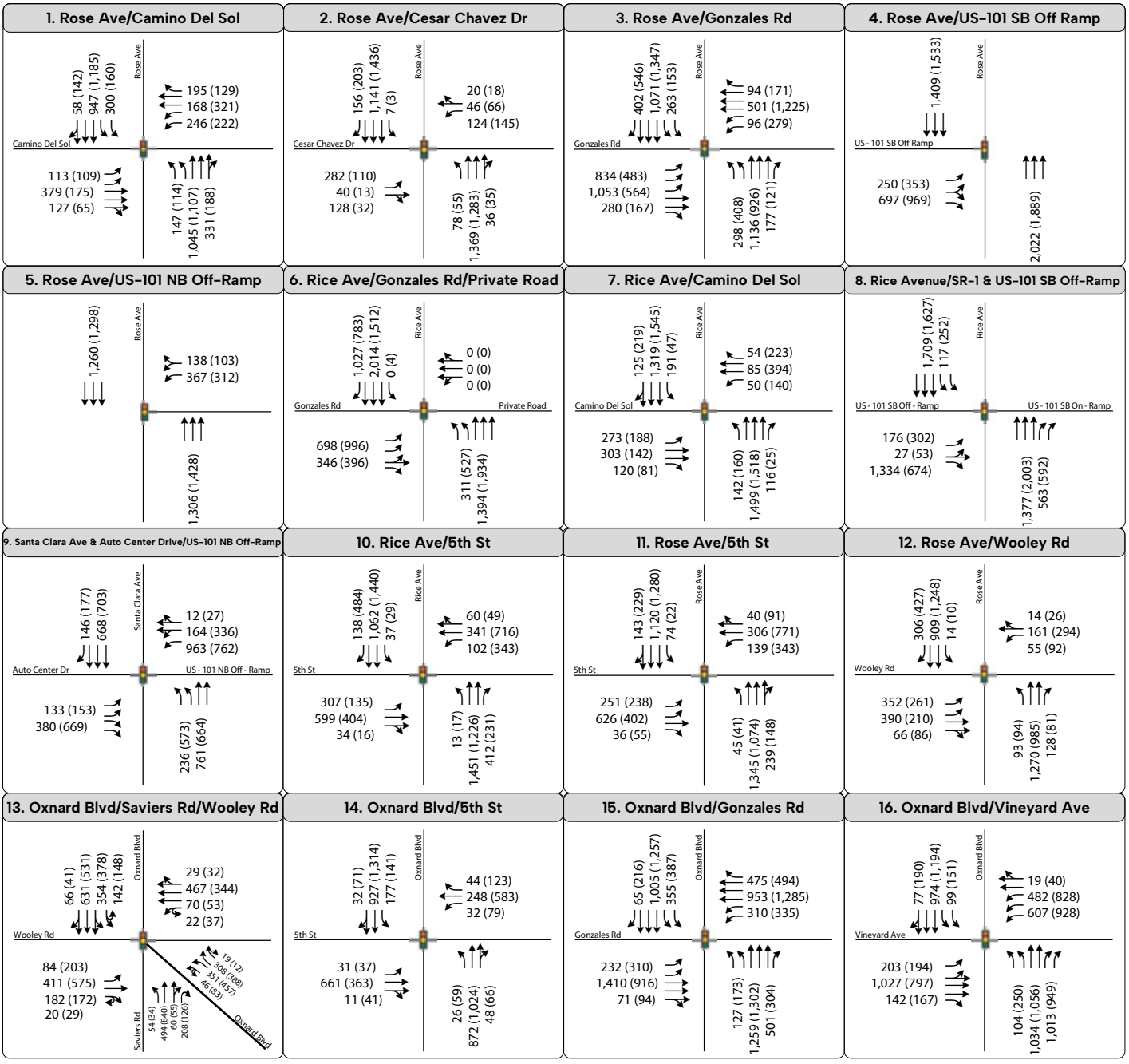
In order to present a conservative analysis, traffic volumes from pending nearby development projects (based on the City of Oxnard's "Current Planning Projects" website[4], as referenced in June 2025) were included in the development of Cumulative Year (2032) Base volumes. A similar distribution to the 2014 EIR was used, though the type and locations of related projects during this update differ from those studied in 2014. As of Spring 2025, Del Rio High School was operating at approximately half of full enrollment (Freshman and Sophomore classes). Thus, the trips associated with those students and related faculty are included in the data collection. The remaining half of the full enrollment was considered as a Cumulative Project, with the trip generation being half of that estimated in the 2019 "New High School No. 8" DEIR.[5]

Appendix C lists the Cumulative Projects included in this analysis. **Figure 5** on the following page shows the Cumulative Base traffic volumes at the study intersections.

[4] Current Planning Projects Map, June 2025.

[5] Oxnard Union High School District, Draft Environmental Impact Report "New High School No. 8", SCH# 2019029101, August 2019 (Table 3-20)

Figure 5. Cumulative Base Traffic Volumes



3.6 Proposed Project Traffic

This section describes the methodology used to determine Project trip generation estimates and the distribution of Project traffic within the study area. The first step in analyzing traffic conditions with the Project is to estimate the number of new vehicle trips that are expected to be generated by the Project. As described in Section 1.1, the proposed Sub-Neighborhood Plan would implement the City's Northeast Community Specific Plan by allowing a mixed-use urban village with up to 950 dwelling units and 40,000 square feet of commercial/retail space.

3.6.1 Project Trip Generation

Trip generation estimates for the Project are shown in **Table 3-2**, and were developed using the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. Trip generation related to housing utilized ITE Land Use Code 220 (Low-Rise Multifamily Housing) and was calculated on a per dwelling unit basis. Trip generation related to commercial/retail space utilized ITE Land Use Code 822 (Strip Retail Plaza < 40,000 SF) and was calculated on a per thousand-square foot (KSF) basis. While the sub-neighborhood plan proposes a range of residential unit quantities among Planning Areas A and C (up to 950 dwelling units), this analysis assumes a 70%/30% (656/294 units) split among Area A and C, respectively.

Internal capture, pass-by trips, and walk/bike/transit adjustments were made to trip generation estimates. Internal capture represents the percentage of trips between land uses that occur within the site, which is necessary for a mixed-use development with multiple land uses. The internal capture adjustment was calculated using Fehr & Peers' MXD 2.0 trip generation tool, which incorporates the research regarding prediction of trips from mixed-use projects[6]. Pass-by trip adjustment is applied to account for the percentage of trips that would already be on the adjacent roadways but would make a stop at the Project site. This adjustment was only applied to trips generated by commercial/retail space, as home-based trips begin or end at a residence with no pass-by stops. Walk/bike/transit trip adjustments were applied to account for the percentage of Project trips that are estimated to occur by walking, biking, or transit.

[6] "Improved Estimation for Internal Trip Capture for Mixed-use Developments", ITE Journal, August 2010: "NCHRP Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments", Transportation Research Board, 2011: "Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development", American Planning Association, 2013

Table 3-2: Project Vehicle Trip Generation

Land Use	ITE Use Code	Size	Trip Generation Rates [a]						Estimated Trip Generation					
			AM Peak Hour			PM Peak Hour			AM Peak Hour Trips			PM Peak Hour Trips		
			Rate	In%	Out%	Rate	In%	Out%	In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise)	220	950 DU	0.4	24%	76%	0.51	63%	37%	91	289	380	306	179	485
Less: Internal Capture [b]				*7.6%*	*7.6%*		*8.5%*	*8.5%*	*(7)*	*(22)*	*(29)*	*(26)*	*(15)*	*(41)*
Less: Walk/Bike/Transit Trip Adj [c]				*5%*	*5%*		*5%*	*5%*	*(5)*	*(14)*	*(19)*	*(15)*	*(9)*	*(24)*
Net External Vehicle Trips									*79*	*253*	*332*	*265*	*155*	*420*
Strip Retail Plaza (<40K)	822	40 KSF	2.36	60%	40%	6.59	50%	50%	56	38	94	132	132	264
Less: Internal Capture [b]				*7.6%*	*7.6%*		*8.5%*	*8.5%*	*(4)*	*(3)*	*(7)*	*(11)*	*(11)*	*(22)*
Less: Walk/Bike/Transit Trip Adj [c]				*5%*	*5%*		*5%*	*5%*	*(3)*	*(2)*	*(5)*	*(7)*	*(7)*	*(13)*
Total Driveway Trips									*49*	*33*	*82*	*114*	*114*	*229*
Less: Pass-by [d]			*50%*			*50%*			*(24)*	*(16)*	*(40)*	*(57)*	*(57)*	*(114)*
Net External Vehicle Trips									*25*	*17*	*42*	*57*	*57*	*115*
TOTAL DRIVEWAY TRIPS									***128***	***286***	***414***	***379***	***269***	***649***
TOTAL PROJECT EXTERN. VEHICLE TRIPS									***104***	***270***	***374***	***322***	***212***	***535***

Notes:

[a] Source: Institute of Transportation Engineers (ITE), Trip Generation, 11th Edition, 2021.
[b] Internal capture represents the percentage of trips between land uses that occur within the site.
[c] Walk/bike/transit trip adjustment applied to account for the percentage of Project trips that occur by walking, biking, or transit.
[d] Pass-by trip adjustment applied to account for the percentage of trips on adjacent roadways that make a stop at the Project site.

3.6.2 Project Trip Distribution and Assignment

Trip distribution assumptions are used to determine the origin and destination of new vehicle trips associated with the Project. Project trip distribution is based on the land use context and circulation network characteristics in the vicinity of the Project site. The Project trip distribution is shown in **Figure 6** on the following page. Full access to Planning Area A would be available from the intersection of Rose Avenue at Jacinto Drive. Vehicular access to Planning Area C is limited by the Rose Avenue median and its proximity to the intersection of Rose Avenue & Camino Del Sol, so future connections will be right-in, right-out only. The Rose Avenue access to Area C is projected to receive approximately 65 inbound vehicles during the PM peak hour, while the Camino Del Sol access would receive approximately 15 inbound vehicles.

Figure 7 shows the assignment of Project-related peak hour vehicle trips at the study intersections. **Figure 8** and **Figure 9** show the Existing Plus Project and Cumulative Plus Project traffic volumes, respectively.

Figure 6. Project Trip Distribution

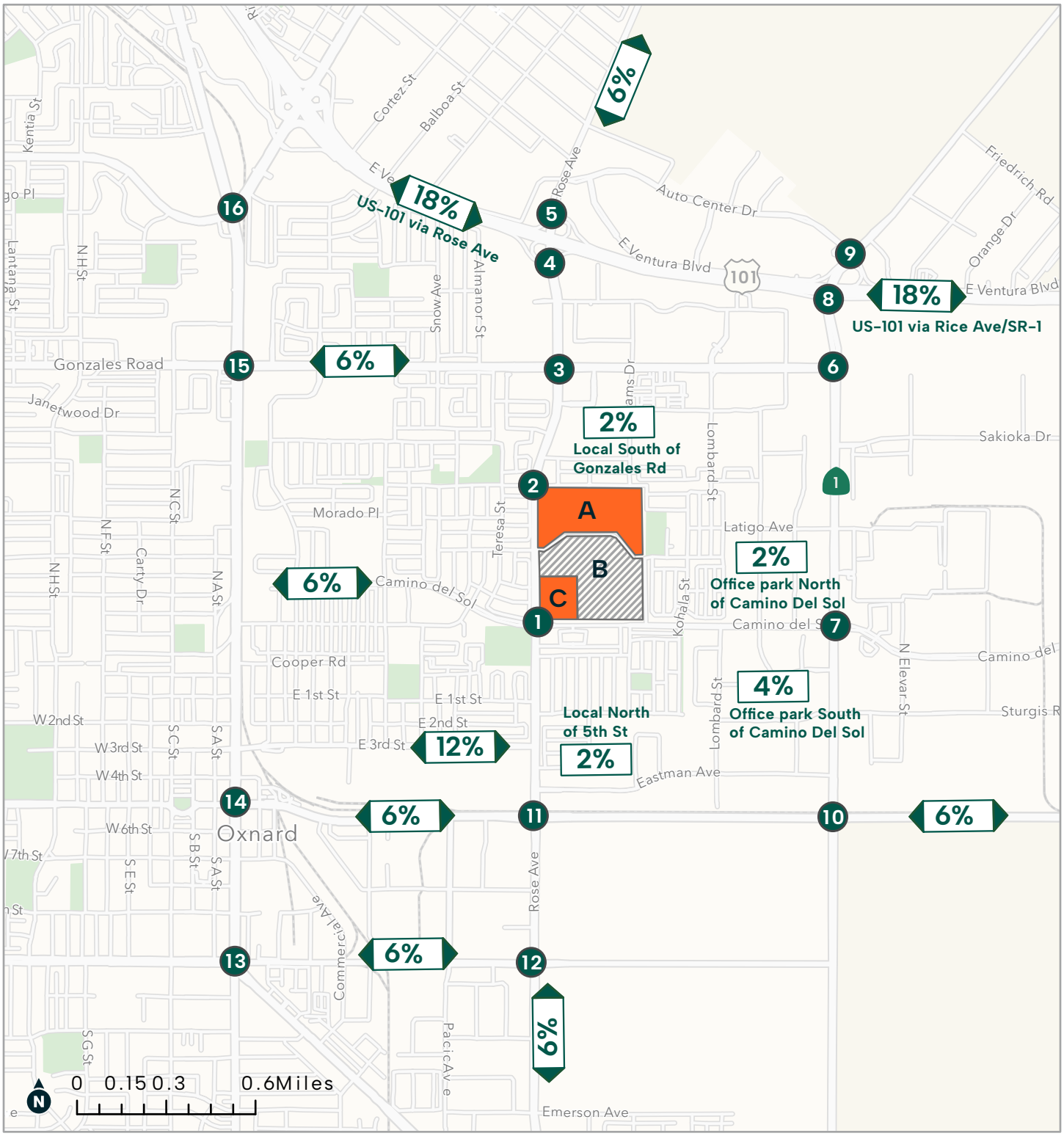


Figure 7. Project Only Traffic Volumes

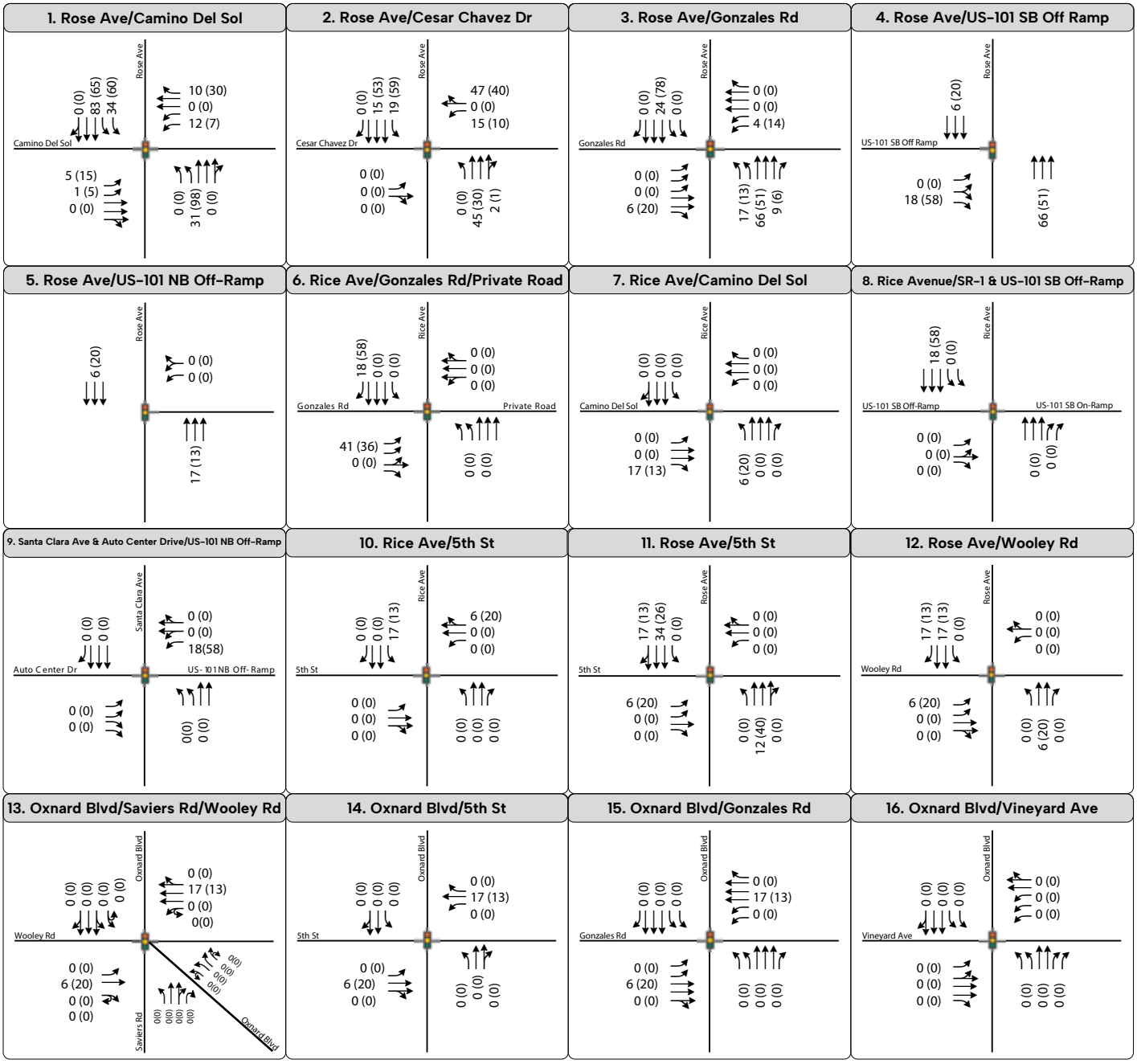


Figure 8. Existing Plus Project Traffic Volumes

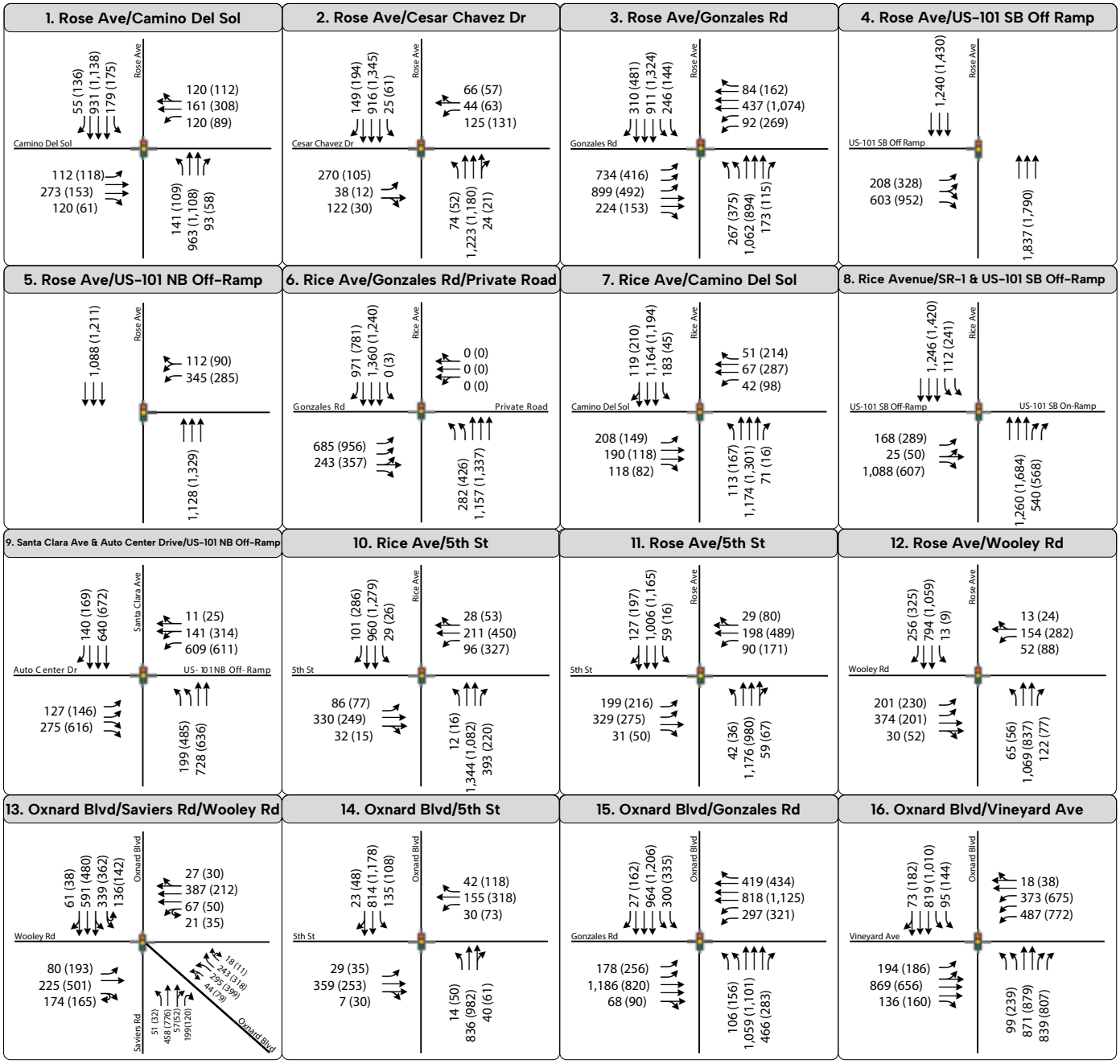
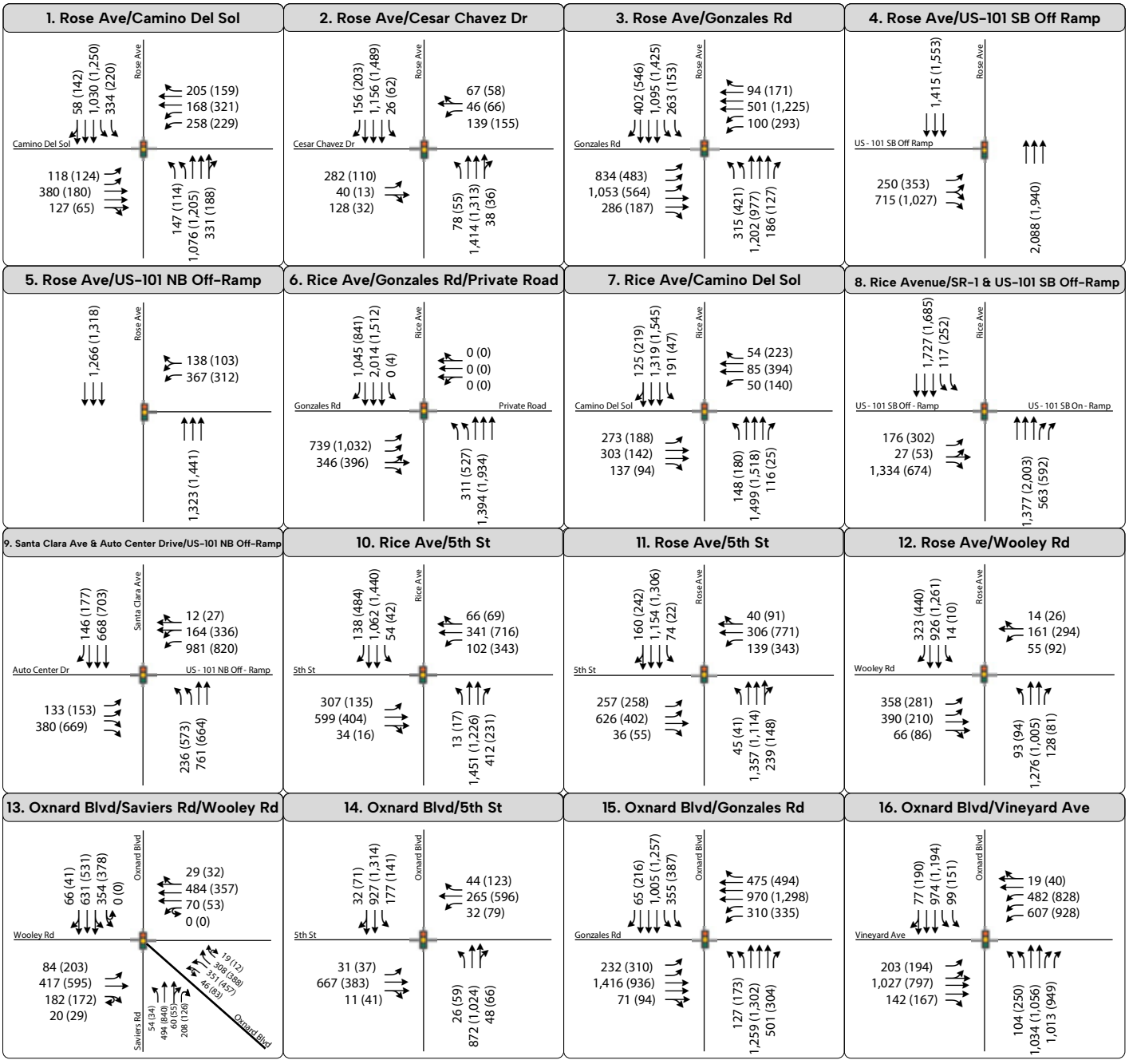


Figure 9. Cumulative Plus Project Traffic Volumes



3.7 Intersection Operations

3.7.1 Existing Conditions (2025)

Under Existing conditions, the following intersections operate with a worse LOS than their Circulation Element criteria (described in Section 3.1) in either the AM or PM peak hour:

- 1 – Rose Avenue & Camino Del Sol (LOS D/E in AM Peak Hour)
- 2 – Rose Avenue & Cesar Chavez Drive (LOS D in AM Peak Hour)
- 3 – Rose Avenue and Gonzales Road (LOS E in PM Peak Hour)
- 10 – Rice Avenue & 5th Street (LOS D in AM and PM Peak Hours)
- 11 – Rose Avenue & 5th Street (LOS D in AM and PM Peak Hours)
- 12 – Rose Avenue & Wooley Road (LOS D in AM and PM Peak Hours)

Delay and LOS results are shown in **Table 3–3** below. It should also be noted that the capacity of the following locations are affected by the presence of two rail lines serving the residents of Oxnard, the Metrolink Ventura County lines and the Amtrak Pacific Surfliner line.

- 10 – Rice Avenue & 5th Street
- 11 – Rose Avenue & 5th Street
- 15 – Oxnard Boulevard & Gonzales Road
- 16 – Oxnard Boulevard & Vineyard Avenue

These four locations are affected by the rail line gate down time that occurs in the AM/PM peak commute hours and subsequently this has been reflected in the intersection capacity calculations resulting in additional delay to drivers not attributable to the Project.

Table 3-3: Existing and Existing Plus Project Level of Service

ID	Intersection		Existing (2025)		Existing Plus Project (2025)	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	Rose Ave & Camino Del Sol	AM	54	**D**	59	**E**
		PM	36	**D**	45	**D**
2	Rose Ave & Cesar Chavez Dr	AM	39	**D**	42	**D**
		PM	22	C	29	C
3	Rose Ave & Gonzales Rd	AM	51	D	52	D
		PM	54	D	56	**E**
4	Rose Ave & US-101 SB Off-Ramp	AM	18	B	18	B
		PM	26	C	27	C
5	Rose Ave & US-101 NB Off-Ramp	AM	14	B	14	B
		PM	14	B	13	B
6	Rice Ave & Gonzales Rd	AM	28	C	30	C
		PM	33	C	35	C
7	Rice Ave & Camino Del Sol	AM	19	B	19	B
		PM	23	C	23	C
8	Rice Ave & US-101 SB Off-Ramp	AM	11	B	11	B
		PM	17	B	17	B
9	Santa Clara Ave & Auto Cntr Dr/US-101 NB Off	AM	19	B	19	B
		PM	23	C	24	C
10	Rice Ave & 5th St	AM	36	**D**	36	**D**
		PM	49	**D**	49	**D**
11	Rose Ave & 5th St	AM	44	**D**	45	**D**
		PM	50	**D**	51	**D**
12	Rose Ave & Wooley Rd	AM	40	**D**	40	**D**
		PM	42	**D**	43	**D**
13	Oxnard Blvd & Wooley Rd/Saviers Rd	AM	105	F	106	F
		PM	139	F	141	F
14	Oxnard Blvd & 5th St	AM	23	C	24	C
		PM	26	C	27	C
15	Oxnard Blvd & Gonzales Rd	AM	51	D	51	D
		PM	52	D	53	D
16	Oxnard Blvd & Vineyard Ave	AM	50	D	50	D
		PM	50	D	50	D

Source: Fehr & Peers, 2025
Note: **Bolded** letters represented LOS grades below that intersection's Circulation Element "acceptable" threshold. These thresholds are further described in Section 3.1.

3.7.2 Cumulative (2032) Conditions

With the addition of Project trips, the resulting LOS for the study intersections is shown in **Table 3-4**. Queue lengths (95th percentile) were also calculated for the PM peak hour at the US 101 Off-Ramps to Rose Avenue and Rice Avenue. None of the queue lengths are expected to exceed the available ramp storage under the Cumulative Plus Project conditions.

3.7.3 Analysis of Operational Improvements

Goal ICS-3.2 of the City's 2030 General Plan, Chapter 4.4 (Circulation Element)[7] defines a citywide minimum standard of LOS of C for all intersections, with several exceptions listed below. Among study intersections, the following have a minimum LOS of D. "Five Points" has a minimum LOS of F.

- Rose Avenue & Gonzales Road (Int. 3)
- "Five Points", Oxnard Boulevard & Wooley Road/Saviers Road (Int. 13)
- Oxnard Boulevard & Gonzales Road (Int. 15)
- Oxnard Boulevard & Vineyard Avenue (Int. 16)

No study intersections were degraded below their Cumulative Base LOS by the addition of Project trips. Signal timing optimization was evaluated but yielded minimal improvement, with most intersections operating at similar delay levels despite the optimization. The resulting LOS results following signal timing improvements are shown in **Table 3-4** below. Detailed intersection operations analysis results are included in **Appendix B**.

Eastbound-Westbound Left Turn Phases at Rose Avenue & Cesar Chavez

Under Existing conditions, Intersection 2 (Rose Ave. & Cesar Chavez Dr.) features permissive east- and westbound left turns. While the left-turn volumes are relatively high (EB: 270 AM/105 PM; WB: 110 AM/121 PM), opposing peak hour through volumes are low (less than 70), thus left-turn/opposing through products are below 12,000[8]. While the Project will minimally increase the westbound left-turn volume (shown in **Figures 7-9**), the left-turn/opposing product will remain well below 100,000 in both peak hours. Despite the low product estimates, protected left turns were analyzed for the east- and westbound approaches under the Existing Plus Project and Cumulative Plus Project scenarios, due to the following considerations:

- Project would add active land uses, which could increase pedestrian/bike activity
- Cesar Chavez Avenue features a "sharrowed" bike route, which connects users to the bike lanes on Rose Avenue
- Intersection features two bus stops, which attract pedestrian activity. There are also nearby destinations including a park and an elementary and high school
- Improve consistency with nearby intersection of Rose Ave. and Jacinto Dr./Camino De La Luna, which has protected east- and westbound left turns

The protected left turns would improve separation between vehicles, pedestrians, and cyclists. This modification adds two signal phases, requiring optimized signal timing. Under Cumulative Plus Project, the eastbound left-turn phase (unrelated to Project traffic) was placed on minimum recall to manage queues.

[7] City of Oxnard Development Services Department, Planning Division, *2030 General Plan Goals and Policies*, Adopted October 2011 (amended through December 2016)

[8] Section 4F.06 of 2026 California MUTCD identifies a turning–opposing through product threshold of 100,000 for protected-only left turns. While intended for new signals and presented alongside other volume and delay guidance, it serves as a benchmark that the subject opposing through volumes are relatively low.

Table 3-4: Cumulative Base, Cumulative with Project and Cumulative Plus Project & Signal Optimization LOS

ID	Intersection		C Base		C+P		C+P Opt.	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	Rose Ave & Camino Del Sol	AM	58	**E**	64	**E**	26	C
		PM	35	**D**	38	**D**	20	C
2	Rose Ave & Cesar Chavez Dr	AM	37	**D**	41	**D**	41	**D**
		PM	23	C	30	C	30	C
3	Rose Ave & Gonzales Rd	AM	56	**E**	57	**E**	57	**E**
		PM	62	**E**	67	**E**	65	**E**
4	Rose Ave & US-101 SB Off-Ramp	AM	21	C	22	C	22	C
		PM	26	C	30	C	30	C
5	Rose Ave & US-101 NB Off-Ramp	AM	15	B	15	B	15	B
		PM	15	B	15	B	15	B
6	Rice Ave & Gonzales Rd	AM	50	**D**	54	**D**	40	**D**
		PM	40	**D**	42	**D**	40	**D**
7	Rice Ave & Camino Del Sol	AM	27	C	27	C	25	C
		PM	32	C	33	C	33	C
8	Rice Ave & US-101 SB Off-Ramp	AM	13	B	13	B	12	B
		PM	19	B	19	B	18	B
9	Santa Clara Ave & Auto Center Dr/US-101 NB Off-Ramp	AM	26	C	26	C	26	C
		PM	28	C	30	C	29	C
10	Rice Ave & 5th St	AM	71	**E**	73	**E**	67	**E**
		PM	71	**E**	74	**E**	66	**E**
11	Rose Ave & 5th St	AM	83	**F**	83	**F**	79	**E**
		PM	94	**F**	95	**F**	78	**E**
12	Rose Ave & Wooley Rd	AM	46	**D**	47	**D**	42	**D**
		PM	48	**D**	49	**D**	45	**D**
13	Oxnard Blvd & Wooley Rd/Saviers Rd	AM	144	F	147	F	145	F
		PM	168	F	171	F	152	F
14	Oxnard Blvd & 5th St	AM	32	C	33	C	32	C
		PM	52	**D**	55	**D**	43	**D**
15	Oxnard Blvd & Gonzales Rd	AM	60	**E**	60	**E**	59	**E**
		PM	61	**E**	61	**E**	59	**E**
16	Oxnard Blvd & Vineyard Ave	AM	60	**E**	60	**E**	60	**E**
		PM	66	**E**	66	**E**	61	**E**

Source: Fehr & Peers, 2025
Note: **Bolded** letters represent LOS grades below that intersection's Circulation Element "acceptable" threshold. These thresholds are further described in Section 3.1. C Base = Cumulative Base (2032), C+P = Cumulative + Project (2032)

3.7.4 Left-Turn Queuing Analysis

Following coordination with City staff regarding left-turn queuing, it was determined that there were four intersections where the Project would contribute to more than 10% of left-turn movement traffic volumes:

- Rose Avenue & Camino Del Sol (Int. 1)
- Rose Avenue & Cesar Chavez Drive (Int. 2)
- Rice Avenue & Camino Del Sol (Int. 7)
- Rice Avenue & 5th Street (Int. 10)

Table 3-5 and **Table 3-6** show 95th percentile queue lengths for left-turn movements at the four intersections identified for analysis. None of the four locations would have a left turn pocket exceeded due to Project traffic, except for the intersection of Rose Avenue and Camino Del Sol. However, this intersection was undergoing improvements during the 2025 counts and "Existing" analysis. As of 2026, the intersection has been improved and consists of its' "Cumulative" lane configuration, including dual left turn lanes on all approaches. Thus, the "Existing + Project" at this intersection is for comparison purposes only and does not represent a real storage pocket exceedance that would need to be addressed.

Table 3-5: Left-Turn Queuing Analysis, AM Peak Hour

ID	Intersection	Movement	Storage Length (ft)	95th Percentile Queue Length (ft)							
				Existing (2025)	E+P	C Base	C+P	Ex Exceeds Storage?	E+P Exceeds Storage?	CB Exceeds Storage?	CPP Exceeds Storage?
1	Rose Ave & Camino Del Sol	EBL	205	**225**	**225**	100	125	**Yes**[1]	**Yes**[1]	No	No
		WBL	260	225	225	225	250	No	No	No	No
		NBL	230	**275**	**275**	150	150	**Yes**[1]	**Yes**[1]	No	No
		SBL	345	300	**350**	275	300	No[1]	**Yes**[1]	No	No
2	Rose Ave & Cesar Chavez Dr	EBL	200	**400**	**475**	**425**	**525**	**Yes**	**Yes**	**Yes**	**Yes**
		WBL	100	**175**	**250**	**200**	**275**	**Yes**	**Yes**	**Yes**	**Yes**
		NBL	225	150	125	150	150	No	No	No	No
		SBL	200	25	50	25	50	No	No	No	No
7	Rice Ave & Camino Del Sol	EBL	280	250	250	**350**	**350**	No	No	**Yes**	**Yes**
		WBL	275	50	50	75	75	No	No	No	No
		NBL	280	50	75	100	100	No	No	No	No
		SBL	280	100	100	125	125	No	No	No	No
10	Rice Ave & 5th St	EBL	210	145	145	**610**	**610**	No	No	**Yes**	**Yes**
		WBL	220	160	160	195	195	No	No	No	No
		NBL	190	20	20	35	35	No	No	No	No
		SBL	345	25	75	140	155	No	No	No	No

Source: Fehr & Peers, 2026
Note: E+P = Existing + Project (2025), C Base = Cumulative Base (2032), C+P = Cumulative + Project (2032); **Bolded** cells represent scenarios where 95th percentile queues exceed available storage length.
[1] The intersection of Rose Ave & Camino Del Sol was undergoing improvements during the 2025 counts and "Existing" analysis. As of 2026, the intersection has been improved and consists of its' "Cumulative" lane configuration. Thus, the "Existing + Project" at this intersection is for comparison purposes only and does not represent a real scenario.

Table 3-6: Left-Turn Queueing Analysis, PM Peak Hour

ID	Intersection	Movement	Storage Length (ft)	95th Percentile Queue Length (ft)							
				Existing (2025)	E+P	C Base	C+P	Ex Exceeds Storage?	E+P Exceeds Storage?	CB Exceeds Storage?	CPP Exceeds Storage?
1	Rose Ave & Camino Del Sol	EBL	205	200	**225**	100	125	No[1]	**Yes**[1]	No	No
		WBL	260	175	175	200	225	No[1]	No[1]	No	No
		NBL	230	225	225	125	125	No[1]	No[1]	No	No
		SBL	345	200	300	150	175	No[1]	No[1]	No	No
2	Rose Ave & Cesar Chavez Dr	EBL	200	175	200	200	200	No	No	No	No
		WBL	100	**200**	**225**	**225**	**300**	**Yes**	**Yes**	**Yes**	**Yes**
		NBL	225	100	75	100	100	No	No	No	No
		SBL	200	25	100	25	100	No	No	No	No
7	Rice Ave & Camino Del Sol	EBL	280	200	200	**300**	**325**	No	No	**Yes**	**Yes**
		WBL	275	125	125	175	175	No	No	No	No
		NBL	280	100	100	125	150	No	No	No	No
		SBL	280	25	25	50	50	No	No	No	No
10	Rice Ave & 5th St	EBL	210	140	140	**250**	**250**	No	No	**Yes**	**Yes**
		WBL	220	**545**	**545**	**745**	**755**	**Yes**	**Yes**	**Yes**	**Yes**
		NBL	190	35	35	65	65	No	No	No	No
		SBL	345	25	50	100	150	No	No	No	No

Source: Fehr & Peers, 2026
Note: E+P = Existing + Project (2025), C Base = Cumulative Base (2032), C+P = Cumulative + Project (2032); **Bolded** cells represent scenarios where 95th percentile queues exceed available storage length.
[1] The intersection of Rose Ave & Camino Del Sol was undergoing improvements during the 2025 counts and "Existing" analysis. As of 2026, the intersection has been improved and consists of its' "Cumulative" lane configuration. Thus, the "Existing + Project" at this intersection is for comparison purposes only and does not represent a real scenario.

3.8 Site Access & Circulation Evaluation

To access Planning Area 'A', the project is adding new private streets with an alignment perpendicular to the public right-of-way along Cesar Chavez Drive, Gibraltar Street, and Jacinto Drive. To access Planning Area 'C', the Project is adding two new private streets with an alignment perpendicular to the public right-of-way along Camino Del Sol and Rose Avenue. These new streets will provide access to the Project Site as shown in **Figure 2.** The roadway and driveway design would be designed to comply with the City of Oxnard's standards for the design of new streets and driveways. In accordance with a prior development agreement between the City of Oxnard, Gold Coast Transit, OUHSD, and any future developers of the Project Site, the proposed development would include reconstruction of the existing bus stop along Rose Avenue adjacent to Del Sol Park (Int. 1), as well as the installation of new bus stops at the following intersections:

- Rose Avenue & Cesar Chavez Drive (Int. 2)
    - Construction of a bus stop at the northeast corner
    - Construction of a bus stop at the southwest corner
- Rose Avenue & Camino de la Luna/Jacinto Drive
    - Construction of a bus stop at the southwest corner
    - Construction of a bus stop at the northeast corner

The Project would not include permanent lane or street closures that would impede emergency access to nearby properties. Oxnard Fire Station 5 is located west of Rose Avenue and Camino Del Sol, less than half a mile from the Project Site.

4 Project Construction

Short-term adverse traffic and parking impacts could occur in the vicinity of the Project during construction. Additional trips generated by truck deliveries and construction employees could affect traffic flow in the study area. Construction activity could impact traffic along Rose Avenue, Camino Del Sol, and Jacinto Drive. Pedestrian traffic flow near the project site could also be altered as a result of construction. The availability of parking, especially on-street parking in the study area, could be impacted if on-site parking for construction employees were not provided. This chapter identifies guidelines and standards that must be satisfied in a traffic control plan during the construction of the Project to help mitigate the short-term transportation impacts of Project construction.

4.1 Construction Mitigation Plan

The developer must comply with the standard City of Oxnard development permit conditions relating to construction activities. To minimize construction impacts, the Project applicant will submit a Construction Mitigation Plan to the City for review as part of the project approval process. Elements of the proposed plan are described below.

4.1.1 Staging Area

The construction staging area will be determined in consultation with the Project applicant and City staff.

4.1.2 Haul Route

Locally, the following haul routes are available for construction:

- North/South on Rose Avenue to the US-101

4.1.3 Employee Parking

The Project Applicant will ensure that construction period employees can either park on-site or at an off-site location. Off-site parking in the adjacent residential neighborhoods will be prohibited.

4.1.4 Pedestrian Safety

If sidewalks are closed during construction, pedestrians shall be advised of the closure with signage. It may also be necessary for the applicant to provide a protected walkway.

5 Summary and Conclusions

This study was undertaken to analyze the potential traffic deficiencies of the mixed-use development proposed at Maulhardt-Stiles Sub-Neighborhood Plan Project in the City of Oxnard. The following summarizes the findings of this analysis:

- The proposed Project is a mixed-use development that includes a residential component with 950 dwelling units along with 40,000 square feet of commercial/retail space.

- Vehicular access to the Project would be provided by multiple separate driveways on the east, west, north and south sides of the Project site, located on Rose Avenue, Jacinto Drive, Cesar Chavez Drive, Gibraltar Street, to better distribute traffic loads and reduce potential traffic conflicts.

- Sixteen (16) signalized intersections within the City of Oxnard were analyzed for the Project. Five (5) of the analyzed intersections operate at a worse LOS than their General Plan standard under Existing (2025) conditions.

- The proposed Project is expected to generate a net increase of approximately 374 trips during the peak AM hour and 535 trips during the peak PM hour.

- The addition of the Project traffic to the Cumulative Base conditions will not degrade the level of service beyond the Cumulative Base conditions.

- No feasible physical improvements were identified (due to a lack of available right of way) for any of the locations operating at LOS D or worse.

- Optimized signal timings were tested to assess whether intersection operations could be improved. Most locations continue to operate at a similar level of delay and were not substantially improved by the signal timing upgrades.

- The 95th percentile queue lengths for US-101 freeway off ramps at the study intersections on Rose Avenue and Rice Avenue do not currently exceed the storage length on the ramps during the peak AM and peak PM hours.

- The 95th percentile queue length is not projected to exceed the storage length of the US-101 off ramps during the peak AM and peak PM hours under Cumulative plus Project conditions when rounding up to the nearest car length (25 feet).

- Three (3) signalized intersections under cumulative base and cumulative-plus-project conditions are forecasted to experience 95th-percentile queues that exceed existing left-turn storage pocket lengths during the AM and/or PM peak hours: Rose Avenue & Cesar Chavez Drive (Int. 2), Rice Avenue & Camino Del Sol (Int. 7), and Rice Avenue & 5th Street (Int. 11).

- The Project would not degrade any existing or planned transit, pedestrian or bicycle facilities.

Appendix A – Traffic Count Sheets

INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

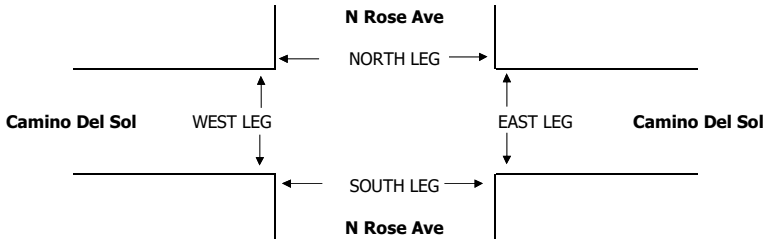
LOCATION: Oxnard
NORTH & SOUTH: N Rose Ave
EAST & WEST: Camino Del Sol

PROJECT #: SC5278
LOCATION #: 1
CONTROL: SIGNAL

NOTES: Construction

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

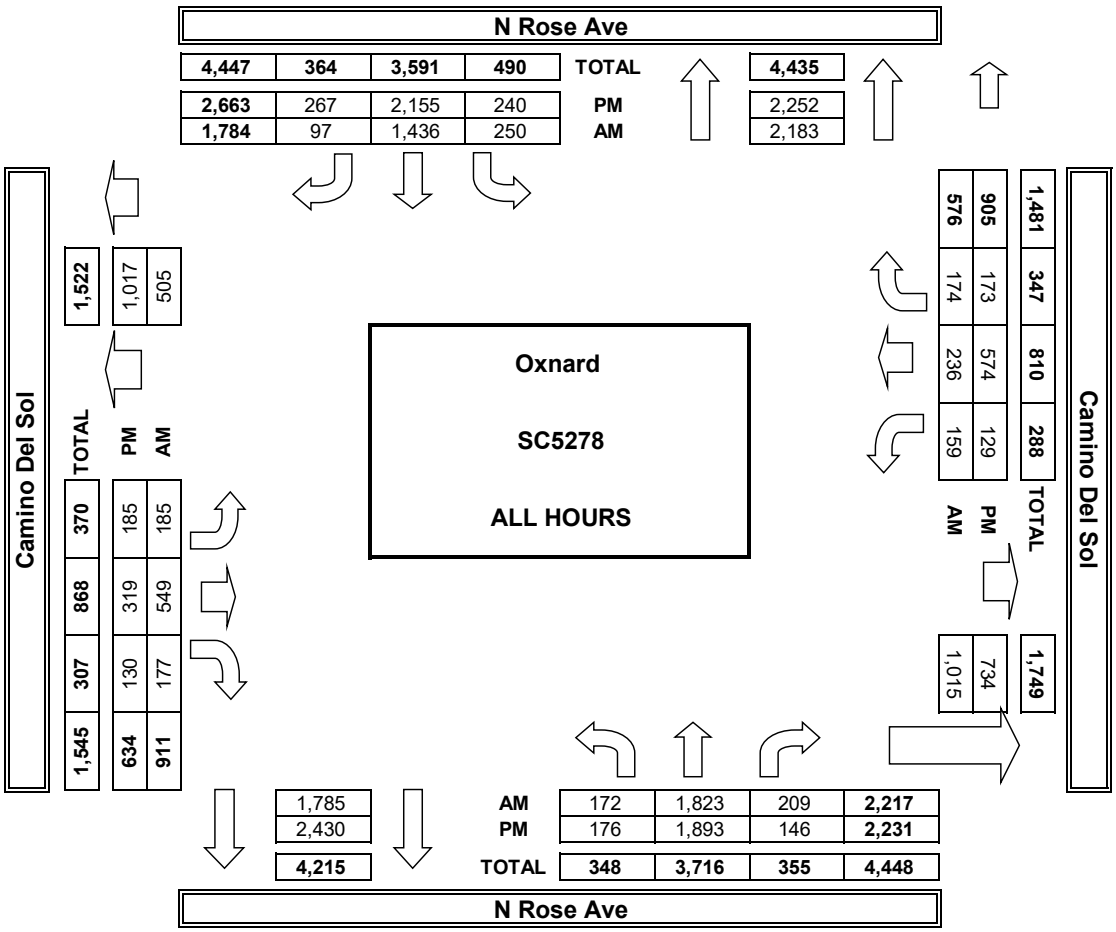
		NORTHBOUND N Rose Ave			SOUTHBOUND N Rose Ave			EASTBOUND Camino Del Sol			WESTBOUND Camino Del Sol				U-TURNS				
	LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 1	ET 2	ER 1	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	6	259	31	28	101	5	26	59	17	9	11	21	573	2	0	0	1	3
	6:45 AM	8	211	34	37	165	9	22	86	10	20	15	17	634	4	0	0	1	5
	7:00 AM	6	182	26	13	120	11	8	69	10	13	30	6	494	1	0	0	0	1
	7:15 AM	15	239	25	27	202	17	22	63	20	12	19	20	681	2	1	0	2	5
	7:30 AM	51	253	21	23	176	15	21	63	31	25	34	30	743	0	0	0	1	1
	7:45 AM	47	222	17	46	257	18	29	76	44	23	52	23	854	1	0	0	0	1
	8:00 AM	28	228	21	42	232	14	35	81	32	24	30	29	796	1	0	0	1	2
	8:15 AM	11	229	34	34	183	8	22	52	13	33	45	28	692	2	0	0	1	3
	VOLUMES	172	1,823	209	250	1,436	97	185	549	177	159	236	174	5,488	13	1	0	7	21
	APPROACH %	8%	82%	9%	14%	80%	5%	20%	60%	19%	28%	41%	30%						
	APP/DEPART	2,217	/	2,183	1,784	/	1,785	911	/	1,015	576	/	505	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	137	932	93	145	848	55	107	272	120	105	161	110	3,092	4	0	0	3	
	APPROACH %	12%	80%	8%	14%	81%	5%	21%	55%	24%	28%	42%	29%						
	PEAK HR FACTOR		0.897			0.816			0.837			0.886		0.904					
	APP/DEPART	1,166	/	1,149	1,048	/	1,077	499	/	513	379	/	353	0					
PM	4:00 PM	14	274	12	30	301	39	24	37	14	13	68	15	841	2	0	0	1	3
	4:15 PM	18	279	10	25	273	32	23	37	9	12	74	13	805	1	0	0	4	5
	4:30 PM	31	234	17	36	253	34	29	35	23	16	84	21	813	2	0	0	5	7
	4:45 PM	23	222	15	25	265	34	30	28	14	18	76	21	771	4	0	0	4	8
	5:00 PM	29	275	16	29	282	36	21	48	15	22	74	27	874	1	0	0	1	2
	5:15 PM	18	218	31	29	287	32	12	34	15	20	73	29	798	2	1	0	7	10
	5:30 PM	21	192	19	32	244	37	24	49	20	12	79	24	753	2	0	0	4	6
	5:45 PM	22	199	26	34	250	23	22	51	20	16	46	23	732	2	0	0	3	5
	VOLUMES	176	1,893	146	240	2,155	267	185	319	130	129	574	173	6,433	16	1	0	29	46
	APPROACH %	8%	85%	7%	9%	81%	10%	29%	50%	21%	14%	63%	19%						
	APP/DEPART	2,231	/	2,252	2,663	/	2,430	634	/	734	905	/	1,017	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	101	1,010	58	115	1,073	136	103	148	61	68	308	82	3,285	8	0	0	14	
	APPROACH %	9%	86%	5%	9%	81%	10%	33%	47%	20%	14%	65%	17%						
	PEAK HR FACTOR		0.917			0.954			0.897			0.937		0.938					
	APP/DEPART	1,177	/	1,195	1,324	/	1,210	312	/	335	472	/	545	0					

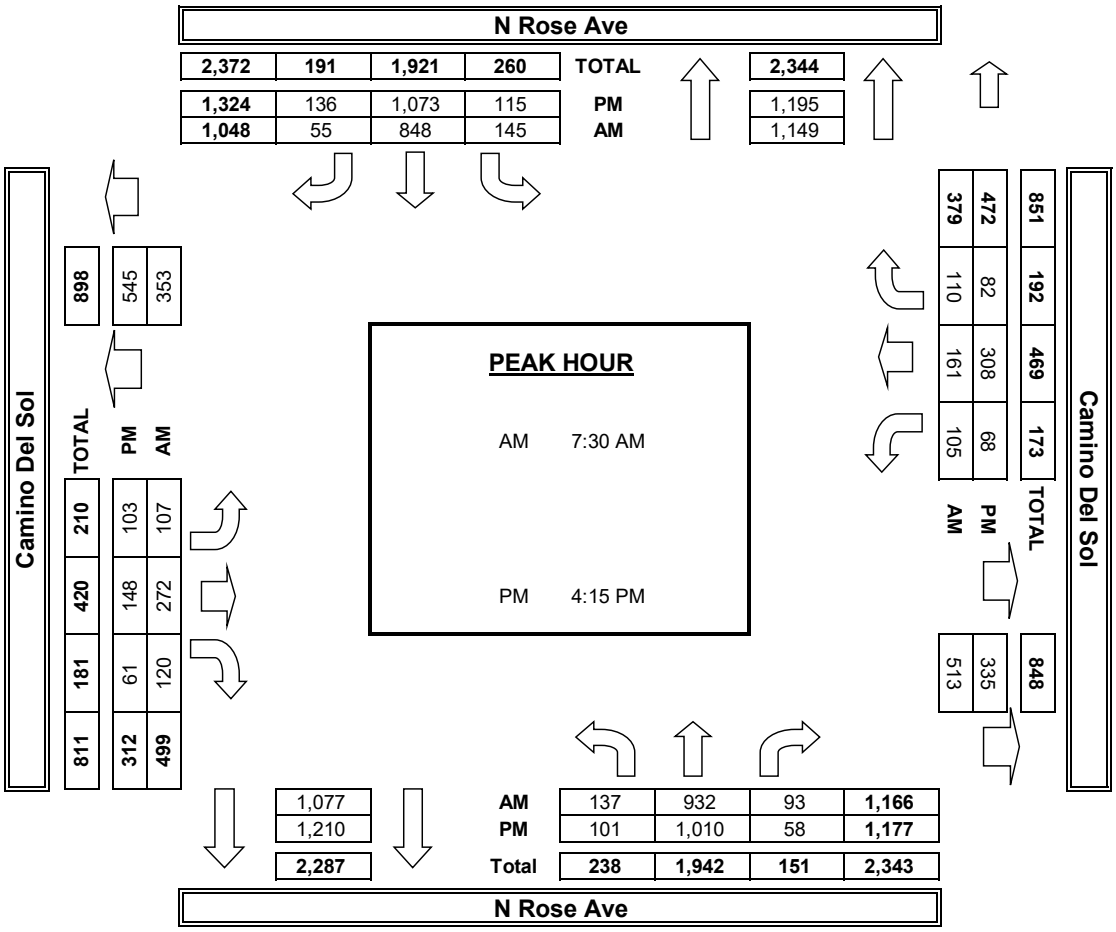


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:45 AM	1	0	1	0	2	1	0	1	0	2	0	0	0	0	0
	7:00 AM	2	4	8	2	16	2	4	8	2	16	0	0	0	0	0
	7:15 AM	0	10	0	0	10	0	10	0	0	10	0	0	0	0	0
	7:30 AM	2	4	5	1	12	2	4	5	0	11	0	0	0	1	1
	7:45 AM	7	4	12	3	26	7	3	11	1	22	0	1	1	2	4
	8:00 AM	9	13	13	2	37	9	10	13	2	34	0	3	0	0	3
	8:15 AM	20	6	14	8	48	20	3	14	8	45	0	3	0	0	3
	TOTAL	41	41	53	16	151	41	34	52	13	140	0	7	1	3	11
	BEGIN PEAK HR			7:30 AM			38	20	43	11	112					
PM	4:00 PM	3	9	8	9	29	3	8	7	8	26	0	1	1	1	3
	4:15 PM	2	5	9	3	19	1	5	7	2	15	1	0	2	1	4
	4:30 PM	1	6	4	0	11	1	5	4	0	10	0	1	0	0	1
	4:45 PM	0	11	6	0	17	0	10	5	0	15	0	1	1	0	2
	5:00 PM	1	4	4	2	11	1	2	2	1	6	0	2	2	1	5
	5:15 PM	0	0	1	5	6	0	0	0	3	3	0	0	1	2	3
	5:30 PM	0	1	1	2	4	0	1	1	0	2	0	0	0	2	2
	5:45 PM	0	1	4	4	9	0	1	2	3	6	0	0	2	1	3
	TOTAL	7	37	37	25	106	6	32	28	17	83	1	5	9	8	23
	BEGIN PEAK HR			4:15 PM			3	22	18	3	46					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

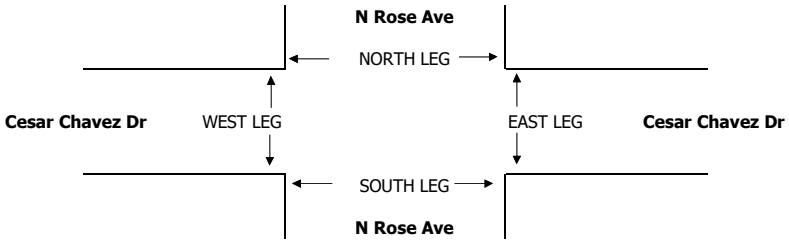
LOCATION: Oxnard
NORTH & SOUTH: N Rose Ave
EAST & WEST: Cesar Chavez Dr

PROJECT #: SC5278
LOCATION #: 2
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

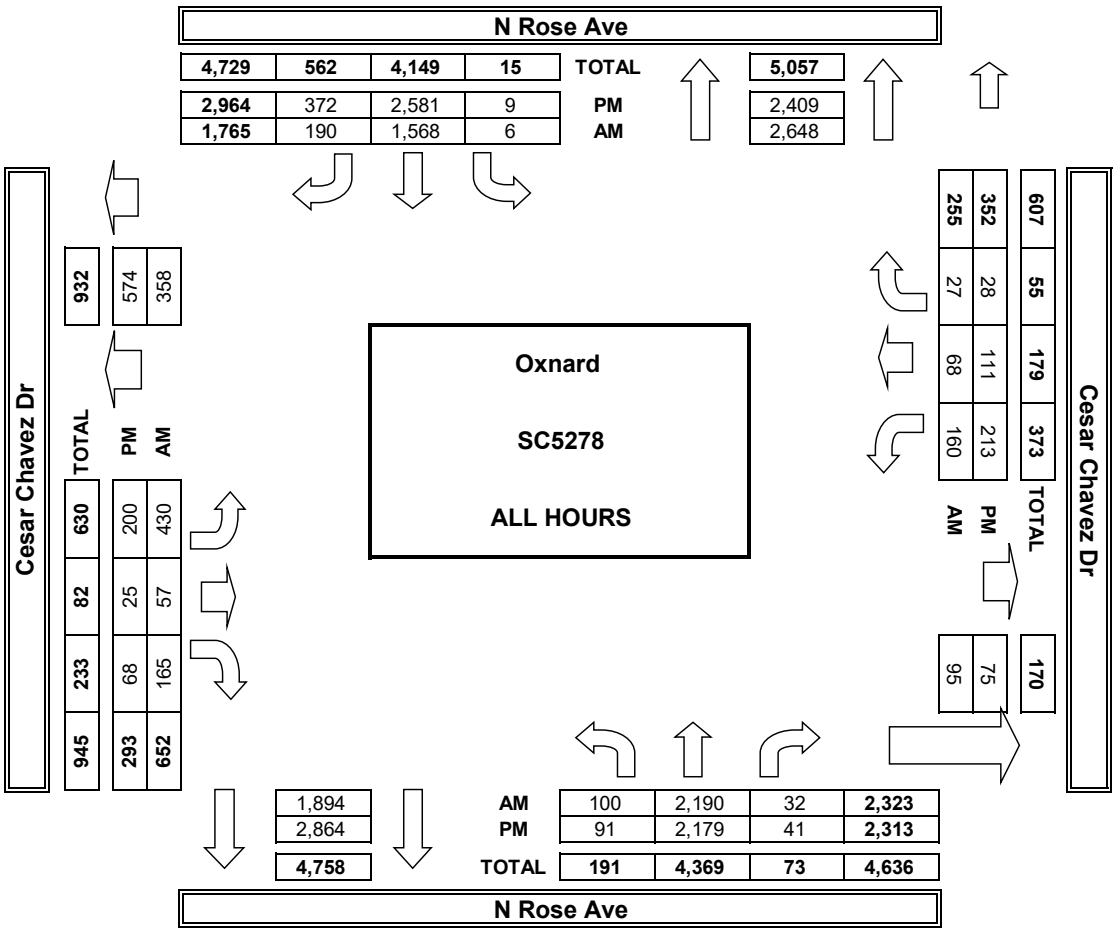
		NORTHBOUND N Rose Ave			SOUTHBOUND N Rose Ave			EASTBOUND Cesar Chavez Dr			WESTBOUND Cesar Chavez Dr				U-TURNS				
	LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 0.5	ET 0.5	ER 1	WL 1	WT 1	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	2	286	3	0	139	6	41	3	2	10	1	0	493	0	0	0	0	0
	6:45 AM	1	261	2	0	192	8	32	2	12	9	0	3	522	0	0	0	0	0
	7:00 AM	6	206	4	0	125	10	42	5	5	12	3	0	418	0	0	0	0	0
	7:15 AM	17	291	6	1	235	32	50	2	14	16	13	2	679	0	0	0	0	0
	7:30 AM	21	289	3	0	203	46	79	12	26	34	12	5	730	0	0	0	0	0
	7:45 AM	21	278	8	2	231	52	84	13	41	36	15	5	786	0	1	0	0	1
	8:00 AM	15	320	5	2	232	19	57	11	41	24	4	7	737	0	0	0	0	0
	8:15 AM	17	259	1	1	211	17	45	9	24	19	20	5	628	1	0	0	0	1
	VOLUMES	100	2,190	32	6	1,568	190	430	57	165	160	68	27	4,995	1	1	0	0	2
	APPROACH %	4%	94%	1%	0%	89%	11%	66%	9%	25%	63%	27%	11%						
	APP/DEPART	2,323	/	2,648	1,765	/	1,894	652	/	95	255	/	358	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	74	1,178	22	5	901	149	270	38	122	110	44	19	2,933	0	1	0	0	
	APPROACH %	6%	92%	2%	0%	85%	14%	63%	9%	28%	64%	25%	11%						
	PEAK HR FACTOR		0.937			0.923			0.779			0.772		0.932					
	APP/DEPART	1,274	/	1,468	1,056	/	1,133	430	/	65	173	/	267	0					
PM	4:00 PM	7	299	3	0	341	24	23	5	11	21	15	4	753	0	0	0	0	0
	4:15 PM	12	310	5	0	305	43	22	2	7	27	11	8	752	0	0	0	0	0
	4:30 PM	13	263	6	0	319	56	22	3	6	29	18	3	738	1	1	0	0	2
	4:45 PM	10	285	3	1	339	45	25	3	9	27	19	1	767	0	0	0	0	0
	5:00 PM	16	292	6	0	329	50	36	4	8	38	15	5	799	0	0	0	0	0
	5:15 PM	7	259	4	2	338	56	20	5	5	29	9	2	736	0	0	0	0	0
	5:30 PM	9	250	6	1	316	46	27	1	12	22	17	4	711	1	0	0	0	1
	5:45 PM	17	221	8	5	294	52	25	2	10	20	7	1	662	0	1	0	0	1
	VOLUMES	91	2,179	41	9	2,581	372	200	25	68	213	111	28	5,922	2	2	0	0	4
	APPROACH %	4%	94%	2%	0%	87%	13%	68%	9%	23%	61%	32%	8%						
	APP/DEPART	2,313	/	2,409	2,964	/	2,864	293	/	75	352	/	574	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	51	1,150	20	1	1,292	194	105	12	30	121	63	17	3,058	1	1	0	0	
	APPROACH %	4%	94%	2%	0%	87%	13%	71%	8%	20%	60%	31%	8%						
	PEAK HR FACTOR		0.934			0.966			0.766			0.866		0.957					
	APP/DEPART	1,222	/	1,273	1,488	/	1,444	147	/	33	201	/	308	0					

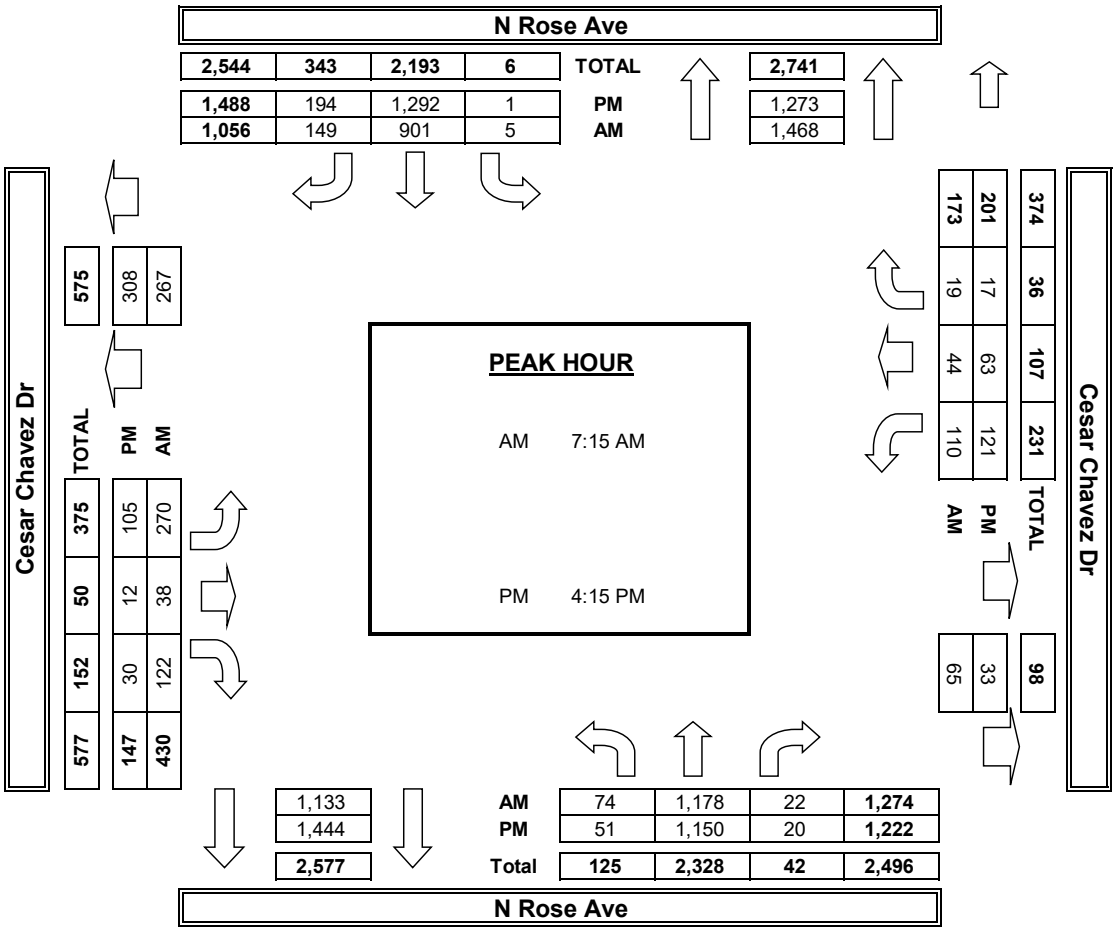


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	6:45 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	7:00 AM	1	0	0	3	4	1	0	0	3	4	0	0	0	0	0
	7:15 AM	7	1	0	1	9	6	0	0	1	7	1	1	0	0	2
	7:30 AM	2	1	1	0	4	1	0	1	0	2	1	1	0	0	2
	7:45 AM	0	2	1	1	4	0	1	0	0	1	0	1	1	1	3
	8:00 AM	3	0	0	0	3	3	0	0	0	3	0	0	0	0	0
	8:15 AM	1	1	0	0	2	1	1	0	0	2	0	0	0	0	0
	TOTAL	16	5	2	5	28	13	2	1	4	20	3	3	1	1	8
	BEGIN PEAK HR			7:15 AM			10	1	1	1	13					
PM	4:00 PM	1	2	1	4	8	1	1	1	2	5	0	1	0	2	3
	4:15 PM	1	0	1	1	3	1	0	0	1	2	0	0	1	0	1
	4:30 PM	1	1	0	2	4	1	1	0	2	4	0	0	0	0	0
	4:45 PM	1	0	0	1	2	1	0	0	1	2	0	0	0	0	0
	5:00 PM	1	0	1	3	5	0	0	0	2	2	1	0	1	1	3
	5:15 PM	1	0	3	5	9	1	0	1	3	5	0	0	2	2	4
	5:30 PM	2	0	0	5	7	1	0	0	1	2	1	0	0	4	5
	5:45 PM	0	1	1	3	5	0	0	0	2	2	0	1	1	1	3
	TOTAL	8	4	7	24	43	6	2	2	14	24	2	2	5	10	19
	BEGIN PEAK HR			4:15 PM			3	1	0	6	10					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

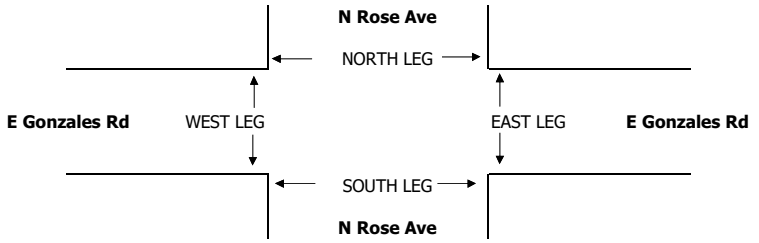
LOCATION: Oxnard
NORTH & SOUTH: N Rose Ave
EAST & WEST: E Gonzales Rd

PROJECT #: SC5278
LOCATION #: 3
CONTROL: SIGNAL

NOTES:
Queue NB AM

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

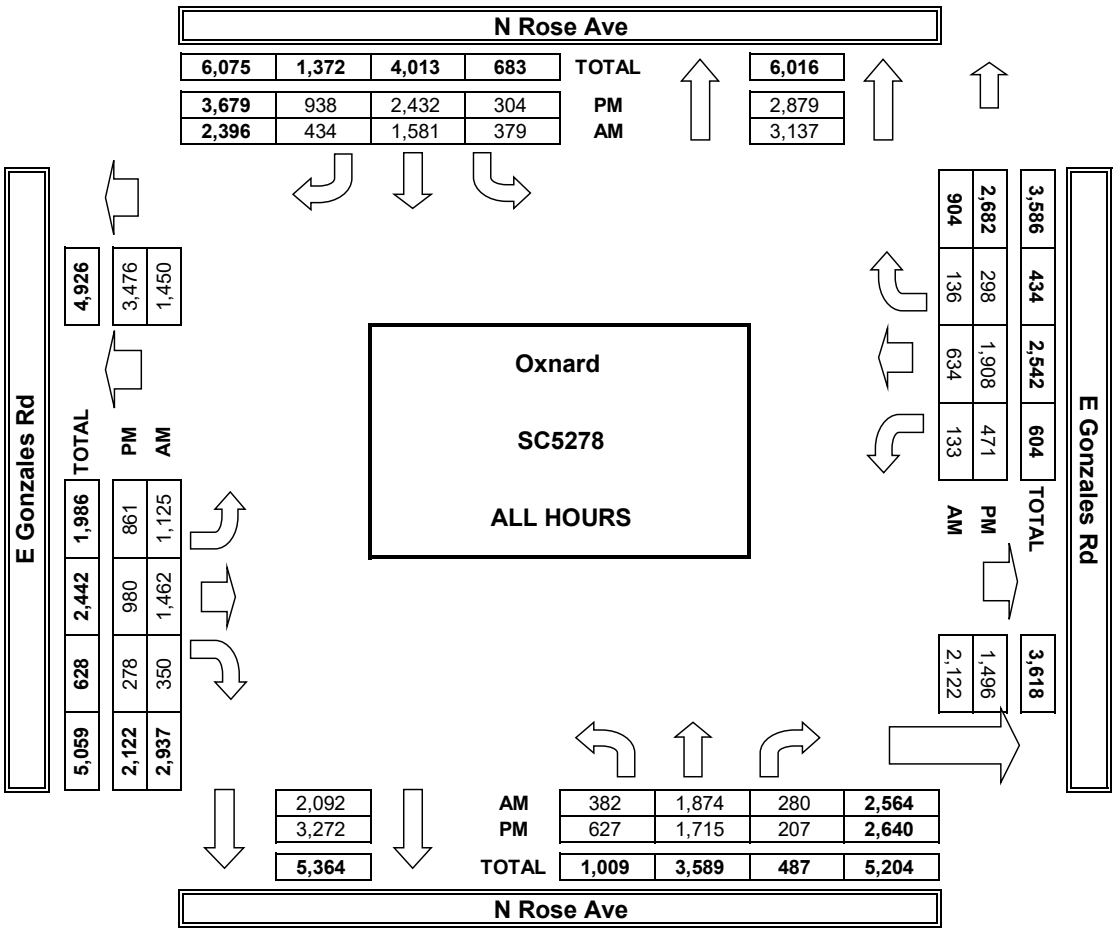
		NORTHBOUND N Rose Ave			SOUTHBOUND N Rose Ave			EASTBOUND E Gonzales Rd			WESTBOUND E Gonzales Rd				U-TURNS				
	LANES:	NL 2	NT 3	NR 1	SL 2	ST 3	SR 1	EL 3	ET 2	ER 1	WL 1	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	34	239	29	31	134	16	91	114	27	8	37	9	769	0	0	0	0	0
	6:45 AM	32	215	40	30	183	19	98	160	44	14	44	9	888	2	0	0	0	2
	7:00 AM	38	182	17	27	168	38	80	107	22	8	45	17	749	5	1	0	0	6
	7:15 AM	46	242	30	46	209	51	122	182	39	16	71	17	1,071	3	0	0	0	3
	7:30 AM	44	259	29	32	233	62	222	235	49	18	80	16	1,279	4	1	0	0	5
	7:45 AM	58	275	51	68	237	70	175	247	48	25	133	18	1,405	2	0	0	0	2
	8:00 AM	64	270	57	69	187	72	203	255	68	26	92	30	1,393	6	0	0	1	7
	8:15 AM	66	192	27	76	230	106	134	162	53	18	132	20	1,216	6	0	0	0	6
	VOLUMES	382	1,874	280	379	1,581	434	1,125	1,462	350	133	634	136	8,801	28	2	0	1	31
	APPROACH %	15%	73%	11%	16%	66%	18%	38%	50%	12%	15%	70%	15%						
	APP/DEPART	2,564	/	3,137	2,396	/	2,092	2,937	/	2,122	904	/	1,450	0					
	BEGIN PEAK HR	7:30 AM																	
	VOLUMES	232	996	164	245	887	310	734	899	218	87	437	84	5,313	18	1	0	1	
	APPROACH %	16%	71%	12%	17%	61%	21%	40%	49%	12%	14%	72%	14%						
	PEAK HR FACTOR		0.888			0.876			0.880			0.865		0.944					
	APP/DEPART	1,410	/	1,815	1,443	/	1,210	1,851	/	1,309	609	/	979	0					
PM	4:00 PM	82	229	28	50	262	126	135	142	40	61	208	39	1,402	16	0	1	0	17
	4:15 PM	94	224	37	40	316	106	126	98	37	46	213	33	1,370	8	0	2	0	10
	4:30 PM	56	201	32	31	308	125	104	116	33	62	237	41	1,346	14	2	0	0	16
	4:45 PM	89	206	26	41	297	101	114	133	41	50	254	42	1,394	13	1	0	0	14
	5:00 PM	82	254	24	30	338	150	98	114	35	74	300	42	1,541	13	2	0	2	17
	5:15 PM	86	182	27	37	303	105	100	129	24	67	283	37	1,380	9	0	0	0	9
	5:30 PM	72	236	17	37	329	98	100	124	35	55	192	32	1,327	10	0	0	1	11
	5:45 PM	66	183	16	38	279	127	84	124	33	56	221	32	1,259	8	0	0	2	10
	VOLUMES	627	1,715	207	304	2,432	938	861	980	278	471	1,908	298	11,123	91	5	3	5	104
	APPROACH %	24%	65%	8%	8%	66%	25%	41%	46%	13%	18%	71%	11%						
	APP/DEPART	2,640	/	2,879	3,679	/	3,272	2,122	/	1,496	2,682	/	3,476	0					
	BEGIN PEAK HR	4:30 PM																	
	VOLUMES	313	843	109	139	1,246	481	416	492	133	253	1,074	162	5,717	49	5	0	2	
	APPROACH %	24%	64%	8%	7%	67%	26%	40%	47%	13%	17%	72%	11%						
	PEAK HR FACTOR		0.881			0.900			0.904			0.892		0.917					
	APP/DEPART	1,314	/	1,426	1,871	/	1,681	1,041	/	742	1,491	/	1,868	0					

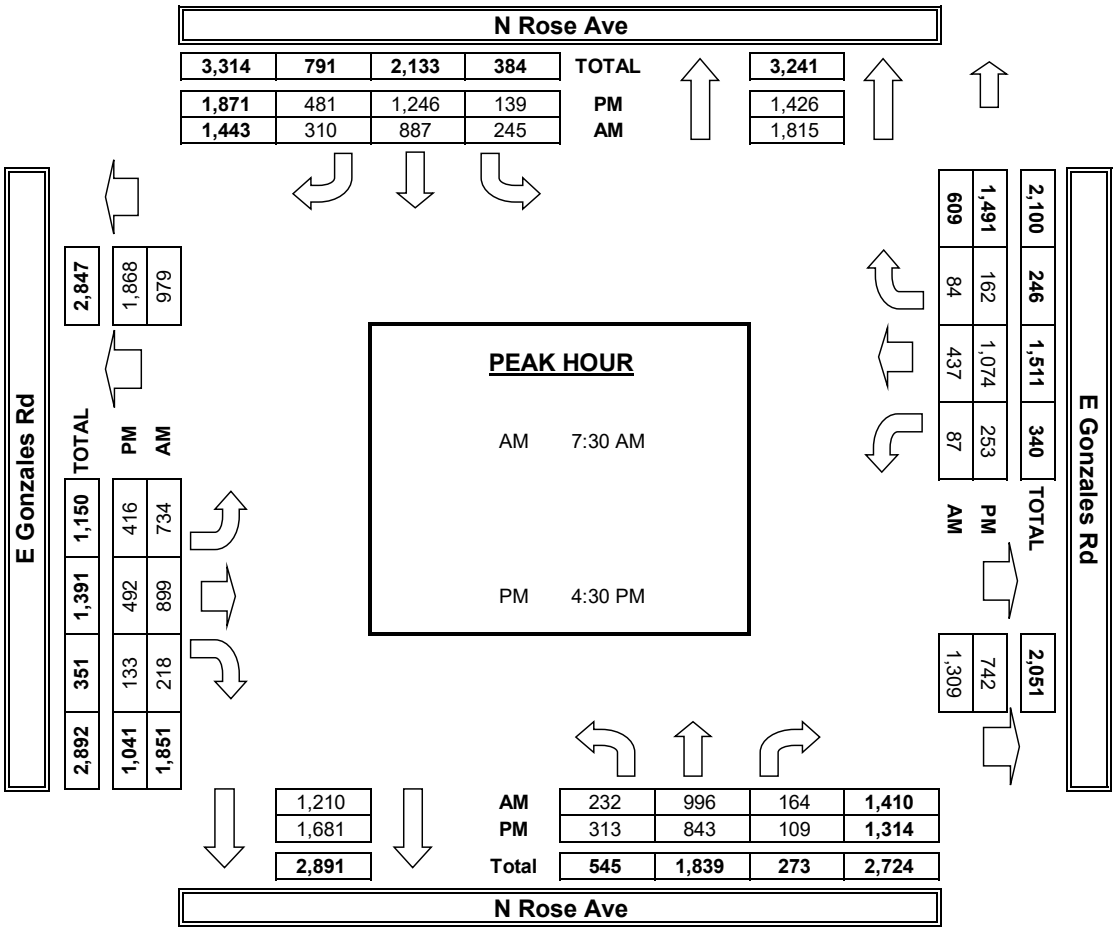


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	1	2	1	4	0	0	1	1	2	0	1	1	0	2
	6:45 AM	1	0	2	0	3	0	0	1	0	1	1	0	1	0	2
	7:00 AM	1	2	1	0	4	1	1	0	0	2	0	1	1	0	2
	7:15 AM	1	1	0	1	3	1	1	0	1	3	0	0	0	0	0
	7:30 AM	1	1	1	1	4	1	1	1	1	4	0	0	0	0	0
	7:45 AM	3	5	1	2	11	3	5	0	1	9	0	0	1	1	2
	8:00 AM	3	1	5	1	10	3	0	3	0	6	0	1	2	1	4
	8:15 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	TOTAL	10	12	12	6	40	9	8	6	4	27	1	4	6	2	13
	BEGIN PEAK HR	7:30 AM					7	6	4	2	19					
PM	4:00 PM	2	8	1	10	21	2	7	1	9	19	0	1	0	1	2
	4:15 PM	6	5	4	8	23	2	4	3	6	15	4	1	1	2	8
	4:30 PM	1	2	0	9	12	1	2	0	8	11	0	0	0	1	1
	4:45 PM	1	5	1	10	17	1	5	0	10	16	0	0	1	0	1
	5:00 PM	5	3	0	10	18	5	2	0	9	16	0	1	0	1	2
	5:15 PM	3	6	3	8	20	2	3	2	7	14	1	3	1	1	6
	5:30 PM	4	7	3	5	19	3	4	1	4	12	1	3	2	1	7
	5:45 PM	1	5	2	6	14	0	3	1	5	9	1	2	1	1	5
	TOTAL	23	41	14	66	144	16	30	8	58	112	7	11	6	8	32
	BEGIN PEAK HR	4:30 PM					9	12	2	34	57					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

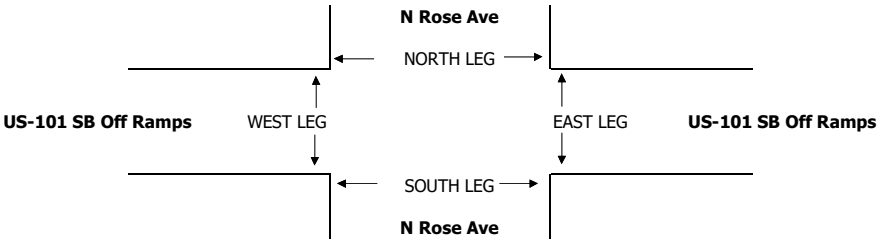
LOCATION: Oxnard
NORTH & SOUTH: N Rose Ave
EAST & WEST: US-101 SB Off Ramps

PROJECT #: SC5278
LOCATION #: 4
CONTROL: SIGNAL

NOTES: Queue NB PM

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

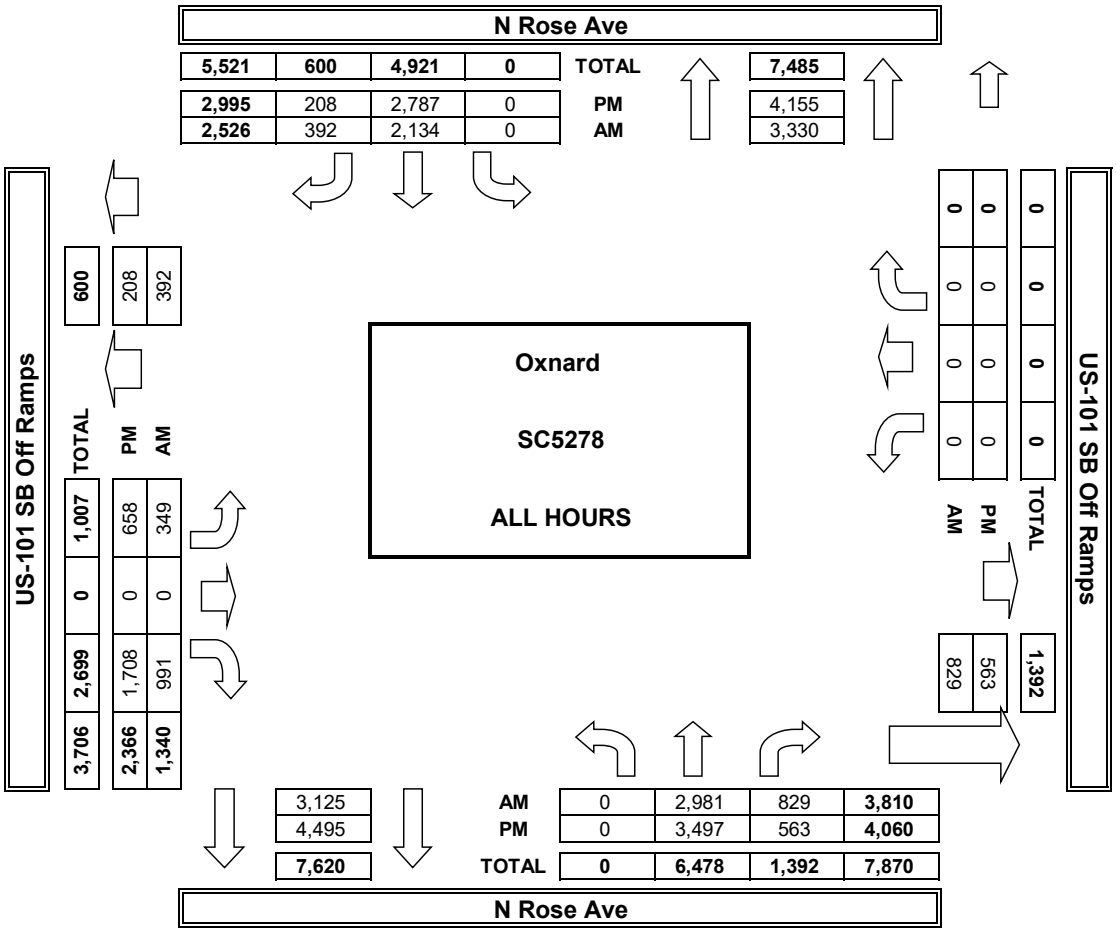
		NORTHBOUND N Rose Ave			SOUTHBOUND N Rose Ave			EASTBOUND US-101 SB Off Ramps			WESTBOUND US-101 SB Off Ramps				U-TURNS				
	LANES:	NL X	NT 3	NR 1	SL X	ST 3	SR 1	EL 1.5	ET X	ER 1.5	WL X	WT X	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	0	304	130	0	199	68	32	0	95	0	0	0	828	0	0	0	0	0
	6:45 AM	0	329	94	0	223	43	36	0	112	0	0	0	837	0	0	0	0	0
	7:00 AM	0	236	84	0	201	48	33	0	84	0	0	0	686	0	0	0	0	0
	7:15 AM	0	341	127	0	277	46	40	0	115	0	0	0	946	0	0	0	0	0
	7:30 AM	0	389	125	0	301	47	41	0	112	0	0	0	1,015	0	0	0	0	0
	7:45 AM	0	514	98	0	319	52	43	0	139	0	0	0	1,165	0	0	0	0	0
	8:00 AM	0	464	77	0	285	43	66	0	166	0	0	0	1,101	0	0	0	0	0
	8:15 AM	0	404	94	0	329	45	58	0	168	0	0	0	1,098	0	0	0	0	0
	VOLUMES	0	2,981	829	0	2,134	392	349	0	991	0	0	0	7,676	0	0	0	0	0
	APPROACH %	0%	78%	22%	0%	84%	16%	26%	0%	74%	0%	0%	0%						
	APP/DEPART	3,810	/	3,330	2,526	/	3,125	1,340	/	829	0	/	392	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	0	1,771	394	0	1,234	187	208	0	585	0	0	0	4,379	0	0	0	0	
	APPROACH %	0%	82%	18%	0%	87%	13%	26%	0%	74%	0%	0%	0%						
	PEAK HR FACTOR		0.884			0.950			0.855			0.000		0.940					
	APP/DEPART	2,165	/	1,979	1,421	/	1,819	793	/	394	0	/	187	0					
PM	4:00 PM	0	462	80	0	364	28	72	0	177	0	0	0	1,183	0	0	0	0	0
	4:15 PM	0	443	70	0	321	35	89	0	226	0	0	0	1,184	0	0	0	0	0
	4:30 PM	0	426	63	0	357	31	80	0	199	0	0	0	1,156	0	0	0	0	0
	4:45 PM	0	427	75	0	335	19	89	0	212	0	0	0	1,157	0	0	0	0	0
	5:00 PM	0	466	56	0	326	27	80	0	217	0	0	0	1,172	0	0	0	0	0
	5:15 PM	0	456	74	0	358	23	92	0	235	0	0	0	1,238	0	0	0	0	0
	5:30 PM	0	409	70	0	327	26	94	0	239	0	0	0	1,165	0	0	0	0	0
	5:45 PM	0	408	75	0	399	19	62	0	203	0	0	0	1,166	0	0	0	0	0
	VOLUMES	0	3,497	563	0	2,787	208	658	0	1,708	0	0	0	9,421	0	0	0	0	0
	APPROACH %	0%	86%	14%	0%	93%	7%	28%	0%	72%	0%	0%	0%						
	APP/DEPART	4,060	/	4,155	2,995	/	4,495	2,366	/	563	0	/	208	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	0	1,739	275	0	1,410	95	328	0	894	0	0	0	4,741	0	0	0	0	
	APPROACH %	0%	86%	14%	0%	94%	6%	27%	0%	73%	0%	0%	0%						
	PEAK HR FACTOR		0.950			0.900			0.917			0.000		0.957					
	APP/DEPART	2,014	/	2,067	1,505	/	2,304	1,222	/	275	0	/	95	0					

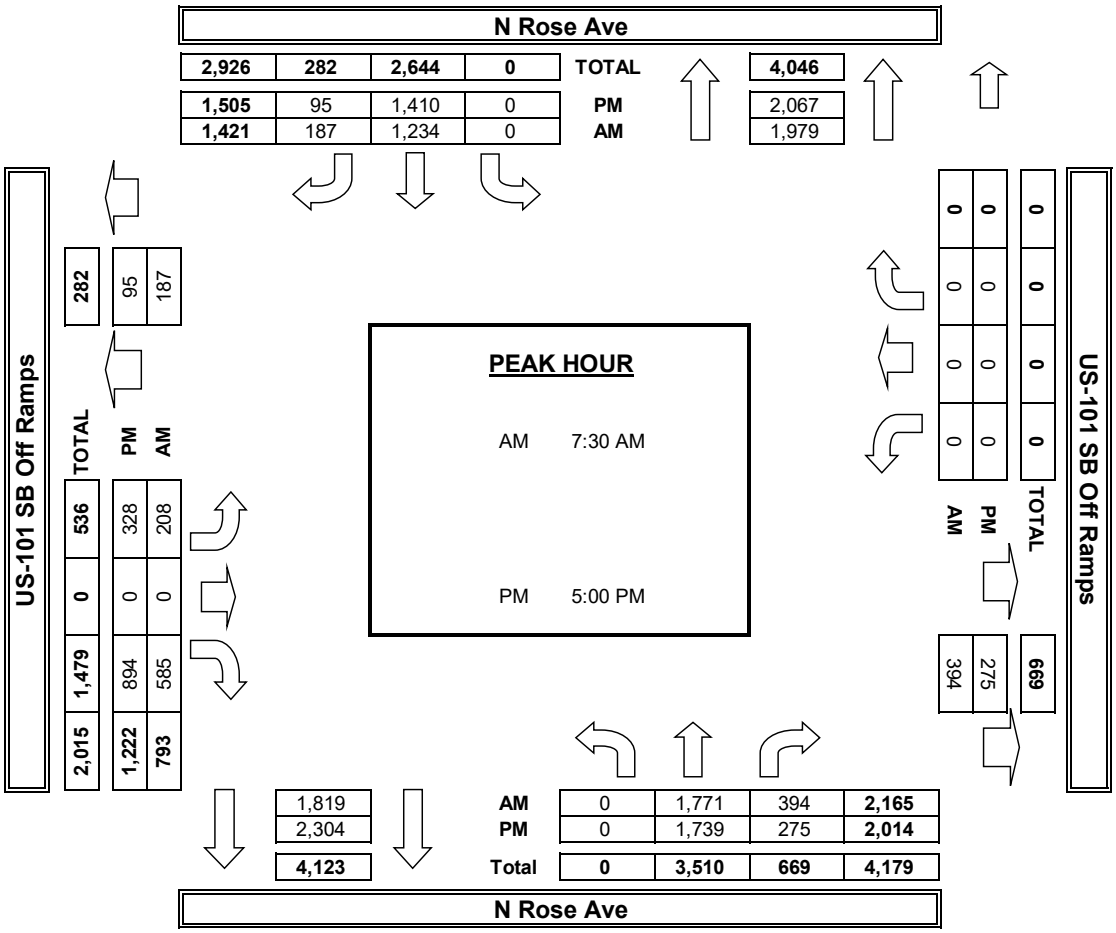


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:45 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	7:00 AM	0	0	0	3	3	0	0	0	2	2	0	0	0	1	1
	7:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	7:30 AM	0	0	2	1	3	0	0	0	0	0	0	0	2	1	3
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	1	2	3	0	0	0	2	2	0	0	1	0	1
	8:15 AM	0	0	0	3	3	0	0	0	2	2	0	0	0	1	1
	TOTAL	0	0	3	11	14	0	0	0	7	7	0	0	3	4	7
	BEGIN PEAK HR			7:30 AM			0	0	0	4	4					
PM	4:00 PM	0	0	0	2	2	0	0	0	1	1	0	0	0	1	1
	4:15 PM	0	0	0	3	3	0	0	0	3	3	0	0	0	0	0
	4:30 PM	0	0	1	2	3	0	0	1	2	3	0	0	0	0	0
	4:45 PM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	5:00 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	5:15 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	TOTAL	0	0	2	10	12	0	0	2	7	9	0	0	0	3	3
	BEGIN PEAK HR			5:00 PM			0	0	0	1	1					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

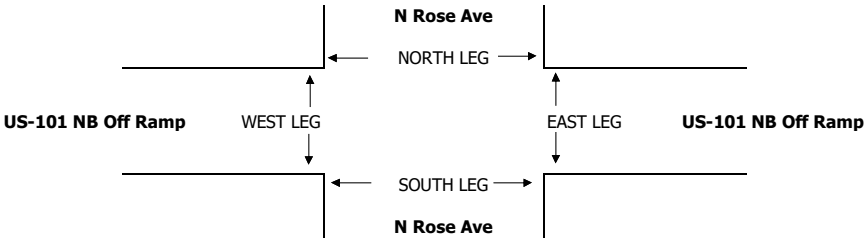
LOCATION: Oxnard
NORTH & SOUTH: N Rose Ave
EAST & WEST: US-101 NB Off Ramp

PROJECT #: SC5278
LOCATION #: 5
CONTROL: SIGNAL

NOTES:
Queue NB PM

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

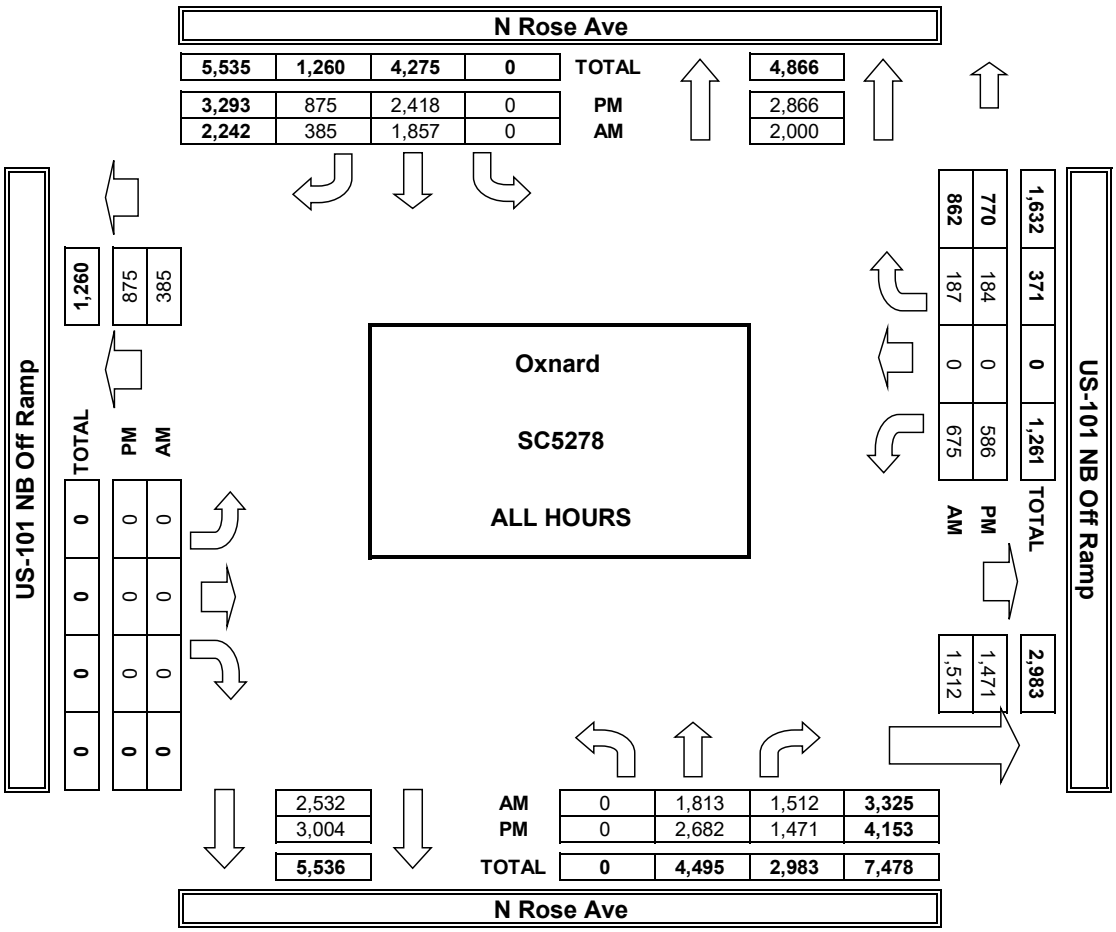
	NORTHBOUND (N Rose Ave)			SOUTHBOUND (N Rose Ave)			EASTBOUND (US-101 NB Off Ramp)			WESTBOUND (US-101 NB Off Ramp)				U-TURNS				
LANES:	NL X	NT 3	NR 1	SL X	ST 3	SR 1	EL X	ET X	ER X	WL 1.5	WT X	WR 0.5	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM 6:30 AM	0	179	157	0	189	45	0	0	0	78	0	17	665	0	0	0	0	0
6:45 AM	0	183	182	0	192	47	0	0	0	85	0	16	705	0	0	0	0	0
7:00 AM	0	149	120	0	170	47	0	0	0	68	0	18	572	0	0	0	0	0
7:15 AM	0	191	190	0	224	39	0	0	0	99	0	24	767	0	0	0	0	0
7:30 AM	0	221	209	0	262	54	0	0	0	86	0	16	848	0	0	0	0	0
7:45 AM	0	301	251	0	277	44	0	0	0	94	0	36	1,003	0	0	0	0	0
8:00 AM	0	323	207	0	258	56	0	0	0	70	0	30	944	0	0	0	0	0
8:15 AM	0	266	196	0	285	53	0	0	0	95	0	30	925	0	0	0	0	0
VOLUMES	0	1,813	1,512	0	1,857	385	0	0	0	675	0	187	6,429	0	0	0	0	0
APPROACH %	0%	55%	45%	0%	83%	17%	0%	0%	0%	78%	0%	22%						
APP/DEPART	3,325	/	2,000	2,242	/	2,532	0	/	1,512	862	/	385	0					
BEGIN PEAK HR		7:30 AM																
VOLUMES	0	1,111	863	0	1,082	207	0	0	0	345	0	112	3,720	0	0	0	0	
APPROACH %	0%	56%	44%	0%	84%	16%	0%	0%		75%	0%	25%						
PEAK HR FACTOR		0.894			0.953			0.000			0.879		0.927					
APP/DEPART	1,974	/	1,223	1,289	/	1,427	0	/	863	457	/	207	0					
PM 4:00 PM	0	348	184	0	326	102	0	0	0	66	0	31	1,057	0	0	0	0	0
4:15 PM	0	349	183	0	293	115	0	0	0	63	0	15	1,018	0	0	0	0	0
4:30 PM	0	341	165	0	312	110	0	0	0	76	0	21	1,025	0	0	0	0	0
4:45 PM	0	313	203	0	276	113	0	0	0	78	0	22	1,005	0	0	0	0	0
5:00 PM	0	318	228	0	293	100	0	0	0	60	0	28	1,027	0	0	0	0	0
5:15 PM	0	344	204	0	310	123	0	0	0	71	0	19	1,071	0	0	0	0	0
5:30 PM	0	354	149	0	276	111	0	0	0	77	0	18	985	0	0	0	0	0
5:45 PM	0	315	155	0	332	101	0	0	0	95	0	30	1,028	0	0	0	0	0
VOLUMES	0	2,682	1,471	0	2,418	875	0	0	0	586	0	184	8,216	0	0	0	0	0
APPROACH %	0%	65%	35%	0%	73%	27%	0%	0%	0%	76%	0%	24%						
APP/DEPART	4,153	/	2,866	3,293	/	3,004	0	/	1,471	770	/	875	0					
BEGIN PEAK HR		4:30 PM																
VOLUMES	0	1,316	800	0	1,191	446	0	0	0	285	0	90	4,128	0	0	0	0	
APPROACH %	0%	62%	38%	0%	73%	27%	0%	0%	0%	76%	0%	24%						
PEAK HR FACTOR		0.965			0.945			0.000			0.938		0.964					
APP/DEPART	2,116	/	1,406	1,637	/	1,476	0	/	800	375	/	446	0					

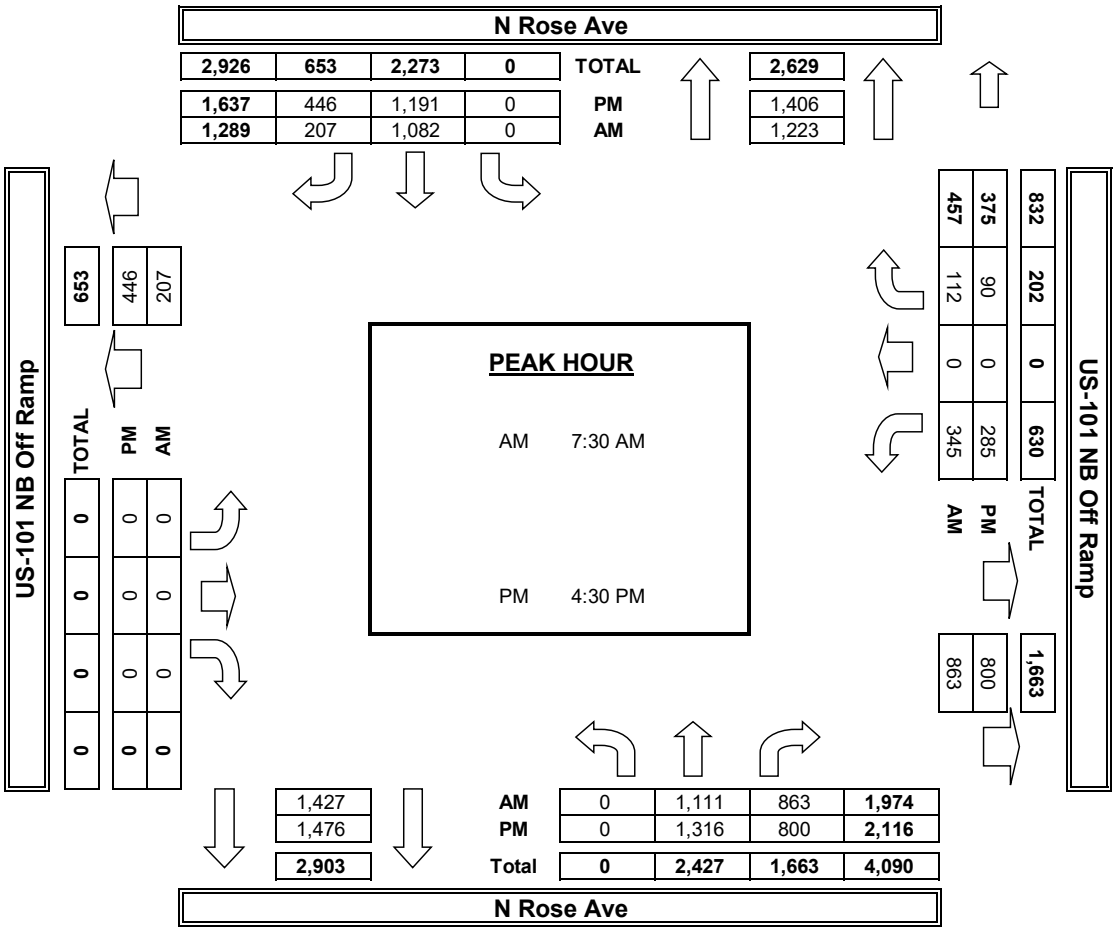


	ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
	N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM 6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	1	1	1	3	0	0	0	0	0	0	1	1	1	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	2	0	2	0	0	1	0	1	0	0	1	0	1
7:45 AM	0	0	2	0	2	0	0	1	0	1	0	0	1	0	1
8:00 AM	0	0	1	2	3	0	0	1	0	1	0	0	0	2	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	1	6	3	10	0	0	3	0	3	0	1	3	3	7
BEGIN PEAK HR	7:30 AM					0	0	3	0	3					
PM 4:00 PM	0	0	2	1	3	0	0	0	0	0	0	0	2	1	3
4:15 PM	0	0	2	1	3	0	0	1	0	1	0	0	1	1	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
5:00 PM	0	0	1	1	2	0	0	0	0	0	0	0	1	1	2
5:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
5:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
TOTAL	0	0	6	6	12	0	0	1	0	1	0	0	5	6	11
BEGIN PEAK HR	4:30 PM					0	0	0	0	0					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

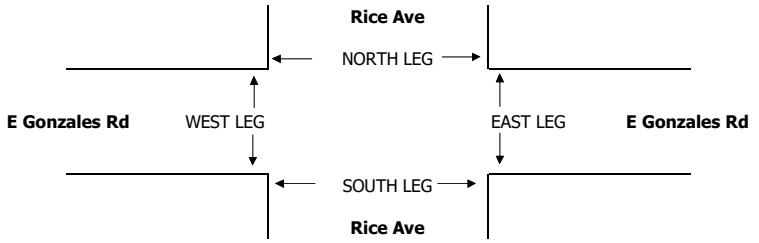
LOCATION: Oxnard
NORTH & SOUTH: Rice Ave
EAST & WEST: E Gonzales Rd

PROJECT #: SC5278
LOCATION #: 6
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

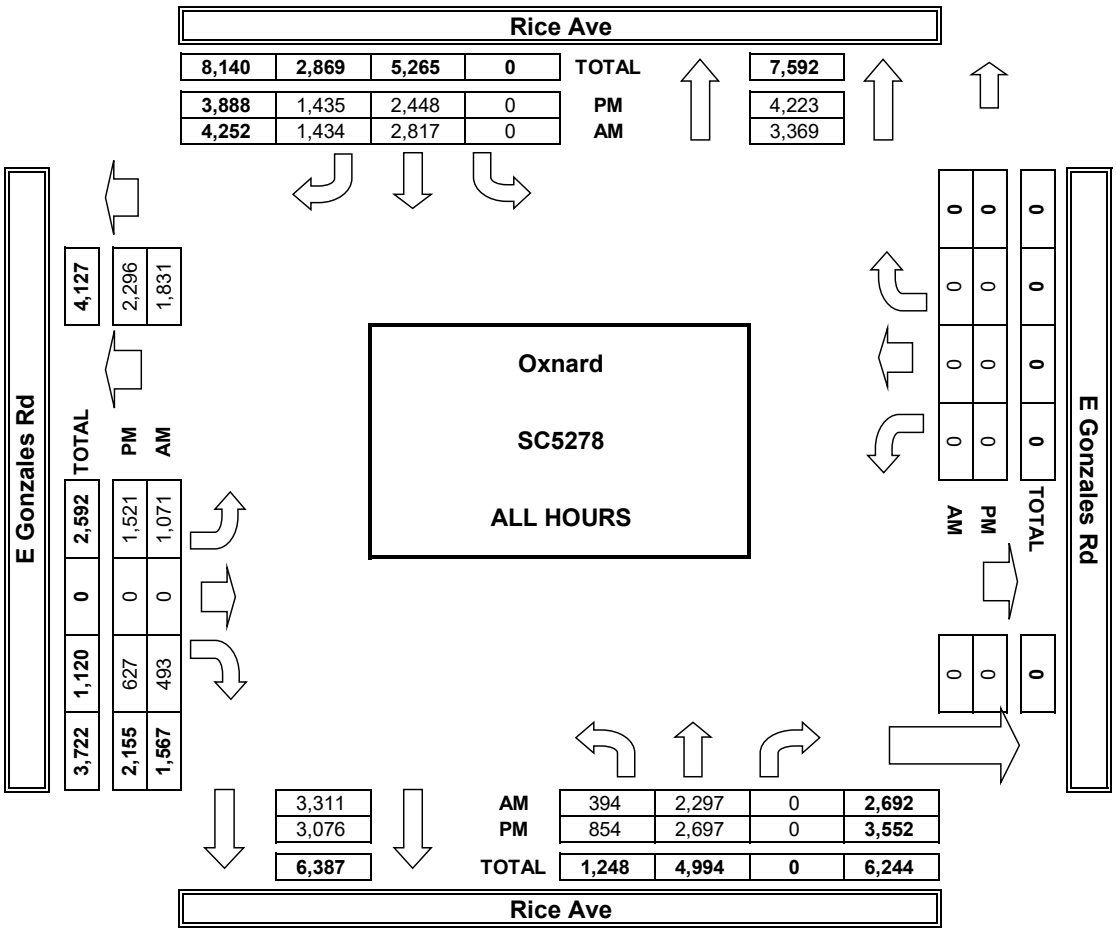
		NORTHBOUND Rice Ave			SOUTHBOUND Rice Ave			EASTBOUND E Gonzales Rd			WESTBOUND E Gonzales Rd				U-TURNS				
	LANES:	NL 2	NT 3	NR X	SL X	ST 3	SR 1	EL 3	ET X	ER 1	WL X	WT X	WR X	TOTAL	NB 0	SB 1	EB 0	WB 0	TTL
AM	6:30 AM	22	265	0	0	354	71	104	0	54	0	0	0	870	0	0	0	0	0
	6:45 AM	29	286	0	0	444	156	92	0	74	0	0	0	1,081	0	0	0	0	0
	7:00 AM	27	260	0	0	311	107	108	0	54	0	0	0	867	0	0	0	0	0
	7:15 AM	35	329	0	0	348	147	123	0	68	0	0	0	1,050	0	0	0	0	0
	7:30 AM	44	277	0	0	344	179	189	0	58	0	0	0	1,091	0	0	0	0	0
	7:45 AM	80	316	0	0	372	238	191	0	63	0	0	0	1,260	0	1	1	0	2
	8:00 AM	67	301	0	0	335	265	150	0	56	0	0	0	1,174	0	0	0	0	0
	8:15 AM	90	263	0	0	309	271	114	0	66	0	0	0	1,113	1	0	2	0	3
	VOLUMES	394	2,297	0	0	2,817	1,434	1,071	0	493	0	0	0	8,511	1	1	3	0	5
	APPROACH %	15%	85%	0%	0%	66%	34%	68%	0%	31%	0%	0%	0%						
	APP/DEPART	2,692	/	3,369	4,252	/	3,311	1,567	/	0	0	/	1,831	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	281	1,157	0	0	1,360	953	644	0	243	0	0	0	4,643	1	1	3	0	
	APPROACH %	20%	80%	0%	0%	59%	41%	72%	0%	27%	0%	0%	0%						
	PEAK HR FACTOR		0.908			0.947			0.873			0.000		0.920					
	APP/DEPART	1,439	/	1,802	2,314	/	1,604	890	/	0	0	/	1,237	0					
PM	4:00 PM	119	424	0	0	288	165	173	0	62	0	0	0	1,231	0	1	0	0	1
	4:15 PM	103	322	0	0	316	188	151	0	68	0	0	0	1,148	0	1	1	0	2
	4:30 PM	115	339	0	0	304	169	237	0	90	0	0	0	1,254	0	0	1	0	1
	4:45 PM	110	385	0	0	308	180	166	0	54	0	0	0	1,203	1	1	2	0	4
	5:00 PM	108	321	0	0	316	195	306	0	111	0	0	0	1,357	0	0	1	0	1
	5:15 PM	92	292	0	0	312	179	206	0	102	0	0	0	1,183	0	2	1	0	3
	5:30 PM	115	337	0	0	285	174	159	0	58	0	0	0	1,128	0	0	1	0	1
	5:45 PM	92	277	0	0	319	185	123	0	82	0	0	0	1,078	0	0	0	0	0
	VOLUMES	854	2,697	0	0	2,448	1,435	1,521	0	627	0	0	0	9,595	1	5	7	0	13
	APPROACH %	24%	76%	0%	0%	63%	37%	71%	0%	29%	0%	0%	0%						
	APP/DEPART	3,552	/	4,223	3,888	/	3,076	2,155	/	0	0	/	2,296	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	425	1,337	0	0	1,240	723	915	0	357	0	0	0	5,006	1	3	5	0	
	APPROACH %	24%	76%	0%	0%	63%	37%	72%	0%	28%	0%	0%	0%						
	PEAK HR FACTOR		0.889			0.962			0.764			0.000		0.922					
	APP/DEPART	1,763	/	2,255	1,966	/	1,598	1,277	/	0	0	/	1,153	0					

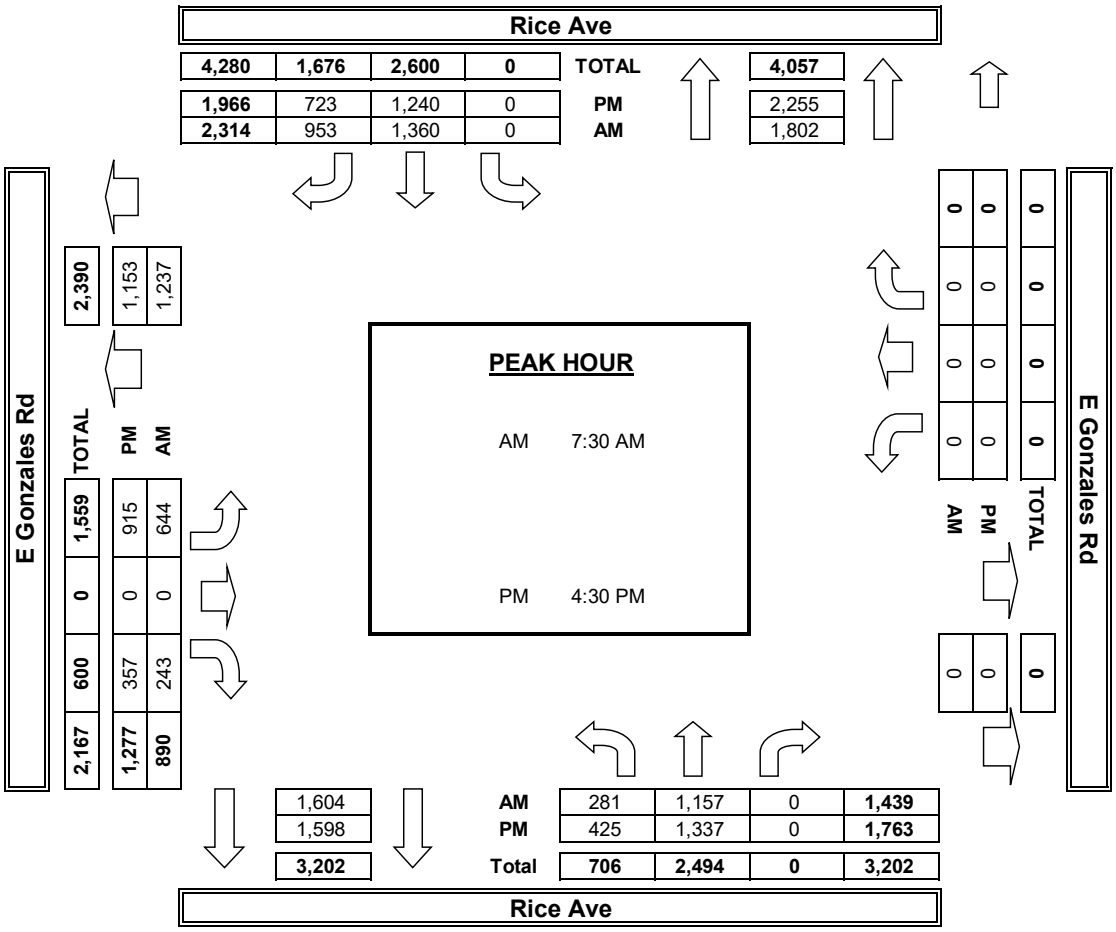


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	8:00 AM	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1
	8:15 AM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	TOTAL	0	2	1	1	4	0	1	0	0	1	0	1	1	1	3
	BEGIN PEAK HR			7:30 AM			0	1	0	0	1					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	1	2	3	0	0	0	0	0	0	0	1	2	3
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2
	5:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	5:45 PM	0	0	0	3	3	0	0	0	2	2	0	0	0	1	1
	TOTAL	0	2	3	5	10	0	0	0	2	2	0	2	3	3	8
	BEGIN PEAK HR			4:30 PM			0	0	0	0	0					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

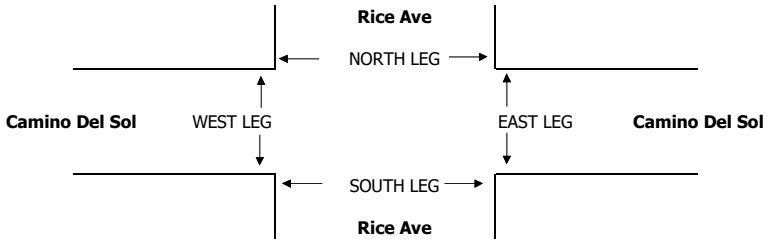
LOCATION: Oxnard
NORTH & SOUTH: Rice Ave
EAST & WEST: Camino Del Sol

PROJECT #: SC5278
LOCATION #: 7
CONTROL: SIGNAL

NOTES: Minor construction WT 8:05-8:30

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

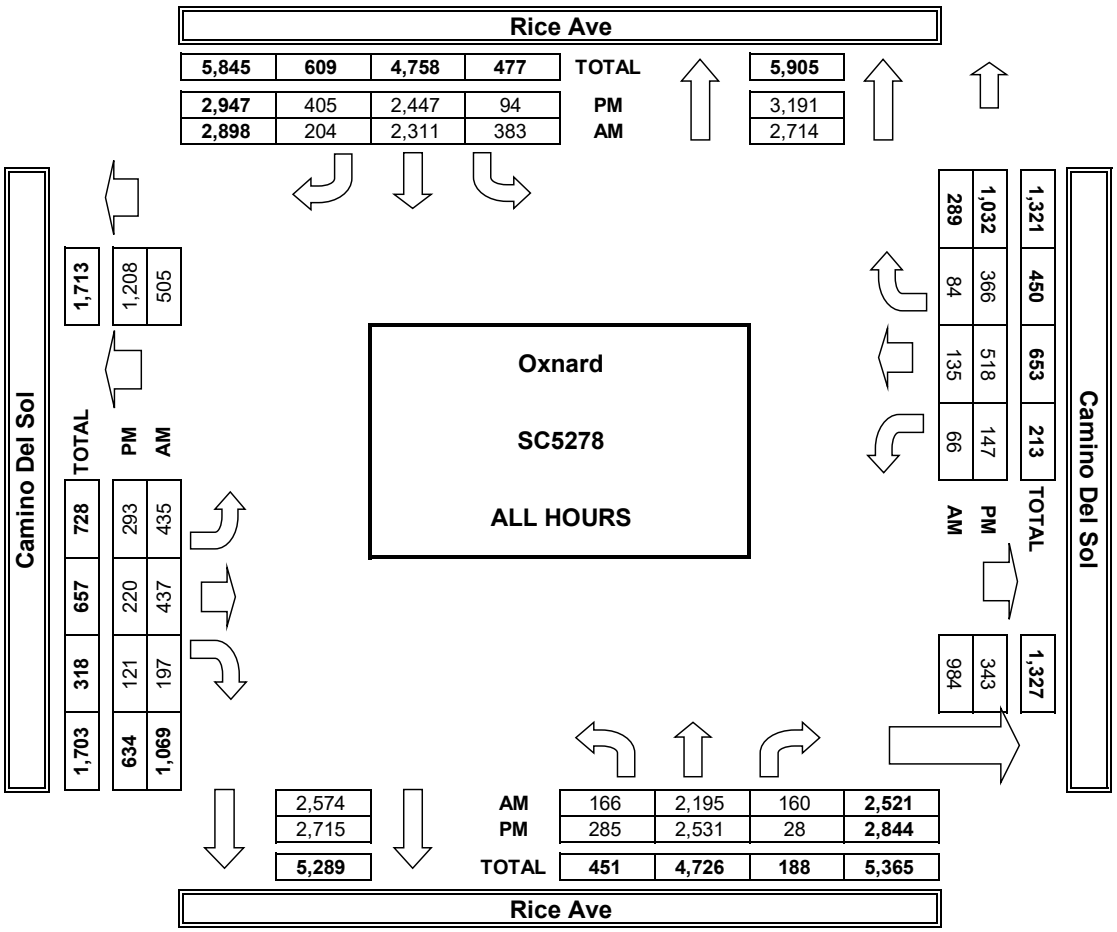
		NORTHBOUND Rice Ave			SOUTHBOUND Rice Ave			EASTBOUND Camino Del Sol			WESTBOUND Camino Del Sol				U-TURNS				
	LANES:	NL 1	NT 3	NR 1	SL 1	ST 3	SR 0	EL 1	ET 2	ER 1	WL 1	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	4	264	19	35	286	16	56	73	36	5	10	6	810	0	0	0	0	0
	6:45 AM	13	266	44	66	337	28	66	72	19	3	14	6	934	0	0	0	0	0
	7:00 AM	14	243	16	56	259	22	69	52	12	10	22	13	788	0	0	0	1	1
	7:15 AM	15	274	22	34	264	25	72	45	21	14	8	9	803	0	0	0	1	1
	7:30 AM	22	283	6	43	289	27	50	43	21	9	25	14	832	0	0	0	1	1
	7:45 AM	37	300	28	49	305	27	59	49	29	8	14	12	917	0	0	0	1	1
	8:00 AM	33	317	15	57	306	40	27	53	30	8	20	16	922	0	0	0	0	0
	8:15 AM	28	248	10	43	265	19	36	50	29	9	22	8	767	0	0	0	0	0
	VOLUMES	166	2,195	160	383	2,311	204	435	437	197	66	135	84	6,777	0	0	0	4	4
	APPROACH %	7%	87%	6%	13%	80%	7%	41%	41%	18%	23%	47%	29%						
	APP/DEPART	2,521	/	2,714	2,898	/	2,574	1,069	/	984	289	/	505	0					
	BEGIN PEAK HR	7:15 AM																	
	VOLUMES	107	1,174	71	183	1,164	119	208	190	101	39	67	51	3,477	0	0	0	3	
	APPROACH %	8%	87%	5%	12%	79%	8%	42%	38%	20%	24%	42%	32%						
	PEAK HR FACTOR		0.926			0.909			0.904			0.816		0.943					
	APP/DEPART	1,352	/	1,433	1,466	/	1,304	499	/	447	160	/	293	0					
PM	4:00 PM	40	315	4	7	294	73	47	28	12	18	68	53	959	0	0	0	0	0
	4:15 PM	44	326	5	9	292	64	28	29	19	9	62	39	926	0	0	0	0	0
	4:30 PM	40	341	5	15	293	53	37	34	16	38	90	67	1,029	0	0	0	0	0
	4:45 PM	29	324	3	15	290	43	37	24	13	22	60	49	909	0	0	0	1	1
	5:00 PM	34	310	3	6	319	50	47	31	21	28	75	59	983	0	0	0	0	0
	5:15 PM	51	293	1	18	336	41	31	31	12	10	61	38	923	0	0	0	0	0
	5:30 PM	24	298	1	11	329	39	28	24	15	12	59	29	869	0	1	0	0	1
	5:45 PM	23	324	6	13	294	42	38	19	13	10	43	32	857	0	0	0	0	0
	VOLUMES	285	2,531	28	94	2,447	405	293	220	121	147	518	366	7,457	0	1	0	1	2
	APPROACH %	10%	89%	1%	3%	83%	14%	46%	35%	19%	14%	50%	35%						
	APP/DEPART	2,844	/	3,191	2,947	/	2,715	634	/	343	1,032	/	1,208	0					
	BEGIN PEAK HR	4:15 PM																	
	VOLUMES	147	1,301	16	45	1,194	210	149	118	69	97	287	214	3,848	0	0	0	1	
	APPROACH %	10%	89%	1%	3%	82%	14%	44%	35%	21%	16%	48%	36%						
	PEAK HR FACTOR		0.948			0.966			0.848			0.768		0.935					
	APP/DEPART	1,464	/	1,664	1,449	/	1,360	336	/	180	599	/	644	0					

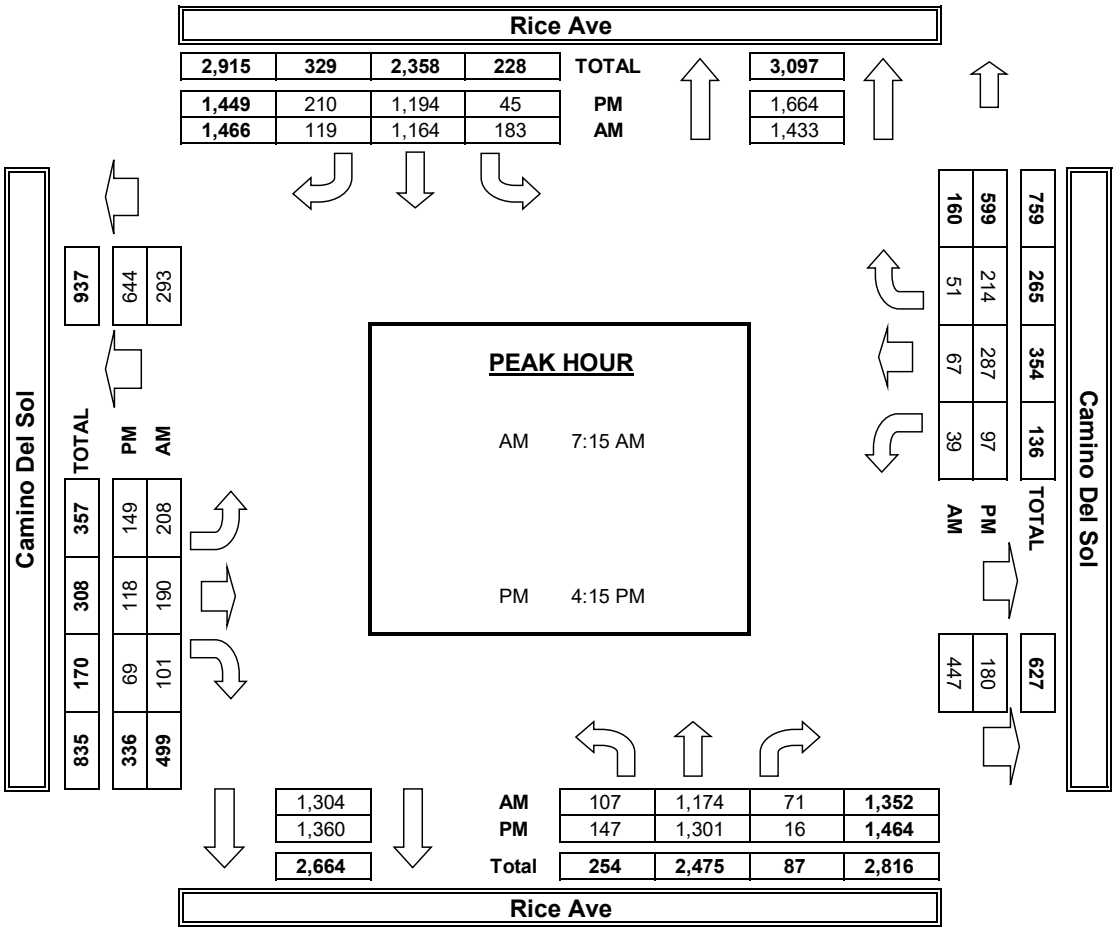


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	2	0	1	3	0	0	0	0	0	0	2	0	1	3
	6:45 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	7:00 AM	0	1	1	0	2	0	0	0	0	0	0	1	1	0	2
	7:15 AM	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	8:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	6	2	2	10	0	2	0	0	2	0	4	2	2	8
	BEGIN PEAK HR	7:15 AM					0	2	0	0	2					
PM	4:00 PM	0	1	1	0	2	0	0	0	0	0	0	1	1	0	2
	4:15 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
	5:00 PM	0	1	1	0	2	0	0	0	0	0	0	1	1	0	2
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	1	4	2	0	7	0	1	0	0	1	1	3	2	0	6
	BEGIN PEAK HR	4:15 PM					0	1	0	0	1					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

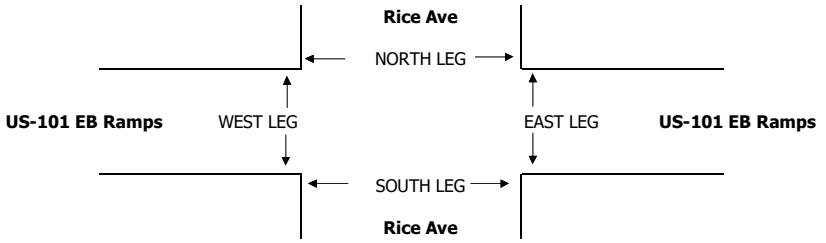
LOCATION: Oxnard
NORTH & SOUTH: Rice Ave
EAST & WEST: US-101 EB Ramps

PROJECT #: SC5278
LOCATION #: 8
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

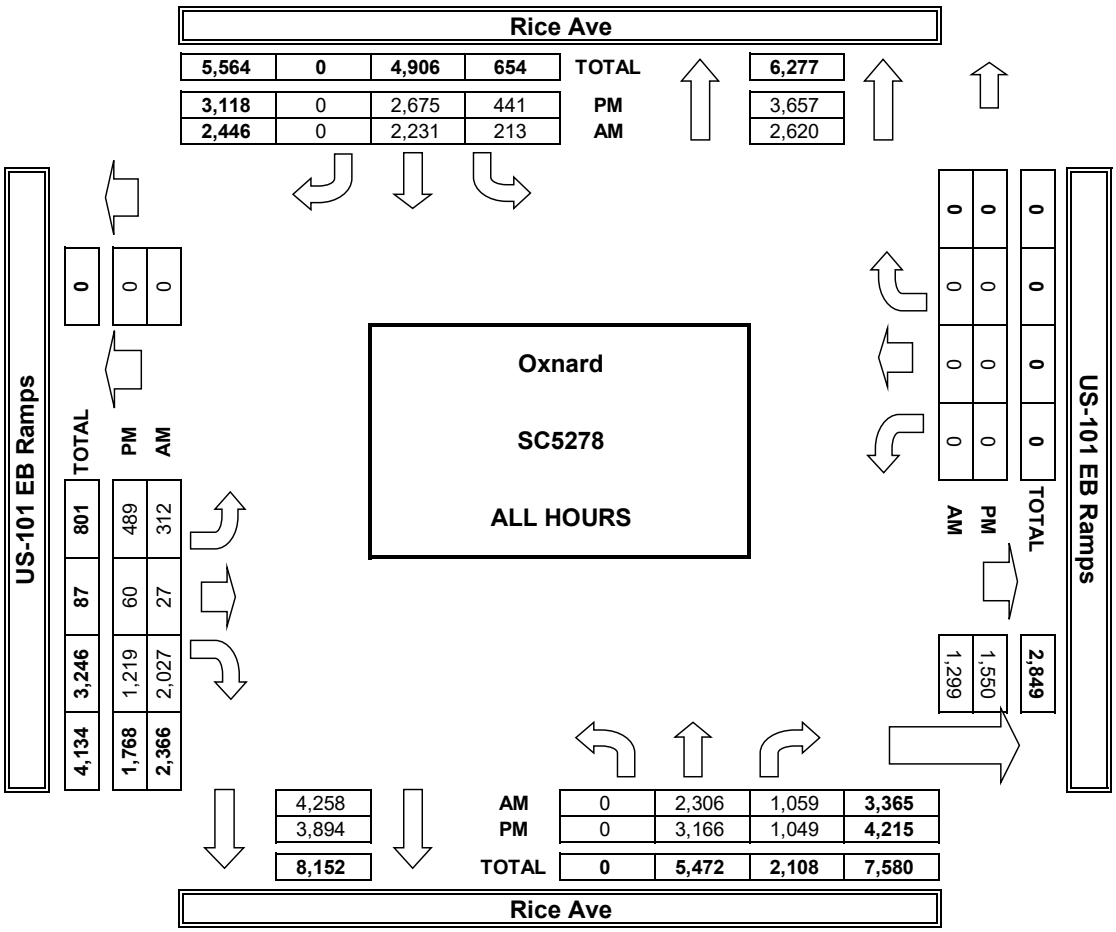
		NORTHBOUND Rice Ave			SOUTHBOUND Rice Ave			EASTBOUND US-101 EB Ramps			WESTBOUND US-101 EB Ramps				U-TURNS				
	LANES:	NL X	NT 3	NR 2	SL 2	ST 3	SR X	EL 1.5	ET 0.5	ER 1	WL X	WT X	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	0	217	151	18	207	0	27	0	219	0	0	0	839	0	0	0	0	0
	6:45 AM	0	250	128	29	295	0	42	1	306	0	0	0	1,051	0	0	0	0	0
	7:00 AM	0	263	104	25	224	0	38	0	195	0	0	0	849	0	0	0	0	0
	7:15 AM	0	316	136	31	277	0	37	1	219	0	0	0	1,017	0	0	0	0	0
	7:30 AM	0	304	162	29	291	0	32	0	233	0	0	0	1,051	0	0	0	0	0
	7:45 AM	0	381	127	20	317	0	63	18	294	0	0	0	1,220	0	0	0	0	0
	8:00 AM	0	320	130	31	302	0	43	5	298	0	0	0	1,129	0	1	0	0	1
	8:15 AM	0	255	121	30	318	0	30	2	263	0	0	0	1,019	0	1	0	0	1
	VOLUMES	0	2,306	1,059	213	2,231	0	312	27	2,027	0	0	0	8,177	0	2	0	0	2
	APPROACH %	0%	69%	31%	9%	91%	0%	13%	1%	86%	0%	0%	0%						
	APP/DEPART	3,365	/	2,620	2,446	/	4,258	2,366	/	1,299	0	/	0	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	0	1,260	540	110	1,228	0	168	25	1,088	0	0	0	4,421	0	2	0	0	
	APPROACH %	0%	70%	30%	8%	92%	0%	13%	2%	85%	0%	0%	0%						
	PEAK HR FACTOR		0.886			0.960			0.854			0.000		0.906					
	APP/DEPART	1,800	/	1,430	1,340	/	2,316	1,281	/	675	0	/	0	0					
PM	4:00 PM	0	457	139	40	320	0	40	1	135	0	0	0	1,132	0	0	0	0	0
	4:15 PM	0	365	107	41	333	0	65	1	173	0	0	0	1,085	0	0	0	0	0
	4:30 PM	0	453	123	66	341	0	69	1	133	0	0	0	1,186	0	1	0	0	1
	4:45 PM	0	411	140	55	335	0	68	10	154	0	0	0	1,173	0	1	0	0	1
	5:00 PM	0	466	160	65	350	0	77	24	162	0	0	0	1,304	0	0	0	0	0
	5:15 PM	0	354	145	53	336	0	75	15	158	0	0	0	1,136	0	0	0	0	0
	5:30 PM	0	367	128	66	324	0	54	7	135	0	0	0	1,081	0	0	0	0	0
	5:45 PM	0	293	107	55	336	0	41	1	169	0	0	0	1,002	0	0	0	0	0
	VOLUMES	0	3,166	1,049	441	2,675	0	489	60	1,219	0	0	0	9,101	0	2	0	0	2
	APPROACH %	0%	75%	25%	14%	86%	0%	28%	3%	69%	0%	0%	0%						
	APP/DEPART	4,215	/	3,657	3,118	/	3,894	1,768	/	1,550	0	/	0	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	0	1,684	568	239	1,362	0	289	50	607	0	0	0	4,801	0	2	0	0	
	APPROACH %	0%	75%	25%	15%	85%	0%	31%	5%	64%	0%	0%	0%						
	PEAK HR FACTOR		0.899			0.966			0.899			0.000		0.920					
	APP/DEPART	2,252	/	1,975	1,603	/	1,969	946	/	857	0	/	0	0					

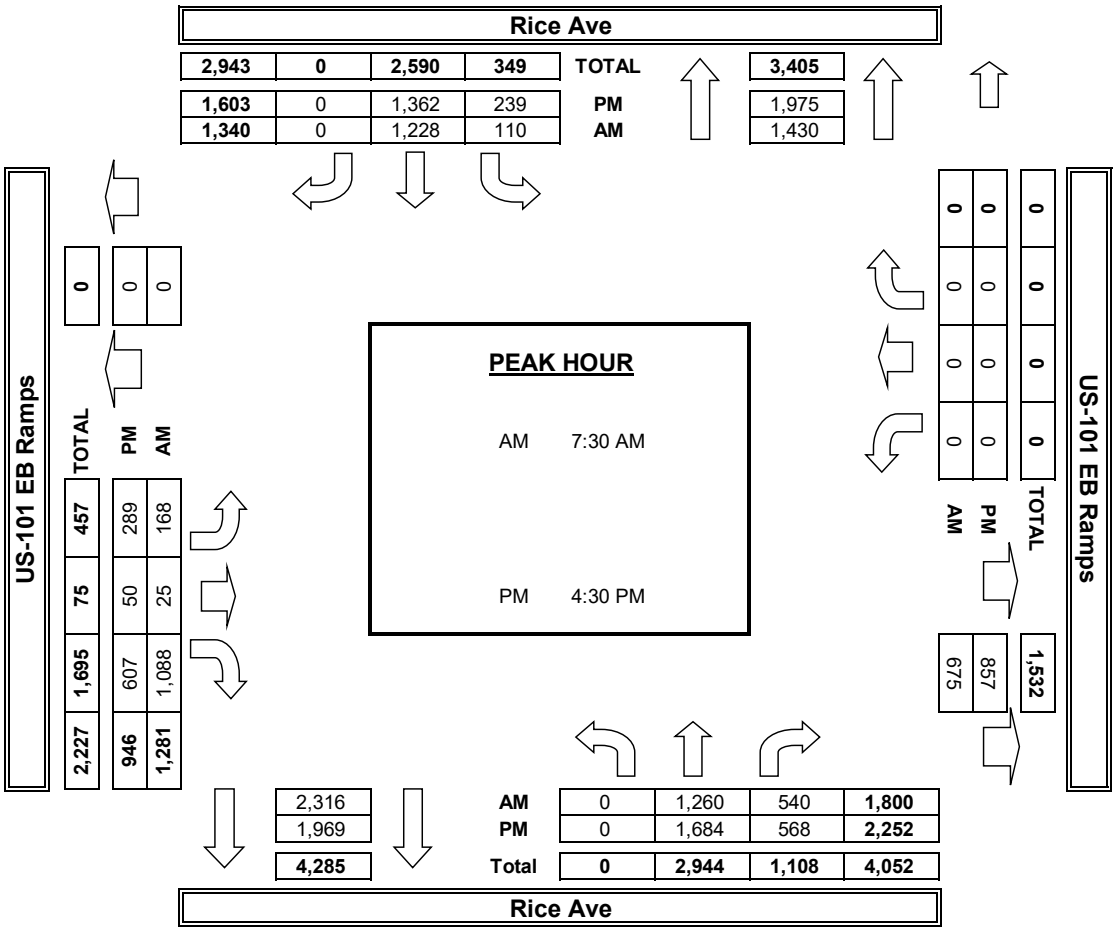


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	2	2	0	0	0	0	0	0	0	0	2	2
	8:00 AM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	8:15 AM	0	0	1	1	2	0	0	0	1	1	0	0	1	0	1
	TOTAL	0	0	2	4	6	0	0	1	2	3	0	0	1	2	3
	BEGIN PEAK HR			7:30 AM			0	0	1	1	2					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	2	2	0	0	0	0	0	0	0	0	2	2
	5:00 PM	0	0	0	2	2	0	0	0	1	1	0	0	0	1	1
	5:15 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	5:30 PM	0	0	2	0	2	0	0	2	0	2	0	0	0	0	0
	5:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	TOTAL	0	0	3	6	9	0	0	2	2	4	0	0	1	4	5
	BEGIN PEAK HR			4:30 PM			0	0	0	2	2					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

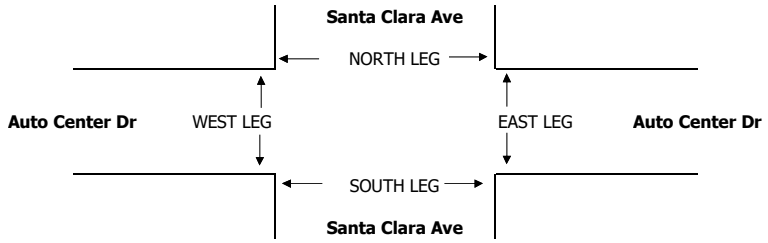
LOCATION: Oxnard
NORTH & SOUTH: Santa Clara Ave
EAST & WEST: Auto Center Dr

PROJECT #: SC5278
LOCATION #: 9
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

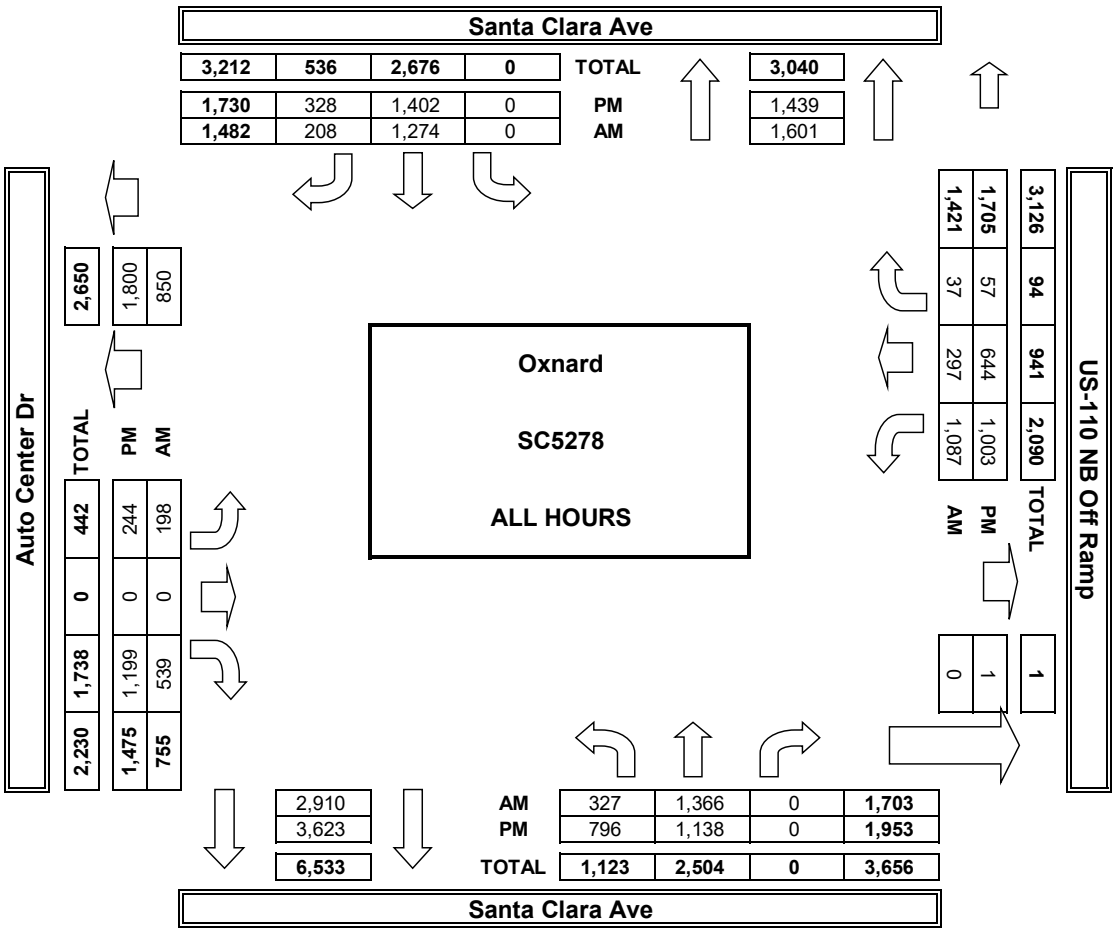
		NORTHBOUND Santa Clara Ave			SOUTHBOUND Santa Clara Ave			EASTBOUND Auto Center Dr			WESTBOUND US-110 NB Off Ramp				U-TURNS				
	LANES:	NL 2	NT 2	NR X	SL X	ST 3	SR 1	EL 2	ET X	ER 2	WL 1	WT 1.5	WR 0.5	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	17	188	0	0	135	13	21	0	62	84	33	6	559	3	0	1	0	4
	6:45 AM	43	141	0	0	158	13	19	0	63	167	37	8	649	1	0	2	0	3
	7:00 AM	34	192	0	0	133	20	15	0	63	104	44	5	610	2	0	3	0	5
	7:15 AM	40	204	0	0	154	25	20	0	75	125	40	3	686	1	0	0	0	1
	7:30 AM	40	146	0	0	146	55	28	0	61	165	38	1	680	1	0	5	0	6
	7:45 AM	46	220	0	0	177	37	37	0	69	163	32	2	783	2	0	5	0	7
	8:00 AM	69	158	0	0	163	23	31	0	70	138	31	5	688	0	0	1	0	1
	8:15 AM	38	117	0	0	208	22	27	0	76	141	42	7	678	0	0	1	0	1
	VOLUMES	327	1,366	0	0	1,274	208	198	0	539	1,087	297	37	5,361	10	0	18	0	28
	APPROACH %	19%	80%	0%	0%	86%	14%	26%	0%	71%	76%	21%	3%						
	APP/DEPART	1,703	/	1,601	1,482	/	2,910	755	/	0	1,421	/	850	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	195	728	0	0	640	140	116	0	275	591	141	11	2,852	4	0	11	0	
	APPROACH %	21%	79%	0%	0%	82%	18%	29%	0%	68%	80%	19%	1%						
	PEAK HR FACTOR		0.865			0.911			0.905			0.911		0.903					
	APP/DEPART	927	/	855	780	/	1,510	402	/	0	743	/	487	0					
PM	4:00 PM	69	138	0	0	203	51	27	0	115	105	93	9	810	1	0	6	0	7
	4:15 PM	91	144	0	0	198	38	30	0	159	103	71	6	840	0	0	3	0	3
	4:30 PM	134	146	0	0	164	36	30	0	140	138	74	3	865	1	0	6	1	8
	4:45 PM	123	170	0	0	180	39	28	0	141	133	84	7	905	1	0	5	0	6
	5:00 PM	102	167	0	0	169	46	41	0	172	148	80	8	933	3	0	4	0	7
	5:15 PM	117	153	0	0	159	48	31	0	163	133	76	7	887	4	0	1	0	5
	5:30 PM	80	132	0	0	160	40	26	0	160	126	91	8	823	6	0	3	0	9
	5:45 PM	80	88	0	0	169	30	31	0	149	117	75	9	748	3	0	4	0	7
	VOLUMES	796	1,138	0	0	1,402	328	244	0	1,199	1,003	644	57	6,863	19	0	32	1	52
	APPROACH %	41%	58%	0%	0%	81%	19%	17%	0%	81%	59%	38%	3%						
	APP/DEPART	1,953	/	1,439	1,730	/	3,623	1,475	/	1	1,705	/	1,800	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	476	636	0	0	672	169	130	0	616	552	314	25	3,616	9	0	16	1	
	APPROACH %	42%	57%	0%	0%	80%	20%	17%	0%	81%	62%	35%	3%						
	PEAK HR FACTOR		0.953			0.960			0.878			0.945		0.962					
	APP/DEPART	1,121	/	791	841	/	1,849	762	/	1	892	/	975	0					

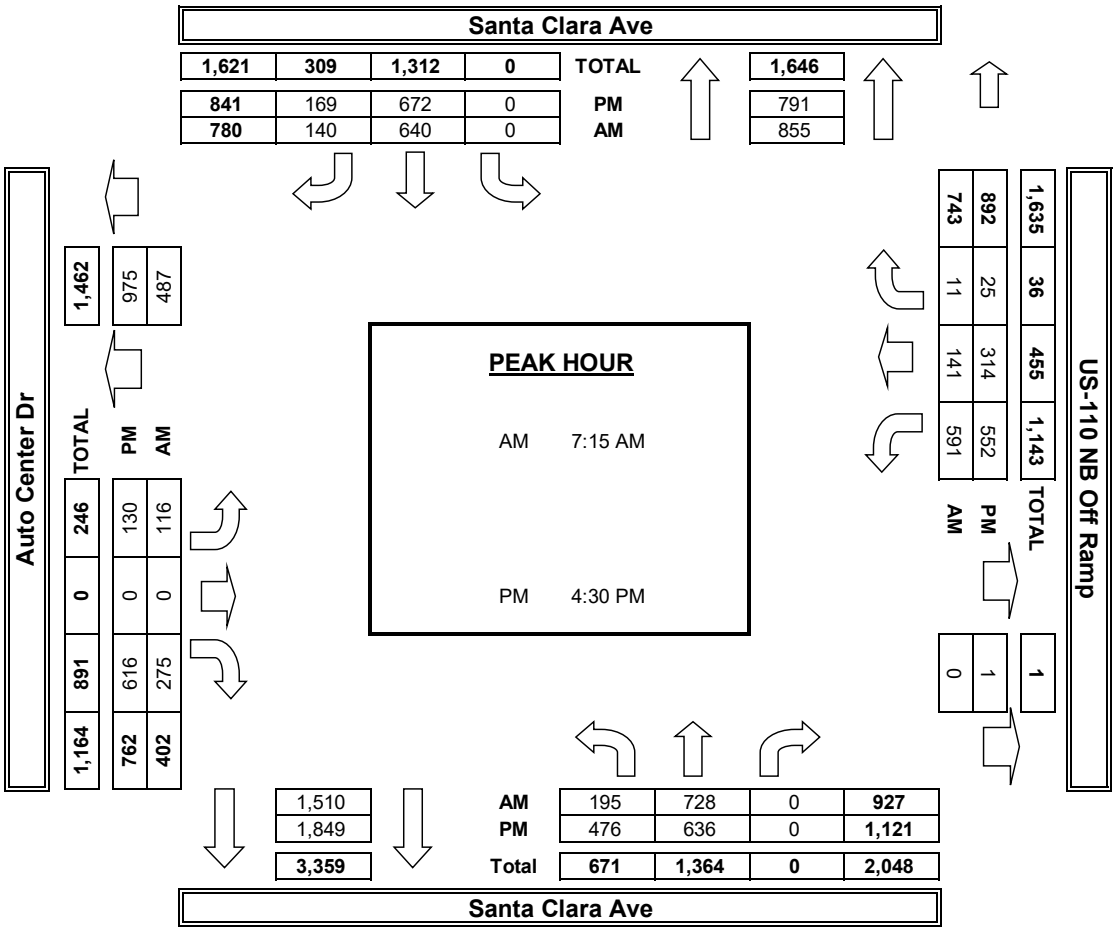


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	1	0	1	1	3	1	0	1	1	3	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	1	0	1	2	4	0	0	1	1	2	1	0	0	1	2
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	1	2	0	3	0	0	0	0	0	0	1	2	0	3
	TOTAL	2	1	4	3	10	1	0	2	2	5	1	1	2	1	5
	BEGIN PEAK HR			7:15 AM			1	0	2	2	5					
PM	4:00 PM	0	1	1	0	2	0	0	0	0	0	0	1	1	0	2
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	2	0	2	2	6	0	0	0	1	1	2	0	2	1	5
	4:45 PM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	5:00 PM	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
	5:15 PM	1	0	0	1	2	0	0	0	0	0	1	0	0	1	2
	5:30 PM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	3	1	5	5	14	0	0	2	3	5	3	1	3	2	9
	BEGIN PEAK HR			4:30 PM			0	0	1	3	4					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

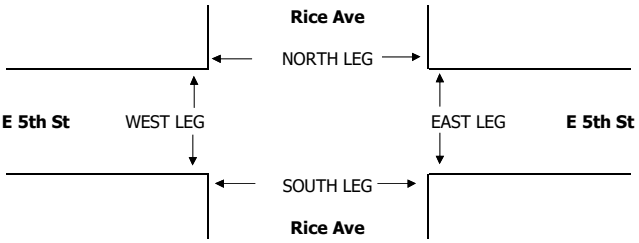
LOCATION: Oxnard
NORTH & SOUTH: Rice Ave
EAST & WEST: E 5th St

PROJECT #: SC5278
LOCATION #: 10
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

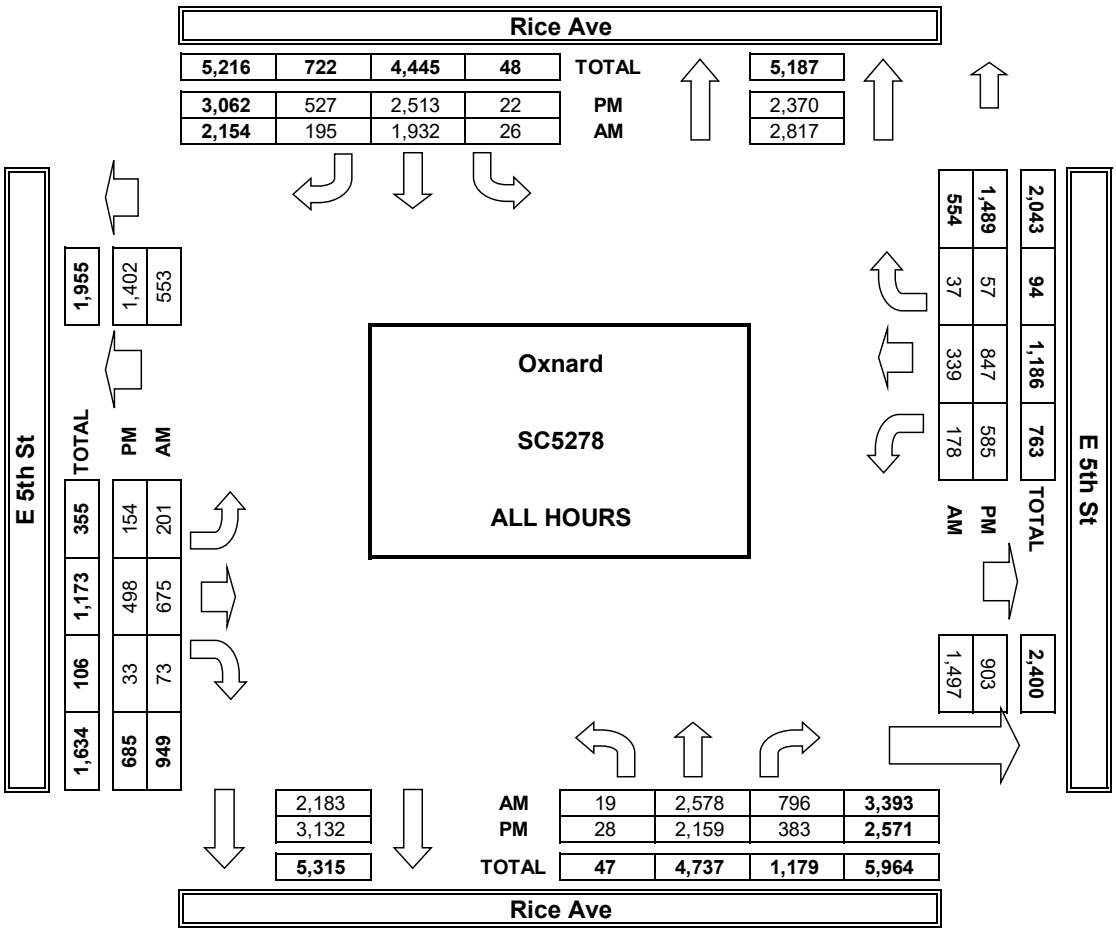
		NORTHBOUND Rice Ave			SOUTHBOUND Rice Ave			EASTBOUND E 5th St			WESTBOUND E 5th St				U-TURNS				
	LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	0	302	130	4	253	23	23	129	23	16	22	1	926	0	0	0	0	0
	6:45 AM	0	396	102	2	265	26	40	84	7	18	38	3	981	0	0	0	0	0
	7:00 AM	1	261	95	1	205	18	30	68	8	20	25	3	735	0	0	0	0	0
	7:15 AM	4	324	81	0	236	19	25	76	8	25	42	2	842	0	1	0	0	1
	7:30 AM	1	334	111	2	239	26	13	88	11	24	43	5	897	0	0	0	0	0
	7:45 AM	2	360	126	4	252	25	27	85	8	30	56	7	982	0	0	0	0	0
	8:00 AM	5	326	75	5	233	31	21	81	5	17	70	8	877	0	0	0	0	0
	8:15 AM	6	275	76	8	249	27	22	64	3	28	43	8	809	0	0	0	0	0
	VOLUMES	19	2,578	796	26	1,932	195	201	675	73	178	339	37	7,050	0	1	0	0	1
	APPROACH %	1%	76%	23%	1%	90%	9%	21%	71%	8%	32%	61%	7%						
	APP/DEPART	3,393	/	2,817	2,154	/	2,183	949	/	1,497	554	/	553	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	12	1,344	393	11	960	101	86	330	32	96	211	22	3,599	0	1	0	0	
	APPROACH %	1%	77%	22%	1%	89%	9%	19%	74%	7%	29%	64%	7%						
	PEAK HR FACTOR		0.896			0.955			0.933			0.866		0.916					
	APP/DEPART	1,749	/	1,453	1,073	/	1,088	448	/	734	329	/	324	0					
PM	4:00 PM	3	267	37	2	314	81	20	42	2	86	84	9	947	0	0	0	0	0
	4:15 PM	1	280	38	2	301	49	21	82	6	48	110	5	943	0	0	0	0	0
	4:30 PM	2	275	51	3	301	84	18	74	3	94	127	7	1,039	0	0	0	0	0
	4:45 PM	5	293	59	3	326	66	12	59	7	79	105	7	1,021	0	0	0	0	0
	5:00 PM	4	246	59	5	311	66	18	67	3	75	110	9	973	0	0	0	0	0
	5:15 PM	5	268	51	2	341	70	29	49	2	79	108	10	1,014	0	0	0	0	0
	5:30 PM	6	240	42	3	327	75	14	65	5	67	103	3	950	0	0	0	0	0
	5:45 PM	2	290	46	2	292	36	22	60	5	57	100	7	919	1	0	0	0	1
	VOLUMES	28	2,159	383	22	2,513	527	154	498	33	585	847	57	7,807	1	0	0	0	1
	APPROACH %	1%	84%	15%	1%	82%	17%	22%	73%	5%	39%	57%	4%						
	APP/DEPART	2,571	/	2,370	3,062	/	3,132	685	/	903	1,489	/	1,402	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	16	1,082	220	13	1,279	286	77	249	15	327	450	33	4,047	0	0	0	0	
	APPROACH %	1%	82%	17%	1%	81%	18%	23%	73%	4%	40%	56%	4%						
	PEAK HR FACTOR		0.923			0.955			0.897			0.888		0.974					
	APP/DEPART	1,318	/	1,192	1,578	/	1,621	341	/	482	810	/	752	0					

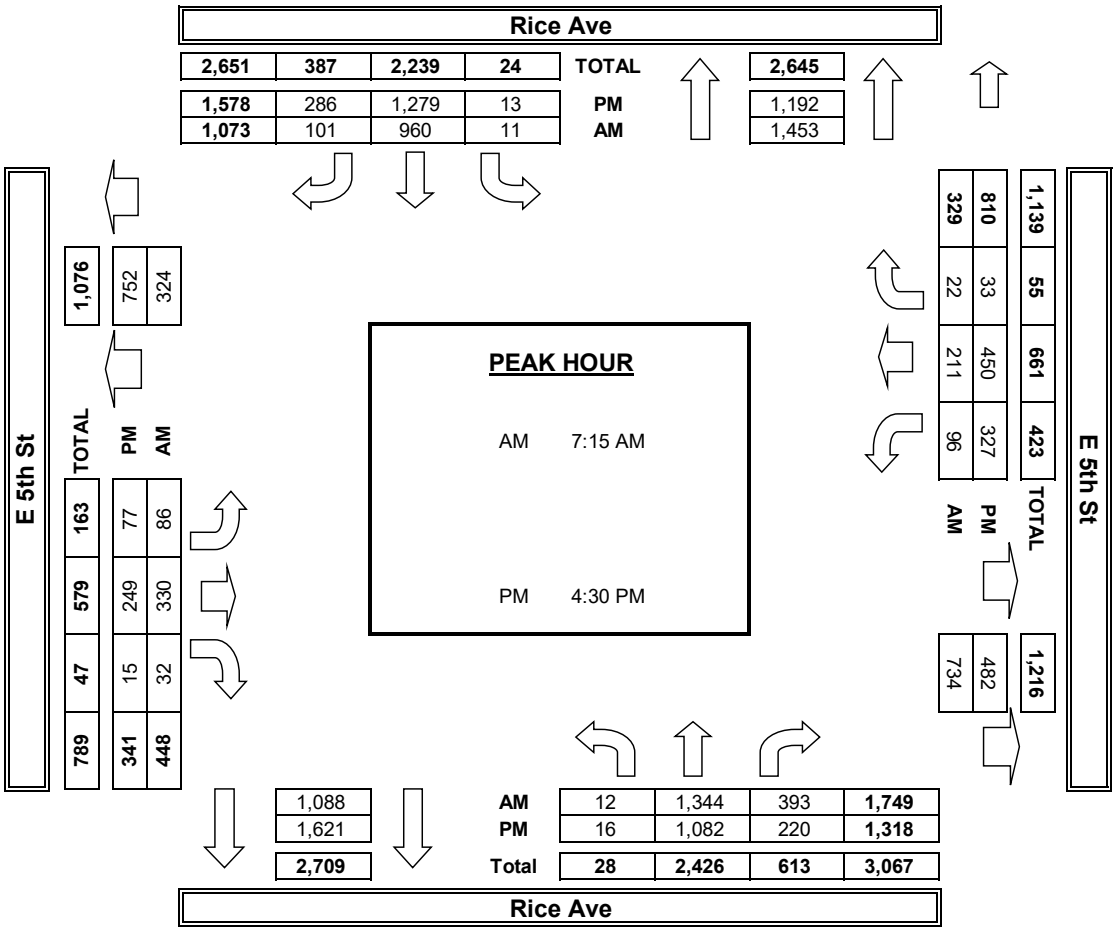


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BEGIN PEAK HR			7:15 AM			0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	BEGIN PEAK HR			4:30 PM			0	0	0	0	0					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

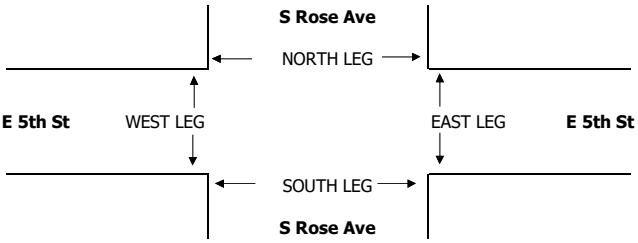
LOCATION: Oxnard
NORTH & SOUTH: S Rose Ave
EAST & WEST: E 5th St

PROJECT #: SC5278
LOCATION #: 11
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

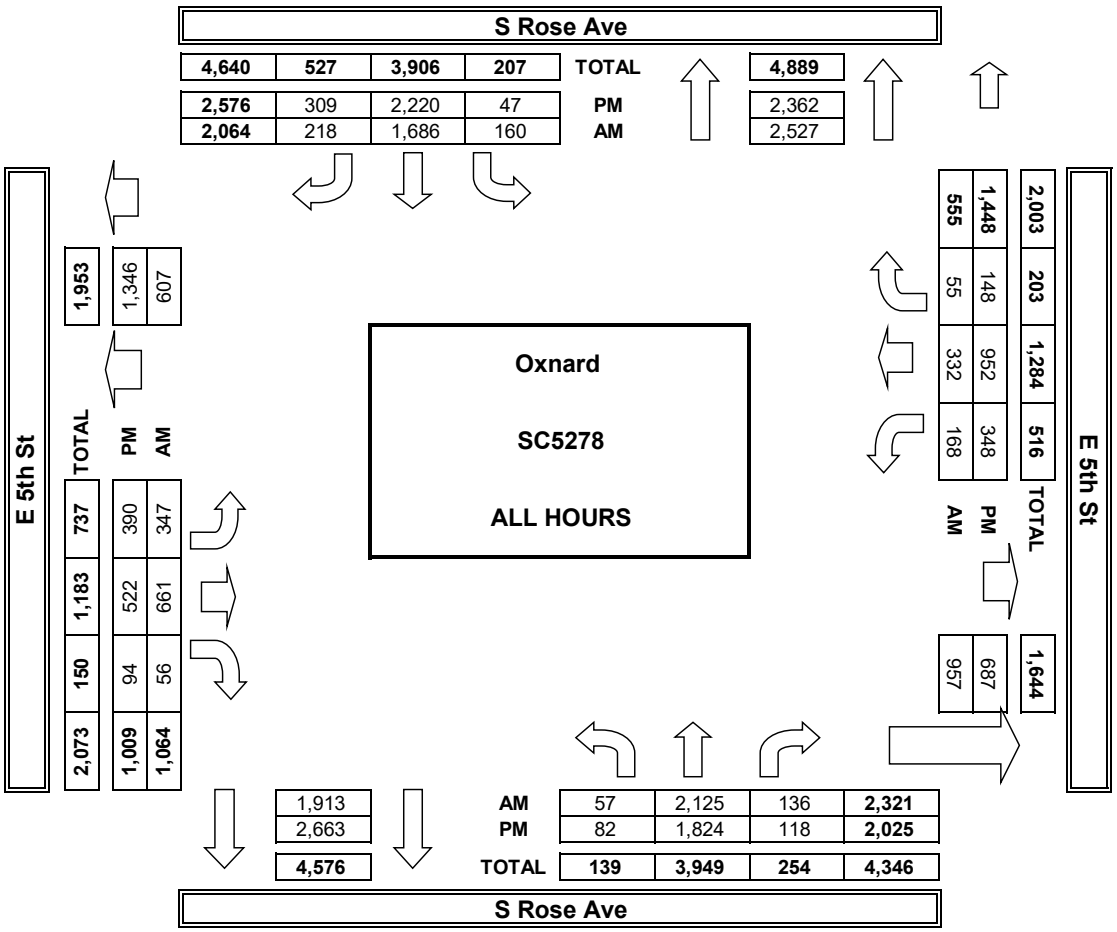
		NORTHBOUND S Rose Ave			SOUTHBOUND S Rose Ave			EASTBOUND E 5th St			WESTBOUND E 5th St				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 2	ET 1	ER 1	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	0	244	25	56	167	18	30	94	6	18	23	5	686	0	0	0	0	0
	6:45 AM	5	302	29	23	182	36	40	79	4	20	27	9	756	0	0	0	0	0
	7:00 AM	4	183	11	17	134	25	41	72	10	21	25	7	550	0	0	0	0	0
	7:15 AM	2	273	15	23	239	29	35	77	8	24	35	5	765	1	0	0	0	1
	7:30 AM	12	312	18	12	200	21	45	75	4	26	44	6	775	0	0	0	0	0
	7:45 AM	14	298	10	17	258	25	56	93	8	18	62	10	869	0	0	0	0	0
	8:00 AM	13	281	16	7	275	35	57	84	11	22	57	8	866	0	0	0	0	0
	8:15 AM	7	232	12	5	231	29	43	87	5	19	59	5	734	2	0	0	0	2
	VOLUMES	57	2,125	136	160	1,686	218	347	661	56	168	332	55	6,004	3	0	0	0	3
	APPROACH %	2%	92%	6%	8%	82%	11%	33%	62%	5%	30%	60%	10%						
	APP/DEPART	2,321	/	2,527	2,064	/	1,913	1,064	/	957	555	/	607	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	41	1,164	59	59	972	110	193	329	31	90	198	29	3,276	1	0	0	0	
	APPROACH %	3%	92%	5%	5%	85%	10%	35%	59%	6%	28%	62%	9%						
	PEAK HR FACTOR		0.925			0.900			0.881			0.881		0.942					
	APP/DEPART	1,265	/	1,386	1,141	/	1,094	553	/	447	317	/	349	0					
PM	4:00 PM	13	279	18	6	247	41	57	58	9	49	114	23	914	1	0	0	0	1
	4:15 PM	9	259	16	5	316	37	40	79	10	40	100	28	939	0	0	0	0	0
	4:30 PM	7	220	22	3	250	45	54	63	18	36	124	24	866	0	0	0	0	0
	4:45 PM	10	235	16	7	273	42	52	66	9	46	140	19	915	0	0	1	0	1
	5:00 PM	10	226	13	1	300	60	49	67	13	49	125	9	922	0	0	0	0	0
	5:15 PM	16	215	14	7	232	20	53	62	10	48	115	18	810	0	0	1	0	1
	5:30 PM	12	222	6	13	383	35	42	61	15	42	116	18	965	0	0	0	0	0
	5:45 PM	5	168	13	5	219	29	43	66	10	38	118	9	723	0	0	1	0	1
	VOLUMES	82	1,824	118	47	2,220	309	390	522	94	348	952	148	7,058	1	0	3	0	4
	APPROACH %	4%	90%	6%	2%	86%	12%	39%	52%	9%	24%	66%	10%						
	APP/DEPART	2,025	/	2,362	2,576	/	2,663	1,009	/	687	1,448	/	1,346	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	36	940	67	16	1,139	184	195	275	50	171	489	80	3,643	0	0	1	0	
	APPROACH %	3%	90%	6%	1%	85%	14%	37%	53%	10%	23%	66%	11%						
	PEAK HR FACTOR		0.918			0.927			0.965			0.902		0.970					
	APP/DEPART	1,043	/	1,215	1,339	/	1,360	521	/	358	740	/	710	0					

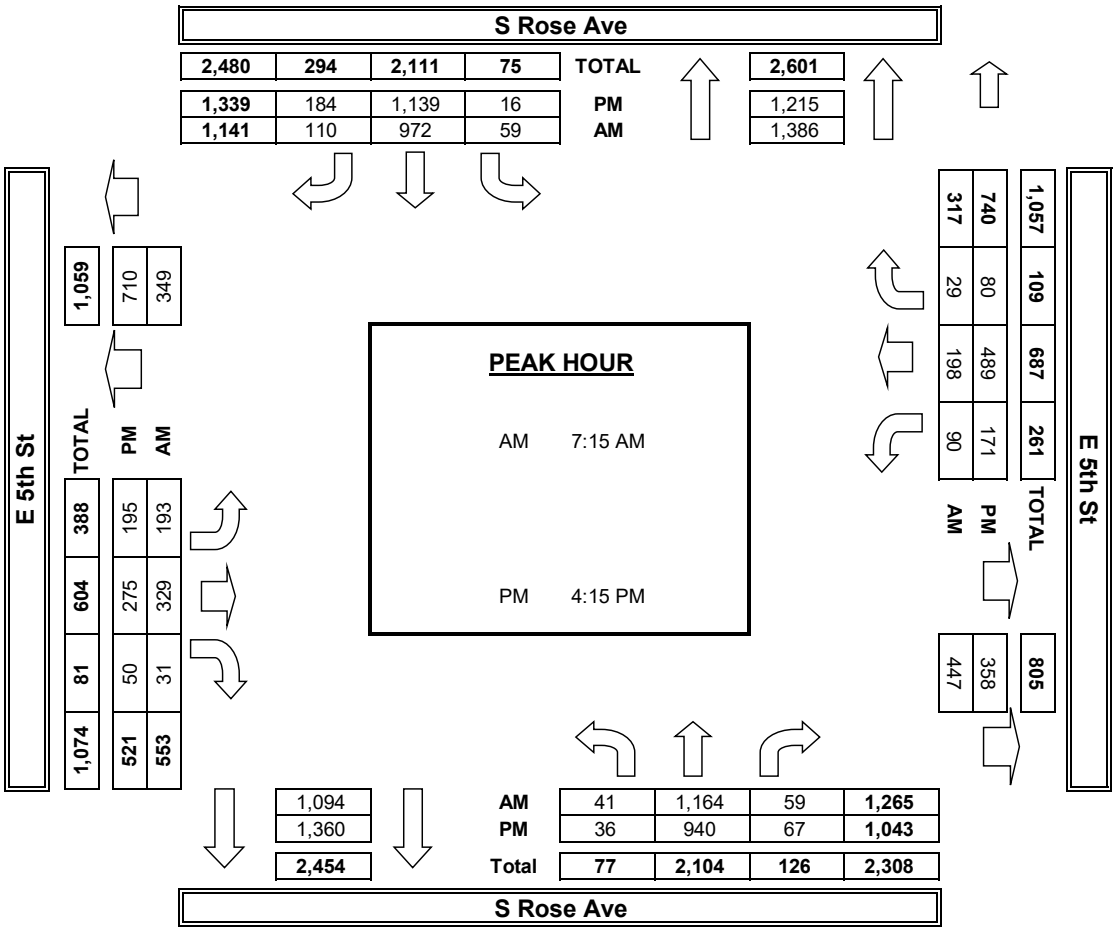


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	0	1	5	6	0	0	0	1	1	0	0	1	4	5
	6:45 AM	0	1	1	0	2	0	0	0	0	0	0	1	1	0	2
	7:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	7:15 AM	1	0	0	4	5	0	0	0	1	1	1	0	0	3	4
	7:30 AM	0	0	0	2	2	0	0	0	0	0	0	0	0	2	2
	7:45 AM	0	0	0	5	5	0	0	0	2	2	0	0	0	3	3
	8:00 AM	1	4	1	5	11	1	3	0	3	7	0	1	1	2	4
	8:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	TOTAL	2	5	3	23	33	1	3	0	7	11	1	2	3	16	22
	BEGIN PEAK HR			7:15 AM			1	3	0	6	10					
PM	4:00 PM	0	0	3	7	10	0	0	0	2	2	0	0	3	5	8
	4:15 PM	0	0	0	8	8	0	0	0	5	5	0	0	0	3	3
	4:30 PM	1	4	2	2	9	0	4	2	2	8	1	0	0	0	1
	4:45 PM	0	0	0	4	4	0	0	0	2	2	0	0	0	2	2
	5:00 PM	1	1	1	3	6	1	0	0	3	4	0	1	1	0	2
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	1	0	0	8	9	1	0	0	7	8	0	0	0	1	1
	5:45 PM	1	0	1	2	4	0	0	0	1	1	1	0	1	1	3
	TOTAL	4	5	7	34	50	2	4	2	22	30	2	1	5	12	20
	BEGIN PEAK HR			4:15 PM			1	4	2	12	19					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

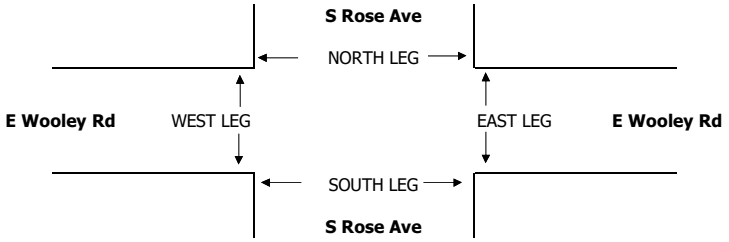
LOCATION: Oxnard
NORTH & SOUTH: S Rose Ave
EAST & WEST: E Wooley Rd

PROJECT #: SC5278
LOCATION #: 12
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

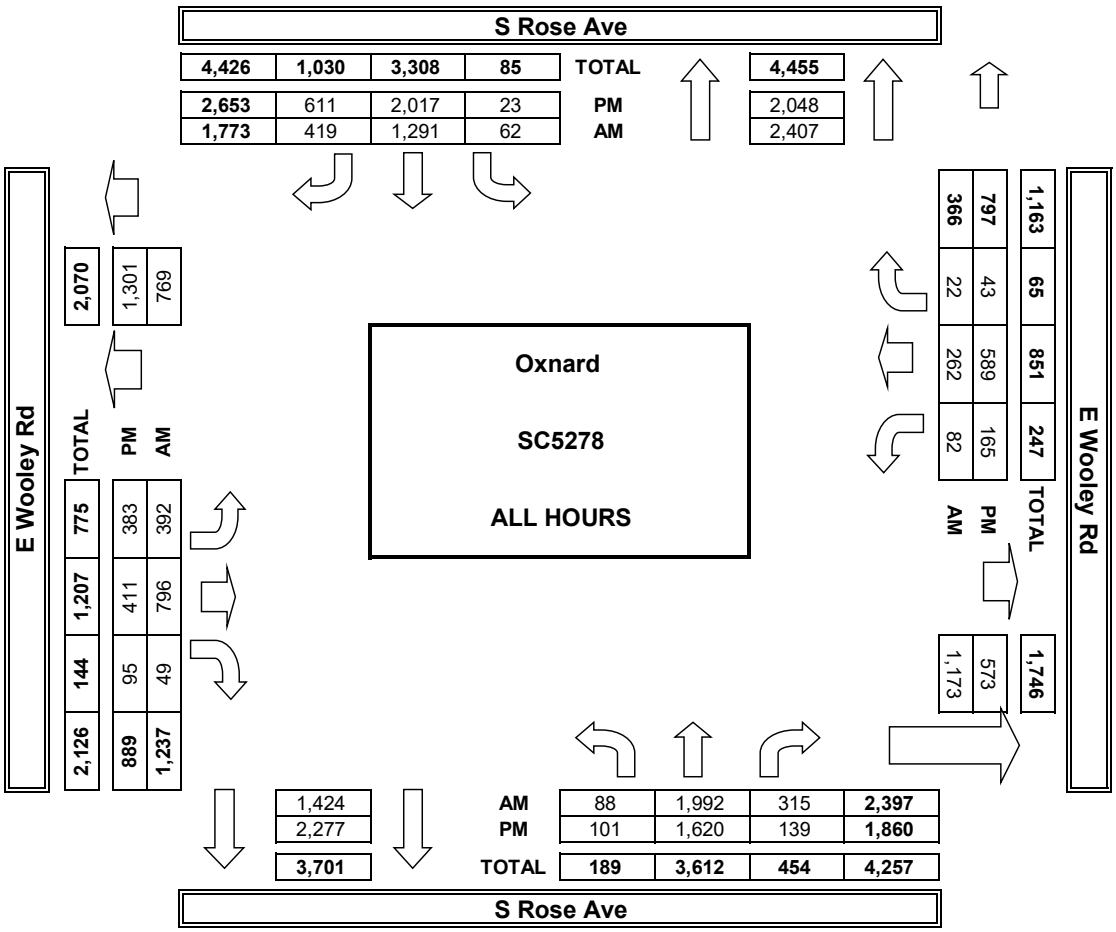
		NORTHBOUND S Rose Ave			SOUTHBOUND S Rose Ave			EASTBOUND E Wooley Rd			WESTBOUND E Wooley Rd				U-TURNS				
	LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 0	EL 2	ET 2	ER 0	WL 1	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	1	268	63	31	113	26	60	141	4	1	9	1	718	0	0	0	0	0
	6:45 AM	6	239	49	10	113	52	60	90	4	10	34	1	668	0	0	0	0	0
	7:00 AM	11	184	41	5	117	52	38	101	4	8	36	3	600	0	0	0	0	0
	7:15 AM	7	238	40	3	171	50	39	90	7	11	29	4	689	0	1	0	0	1
	7:30 AM	16	301	31	3	148	60	50	110	8	15	49	1	792	0	0	0	0	0
	7:45 AM	14	302	40	2	219	67	53	97	7	12	45	7	865	1	0	0	0	1
	8:00 AM	20	236	26	5	201	56	49	81	10	14	26	3	727	1	0	0	0	1
	8:15 AM	13	224	25	3	209	56	43	86	5	11	34	2	711	0	0	0	0	0
	VOLUMES	88	1,992	315	62	1,291	419	392	796	49	82	262	22	5,773	2	1	0	0	3
	APPROACH %	4%	83%	13%	3%	73%	24%	32%	64%	4%	22%	72%	6%						
	APP/DEPART	2,397	/	2,407	1,773	/	1,424	1,237	/	1,173	366	/	769	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	63	1,063	122	13	777	239	195	374	30	52	154	13	3,097	2	0	0	0	
	APPROACH %	5%	85%	10%	1%	76%	23%	33%	62%	5%	24%	70%	6%						
	PEAK HR FACTOR		0.875			0.893			0.891			0.842		0.894					
	APP/DEPART	1,250	/	1,271	1,029	/	861	599	/	509	219	/	456	0					
PM	4:00 PM	19	254	16	7	212	68	48	36	11	19	73	12	775	0	0	0	0	0
	4:15 PM	21	203	19	2	268	82	49	40	8	21	64	11	788	0	0	0	0	0
	4:30 PM	10	198	24	2	243	70	54	45	15	18	73	5	757	0	0	0	0	0
	4:45 PM	16	227	11	1	259	78	54	59	12	23	73	5	818	0	0	0	0	0
	5:00 PM	9	189	23	3	276	82	53	57	17	26	72	3	810	0	1	0	0	1
	5:15 PM	12	181	15	4	167	81	33	53	6	21	78	1	652	0	0	0	0	0
	5:30 PM	4	182	18	1	296	83	50	64	13	20	82	3	816	0	1	0	0	1
	5:45 PM	10	186	13	3	296	67	42	57	13	17	74	3	781	0	0	0	0	0
	VOLUMES	101	1,620	139	23	2,017	611	383	411	95	165	589	43	6,199	0	2	0	0	2
	APPROACH %	5%	87%	7%	1%	76%	23%	43%	46%	11%	21%	74%	5%						
	APP/DEPART	1,860	/	2,048	2,653	/	2,277	889	/	573	797	/	1,301	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	56	817	77	8	1,046	312	210	201	52	88	282	24	3,174	0	1	0	0	
	APPROACH %	6%	86%	8%	1%	77%	23%	45%	43%	11%	22%	72%	6%						
	PEAK HR FACTOR		0.935			0.944			0.911			0.975		0.970					
	APP/DEPART	950	/	1,052	1,367	/	1,186	463	/	286	394	/	650	0					

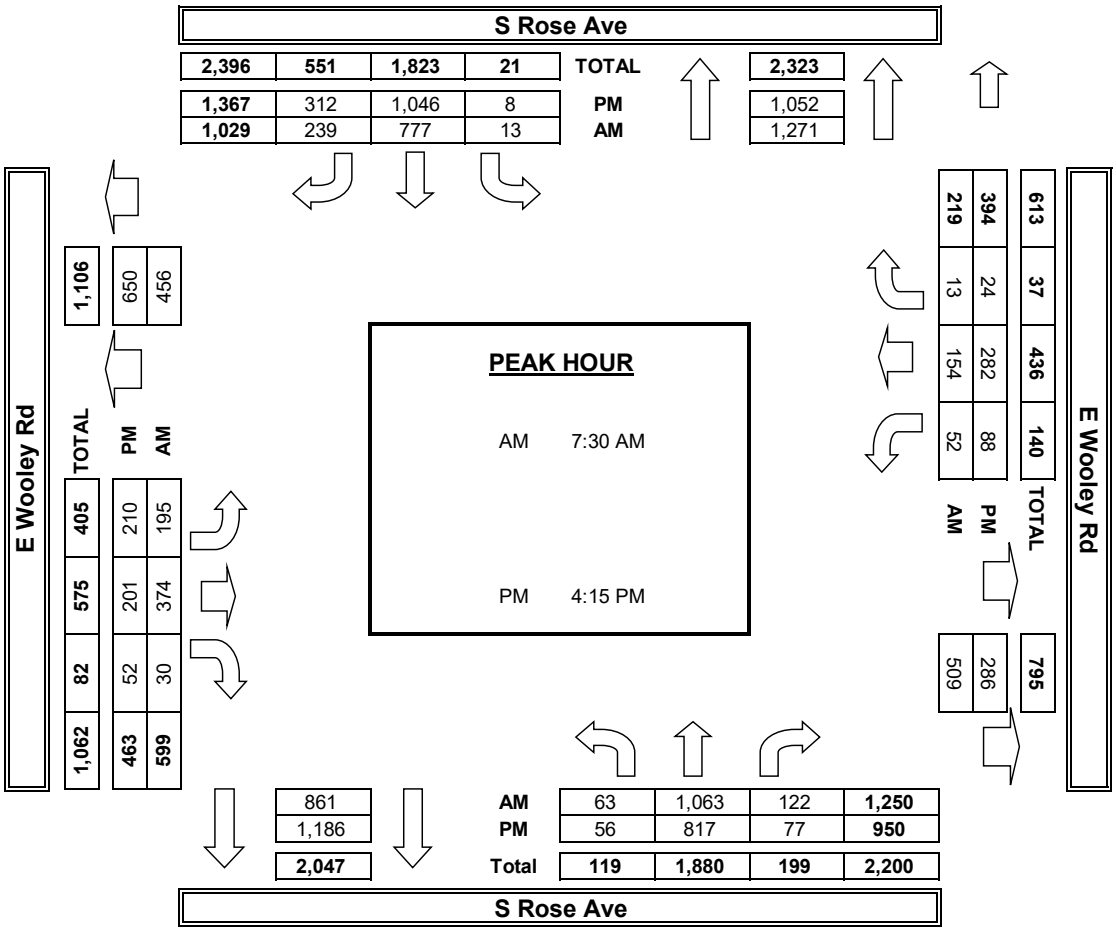


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	0	0	3	3	0	0	0	0	0	0	0	0	3	3
	6:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	2	2	0	0	0	1	1	0	0	0	1	1
	8:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	TOTAL	0	0	1	6	7	0	0	0	1	1	0	0	1	5	6
	BEGIN PEAK HR			7:30 AM			0	0	0	1	1					
PM	4:00 PM	0	0	3	2	5	0	0	0	0	0	0	0	3	2	5
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	5:30 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	5:45 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	TOTAL	0	0	3	6	9	0	0	0	2	2	0	0	3	4	7
	BEGIN PEAK HR			4:15 PM			0	0	0	1	1					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

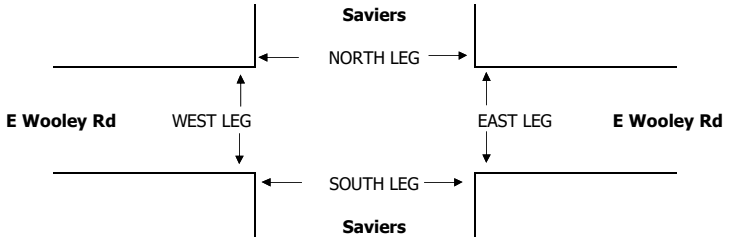
DATE: Wed, Apr 2, 25

LOCATION: Oxnard
NORTH & SOUTH: Saviers
EAST & WEST: E Wooley Rd
PROJECT #: SC5278
LOCATION #: 13
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

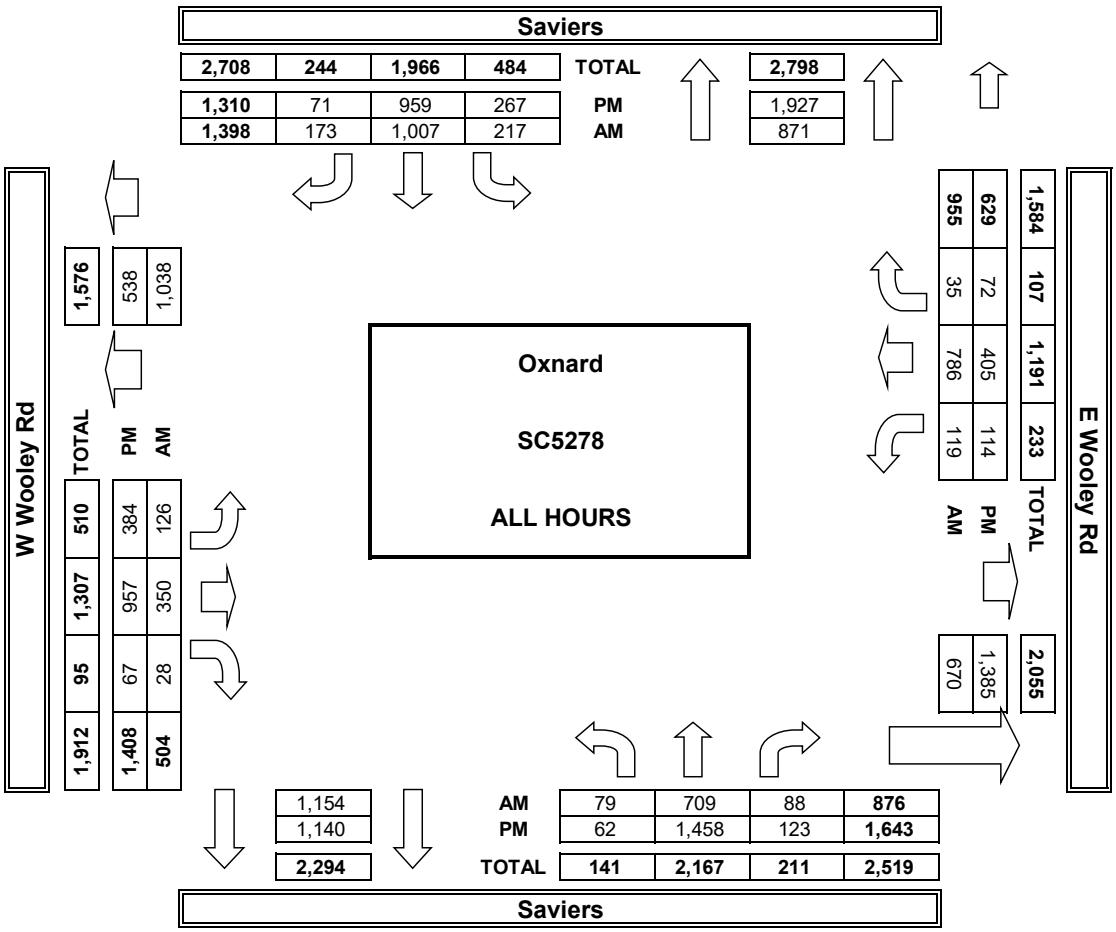
		NORTHBOUND Saviers			SOUTHBOUND Saviers			EASTBOUND W Wooley Rd			WESTBOUND E Wooley Rd				U-TURNS				
	LANES:	NL 1	NT 2	NR 1	SL 0.5	ST 2.5	SR 0.5	EL 1	ET 1.5	ER 0.5	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	5	56	8	21	104	37	7	20	3	9	126	1	397	0	0	0	0	0
	6:45 AM	7	55	4	17	107	39	8	22	2	8	95	1	365	0	0	0	1	1
	7:00 AM	6	63	9	16	90	23	7	43	1	20	88	1	367	0	0	0	1	1
	7:15 AM	10	77	10	27	115	13	24	46	3	15	107	5	452	0	1	0	0	1
	7:30 AM	10	103	9	25	171	18	27	44	8	19	100	7	541	0	0	0	3	3
	7:45 AM	17	142	21	31	130	15	23	69	3	13	105	6	575	0	0	0	2	2
	8:00 AM	16	105	14	44	132	15	18	61	5	16	77	8	511	0	0	0	5	5
	8:15 AM	8	108	13	36	158	13	12	45	3	19	88	6	509	0	0	0	3	3
	VOLUMES	79	709	88	217	1,007	173	126	350	28	119	786	35	3,733	0	1	0	15	16
	APPROACH %	9%	81%	10%	16%	72%	12%	25%	69%	6%	12%	82%	4%						
	APP/DEPART	876	/	871	1,398	/	1,154	504	/	670	955	/	1,038	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	51	458	57	136	591	61	80	219	19	67	370	27	2,149	0	0	0	13	
	APPROACH %	9%	81%	10%	17%	75%	8%	25%	69%	6%	14%	78%	6%						
	PEAK HR FACTOR		0.786			0.921			0.837			0.924		0.931					
	APP/DEPART	566	/	565	788	/	677	318	/	425	477	/	482	0					
PM	4:00 PM	5	168	17	18	123	10	56	149	13	19	33	8	619	0	2	0	3	5
	4:15 PM	5	162	20	42	128	6	54	90	13	9	64	11	604	0	1	0	5	6
	4:30 PM	10	158	21	33	113	6	47	131	11	16	63	9	618	0	1	0	4	5
	4:45 PM	8	194	11	38	123	10	48	124	7	16	55	4	638	0	4	0	8	12
	5:00 PM	11	170	17	35	146	7	48	119	7	13	38	7	618	0	2	0	3	5
	5:15 PM	6	207	10	30	104	12	47	127	6	7	47	9	612	0	1	0	7	8
	5:30 PM	7	205	14	31	107	9	50	111	7	14	59	10	624	0	1	0	6	7
	5:45 PM	10	194	13	40	115	11	34	106	3	20	46	14	606	0	1	0	2	3
	VOLUMES	62	1,458	123	267	959	71	384	957	67	114	405	72	4,990	0	13	0	38	51
	APPROACH %	4%	89%	7%	20%	73%	5%	27%	68%	5%	18%	64%	11%						
	APP/DEPART	1,643	/	1,927	1,310	/	1,140	1,408	/	1,385	629	/	538	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	32	776	52	134	480	38	193	481	27	50	199	30	2,524	0	8	0	24	
	APPROACH %	4%	90%	6%	20%	73%	6%	28%	69%	4%	17%	66%	10%						
	PEAK HR FACTOR		0.951			0.868			0.974			0.851		0.971					
	APP/DEPART	860	/	1,007	660	/	557	701	/	691	303	/	269	0					

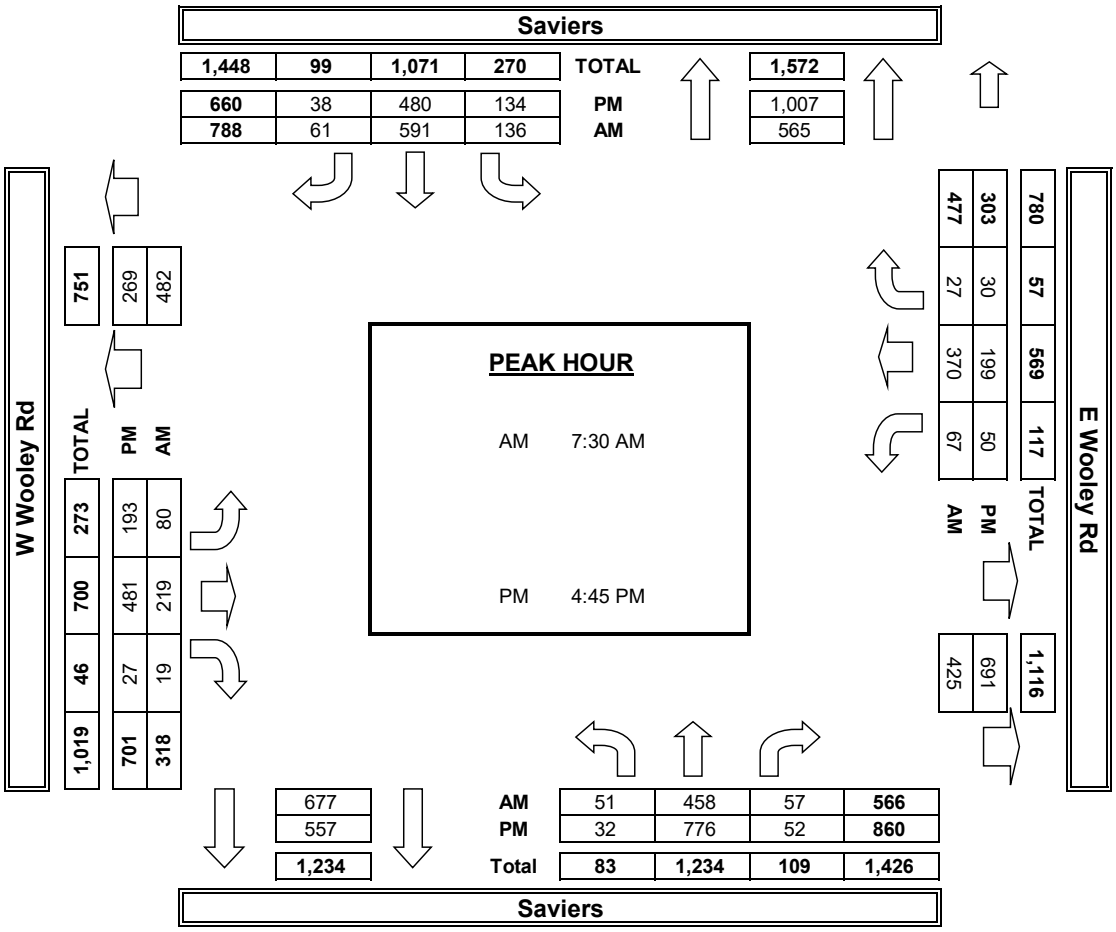


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	6:45 AM	1	3	4	3	11	1	1	1	3	6	0	2	3	0	5
	7:00 AM	0	0	1	1	2	0	0	1	1	2	0	0	0	0	0
	7:15 AM	0	2	2	5	9	0	1	1	3	5	0	1	1	2	4
	7:30 AM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	7:45 AM	0	1	0	2	3	0	1	0	2	3	0	0	0	0	0
	8:00 AM	0	2	2	2	6	0	2	1	2	5	0	0	1	0	1
	8:15 AM	0	1	2	1	4	0	1	2	0	3	0	0	0	1	1
	TOTAL	1	9	12	15	37	1	6	6	12	25	0	3	6	3	12
	BEGIN PEAK HR			7:30 AM			0	4	3	4	11					
PM	4:00 PM	0	2	3	2	7	0	1	1	1	3	0	1	2	1	4
	4:15 PM	0	3	2	4	9	0	2	1	4	7	0	1	1	0	2
	4:30 PM	0	5	3	5	13	0	4	3	4	11	0	1	0	1	2
	4:45 PM	0	2	3	1	6	0	1	1	1	3	0	1	2	0	3
	5:00 PM	0	0	7	2	9	0	0	4	2	6	0	0	3	0	3
	5:15 PM	0	4	0	2	6	0	4	0	2	6	0	0	0	0	0
	5:30 PM	0	2	3	1	6	0	1	1	1	3	0	1	2	0	3
	5:45 PM	0	0	5	2	7	0	0	1	2	3	0	0	4	0	4
	TOTAL	0	18	26	19	63	0	13	12	17	42	0	5	14	2	21
	BEGIN PEAK HR			4:45 PM			0	6	6	6	18					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

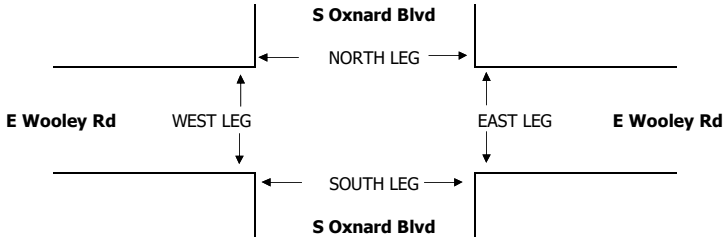
LOCATION: Oxnard
NORTH & SOUTH: S Oxnard Blvd
EAST & WEST: E Wooley Rd

PROJECT #: SC5278
LOCATION #: 13a
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

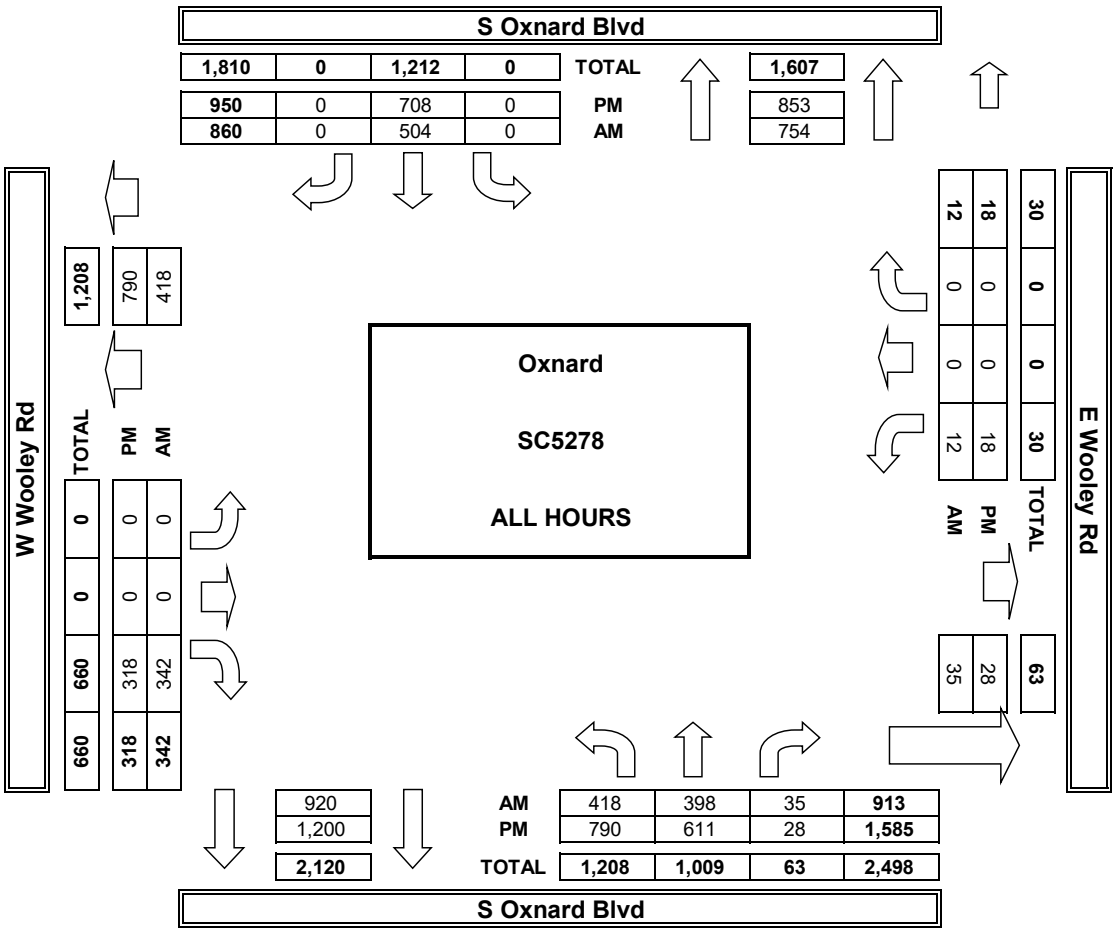
		NORTHBOUND S Oxnard Blvd			SOUTHBOUND S Oxnard Blvd			EASTBOUND W Wooley Rd			WESTBOUND E Wooley Rd				U-TURNS				
	LANES:	NL 2	NT 2	NR 0	SL 0.5	ST 1.5	SR 0.5	EL 1	ET 1.5	ER 0.5	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	28	38	1	0	43	0	0	0	45	1	0	0	156	4	59	0	0	63
	6:45 AM	41	41	5	0	39	0	0	0	39	0	0	0	165	3	31	0	0	34
	7:00 AM	25	31	5	0	34	0	0	0	35	1	0	0	131	5	28	0	0	33
	7:15 AM	29	45	6	0	49	0	0	0	49	2	0	0	180	6	39	0	0	45
	7:30 AM	57	72	4	0	55	0	0	0	43	1	0	0	232	7	55	0	0	62
	7:45 AM	85	63	2	0	105	0	0	0	43	2	0	0	300	12	55	0	0	67
	8:00 AM	79	59	5	0	85	0	0	0	52	1	0	0	281	13	47	0	0	60
	8:15 AM	74	49	7	0	94	0	0	0	36	4	0	0	264	12	42	0	0	54
	VOLUMES	418	398	35	0	504	0	0	0	342	12	0	0	2,127	62	356	0	0	418
	APPROACH %	46%	44%	4%	0%	59%	0%	0%	0%	100%	100%	0%	0%						
	APP/DEPART	913	/	754	860	/	920	342	/	35	12	/	418	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	295	243	18	0	339	0	0	0	174	8	0	0	1,320	44	199	0	0	
	APPROACH %	49%	41%	3%	0%	63%	0%	0%	0%	100%	100%	0%	0%						
	PEAK HR FACTOR		0.926			0.841			0.837			0.500		0.899					
	APP/DEPART	600	/	442	538	/	565	174	/	18	8	/	295	0					
PM	4:00 PM	87	77	1	0	88	0	0	0	35	3	0	0	291	20	31	0	0	51
	4:15 PM	109	95	4	0	77	0	0	0	51	6	0	0	342	16	30	0	0	46
	4:30 PM	104	80	4	0	97	0	0	0	44	2	0	0	331	22	28	0	0	50
	4:45 PM	99	66	2	0	100	0	0	0	35	0	0	0	302	21	31	0	0	52
	5:00 PM	91	80	2	0	62	0	0	0	33	2	0	0	270	18	30	0	0	48
	5:15 PM	107	72	4	0	99	0	0	0	31	1	0	0	314	22	32	0	0	54
	5:30 PM	93	74	4	0	92	0	0	0	50	3	0	0	316	17	35	0	0	52
	5:45 PM	100	67	7	0	93	0	0	0	39	1	0	0	307	20	25	0	0	45
	VOLUMES	790	611	28	0	708	0	0	0	318	18	0	0	2,871	156	242	0	0	398
	APPROACH %	50%	39%	2%	0%	75%	0%	0%	0%	100%	100%	0%	0%						
	APP/DEPART	1,585	/	853	950	/	1,200	318	/	28	18	/	790	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	399	318	11	0	362	0	0	0	165	11	0	0	1,465	79	120	0	0	
	APPROACH %	49%	39%	1%	0%	75%	0%	0%	0%	100%	100%	0%	0%						
	PEAK HR FACTOR		0.901			0.920			0.809			0.458		0.944					
	APP/DEPART	807	/	438	482	/	617	165	/	11	11	/	399	0					

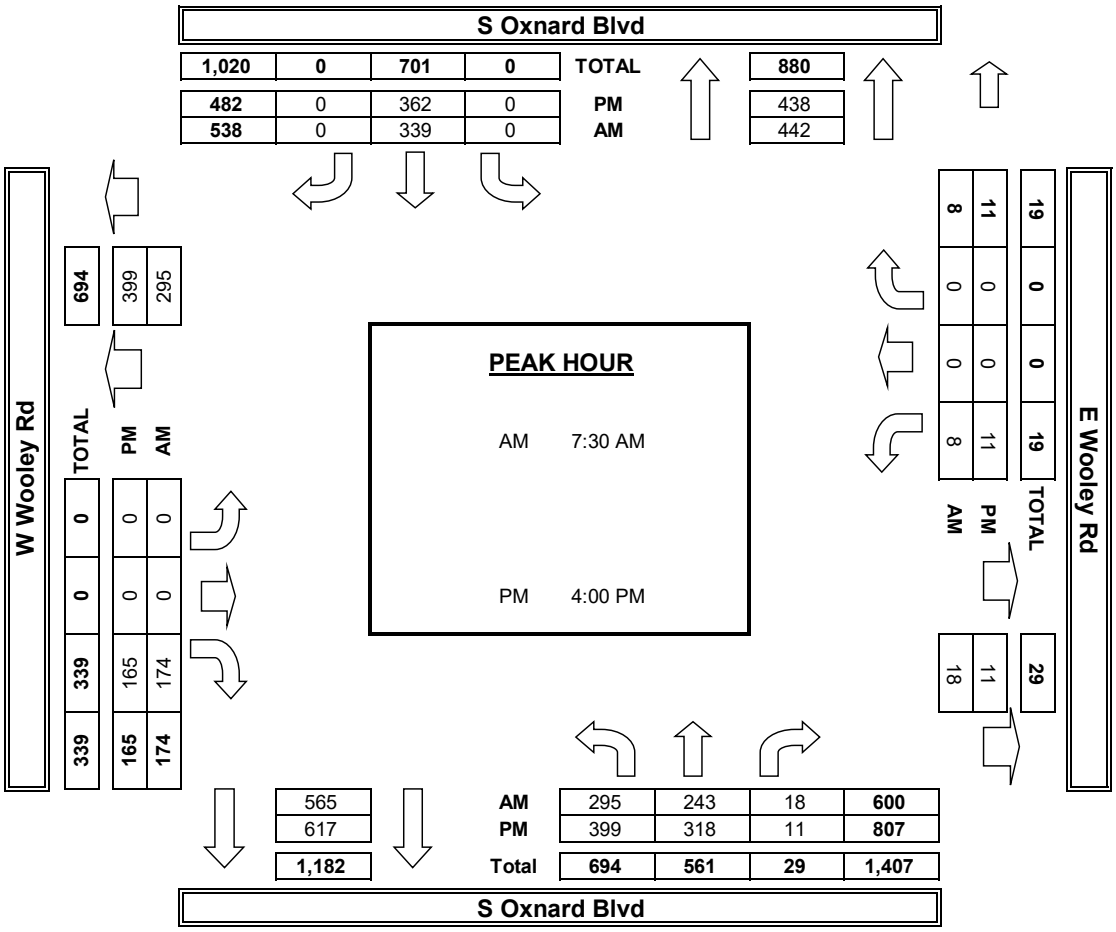


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:45 AM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
	BEGIN PEAK HR			7:30 AM			0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BEGIN PEAK HR			4:00 PM			0	0	0	0	0					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

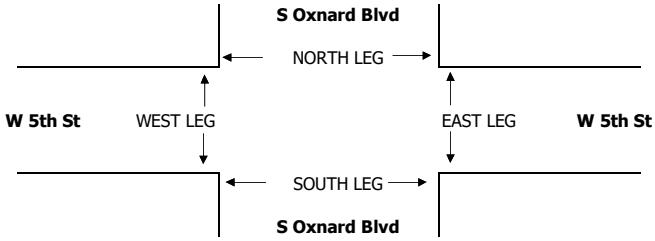
DATE: Tue, Apr 8, 25

LOCATION: Oxnard
NORTH & SOUTH: S Oxnard Blvd
EAST & WEST: W 5th St
PROJECT #: SC5278
LOCATION #: 14
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

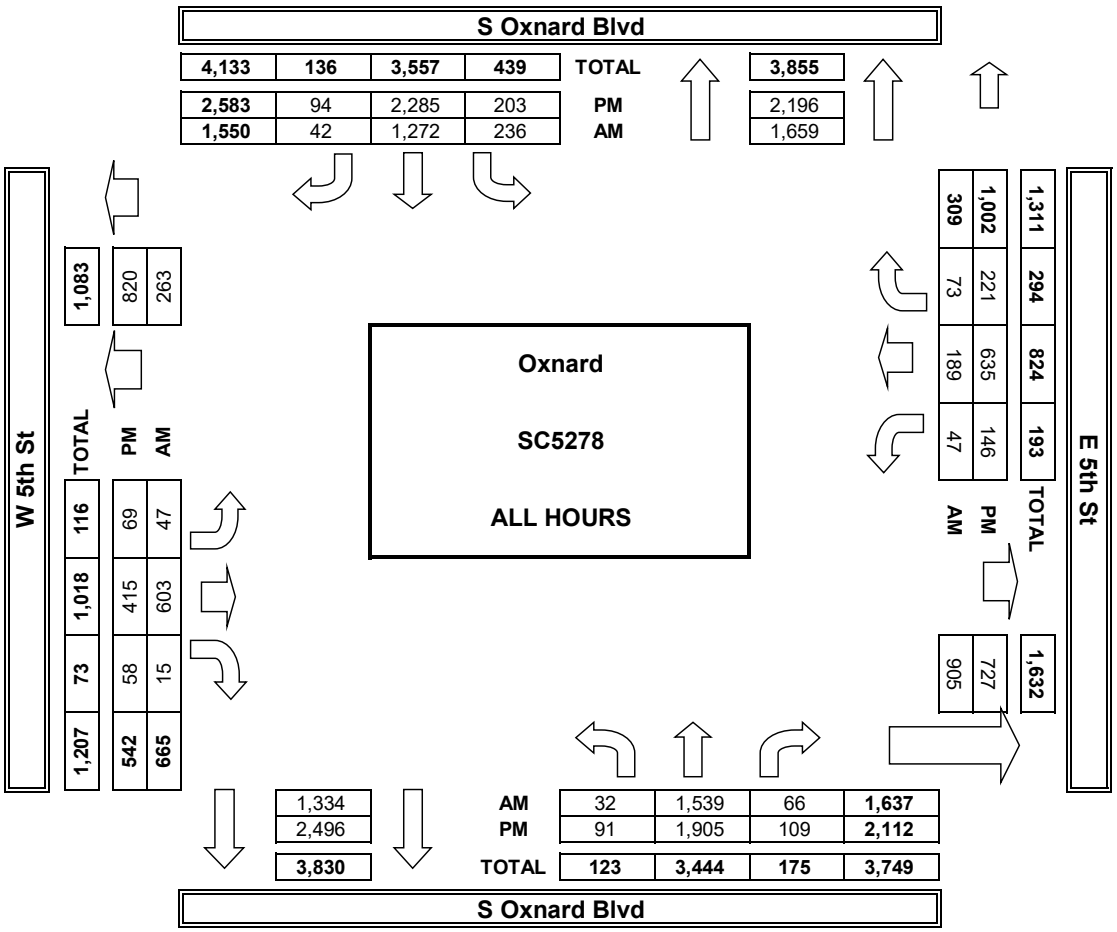
		NORTHBOUND S Oxnard Blvd			SOUTHBOUND S Oxnard Blvd			EASTBOUND W 5th St			WESTBOUND E 5th St				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 1	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	5	210	5	31	91	2	9	67	2	1	6	6	435	0	0	0	0	0
	6:45 AM	3	156	6	31	117	7	2	58	1	6	20	8	415	0	0	0	0	0
	7:00 AM	5	151	9	23	116	5	2	53	2	7	13	5	391	0	0	0	0	0
	7:15 AM	5	186	6	16	134	5	5	72	3	3	12	12	459	0	0	0	0	0
	7:30 AM	4	236	11	26	222	5	6	81	3	5	25	8	632	0	0	0	0	0
	7:45 AM	4	214	10	36	202	4	9	119	0	8	48	12	666	0	0	0	0	0
	8:00 AM	3	199	9	42	258	9	10	81	2	5	31	9	658	0	0	0	0	0
	8:15 AM	3	187	10	31	132	5	4	72	2	12	34	13	505	0	0	0	0	0
	VOLUMES	32	1,539	66	236	1,272	42	47	603	15	47	189	73	4,161	0	0	0	0	0
	APPROACH %	2%	94%	4%	15%	82%	3%	7%	91%	2%	15%	61%	24%						
	APP/DEPART	1,637	/	1,659	1,550	/	1,334	665	/	905	309	/	263	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	14	836	40	135	814	23	29	353	7	30	138	42	2,461	0	0	0	0	
	APPROACH %	2%	94%	4%	14%	84%	2%	7%	91%	2%	14%	66%	20%						
	PEAK HR FACTOR		0.886			0.786			0.760			0.772		0.924					
	APP/DEPART	890	/	907	972	/	851	389	/	528	210	/	175	0					
PM	4:00 PM	12	233	13	21	257	11	11	51	8	16	77	26	736	0	0	0	0	0
	4:15 PM	12	239	11	30	277	16	4	41	7	21	85	34	777	2	0	0	0	2
	4:30 PM	7	241	11	32	324	12	12	57	5	19	80	35	835	4	0	0	0	4
	4:45 PM	13	244	16	12	264	13	7	61	6	16	79	35	766	1	0	0	0	1
	5:00 PM	18	242	16	36	300	11	12	54	6	20	65	13	793	0	1	0	0	1
	5:15 PM	7	255	18	27	290	12	4	61	13	18	81	35	821	0	0	0	0	0
	5:30 PM	13	228	15	22	295	10	11	40	5	18	89	22	768	0	0	0	0	0
	5:45 PM	9	223	9	23	278	9	8	50	8	18	79	21	735	0	0	0	0	0
	VOLUMES	91	1,905	109	203	2,285	94	69	415	58	146	635	221	6,239	7	1	0	0	8
	APPROACH %	4%	90%	5%	8%	88%	4%	13%	77%	11%	15%	63%	22%						
	APP/DEPART	2,112	/	2,196	2,583	/	2,496	542	/	727	1,002	/	820	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	45	982	61	107	1,178	48	35	233	30	73	305	118	3,221	5	1	0	0	
	APPROACH %	4%	90%	6%	8%	88%	4%	12%	78%	10%	15%	61%	24%						
	PEAK HR FACTOR		0.976			0.906			0.955			0.925		0.960					
	APP/DEPART	1,093	/	1,136	1,334	/	1,286	298	/	401	496	/	398	0					

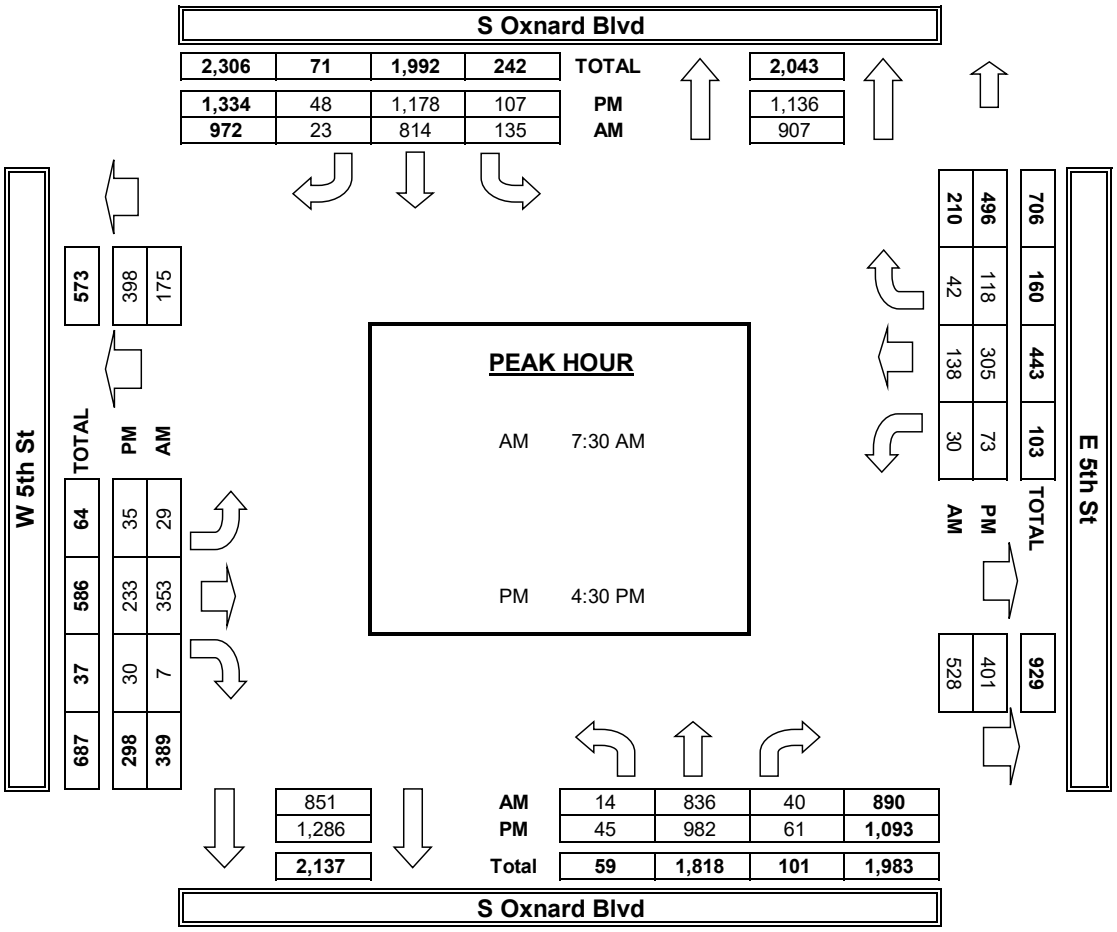


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	6:30 AM	2	4	2	0	8	1	1	2	0	4	1	3	0	0	4
	6:45 AM	0	6	3	0	9	0	2	2	0	4	0	4	1	0	5
	7:00 AM	0	0	2	2	4	0	0	0	2	2	0	0	2	0	2
	7:15 AM	1	0	1	1	3	1	0	0	0	1	0	0	1	1	2
	7:30 AM	2	5	0	0	7	2	3	0	0	5	0	2	0	0	2
	7:45 AM	0	1	1	0	2	0	0	0	0	0	0	1	1	0	2
	8:00 AM	3	3	0	1	7	2	1	0	1	4	1	2	0	0	3
	8:15 AM	0	0	2	0	2	0	0	0	0	0	0	0	2	0	2
	TOTAL	8	19	11	4	42	6	7	4	3	20	2	12	7	1	22
	BEGIN PEAK HR			7:30 AM			4	4	0	1	9					
PM	4:00 PM	3	5	13	3	24	3	5	12	2	22	0	0	1	1	2
	4:15 PM	4	2	4	3	13	4	1	3	2	10	0	1	1	1	3
	4:30 PM	1	5	4	1	11	0	3	3	1	7	1	2	1	0	4
	4:45 PM	3	6	5	4	18	2	4	4	0	10	1	2	1	4	8
	5:00 PM	7	11	8	2	28	6	10	7	1	24	1	1	1	1	4
	5:15 PM	8	1	8	1	18	2	1	5	0	8	6	0	3	1	10
	5:30 PM	2	13	7	2	24	2	12	4	2	20	0	1	3	0	4
	5:45 PM	7	13	7	2	29	6	13	5	2	26	1	0	2	0	3
	TOTAL	35	56	56	18	165	25	49	43	10	127	10	7	13	8	38
	BEGIN PEAK HR			4:30 PM			10	18	19	2	49					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

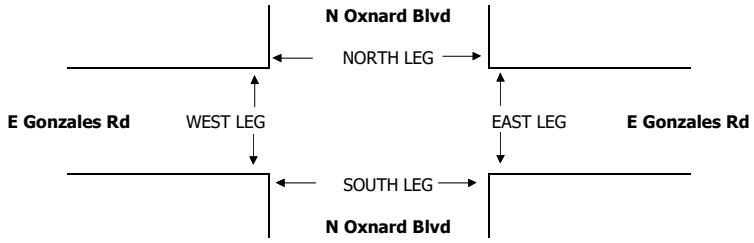
LOCATION: Oxnard
NORTH & SOUTH: N Oxnard Blvd
EAST & WEST: E Gonzales Rd

PROJECT #: SC5278
LOCATION #: 15
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N / ◄ W / E ► / S ▼

		NORTHBOUND N Oxnard Blvd			SOUTHBOUND N Oxnard Blvd			EASTBOUND W Gonzales Rd			WESTBOUND E Gonzales Rd				U-TURNS				
	LANES:	NL 2	NT 3	NR 1	SL 2	ST 3	SR 1	EL 2	ET 3	ER 0	WL 2	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	14	240	35	21	87	11	59	155	22	14	70	39	767	0	0	0	0	0
	6:45 AM	11	247	44	30	129	9	26	130	11	27	62	48	774	0	1	0	0	1
	7:00 AM	22	203	36	43	130	11	62	110	15	25	79	55	791	0	0	0	0	0
	7:15 AM	20	197	67	57	169	14	80	261	13	41	112	87	1,118	0	2	0	0	2
	7:30 AM	25	316	99	72	236	6	64	267	18	71	165	90	1,429	2	0	0	0	2
	7:45 AM	26	230	112	55	242	5	49	354	16	78	184	112	1,463	0	1	0	0	1
	8:00 AM	29	286	118	94	271	11	33	259	18	54	193	119	1,485	2	2	0	0	4
	8:15 AM	22	227	137	76	215	5	32	300	16	94	259	98	1,481	0	0	0	0	0
	VOLUMES	169	1,946	648	448	1,479	72	405	1,836	129	404	1,124	648	9,318	4	6	0	0	10
	APPROACH %	6%	70%	23%	22%	74%	4%	17%	77%	5%	19%	52%	30%						
	APP/DEPART	2,767	/	3,005	2,005	/	2,016	2,370	/	2,932	2,176	/	1,365	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	102	1,059	466	297	964	27	178	1,180	68	297	801	419	5,865	4	3	0	0	
	APPROACH %	6%	65%	29%	23%	75%	2%	12%	83%	5%	20%	53%	28%						
	PEAK HR FACTOR		0.923			0.854			0.851			0.841		0.985					
	APP/DEPART	1,631	/	1,659	1,291	/	1,333	1,426	/	1,943	1,517	/	930	0					
PM	4:00 PM	46	236	69	67	274	13	51	154	13	84	286	89	1,382	1	1	0	1	3
	4:15 PM	54	284	85	74	318	42	47	179	27	95	280	116	1,601	2	3	0	0	5
	4:30 PM	28	223	55	85	321	32	76	233	19	81	270	94	1,517	0	2	1	0	3
	4:45 PM	33	321	60	83	309	35	67	183	24	90	275	108	1,588	0	2	2	0	4
	5:00 PM	39	273	83	86	258	53	62	205	20	55	287	116	1,537	0	0	1	0	1
	5:15 PM	25	246	91	102	299	34	63	173	23	84	206	119	1,465	0	1	0	1	2
	5:30 PM	33	229	77	84	262	44	43	185	23	86	304	120	1,490	1	0	0	1	2
	5:45 PM	36	233	66	85	292	48	65	190	24	67	211	88	1,405	1	1	0	1	3
	VOLUMES	294	2,045	586	666	2,333	301	474	1,502	173	642	2,119	850	12,008	5	10	4	4	23
	APPROACH %	10%	70%	20%	20%	70%	9%	22%	70%	8%	18%	59%	24%						
	APP/DEPART	2,930	/	3,379	3,310	/	3,153	2,153	/	2,758	3,615	/	2,718	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	154	1,101	283	328	1,206	162	252	800	90	321	1,112	434	6,256	2	7	4	0	
	APPROACH %	10%	71%	18%	19%	71%	10%	22%	70%	8%	17%	60%	23%						
	PEAK HR FACTOR		0.906			0.968			0.871			0.951		0.974					
	APP/DEPART	1,540	/	1,794	1,703	/	1,619	1,146	/	1,411	1,867	/	1,432	0					



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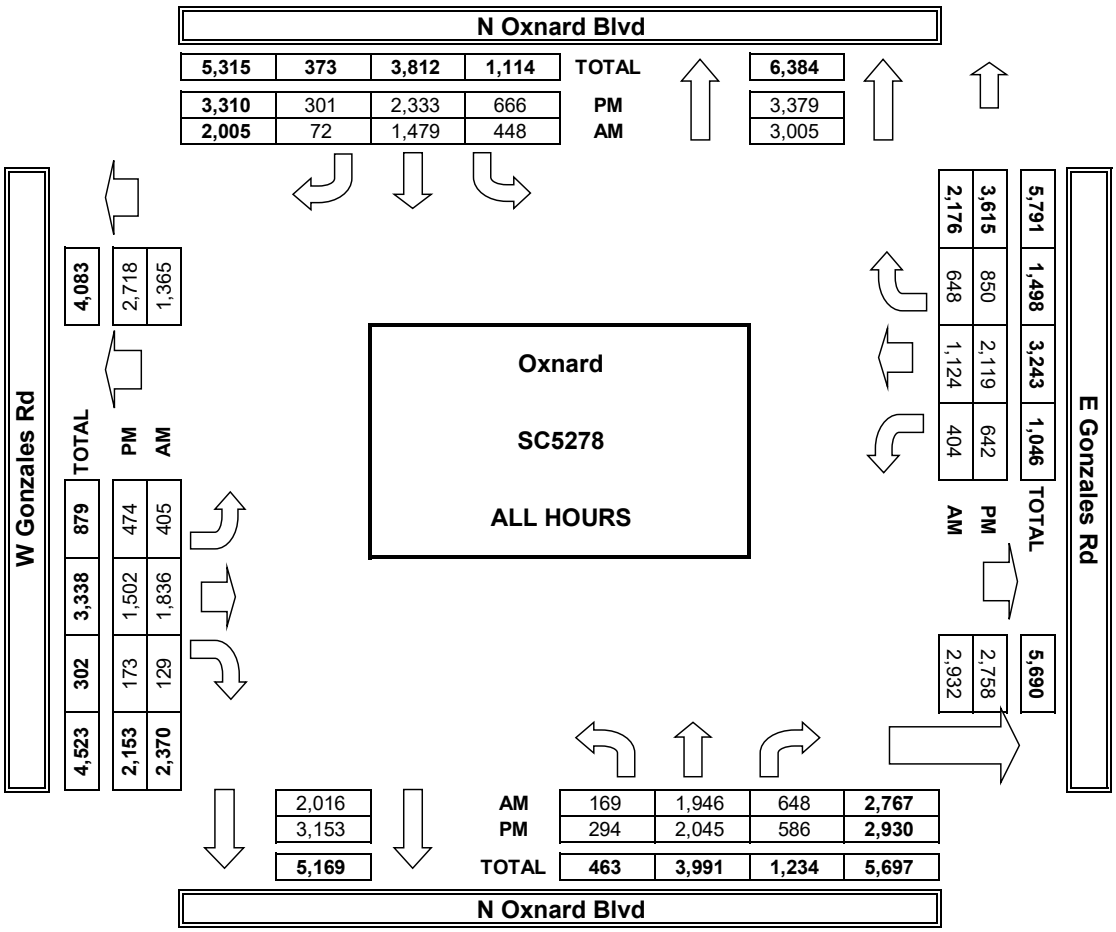
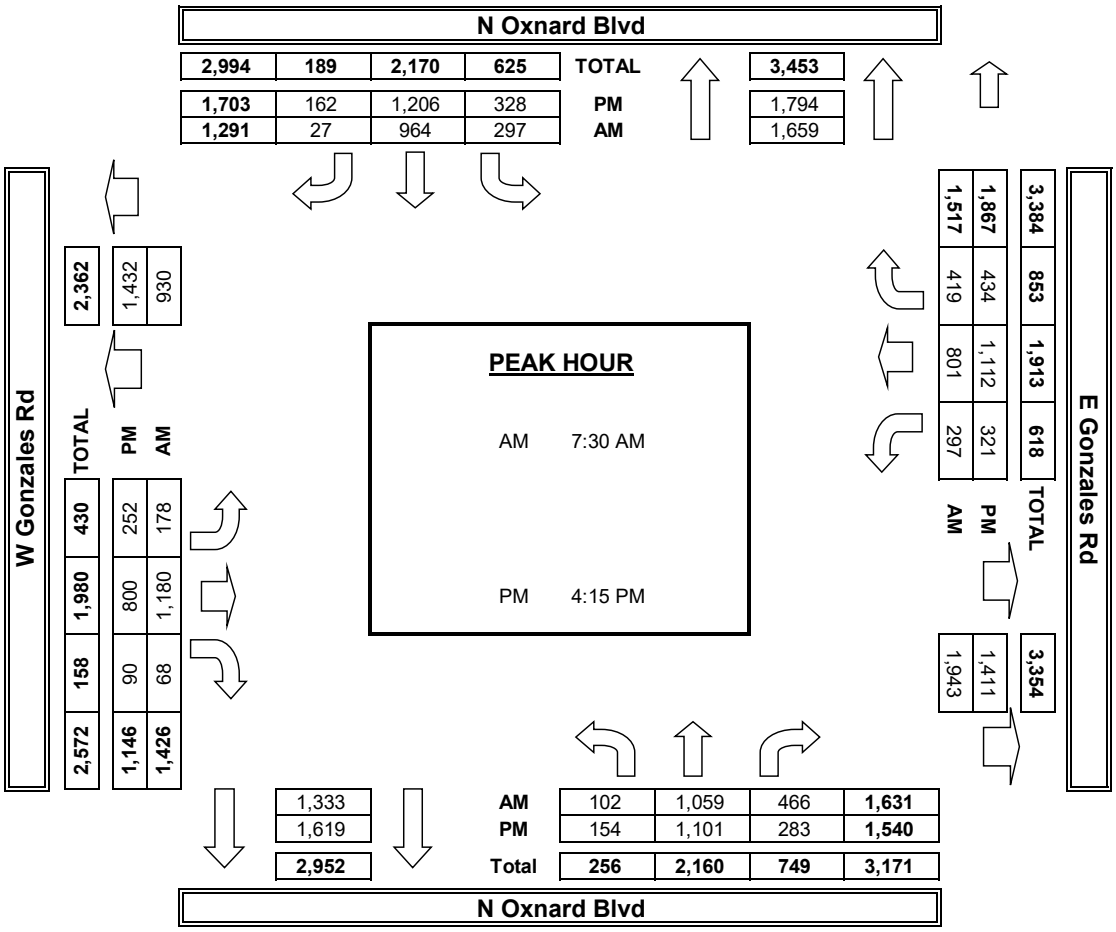
TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T112224

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 2, 25

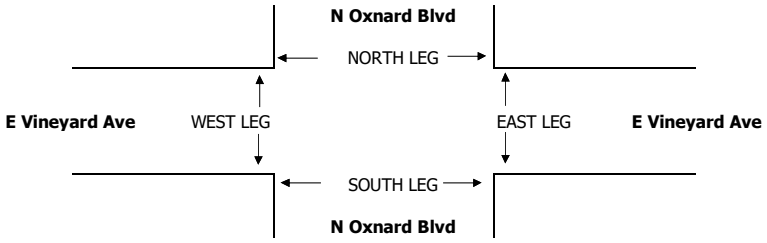
LOCATION: Oxnard
NORTH & SOUTH: N Oxnard Blvd
EAST & WEST: E Vineyard Ave

PROJECT #: SC5278
LOCATION #: 16
CONTROL: SIGNAL

NOTES:

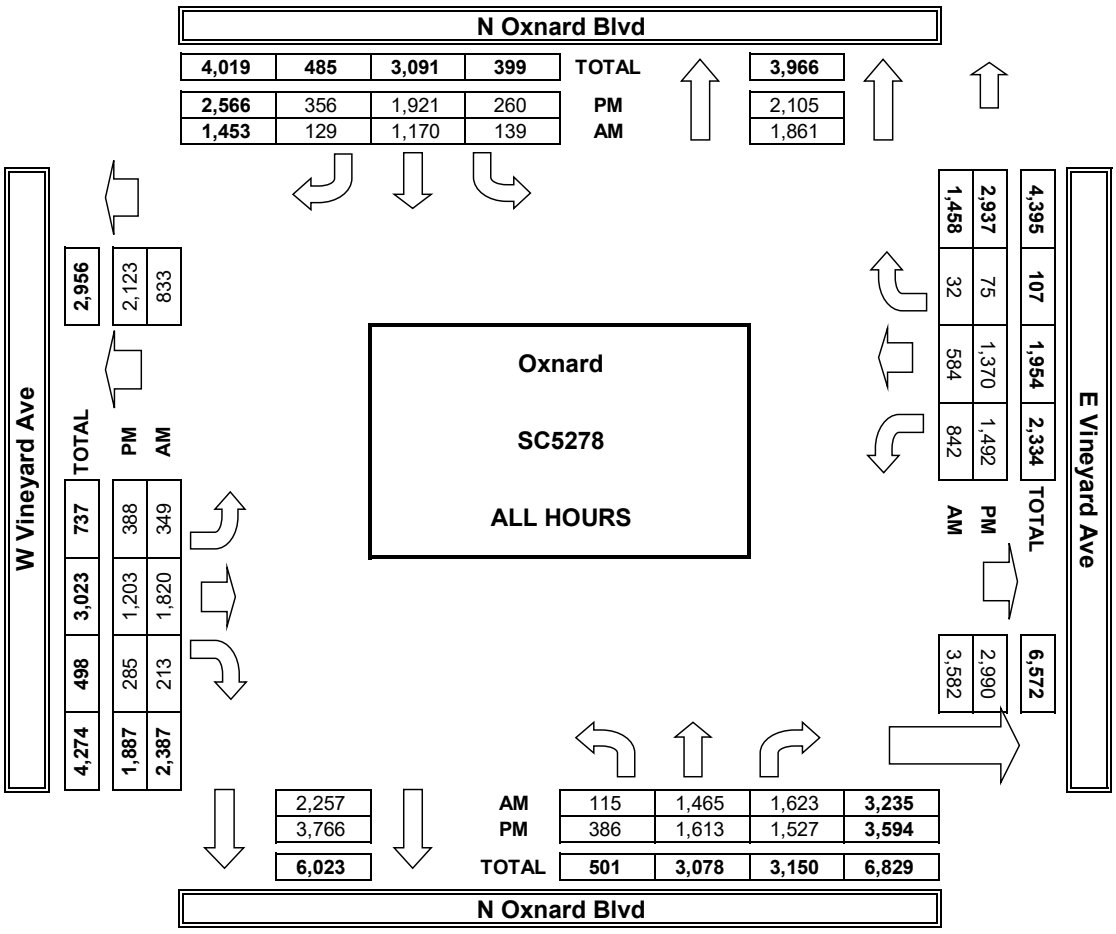
AM / PM / MD / OTHER / OTHER — ▲ N / ◄ W / E ► / S ▼

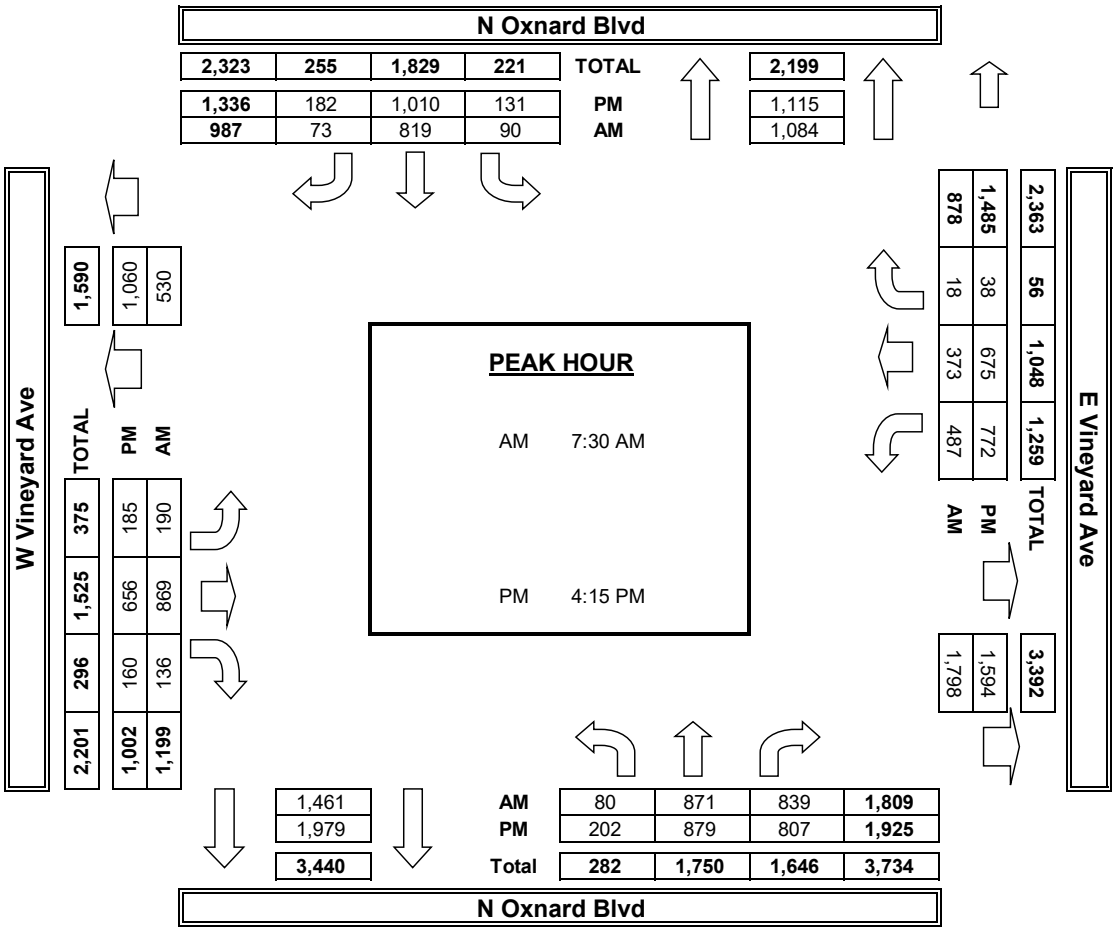
		NORTHBOUND N Oxnard Blvd			SOUTHBOUND N Oxnard Blvd			EASTBOUND W Vineyard Ave			WESTBOUND E Vineyard Ave				U-TURNS				
	LANES:	NL 2	NT 2	NR 2	SL 2	ST 2.5	SR 0.5	EL 1.5	ET 2.5	ER 0.5	WL 3	WT 1.5	WR 0.5	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	6:30 AM	8	162	240	7	68	9	36	210	18	76	44	5	883	4	3	0	0	7
	6:45 AM	7	146	167	9	69	15	41	256	21	68	47	5	851	5	0	1	0	6
	7:00 AM	16	155	188	14	93	17	32	196	14	97	53	4	879	3	6	0	0	9
	7:15 AM	4	131	189	19	121	15	50	289	24	114	67	0	1,023	1	1	0	0	2
	7:30 AM	15	206	250	25	209	19	53	242	38	108	59	7	1,231	5	1	0	0	6
	7:45 AM	17	240	215	21	238	17	40	201	34	134	98	5	1,260	5	0	1	0	6
	8:00 AM	30	226	187	24	174	19	48	226	31	134	120	5	1,224	2	4	1	0	7
	8:15 AM	18	199	187	20	198	18	49	200	33	111	96	1	1,130	7	0	2	0	9
	VOLUMES	115	1,465	1,623	139	1,170	129	349	1,820	213	842	584	32	8,533	32	15	5	0	52
	APPROACH %	4%	45%	50%	10%	81%	9%	15%	76%	9%	58%	40%	2%						
	APP/DEPART	3,235	/	1,861	1,453	/	2,257	2,387	/	3,582	1,458	/	833	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	80	871	839	90	819	73	190	869	136	487	373	18	4,873	19	5	4	0	
	APPROACH %	4%	48%	46%	9%	83%	7%	16%	72%	11%	55%	42%	2%						
	PEAK HR FACTOR		0.948			0.894			0.900			0.847		0.962					
	APP/DEPART	1,809	/	1,084	987	/	1,461	1,199	/	1,798	878	/	530	0					
PM	4:00 PM	41	190	179	28	207	38	53	162	20	191	192	12	1,313	6	4	1	0	11
	4:15 PM	53	237	194	29	259	44	43	157	44	200	171	12	1,443	7	6	0	0	13
	4:30 PM	44	210	190	33	237	42	54	193	40	212	172	8	1,435	11	0	0	0	11
	4:45 PM	61	233	220	28	221	48	45	139	37	184	161	8	1,385	8	3	1	0	12
	5:00 PM	44	199	203	41	293	48	43	167	39	176	171	10	1,434	11	4	0	0	15
	5:15 PM	54	201	203	37	198	34	44	108	35	202	170	17	1,303	9	6	2	0	17
	5:30 PM	52	180	172	32	265	55	53	112	33	164	160	6	1,284	6	3	5	0	14
	5:45 PM	37	163	166	32	241	47	53	165	37	163	173	2	1,279	10	3	2	0	15
	VOLUMES	386	1,613	1,527	260	1,921	356	388	1,203	285	1,492	1,370	75	10,984	68	29	11	0	108
	APPROACH %	11%	45%	42%	10%	75%	14%	21%	64%	15%	51%	47%	3%						
	APP/DEPART	3,594	/	2,105	2,566	/	3,766	1,887	/	2,990	2,937	/	2,123	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	202	879	807	131	1,010	182	185	656	160	772	675	38	5,748	37	13	1	0	
	APPROACH %	10%	46%	42%	10%	76%	14%	18%	65%	16%	52%	45%	3%						
	PEAK HR FACTOR		0.922			0.865			0.873			0.947		0.987					
	APP/DEPART	1,925	/	1,115	1,336	/	1,979	1,002	/	1,594	1,485	/	1,060	0					



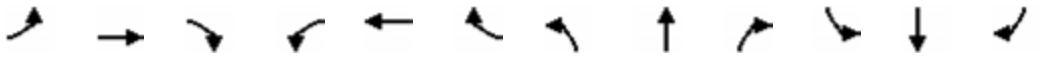
AimTD LLC

TURNING MOVEMENT COUNTS





Appendix B – LOS Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	272	120	108	161	110	141	932	93	145	848	55
Future Volume (veh/h)	107	272	120	108	161	110	141	932	93	145	848	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.95	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	119	302	24	120	179	29	157	1036	40	161	942	25
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	143	736	305	144	633	100	181	1273	541	187	1845	545
Arrive On Green	0.08	0.21	0.21	0.08	0.21	0.21	0.10	0.36	0.36	0.03	0.12	0.12
Sat Flow, veh/h	1767	3526	1459	1767	3021	478	1767	3526	1498	1767	5066	1496
Grp Volume(v), veh/h	119	302	24	120	103	105	157	1036	40	161	942	25
Grp Sat Flow(s),veh/h/ln	1767	1763	1459	1767	1763	1737	1767	1763	1498	1767	1689	1496
Q Serve(g_s), s	9.3	10.4	1.9	9.4	6.8	7.1	12.2	37.2	2.5	12.7	24.4	2.1
Cycle Q Clear(g_c), s	9.3	10.4	1.9	9.4	6.8	7.1	12.2	37.2	2.5	12.7	24.4	2.1
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	143	736	305	144	369	364	181	1273	541	187	1845	545
V/C Ratio(X)	0.83	0.41	0.08	0.83	0.28	0.29	0.87	0.81	0.07	0.86	0.51	0.05
Avail Cap(c_a), veh/h	240	831	344	240	369	364	240	1273	541	240	1845	545
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	63.4	47.9	44.5	63.4	46.5	46.6	61.9	40.5	29.4	66.5	49.9	40.1
Incr Delay (d2), s/veh	11.7	1.0	0.3	11.7	1.1	1.2	21.6	5.8	0.3	20.5	1.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	4.6	0.7	4.6	3.1	3.2	6.5	16.8	0.9	7.1	11.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.1	48.9	44.8	75.1	47.6	47.8	83.4	46.3	29.6	87.0	50.8	40.2
LnGrp LOS	E	D	D	E	D	D	F	D	C	F	D	D
Approach Vol, veh/h		445			328			1233			1128	
Approach Delay, s/veh		55.7			57.7			50.5			55.8	
Approach LOS		E			E			D			E	

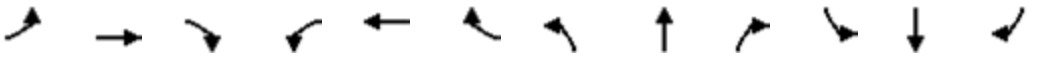
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.8	61.5	17.4	40.2	20.4	62.0	17.3	40.3
Change Period (Y+Rc), s	6.0	11.0	6.0	* 11	6.0	* 11	6.0	11.0
Max Green Setting (Gmax), s	19.0	40.0	19.0	* 33	19.0	* 45	19.0	28.0
Max Q Clear Time (g_c+I1), s	14.7	39.2	11.4	12.4	14.2	26.4	11.3	9.1
Green Ext Time (p_c), s	0.1	0.7	0.1	3.6	0.2	10.7	0.1	2.0

Intersection Summary	
HCM 7th Control Delay, s/veh	53.9
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

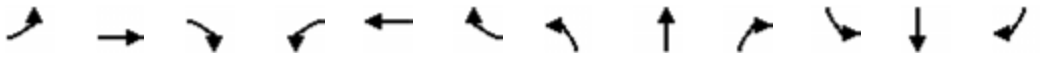
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	38	122	110	44	19	74	1178	22	6	901	149
Future Volume (veh/h)	270	38	122	110	44	19	74	1178	22	6	901	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	290	41	41	118	47	8	80	1267	23	6	969	89
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	379	227	227	353	416	71	101	3038	55	26	2790	847
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.02	0.20	0.20	0.00	0.18	0.18
Sat Flow, veh/h	1325	839	839	1294	1539	262	1767	5121	93	1767	5066	1539
Grp Volume(v), veh/h	290	0	82	118	0	55	80	836	454	6	969	89
Grp Sat Flow(s),veh/h/ln	1325	0	1679	1294	0	1801	1767	1689	1836	1767	1689	1539
Q Serve(g_s), s	29.5	0.0	5.2	10.8	0.0	3.2	6.3	30.3	30.3	0.5	23.4	6.8
Cycle Q Clear(g_c), s	32.7	0.0	5.2	16.0	0.0	3.2	6.3	30.3	30.3	0.5	23.4	6.8
Prop In Lane	1.00		0.50	1.00		0.15	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	379	0	454	353	0	487	101	2004	1090	26	2790	847
V/C Ratio(X)	0.76	0.00	0.18	0.33	0.00	0.11	0.79	0.42	0.42	0.23	0.35	0.11
Avail Cap(c_a), veh/h	447	0	540	419	0	579	240	2004	1090	240	2790	847
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.59	0.59	0.59	0.81	0.81	0.81
Uniform Delay (d), s/veh	50.8	0.0	39.2	45.3	0.0	38.4	67.8	35.1	35.1	68.9	35.3	28.5
Incr Delay (d2), s/veh	6.5	0.0	0.2	0.6	0.0	0.1	7.8	0.4	0.7	3.5	0.3	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	15.9	0.0	4.0	6.4	0.0	2.7	5.3	18.5	20.0	0.4	15.5	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.3	0.0	39.4	45.9	0.0	38.5	75.6	35.5	35.8	72.4	35.6	28.7
LnGrp LOS	E		D	D		D	E	D	D	E	D	C
Approach Vol, veh/h		372			173			1370			1064	
Approach Delay, s/veh		53.4			43.6			37.9			35.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	89.1		42.8	14.0	83.1		42.8				
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	19.0	59.0		45.0	19.0	59.0		45.0				
Max Q Clear Time (g_c+I1), s	2.5	32.3		34.7	8.3	25.4		18.0				
Green Ext Time (p_c), s	0.0	17.6		1.1	0.1	16.5		0.7				

Intersection Summary	
HCM 7th Control Delay, s/veh	39.2
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	734	899	218	88	437	84	250	996	164	246	887	310
Future Volume (veh/h)	734	899	218	88	437	84	250	996	164	246	887	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	781	956	122	94	465	15	266	1060	51	262	944	277
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	1175	1090	483	310	829	254	320	1484	459	467	1700	898
Arrive On Green	0.24	0.31	0.31	0.09	0.16	0.16	0.03	0.10	0.10	0.14	0.34	0.34
Sat Flow, veh/h	4983	3526	1563	3428	5066	1552	3428	5066	1566	3428	5066	1570
Grp Volume(v), veh/h	781	956	122	94	465	15	266	1060	51	262	944	277
Grp Sat Flow(s),veh/h/ln	1661	1763	1563	1714	1689	1552	1714	1689	1566	1714	1689	1570
Q Serve(g_s), s	19.9	36.0	8.2	3.6	11.8	1.1	10.8	28.4	3.1	10.0	21.3	4.1
Cycle Q Clear(g_c), s	19.9	36.0	8.2	3.6	11.8	1.1	10.8	28.4	3.1	10.0	21.3	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1175	1090	483	310	829	254	320	1484	459	467	1700	898
V/C Ratio(X)	0.66	0.88	0.25	0.30	0.56	0.06	0.83	0.71	0.11	0.56	0.56	0.31
Avail Cap(c_a), veh/h	1175	1133	503	343	1484	455	392	1484	459	467	1700	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	45.8	36.2	59.5	53.9	49.4	66.7	57.6	26.3	56.6	38.0	5.2
Incr Delay (d2), s/veh	3.0	8.9	0.7	0.5	1.6	0.3	10.5	2.6	0.4	4.8	1.3	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	16.6	3.2	1.6	5.1	0.5	5.4	13.2	1.7	4.6	8.9	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.5	54.7	37.0	60.1	55.5	49.7	77.2	60.1	26.7	61.4	39.3	6.1
LnGrp LOS	D	D	D	E	E	D	E	E	C	E	D	A
Approach Vol, veh/h		1859			574			1377			1483	
Approach Delay, s/veh		52.2			56.1			62.2			37.0	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.1	47.0	18.7	49.3	19.1	53.0	39.0	28.9
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	41.0	14.0	45.0	16.0	41.0	18.0	41.0
Max Q Clear Time (g_c+I1), s	12.0	30.4	5.6	38.0	12.8	23.3	21.9	13.8
Green Ext Time (p_c), s	0.3	7.7	0.1	5.3	0.3	12.1	0.0	6.4

Intersection Summary	
HCM 7th Control Delay, s/veh	51.0
HCM 7th LOS	D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	208	585	0	1771	1234	0
Future Volume (veh/h)	208	585	0	1771	1234	0
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	0	1856	1856	0
Adj Flow Rate, veh/h	221	598	0	1884	1313	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	408	727	0	3147	3147	0
Arrive On Green	0.23	0.23	0.00	0.62	0.62	0.00
Sat Flow, veh/h	1767	3145	0	5400	5400	0
Grp Volume(v), veh/h	221	598	0	1884	1313	0
Grp Sat Flow(s),veh/h/ln	1767	1572	0	1689	1689	0
Q Serve(g_s), s	11.5	19.0	0.0	23.5	13.9	0.0
Cycle Q Clear(g_c), s	11.5	19.0	0.0	23.5	13.9	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	408	727	0	3147	3147	0
V/C Ratio(X)	0.54	0.82	0.00	0.60	0.42	0.00
Avail Cap(c_a), veh/h	757	1348	0	3147	3147	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.5	38.3	0.0	12.0	10.2	0.0
Incr Delay (d2), s/veh	1.1	2.4	0.0	0.8	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	7.5	0.0	8.0	4.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	36.6	40.7	0.0	12.8	10.6	0.0
LnGrp LOS	D	D		B	B	
Approach Vol, veh/h	819			1884	1313	
Approach Delay, s/veh	39.6			12.8	10.6	
Approach LOS	D			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		75.6		29.4		75.6
Change Period (Y+Rc), s		* 10		5.1		10.4
Max Green Setting (Gmax), s		* 50		45.0		44.5
Max Q Clear Time (g_c+I1), s		25.5		21.0		15.9
Green Ext Time (p_c), s		22.8		3.3		23.0

Intersection Summary		
HCM 7th Control Delay, s/veh	17.6	
HCM 7th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	345	112	1111	0	0	1082
Future Volume (veh/h)	345	112	1111	0	0	1082
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	0	0	1856
Adj Flow Rate, veh/h	236	245	1195	0	0	1163
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	0	0	3
Cap, veh/h	326	290	3383	0	0	3383
Arrive On Green	0.18	0.18	0.67	0.00	0.00	0.67
Sat Flow, veh/h	1767	1572	5400	0	0	5400
Grp Volume(v), veh/h	236	245	1195	0	0	1163
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	0	0	1689
Q Serve(g_s), s	13.2	15.8	10.8	0.0	0.0	10.4
Cycle Q Clear(g_c), s	13.2	15.8	10.8	0.0	0.0	10.4
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	326	290	3383	0	0	3383
V/C Ratio(X)	0.72	0.84	0.35	0.00	0.00	0.34
Avail Cap(c_a), veh/h	757	674	3383	0	0	3383
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	40.3	41.4	7.6	0.0	0.0	7.5
Incr Delay (d2), s/veh	3.0	6.6	0.3	0.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	6.6	3.4	0.0	0.0	3.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	43.3	48.0	7.9	0.0	0.0	7.8
LnGrp LOS	D	D	A			A
Approach Vol, veh/h	481		1195			1163
Approach Delay, s/veh	45.7		7.9			7.8
Approach LOS	D		A			A

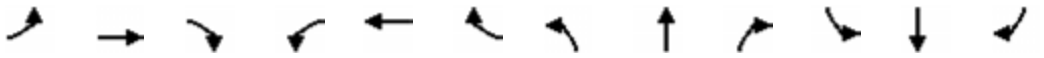
Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	80.5			80.5	24.5
Change Period (Y+Rc), s	10.4			* 10	5.1
Max Green Setting (Gmax), s	44.5			* 50	45.0
Max Q Clear Time (g_c+I1), s	12.8			12.4	17.8
Green Ext Time (p_c), s	23.4			25.8	1.6

Intersection Summary	
HCM 7th Control Delay, s/veh	14.3
HCM 7th LOS	B

Notes

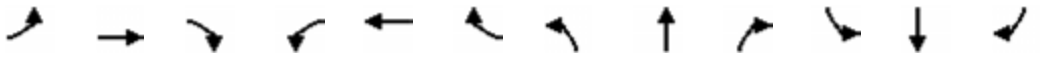
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	644	0	243	0	0	0	282	1157	0	0	1360	953
Future Volume (vph)	644	0	243	0	0	0	282	1157	0	0	1360	953
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0				6.5	6.5			6.5	6.5
Lane Util. Factor	0.94		1.00				0.97	0.91			0.91	1.00
Frpb, ped/bikes	1.00		0.99				1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00		1.00				1.00	1.00			1.00	1.00
Frt	1.00		0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	4942		1548				3400	5036			5036	1548
Flt Permitted	0.95		1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)	4942		1548				3400	5036			5036	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	700	0	264	0	0	0	307	1258	0	0	1478	1036
RTOR Reduction (vph)	0	0	207	0	0	0	0	0	0	0	0	368
Lane Group Flow (vph)	700	0	57	0	0	0	307	1258	0	0	1478	668
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm				Prot	NA		Prot	NA	Perm
Protected Phases	4				3		5	2		1	6	
Permitted Phases			4	3								6
Actuated Green, G (s)	23.5		23.5				15.5	72.6			50.6	50.6
Effective Green, g (s)	23.5		23.5				15.5	72.6			50.6	50.6
Actuated g/C Ratio	0.22		0.22				0.14	0.67			0.47	0.47
Clearance Time (s)	6.0		6.0				6.5	6.5			6.5	6.5
Vehicle Extension (s)	3.0		3.0				3.0	5.5			5.5	5.5
Lane Grp Cap (vph)	1069		334				485	3366			2346	721
v/s Ratio Prot	c0.14						c0.09	0.25			0.29	
v/s Ratio Perm			0.04									c0.43
v/c Ratio	0.65		0.17				0.63	0.37			0.63	0.93
Uniform Delay, d1	38.8		34.6				43.9	8.0			21.9	27.3
Progression Factor	1.00		1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2	1.5		0.2				2.7	0.2			0.9	18.8
Delay (s)	40.3		34.9				46.6	8.1			22.8	46.0
Level of Service	D		C				D	A			C	D
Approach Delay (s/veh)		38.8			0.0			15.7			32.4	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	108.6	Sum of lost time (s)	25.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



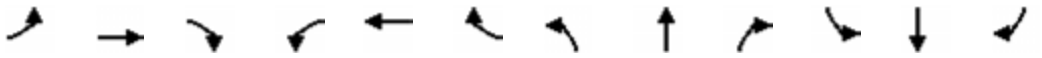
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	190	101	42	67	51	107	1174	71	183	1164	119
Future Volume (veh/h)	208	190	101	42	67	51	107	1174	71	183	1164	119
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	221	202	23	45	71	13	114	1249	40	195	1238	121
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	328	771	343	260	771	343	304	2718	830	348	2617	256
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.05	0.54	0.54	0.07	0.56	0.56
Sat Flow, veh/h	1300	3526	1568	1145	3526	1568	1767	5066	1547	1767	4686	458
Grp Volume(v), veh/h	221	202	23	45	71	13	114	1249	40	195	892	467
Grp Sat Flow(s),veh/h/ln	1300	1763	1568	1145	1763	1568	1767	1689	1547	1767	1689	1766
Q Serve(g_s), s	18.3	5.3	1.3	3.8	1.8	0.7	3.2	17.0	1.4	5.5	17.7	17.7
Cycle Q Clear(g_c), s	20.1	5.3	1.3	9.1	1.8	0.7	3.2	17.0	1.4	5.5	17.7	17.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	328	771	343	260	771	343	304	2718	830	348	1886	986
V/C Ratio(X)	0.67	0.26	0.07	0.17	0.09	0.04	0.37	0.46	0.05	0.56	0.47	0.47
Avail Cap(c_a), veh/h	509	1261	561	419	1261	561	618	2718	830	623	1886	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	36.2	34.7	40.0	34.8	34.4	11.9	15.9	12.3	12.2	14.8	14.8
Incr Delay (d2), s/veh	1.8	0.1	0.1	0.2	0.0	0.0	0.3	0.6	0.1	0.5	0.9	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	2.2	0.5	1.1	0.8	0.3	1.1	6.0	0.5	1.9	6.2	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.6	36.4	34.7	40.2	34.9	34.5	12.2	16.5	12.4	12.7	15.7	16.4
LnGrp LOS	D	D	C	D	C	C	B	B	B	B	B	B
Approach Vol, veh/h		446			129			1403			1554	
Approach Delay, s/veh		40.4			36.7			16.0			15.5	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.1	67.0		30.7	11.6	69.5		30.7				
Change Period (Y+Rc), s	6.5	7.0		6.3	6.5	7.0		6.3				
Max Green Setting (Gmax), s	25.0	60.0		40.0	25.0	60.0		40.0				
Max Q Clear Time (g_c+I1), s	7.5	19.0		22.1	5.2	19.7		11.1				
Green Ext Time (p_c), s	0.1	27.5		1.4	0.1	28.5		0.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.6									
HCM 7th LOS			B									

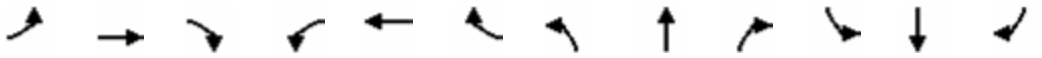
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	168	25	1088	0	0	0	0	1260	540	112	1228	0
Future Volume (vph)	168	25	1088	0	0	0	0	1260	540	112	1228	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8	4.0					4.0	4.0	4.8	9.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1689	1568					5036	2699	3400	5036	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1665	1689	1568					5036	2699	3400	5036	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	185	27	1196	0	0	0	0	1385	593	123	1349	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	105	107	1196	0	0	0	0	1385	593	123	1349	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free					NA	custom	Prot	NA	
Protected Phases	4	4						2 3		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	11.7	11.7	100.7					62.3	46.1	9.1	75.2	
Effective Green, g (s)	11.7	11.7	100.7					62.3	46.1	9.1	75.2	
Actuated g/C Ratio	0.12	0.12	1.00					0.62	0.46	0.09	0.75	
Clearance Time (s)	4.8	4.8							4.0	4.8	9.0	
Vehicle Extension (s)	3.0	3.0							5.0	3.0	5.0	
Lane Grp Cap (vph)	193	196	1568					3115	1235	307	3760	
v/s Ratio Prot	0.06	0.06						0.28		0.04	0.27	
v/s Ratio Perm			c0.76						0.22			
v/c Ratio	0.54	0.55	0.76					0.44	0.48	0.40	0.36	
Uniform Delay, d1	42.0	42.0	0.0					10.1	19.0	43.2	4.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.1	3.1	3.6					0.2	0.6	0.9	0.1	
Delay (s)	45.1	45.1	3.6					10.3	19.6	44.1	4.5	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s/veh)		9.8			0.0			13.1			7.8	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	21.6
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



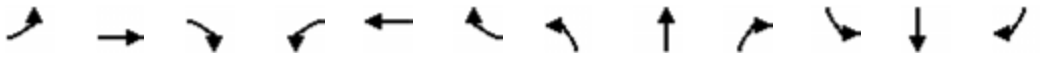
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	0	275	591	141	11	199	728	0	0	640	140
Future Volume (veh/h)	127	0	275	591	141	11	199	728	0	0	640	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856	1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h	141	0	27	657	157	11	221	809	0	0	711	34
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	3	3	3	3	3	3	0	0	3	3
Cap, veh/h	0	0	0	914	443	31	335	1471	0	0	1225	368
Arrive On Green	0.00	0.00	0.00	0.26	0.26	0.26	0.10	0.42	0.00	0.00	0.24	0.24
Sat Flow, veh/h		0		3534	1712	120	3428	3618	0	0	5233	1520
Grp Volume(v), veh/h		0.0		657	0	168	221	809	0	0	711	34
Grp Sat Flow(s),veh/h/ln				1767	0	1832	1714	1763	0	0	1689	1520
Q Serve(g_s), s				10.4	0.0	4.6	3.8	10.7	0.0	0.0	7.6	1.1
Cycle Q Clear(g_c), s				10.4	0.0	4.6	3.8	10.7	0.0	0.0	7.6	1.1
Prop In Lane				1.00		0.07	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				914	0	474	335	1471	0	0	1225	368
V/C Ratio(X)				0.72	0.00	0.35	0.66	0.55	0.00	0.00	0.58	0.09
Avail Cap(c_a), veh/h				2005	0	1039	1167	2572	0	0	3695	1109
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				20.8	0.0	18.7	26.8	13.6	0.0	0.0	20.6	18.1
Incr Delay (d2), s/veh				1.1	0.0	0.5	0.8	0.3	0.0	0.0	0.4	0.1
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.9	0.0	1.8	1.5	3.6	0.0	0.0	2.6	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				21.9	0.0	19.1	27.7	13.9	0.0	0.0	21.1	18.2
LnGrp LOS				C		B	C	B			C	B
Approach Vol, veh/h					825			1030			745	
Approach Delay, s/veh					21.3			16.9			20.9	
Approach LOS					C			B			C	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	35.7	26.0	10.8	24.9
Change Period (Y+Rc), s	10.0	10.0	4.8	10.0
Max Green Setting (Gmax), s	45.0	35.0	21.0	45.0
Max Q Clear Time (g_c+I1), s	12.7	12.4	5.8	9.6
Green Ext Time (p_c), s	6.0	3.4	0.3	5.1

Intersection Summary	
HCM 7th Control Delay, s/veh	19.5
HCM 7th LOS	B

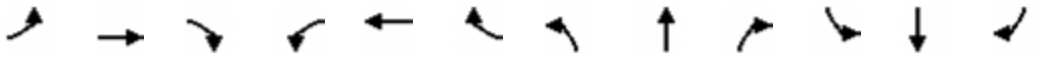
Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	330	32	96	211	22	12	1344	393	12	960	101
Future Volume (vph)	86	330	32	96	211	22	12	1344	393	12	960	101
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
Total Lost time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1688	3331		1688	3328		1688	3376	1510	1688	3376	1510
Flt Permitted	0.95	1.00		0.95	1.00		0.20	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1688	3331		1688	3328		362	3376	1510	140	3376	1510
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	359	35	104	229	24	13	1461	427	13	1043	110
RTOR Reduction (vph)	0	4	0	0	5	0	0	0	44	0	0	40
Lane Group Flow (vph)	93	390	0	104	248	0	13	1461	383	13	1043	70
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	13.1	26.1		13.0	26.0		70.1	70.1	70.1	70.1	70.1	70.1
Effective Green, g (s)	13.1	26.1		13.0	26.0		70.1	70.1	70.1	70.1	70.1	70.1
Actuated g/C Ratio	0.09	0.19		0.09	0.19		0.50	0.50	0.50	0.50	0.50	0.50
Clearance Time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Vehicle Extension (s)	3.0	5.0		2.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	158	621		156	618		181	1692	757	70	1692	757
v/s Ratio Prot	0.06	c0.12		c0.06	0.07			c0.43			0.31	
v/s Ratio Perm							0.04		0.25	0.09		0.05
v/c Ratio	0.59	0.63		0.67	0.40		0.07	0.86	0.51	0.19	0.62	0.09
Uniform Delay, d1	60.8	52.4		61.3	50.1		18.0	30.6	23.3	19.2	25.1	18.2
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	5.5	2.8		8.1	0.9		0.4	5.3	1.1	2.7	1.0	0.1
Delay (s)	66.3	55.2		69.4	51.0		18.4	35.9	24.4	21.8	26.1	18.3
Level of Service	E	E		E	D		B	D	C	C	C	B
Approach Delay (s/veh)		57.3			56.3			33.2			25.3	
Approach LOS		E			E			C			C	

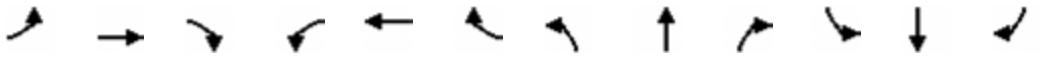
Intersection Summary			
HCM 2000 Control Delay (s/veh)	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	139.8	Sum of lost time (s)	30.6
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	329	31	90	198	29	42	1164	59	59	972	110
Future Volume (veh/h)	193	329	31	90	198	29	42	1164	59	59	972	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	205	350	7	96	211	22	45	1238	60	63	1034	108
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	255	397	331	119	666	69	293	2208	107	100	1567	163
Arrive On Green	0.08	0.22	0.22	0.07	0.21	0.21	0.17	0.46	0.46	0.06	0.35	0.35
Sat Flow, veh/h	3302	1787	1489	1702	3102	320	1702	4763	231	1702	4479	467
Grp Volume(v), veh/h	205	350	7	96	114	119	45	845	453	63	750	392
Grp Sat Flow(s),veh/h/ln	1651	1787	1489	1702	1698	1724	1702	1626	1741	1702	1626	1693
Q Serve(g_s), s	8.6	26.5	0.3	7.8	7.9	8.1	3.1	26.4	26.4	5.1	27.3	27.4
Cycle Q Clear(g_c), s	8.6	26.5	0.3	7.8	7.9	8.1	3.1	26.4	26.4	5.1	27.3	27.4
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.13	1.00		0.28
Lane Grp Cap(c), veh/h	255	397	331	119	365	370	293	1508	807	100	1138	592
V/C Ratio(X)	0.80	0.88	0.02	0.81	0.31	0.32	0.15	0.56	0.56	0.63	0.66	0.66
Avail Cap(c_a), veh/h	354	460	383	182	437	443	293	1508	807	195	1138	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.6	52.7	18.5	64.2	46.3	46.3	49.3	27.2	27.2	64.4	38.4	38.5
Incr Delay (d2), s/veh	9.0	19.8	0.1	14.2	1.3	1.4	1.1	1.5	2.8	6.4	3.0	5.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	14.0	0.2	3.7	3.4	3.5	1.4	10.2	11.2	2.4	11.2	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	72.6	72.5	18.5	78.4	47.6	47.7	50.4	28.7	30.0	70.8	41.4	44.2
LnGrp LOS	E	E	B	E	D	D	D	C	C	E	D	D
Approach Vol, veh/h		562			329			1343			1205	
Approach Delay, s/veh		71.8			56.6			29.9			43.9	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.8	38.1	30.1	55.0	17.8	37.1	14.2	70.9
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	36.0	14.0	49.0	15.0	36.0	16.0	47.0
Max Q Clear Time (g_c+I1), s	9.8	28.5	5.1	29.4	10.6	10.1	7.1	28.4
Green Ext Time (p_c), s	0.1	2.2	0.0	12.9	0.3	2.5	0.1	13.5

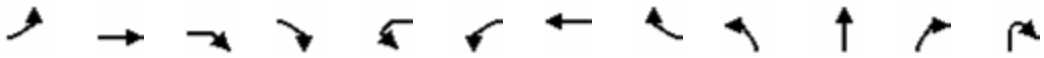
Intersection Summary	
HCM 7th Control Delay, s/veh	44.2
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	374	30	52	154	13	65	1063	122	13	777	239
Future Volume (veh/h)	195	374	30	52	154	13	65	1063	122	13	777	239
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	219	420	30	58	173	12	73	1194	88	15	873	165
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	274	508	36	113	233	16	527	2051	915	67	1133	498
Arrive On Green	0.08	0.15	0.15	0.06	0.14	0.14	0.30	0.58	0.58	0.04	0.32	0.32
Sat Flow, veh/h	3428	3338	238	1767	1715	119	1767	3526	1572	1767	3526	1550
Grp Volume(v), veh/h	219	221	229	58	0	185	73	1194	88	15	873	165
Grp Sat Flow(s),veh/h/ln	1714	1763	1813	1767	0	1834	1767	1763	1572	1767	1763	1550
Q Serve(g_s), s	8.8	17.0	17.2	4.4	0.0	13.6	4.2	30.0	3.5	1.2	31.3	8.6
Cycle Q Clear(g_c), s	8.8	17.0	17.2	4.4	0.0	13.6	4.2	30.0	3.5	1.2	31.3	8.6
Prop In Lane	1.00		0.13	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	274	268	276	113	0	250	527	2051	915	67	1133	498
V/C Ratio(X)	0.80	0.82	0.83	0.51	0.00	0.74	0.14	0.58	0.10	0.22	0.77	0.33
Avail Cap(c_a), veh/h	453	434	447	234	0	452	527	2051	915	240	1133	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.3	57.5	57.6	63.4	0.0	58.1	36.0	18.5	13.0	65.4	42.8	20.9
Incr Delay (d2), s/veh	5.3	6.7	6.9	3.6	0.0	4.3	0.5	1.2	0.2	1.7	5.1	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	8.0	8.3	2.1	0.0	6.5	1.9	11.8	1.2	0.5	14.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.6	64.2	64.5	67.0	0.0	62.4	36.5	19.7	13.2	67.0	47.9	22.7
LnGrp LOS	E	E	E	E		E	D	B	B	E	D	C
Approach Vol, veh/h		669			243			1355			1053	
Approach Delay, s/veh		65.7			63.5			20.2			44.2	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.5	26.8	47.7	51.0	16.7	24.6	11.3	87.4
Change Period (Y+Rc), s	5.5	5.5	6.0	6.0	5.5	5.5	6.0	6.0
Max Green Setting (Gmax), s	18.5	34.5	19.0	45.0	18.5	34.5	19.0	45.0
Max Q Clear Time (g_c+I1), s	6.4	19.2	6.2	33.3	10.8	15.6	3.2	32.0
Green Ext Time (p_c), s	0.1	2.1	0.1	7.9	0.4	0.8	0.0	10.2

Intersection Summary	
HCM 7th Control Delay, s/veh	40.2
HCM 7th LOS	D

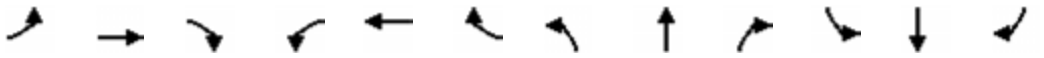


Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	80	219	174	19	21	67	370	27	51	458	57	199
Future Volume (vph)	80	219	174	19	21	67	370	27	51	458	57	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Lane Util. Factor	1.00	0.95				1.00	0.91		1.00	0.95		1.00
Frpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Frt	1.00	0.93				1.00	0.99		1.00	0.98		0.85
Flt Protected	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (prot)	1752	3258				1752	4976		1752	3446		1568
Flt Permitted	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (perm)	1752	3258				1752	4976		1752	3446		1568
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	96	264	210	23	25	81	446	33	61	552	69	240
RTOR Reduction (vph)	0	2	0	0	0	0	4	0	0	0	0	182
Lane Group Flow (vph)	96	495	0	0	0	106	475	0	61	621	0	58
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA			Split	Split	NA		Split	NA		Prot
Protected Phases	3	3			7	7	7		5	5		5
Permitted Phases												
Actuated Green, G (s)	40.5	40.5				28.6	28.6		47.2	47.2		47.2
Effective Green, g (s)	40.5	40.5				28.6	28.6		47.2	47.2		47.2
Actuated g/C Ratio	0.17	0.17				0.12	0.12		0.20	0.20		0.20
Clearance Time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0				2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)	298	555				211	599		348	685		311
v/s Ratio Prot	0.05	c0.15				0.06	c0.10		0.03	c0.18		0.04
v/s Ratio Perm												
v/c Ratio	0.32	0.89				0.50	0.79		0.18	0.91		0.19
Uniform Delay, d1	86.4	96.3				97.7	101.5		78.9	92.9		79.1
Progression Factor	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.2	16.2				0.7	6.7		1.1	17.9		1.3
Delay (s)	86.6	112.5				98.4	108.2		80.0	110.8		80.5
Level of Service	F	F				F	F		F	F		F
Approach Delay (s/veh)		108.3					106.4			100.9		
Approach LOS		F					F			F		

Intersection Summary			
HCM 2000 Control Delay (s/veh)	104.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	237.4	Sum of lost time (s)	30.0
Intersection Capacity Utilization	104.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	136	339	591	61	44	295	243	18
Future Volume (vph)	136	339	591	61	44	295	243	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0			6.0	6.0	
Lane Util. Factor		0.86	0.86			0.97	0.88	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	
Frt		1.00	0.99			1.00	0.85	
Flt Protected		0.95	0.99			0.95	1.00	
Satd. Flow (prot)		1507	4647			3400	2760	
Flt Permitted		0.95	0.99			0.95	1.00	
Satd. Flow (perm)		1507	4647			3400	2760	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	164	408	712	73	53	355	293	22
RTOR Reduction (vph)	0	0	3	0	0	0	71	0
Lane Group Flow (vph)	0	331	1023	0	0	408	244	0
Confl. Peds. (#/hr)				4				3
Confl. Bikes (#/hr)				1				2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	Split	NA		Prot	Prot	Prot	
Protected Phases	6	6	6		4	4	4	
Permitted Phases								
Actuated Green, G (s)		57.3	57.3			33.8	33.8	
Effective Green, g (s)		57.3	57.3			33.8	33.8	
Actuated g/C Ratio		0.24	0.24			0.14	0.14	
Clearance Time (s)		6.0	6.0			6.0	6.0	
Vehicle Extension (s)		4.0	4.0			2.5	2.5	
Lane Grp Cap (vph)		363	1121			484	392	
v/s Ratio Prot		0.22	c0.22			c0.12	0.09	
v/s Ratio Perm								
v/c Ratio		0.91	0.91			0.84	0.62	
Uniform Delay, d1		87.6	87.6			99.2	95.8	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		29.4	12.7			12.4	2.6	
Delay (s)		117.0	100.3			111.6	98.4	
Level of Service		F	F			F	F	
Approach Delay (s/veh)			104.4			105.9		
Approach LOS			F			F		

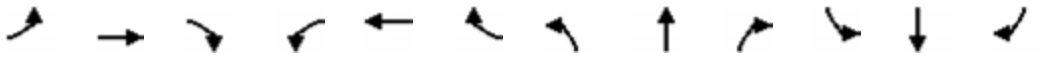
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	353	7	30	138	42	14	836	40	135	814	23
Future Volume (veh/h)	29	353	7	30	138	42	14	836	40	135	814	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	32	384	6	33	150	7	15	909	41	147	885	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	166	573	9	119	299	249	46	2108	95	176	2410	65
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.03	0.61	0.61	0.10	0.69	0.69
Sat Flow, veh/h	1214	3551	55	983	1856	1540	1767	3433	155	1767	3506	95
Grp Volume(v), veh/h	32	190	200	33	150	7	15	467	483	147	445	464
Grp Sat Flow(s),veh/h/ln	1214	1763	1844	983	1856	1540	1767	1763	1825	1767	1763	1838
Q Serve(g_s), s	3.0	12.2	12.2	3.9	8.9	0.5	1.0	16.7	16.7	9.8	12.7	12.7
Cycle Q Clear(g_c), s	11.8	12.2	12.2	16.1	8.9	0.5	1.0	16.7	16.7	9.8	12.7	12.7
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.08	1.00		0.05
Lane Grp Cap(c), veh/h	166	285	298	119	299	249	46	1083	1121	176	1212	1264
V/C Ratio(X)	0.19	0.67	0.67	0.28	0.50	0.03	0.32	0.43	0.43	0.84	0.37	0.37
Avail Cap(c_a), veh/h	284	455	476	214	479	398	295	1083	1121	295	1212	1264
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.3	47.3	47.3	54.9	45.9	42.4	57.4	12.2	12.2	53.1	7.8	7.8
Incr Delay (d2), s/veh	0.6	2.7	2.6	1.3	1.3	0.0	4.0	1.3	1.2	10.0	0.9	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.6	5.9	1.0	4.2	0.2	0.5	6.7	6.9	4.8	4.8	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.8	50.0	49.9	56.2	47.2	42.4	61.3	13.4	13.4	63.0	8.7	8.7
LnGrp LOS	D	D	D	E	D	D	E	B	B	E	A	A
Approach Vol, veh/h		422			190			965			1056	
Approach Delay, s/veh		50.1			48.6			14.1			16.3	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.9	78.7		24.4	8.1	87.5		24.4				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	54.0		31.0	20.0	54.0		31.0				
Max Q Clear Time (g_c+I1), s	11.8	18.7		14.2	3.0	14.7		18.1				
Green Ext Time (p_c), s	0.2	16.4		2.3	0.0	16.2		0.7				

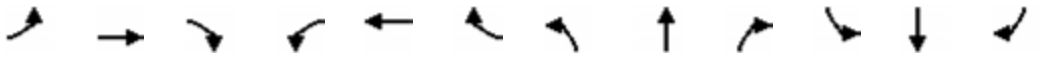
Intersection Summary			
HCM 7th Control Delay, s/veh		23.2	
HCM 7th LOS		C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	1180	68	297	801	419	106	1059	466	300	964	27
Future Volume (veh/h)	178	1180	68	297	801	419	106	1059	466	300	964	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	180	1192	65	300	809	218	107	1070	271	303	974	6
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	497	1562	85	348	1394	421	419	1399	434	349	1295	402
Arrive On Green	0.15	0.33	0.33	0.11	0.29	0.29	0.13	0.29	0.29	0.11	0.27	0.27
Sat Flow, veh/h	3302	4722	257	3302	4879	1472	3302	4879	1513	3302	4879	1513
Grp Volume(v), veh/h	180	821	436	300	809	218	107	1070	271	303	974	6
Grp Sat Flow(s),veh/h/ln	1651	1626	1727	1651	1626	1472	1651	1626	1513	1651	1626	1513
Q Serve(g_s), s	6.9	31.6	31.7	12.5	19.9	12.7	4.1	28.1	21.8	12.6	25.6	0.4
Cycle Q Clear(g_c), s	6.9	31.6	31.7	12.5	19.9	12.7	4.1	28.1	21.8	12.6	25.6	0.4
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	497	1076	571	348	1394	421	419	1399	434	349	1295	402
V/C Ratio(X)	0.36	0.76	0.76	0.86	0.58	0.52	0.26	0.77	0.62	0.87	0.75	0.01
Avail Cap(c_a), veh/h	497	1076	571	401	1394	421	419	1499	465	377	1499	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.4	41.9	42.0	61.6	42.8	22.5	55.1	45.6	43.4	61.6	47.2	37.9
Incr Delay (d2), s/veh	0.4	5.1	9.4	15.5	1.8	4.5	0.3	3.1	4.5	18.0	2.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	13.1	14.6	5.9	8.1	4.8	1.7	11.5	8.5	6.1	10.5	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.9	47.1	51.3	77.1	44.6	27.0	55.5	48.8	47.9	79.6	50.1	38.0
LnGrp LOS	D	D	D	E	D	C	E	D	D	E	D	D
Approach Vol, veh/h		1437			1327			1448			1283	
Approach Delay, s/veh		49.2			49.0			49.1			57.0	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.8	43.2	27.1	46.0	20.8	46.1	20.8	52.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	43.0	17.0	40.0	16.0	43.0	17.0	40.0
Max Q Clear Time (g_c+I1), s	6.1	27.6	8.9	21.9	14.6	30.1	14.5	33.7
Green Ext Time (p_c), s	0.2	9.5	0.3	10.6	0.2	10.0	0.3	5.2

Intersection Summary	
HCM 7th Control Delay, s/veh	51.0
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	869	136	487	373	18	99	871	839	95	819	73
Future Volume (vph)	194	869	136	487	373	18	99	871	839	95	819	73
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1900	1830	1830	1900	1830
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Lane Util. Factor	0.86	0.86	1.00	0.94	0.95		0.97	0.95	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.99	
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)	1452	4579	1510	4760	3349		3274	3505	2658	3274	4964	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1452	4579	1510	4760	3349		3274	3505	2658	3274	4964	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	202	905	142	507	389	19	103	907	874	99	853	76
RTOR Reduction (vph)	0	0	104	0	2	0	0	0	0	0	6	0
Lane Group Flow (vph)	182	925	38	507	406	0	103	907	874	99	923	0
Confl. Peds. (#/hr)						6						6
Confl. Bikes (#/hr)						1						6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		7	7		5	2	7	1	6	
Permitted Phases			8						2			
Actuated Green, G (s)	40.1	40.1	40.1	30.6	30.6		18.0	46.4	77.0	10.6	39.0	
Effective Green, g (s)	40.1	40.1	40.1	30.6	30.6		18.0	46.4	77.0	10.6	39.0	
Actuated g/C Ratio	0.26	0.26	0.26	0.20	0.20		0.12	0.31	0.51	0.07	0.26	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5	3.0	3.0	4.5	
Lane Grp Cap (vph)	383	1210	399	960	675		388	1072	1349	228	1276	
v/s Ratio Prot	0.13	c0.20		0.11	0.12		0.03	c0.26	c0.13	0.03	c0.19	
v/s Ratio Perm			0.02						0.20			
v/c Ratio	0.48	0.76	0.09	0.53	0.60		0.27	0.85	0.65	0.43	0.72	
Uniform Delay, d1	46.9	51.4	42.1	54.1	55.0		60.8	49.3	27.4	67.7	51.4	
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	0.9	2.9	0.1	0.5	1.5		0.4	6.8	1.1	1.3	2.3	
Delay (s)	47.9	54.4	42.2	54.6	56.5		61.2	56.1	28.5	69.0	53.8	
Level of Service	D	D	D	D	E		E	E	C	E	D	
Approach Delay (s/veh)		52.0			55.5			43.6			55.2	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	50.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	151.7	Sum of lost time (s)	24.0
Intersection Capacity Utilization	83.4%	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												
Traffic Volume (veh/h)	103	148	61	82	308	82	109	1010	58	115	1073	136
Future Volume (veh/h)	103	148	61	82	308	82	109	1010	58	115	1073	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.94	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	111	159	15	88	331	73	121	1122	24	128	1192	63
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	134	711	293	110	535	116	145	1439	614	150	2083	618
Arrive On Green	0.08	0.20	0.20	0.06	0.19	0.19	0.08	0.41	0.41	0.17	0.82	0.82
Sat Flow, veh/h	1767	3526	1456	1767	2844	616	1767	3526	1504	1767	5066	1503
Grp Volume(v), veh/h	111	159	15	88	203	201	121	1122	24	128	1192	63
Grp Sat Flow(s),veh/h/ln	1767	1763	1456	1767	1763	1698	1767	1763	1504	1767	1689	1503
Q Serve(g_s), s	8.7	5.3	1.2	6.9	14.8	15.3	9.4	38.7	1.3	9.8	11.0	1.1
Cycle Q Clear(g_c), s	8.7	5.3	1.2	6.9	14.8	15.3	9.4	38.7	1.3	9.8	11.0	1.1
Prop In Lane	1.00		1.00	1.00		0.36	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	711	293	110	331	319	145	1439	614	150	2083	618
V/C Ratio(X)	0.83	0.22	0.05	0.80	0.61	0.63	0.83	0.78	0.04	0.85	0.57	0.10
Avail Cap(c_a), veh/h	202	831	343	202	353	340	240	1439	614	240	2083	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92
Uniform Delay (d), s/veh	63.8	46.7	45.1	64.8	52.2	52.4	63.3	36.0	24.9	57.2	8.3	7.4
Incr Delay (d2), s/veh	15.7	0.4	0.2	12.5	5.5	6.2	12.0	4.2	0.1	14.0	1.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	2.3	0.4	3.4	6.9	6.9	4.7	17.0	0.5	4.6	2.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.5	47.2	45.3	77.3	57.6	58.6	75.3	40.2	25.0	71.2	9.4	7.7
LnGrp LOS	E	D	D	E	E	E	E	D	C	E	A	A
Approach Vol, veh/h		285			492			1267			1383	
Approach Delay, s/veh		59.7			61.5			43.3			15.0	
Approach LOS		E			E			D			B	

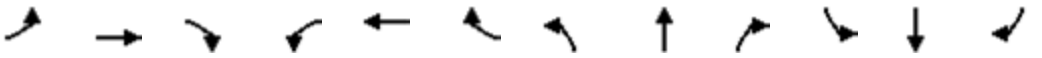
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.9	68.2	14.7	39.2	17.5	68.6	16.6	37.3
Change Period (Y+Rc), s	6.0	11.0	6.0	* 11	6.0	* 11	6.0	11.0
Max Green Setting (Gmax), s	19.0	43.0	16.0	* 33	19.0	* 48	16.0	28.0
Max Q Clear Time (g_c+I1), s	11.8	40.7	8.9	7.3	11.4	13.0	10.7	17.3
Green Ext Time (p_c), s	0.2	2.0	0.1	1.9	0.2	20.6	0.1	3.1

Intersection Summary	
HCM 7th Control Delay, s/veh	35.8
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



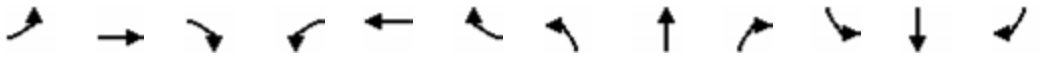
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	12	30	121	63	17	52	1150	20	2	1292	194
Future Volume (veh/h)	105	12	30	121	63	17	52	1150	20	2	1292	194
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.98		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	111	13	5	127	66	10	55	1211	20	2	1360	140
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	224	215	83	271	266	40	89	3608	60	9	3334	1013
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.10	1.00	1.00	0.00	0.22	0.22
Sat Flow, veh/h	1294	1263	486	1360	1566	237	1767	5130	85	1767	5066	1539
Grp Volume(v), veh/h	111	0	18	127	0	76	55	797	434	2	1360	140
Grp Sat Flow(s),veh/h/ln	1294	0	1748	1360	0	1804	1767	1689	1838	1767	1689	1539
Q Serve(g_s), s	11.4	0.0	1.2	12.1	0.0	5.1	4.2	0.0	0.0	0.2	32.3	10.3
Cycle Q Clear(g_c), s	16.5	0.0	1.2	13.3	0.0	5.1	4.2	0.0	0.0	0.2	32.3	10.3
Prop In Lane	1.00		0.28	1.00		0.13	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	224	0	297	271	0	307	89	2375	1293	9	3334	1013
V/C Ratio(X)	0.50	0.00	0.06	0.47	0.00	0.25	0.62	0.34	0.34	0.21	0.41	0.14
Avail Cap(c_a), veh/h	318	0	425	370	0	438	177	2375	1293	177	3334	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.46	0.46	0.46	0.44	0.44	0.44
Uniform Delay (d), s/veh	57.5	0.0	48.7	54.3	0.0	50.3	61.6	0.0	0.0	69.6	31.4	22.8
Incr Delay (d2), s/veh	1.7	0.0	0.1	1.3	0.0	0.4	3.2	0.2	0.3	4.8	0.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.0	0.0	1.0	7.7	0.0	4.3	3.4	0.1	0.2	0.1	18.8	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.2	0.0	48.8	55.6	0.0	50.8	64.8	0.2	0.3	74.4	31.5	22.9
LnGrp LOS	E		D	E		D	E	A	A	E	C	C
Approach Vol, veh/h		129			203			1286			1502	
Approach Delay, s/veh		57.7			53.8			3.0			30.8	
Approach LOS		E			D			A			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	104.5		28.8	13.1	98.1		28.8				
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	14.0	75.0		34.0	14.0	75.0		34.0				
Max Q Clear Time (g_c+I1), s	2.2	2.0		18.5	6.2	34.3		15.3				
Green Ext Time (p_c), s	0.0	28.2		0.3	0.0	26.9		0.7				

Intersection Summary			
HCM 7th Control Delay, s/veh		21.9	
HCM 7th LOS		C	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	416	492	133	255	1074	162	362	843	109	144	1246	481
Future Volume (veh/h)	416	492	133	255	1074	162	362	843	109	144	1246	481
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	452	535	43	277	1167	50	393	916	36	157	1354	455
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	570	1057	469	328	1424	439	440	1556	481	432	1544	658
Arrive On Green	0.11	0.30	0.30	0.10	0.28	0.28	0.04	0.10	0.10	0.13	0.30	0.30
Sat Flow, veh/h	4983	3526	1563	3428	5066	1561	3428	5066	1566	3428	5066	1569
Grp Volume(v), veh/h	452	535	43	277	1167	50	393	916	36	157	1354	455
Grp Sat Flow(s),veh/h/ln	1661	1763	1563	1714	1689	1561	1714	1689	1566	1714	1689	1569
Q Serve(g_s), s	12.4	17.5	2.8	11.1	30.1	3.3	16.0	24.2	2.2	5.9	35.5	12.3
Cycle Q Clear(g_c), s	12.4	17.5	2.8	11.1	30.1	3.3	16.0	24.2	2.2	5.9	35.5	12.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	570	1057	469	328	1424	439	440	1556	481	432	1544	658
V/C Ratio(X)	0.79	0.51	0.09	0.84	0.82	0.11	0.89	0.59	0.07	0.36	0.88	0.69
Avail Cap(c_a), veh/h	570	1057	469	392	1484	457	441	1556	481	432	1544	658
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.4	40.5	35.3	62.3	47.0	37.4	66.1	54.5	24.5	56.0	46.2	14.7
Incr Delay (d2), s/veh	10.9	1.0	0.2	13.5	4.5	0.3	19.2	1.6	0.3	2.4	7.3	5.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	7.6	1.1	5.4	12.9	1.3	8.5	11.2	1.2	2.7	15.6	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.3	41.5	35.5	75.8	51.5	37.7	85.3	56.0	24.8	58.4	53.5	20.6
LnGrp LOS	E	D	D	E	D	D	F	E	C	E	D	C
Approach Vol, veh/h		1030			1494			1345			1966	
Approach Delay, s/veh		54.3			55.6			63.7			46.3	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	49.0	19.4	48.0	24.0	48.7	22.0	45.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	43.0	16.0	41.0	18.0	41.0	16.0	41.0
Max Q Clear Time (g_c+I1), s	7.9	26.2	13.1	19.5	18.0	37.5	14.4	32.1
Green Ext Time (p_c), s	0.3	9.8	0.3	6.9	0.0	3.3	0.3	7.0

Intersection Summary	
HCM 7th Control Delay, s/veh	54.1
HCM 7th LOS	D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	328	894	0	1739	1410	0
Future Volume (veh/h)	328	894	0	1739	1410	0
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	0	1856	1856	0
Adj Flow Rate, veh/h	342	915	0	1811	1469	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	586	1042	0	2732	2732	0
Arrive On Green	0.33	0.33	0.00	0.54	0.54	0.00
Sat Flow, veh/h	1767	3145	0	5400	5400	0
Grp Volume(v), veh/h	342	915	0	1811	1469	0
Grp Sat Flow(s),veh/h/ln	1767	1572	0	1689	1689	0
Q Serve(g_s), s	19.3	32.9	0.0	30.8	22.6	0.0
Cycle Q Clear(g_c), s	19.3	32.9	0.0	30.8	22.6	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	586	1042	0	2732	2732	0
V/C Ratio(X)	0.58	0.88	0.00	0.66	0.54	0.00
Avail Cap(c_a), veh/h	736	1310	0	2732	2732	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.3	37.8	0.0	19.8	17.9	0.0
Incr Delay (d2), s/veh	0.9	5.9	0.0	1.3	0.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	13.4	0.0	11.6	8.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	34.2	43.7	0.0	21.1	18.7	0.0
LnGrp LOS	C	D		C	B	
Approach Vol, veh/h	1257			1811	1469	
Approach Delay, s/veh	41.1			21.1	18.7	
Approach LOS	D			C	B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	75.1	44.9	75.1
Change Period (Y+Rc), s	* 10	5.1	10.4
Max Green Setting (Gmax), s	* 60	50.0	54.5
Max Q Clear Time (g_c+I1), s	32.8	34.9	24.6
Green Ext Time (p_c), s	25.1	4.9	25.6

Intersection Summary	
HCM 7th Control Delay, s/veh	25.9
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	285	90	1316	800	0	1191
Future Volume (veh/h)	285	90	1316	800	0	1191
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	0	1856
Adj Flow Rate, veh/h	191	198	1371	788	0	1241
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	0	3
Cap, veh/h	265	235	2435	1134	0	3653
Arrive On Green	0.15	0.15	0.72	0.72	0.00	0.72
Sat Flow, veh/h	1767	1572	3544	1572	0	5400
Grp Volume(v), veh/h	191	198	1371	788	0	1241
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	1572	0	1689
Q Serve(g_s), s	12.4	14.7	22.9	33.6	0.0	10.9
Cycle Q Clear(g_c), s	12.4	14.7	22.9	33.6	0.0	10.9
Prop In Lane	1.00	1.00		1.00	0.00	
Lane Grp Cap(c), veh/h	265	235	2435	1134	0	3653
V/C Ratio(X)	0.72	0.84	0.56	0.69	0.00	0.34
Avail Cap(c_a), veh/h	810	721	2435	1134	0	3653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.6	49.6	7.9	9.4	0.0	6.2
Incr Delay (d2), s/veh	3.7	7.9	0.9	3.5	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	6.3	7.2	10.5	0.0	3.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	52.3	57.5	8.8	12.9	0.0	6.4
LnGrp LOS	D	E	A	B		A
Approach Vol, veh/h	389		2159			1241
Approach Delay, s/veh	55.0		10.3			6.4
Approach LOS	D		B			A

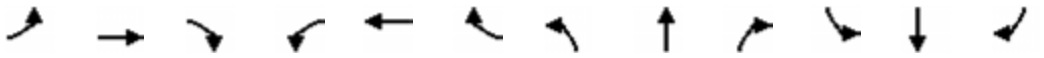
Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	96.9			96.9	23.1
Change Period (Y+Rc), s	10.4			* 10	5.1
Max Green Setting (Gmax), s	49.5			* 55	55.0
Max Q Clear Time (g_c+I1), s	35.6			12.9	16.7
Green Ext Time (p_c), s	13.7			29.7	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	13.6
HCM 7th LOS	B

Notes

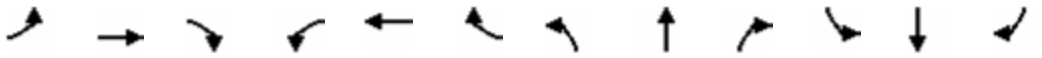
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	920	0	357	0	0	0	426	1337	0	3	1240	723
Future Volume (vph)	920	0	357	0	0	0	426	1337	0	3	1240	723
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0				6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.94		1.00				0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes	1.00		0.99				1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00		1.00				1.00	1.00		1.00	1.00	1.00
Frt	1.00		0.85				1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95		1.00				0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	4942		1548				3400	5036		1752	5036	1548
Flt Permitted	0.95		1.00				0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	4942		1548				3400	5036		1752	5036	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1000	0	388	0	0	0	463	1453	0	3	1348	786
RTOR Reduction (vph)	0	0	280	0	0	0	0	0	0	0	0	329
Lane Group Flow (vph)	1000	0	108	0	0	0	463	1453	0	3	1348	457
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm				Prot	NA		Prot	NA	Perm
Protected Phases	4				3		5	2		1	6	
Permitted Phases			4	3								6
Actuated Green, G (s)	32.9		32.9				22.2	74.8		2.2	54.8	54.8
Effective Green, g (s)	32.9		32.9				22.2	74.8		2.2	54.8	54.8
Actuated g/C Ratio	0.26		0.26				0.17	0.58		0.02	0.43	0.43
Clearance Time (s)	6.0		6.0				6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0		3.0				3.0	5.5		3.0	5.5	5.5
Lane Grp Cap (vph)	1261		395				585	2922		29	2140	658
v/s Ratio Prot	c0.20						c0.14	0.29		0.00	0.27	
v/s Ratio Perm			0.07									c0.29
v/c Ratio	0.79		0.27				0.79	0.50		0.10	0.63	0.69
Uniform Delay, d1	44.8		38.4				51.1	16.0		62.4	29.1	30.2
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.5		0.4				7.2	0.3		1.6	0.9	4.4
Delay (s)	48.3		38.8				58.4	16.3		63.9	30.0	34.6
Level of Service	D		D				E	B		E	C	C
Approach Delay (s/veh)		45.7			0.0			26.5			31.7	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	128.9	Sum of lost time (s)	25.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



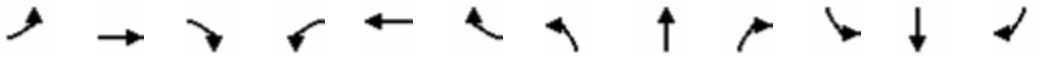
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	118	69	98	287	214	147	1301	16	45	1194	210
Future Volume (veh/h)	149	118	69	98	287	214	147	1301	16	45	1194	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	160	127	16	105	309	49	158	1399	9	48	1284	212
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	248	900	401	342	900	401	276	2739	836	260	2252	372
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.06	0.54	0.54	0.03	0.52	0.52
Sat Flow, veh/h	1014	3526	1569	1233	3526	1569	1767	5066	1547	1767	4370	722
Grp Volume(v), veh/h	160	127	16	105	309	49	158	1399	9	48	992	504
Grp Sat Flow(s),veh/h/ln	1014	1763	1569	1233	1763	1569	1767	1689	1547	1767	1689	1715
Q Serve(g_s), s	17.8	3.2	0.9	8.4	8.3	2.8	4.9	20.4	0.3	1.5	23.5	23.5
Cycle Q Clear(g_c), s	26.1	3.2	0.9	11.6	8.3	2.8	4.9	20.4	0.3	1.5	23.5	23.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.42
Lane Grp Cap(c), veh/h	248	900	401	342	900	401	276	2739	836	260	1740	884
V/C Ratio(X)	0.64	0.14	0.04	0.31	0.34	0.12	0.57	0.51	0.01	0.18	0.57	0.57
Avail Cap(c_a), veh/h	338	1211	539	451	1211	539	550	2739	836	580	1740	884
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	33.5	32.6	38.0	35.4	33.3	15.9	17.0	12.4	13.7	19.4	19.4
Incr Delay (d2), s/veh	2.1	0.1	0.0	0.4	0.2	0.1	0.7	0.7	0.0	0.1	1.4	2.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	1.4	0.3	2.5	3.5	1.0	1.8	7.3	0.1	0.5	8.7	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.1	33.5	32.7	38.4	35.6	33.4	16.6	17.6	12.4	13.8	20.7	22.0
LnGrp LOS	D	C	C	D	D	C	B	B	B	B	C	C
Approach Vol, veh/h		303			463			1566			1544	
Approach Delay, s/veh		41.2			36.0			17.5			21.0	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.4	70.0		36.0	13.4	67.0		36.0				
Change Period (Y+Rc), s	6.5	7.0		6.3	6.5	7.0		6.3				
Max Green Setting (Gmax), s	25.0	60.0		40.0	25.0	60.0		40.0				
Max Q Clear Time (g_c+I1), s	3.5	22.4		28.1	6.9	25.5		13.6				
Green Ext Time (p_c), s	0.0	28.1		0.9	0.1	27.4		1.8				

Intersection Summary												
HCM 7th Control Delay, s/veh			22.9									
HCM 7th LOS			C									

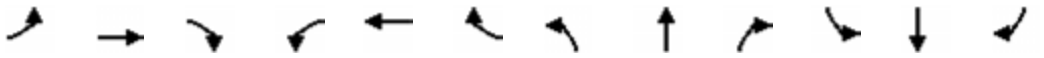
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	289	50	607	0	0	0	0	1684	568	241	1362	0
Future Volume (vph)	289	50	607	0	0	0	0	1684	568	241	1362	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8	4.0					4.0	4.0	4.8	9.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1692	1568					5036	2699	3400	5036	
Flt Permitted	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1665	1692	1568					5036	2699	3400	5036	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	314	54	660	0	0	0	0	1830	617	262	1480	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	182	186	660	0	0	0	0	1830	617	262	1480	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free					NA	custom	Prot	NA	
Protected Phases	4	4						2 3		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	17.7	17.7	112.0					62.5	46.2	14.2	80.5	
Effective Green, g (s)	17.7	17.7	112.0					62.5	46.2	14.2	80.5	
Actuated g/C Ratio	0.16	0.16	1.00					0.56	0.41	0.13	0.72	
Clearance Time (s)	4.8	4.8							4.0	4.8	9.0	
Vehicle Extension (s)	3.0	3.0							5.0	3.0	5.0	
Lane Grp Cap (vph)	263	267	1568					2810	1113	431	3619	
v/s Ratio Prot	0.11	c0.11						c0.36		c0.08	0.29	
v/s Ratio Perm			0.42						0.23			
v/c Ratio	0.69	0.70	0.42					0.65	0.55	0.61	0.41	
Uniform Delay, d1	44.6	44.6	0.0					17.2	25.1	46.3	6.3	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.6	7.7	0.8					0.7	1.0	2.4	0.2	
Delay (s)	52.2	52.3	0.8					17.9	26.1	48.7	6.4	
Level of Service	D	D	A					B	C	D	A	
Approach Delay (s/veh)		19.2			0.0			20.0			12.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	112.0	Sum of lost time (s)	21.6
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



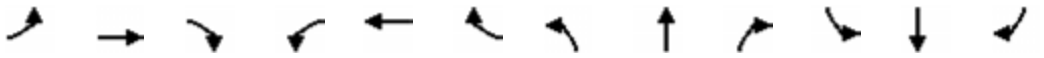
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	0	616	553	314	25	485	636	0	0	672	169
Future Volume (veh/h)	146	0	616	553	314	25	485	636	0	0	672	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856	1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h	152	0	246	627	255	24	505	662	0	0	700	36
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	0	3	3	3	3	3	3	0	0	3	3
Cap, veh/h	0	0	0	874	412	39	617	1665	0	0	1140	342
Arrive On Green	0.00	0.00	0.00	0.25	0.25	0.25	0.18	0.47	0.00	0.00	0.22	0.22
Sat Flow, veh/h		0		3534	1668	157	3428	3618	0	0	5233	1519
Grp Volume(v), veh/h		0.0		627	0	279	505	662	0	0	700	36
Grp Sat Flow(s),veh/h/ln				1767	0	1825	1714	1763	0	0	1689	1519
Q Serve(g_s), s				11.6	0.0	9.7	10.1	8.7	0.0	0.0	8.9	1.3
Cycle Q Clear(g_c), s				11.6	0.0	9.7	10.1	8.7	0.0	0.0	8.9	1.3
Prop In Lane				1.00		0.09	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				874	0	451	617	1665	0	0	1140	342
V/C Ratio(X)				0.72	0.00	0.62	0.82	0.40	0.00	0.00	0.61	0.11
Avail Cap(c_a), veh/h				1735	0	896	1010	2225	0	0	3198	959
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				24.6	0.0	23.8	28.1	12.2	0.0	0.0	24.8	21.9
Incr Delay (d2), s/veh				1.1	0.0	1.4	1.0	0.2	0.0	0.0	0.5	0.1
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.5	0.0	4.0	3.9	2.9	0.0	0.0	3.3	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				25.7	0.0	25.2	29.2	12.4	0.0	0.0	25.4	22.1
LnGrp LOS				C		C	C	B			C	C
Approach Vol, veh/h					906			1167			736	
Approach Delay, s/veh					25.5			19.6			25.2	
Approach LOS					C			B			C	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	43.7	27.6	17.6	26.0
Change Period (Y+Rc), s	10.0	10.0	4.8	10.0
Max Green Setting (Gmax), s	45.0	35.0	21.0	45.0
Max Q Clear Time (g_c+I1), s	10.7	13.6	12.1	10.9
Green Ext Time (p_c), s	4.7	3.9	0.7	5.0

Intersection Summary	
HCM 7th Control Delay, s/veh	23.0
HCM 7th LOS	C

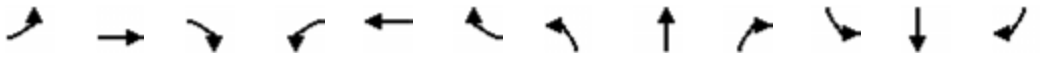
Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	249	15	327	450	33	16	1082	220	13	1279	286
Future Volume (vph)	77	249	15	327	450	33	16	1082	220	13	1279	286
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
Total Lost time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1688	3348		1688	3341		1688	3376	1510	1688	3376	1510
Flt Permitted	0.95	1.00		0.95	1.00		0.08	1.00	1.00	0.14	1.00	1.00
Satd. Flow (perm)	1688	3348		1688	3341		139	3376	1510	254	3376	1510
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	79	257	15	337	464	34	16	1115	227	13	1319	295
RTOR Reduction (vph)	0	3	0	0	3	0	0	0	45	0	0	83
Lane Group Flow (vph)	79	269	0	337	495	0	16	1115	182	13	1319	212
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	12.7	25.0		34.0	46.3		70.0	70.0	70.0	70.0	70.0	70.0
Effective Green, g (s)	12.7	25.0		34.0	46.3		70.0	70.0	70.0	70.0	70.0	70.0
Actuated g/C Ratio	0.08	0.16		0.21	0.29		0.44	0.44	0.44	0.44	0.44	0.44
Clearance Time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Vehicle Extension (s)	3.0	5.0		2.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	134	524		359	969		60	1480	662	111	1480	662
v/s Ratio Prot	0.05	0.08		c0.20	c0.15			0.33			c0.39	
v/s Ratio Perm							0.12		0.12	0.05		0.14
v/c Ratio	0.59	0.51		0.94	0.51		0.27	0.75	0.27	0.12	0.89	0.32
Uniform Delay, d1	70.9	61.7		61.8	47.2		28.5	37.6	28.6	26.5	41.3	29.3
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	6.5	1.7		31.4	0.9		4.9	2.6	0.5	1.0	7.7	0.6
Delay (s)	77.4	63.4		93.2	48.1		33.4	40.2	29.1	27.5	48.9	29.8
Level of Service	E	E		F	D		C	D	C	C	D	C
Approach Delay (s/veh)		66.6			66.3			38.3			45.3	
Approach LOS		E			E			D			D	

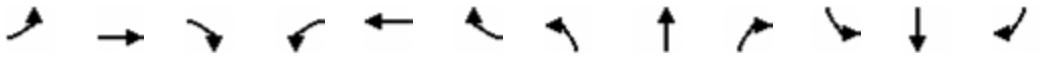
Intersection Summary			
HCM 2000 Control Delay (s/veh)	49.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	159.6	Sum of lost time (s)	30.6
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	275	50	171	489	80	36	940	67	16	1139	184
Future Volume (veh/h)	196	275	50	171	489	80	36	940	67	16	1139	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	202	284	11	176	504	72	37	969	64	16	1174	179
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	295	341	284	182	621	88	283	2273	150	51	1491	227
Arrive On Green	0.09	0.19	0.19	0.11	0.21	0.21	0.17	0.49	0.49	0.03	0.35	0.35
Sat Flow, veh/h	3302	1787	1488	1702	2978	424	1702	4671	308	1702	4259	649
Grp Volume(v), veh/h	202	284	11	176	286	290	37	674	359	16	896	457
Grp Sat Flow(s),veh/h/ln	1651	1787	1488	1702	1698	1704	1702	1626	1726	1702	1626	1656
Q Serve(g_s), s	8.3	21.4	0.6	14.4	22.5	22.7	2.6	18.8	18.9	1.3	34.6	34.6
Cycle Q Clear(g_c), s	8.3	21.4	0.6	14.4	22.5	22.7	2.6	18.8	18.9	1.3	34.6	34.6
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.18	1.00		0.39
Lane Grp Cap(c), veh/h	295	341	284	182	354	355	283	1583	840	51	1138	580
V/C Ratio(X)	0.69	0.83	0.04	0.97	0.81	0.81	0.13	0.43	0.43	0.32	0.79	0.79
Avail Cap(c_a), veh/h	354	460	383	182	437	438	283	1583	840	195	1138	580
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.8	54.5	21.3	62.2	52.7	52.8	49.7	23.3	23.3	66.5	40.8	40.8
Incr Delay (d2), s/veh	4.2	15.2	0.2	56.3	13.4	13.9	1.0	0.8	1.6	3.5	5.5	10.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	11.0	0.3	8.9	10.5	10.7	1.2	7.2	7.8	0.6	14.4	15.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.1	69.7	21.5	118.5	66.2	66.7	50.7	24.1	24.9	70.0	46.4	51.2
LnGrp LOS	E	E	C	F	E	E	D	C	C	E	D	D
Approach Vol, veh/h		497			752			1070			1369	
Approach Delay, s/veh		67.1			78.6			25.3			48.3	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	33.7	29.3	55.0	19.5	36.2	10.2	74.1
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	36.0	14.0	49.0	15.0	36.0	16.0	47.0
Max Q Clear Time (g_c+I1), s	16.4	23.4	4.6	36.6	10.3	24.7	3.3	20.9
Green Ext Time (p_c), s	0.0	2.5	0.0	10.0	0.3	4.4	0.0	14.0

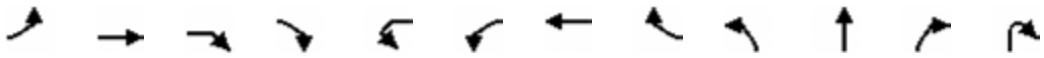
Intersection Summary	
HCM 7th Control Delay, s/veh	50.3
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	201	52	88	282	24	56	817	77	9	1046	312
Future Volume (veh/h)	210	201	52	88	282	24	56	817	77	9	1046	312
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	216	207	38	91	291	23	58	842	41	9	1078	206
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	267	592	107	123	322	25	322	1913	853	45	1360	598
Arrive On Green	0.08	0.20	0.20	0.07	0.19	0.19	0.18	0.54	0.54	0.03	0.39	0.39
Sat Flow, veh/h	3428	2983	538	1767	1697	134	1767	3526	1572	1767	3526	1551
Grp Volume(v), veh/h	216	121	124	91	0	314	58	842	41	9	1078	206
Grp Sat Flow(s),veh/h/ln	1714	1763	1759	1767	0	1831	1767	1763	1572	1767	1763	1551
Q Serve(g_s), s	8.7	8.3	8.5	7.1	0.0	23.5	3.9	20.1	1.7	0.7	37.9	13.2
Cycle Q Clear(g_c), s	8.7	8.3	8.5	7.1	0.0	23.5	3.9	20.1	1.7	0.7	37.9	13.2
Prop In Lane	1.00		0.31	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	267	350	349	123	0	348	322	1913	853	45	1360	598
V/C Ratio(X)	0.81	0.35	0.36	0.74	0.00	0.90	0.18	0.44	0.05	0.20	0.79	0.34
Avail Cap(c_a), veh/h	355	434	433	183	0	451	322	1913	853	177	1360	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.5	48.3	48.4	63.9	0.0	55.5	48.4	19.2	15.0	66.8	38.0	30.5
Incr Delay (d2), s/veh	9.8	0.6	0.6	8.5	0.0	17.9	1.2	0.7	0.1	2.2	4.8	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	3.7	3.8	3.4	0.0	12.4	1.8	8.1	0.6	0.3	16.7	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.3	48.9	49.0	72.4	0.0	73.3	49.6	20.0	15.1	69.0	42.9	32.0
LnGrp LOS	E	D	D	E		E	D	B	B	E	D	C
Approach Vol, veh/h		461			405			941			1293	
Approach Delay, s/veh		60.4			73.1			21.6			41.3	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	33.3	31.5	60.0	16.4	32.1	9.5	82.0
Change Period (Y+Rc), s	5.5	5.5	6.0	6.0	5.5	5.5	6.0	6.0
Max Green Setting (Gmax), s	14.5	34.5	14.0	54.0	14.5	34.5	14.0	54.0
Max Q Clear Time (g_c+I1), s	9.1	10.5	5.9	39.9	10.7	25.5	2.7	22.1
Green Ext Time (p_c), s	0.1	1.3	0.1	10.7	0.2	1.1	0.0	13.6

Intersection Summary	
HCM 7th Control Delay, s/veh	42.3
HCM 7th LOS	D

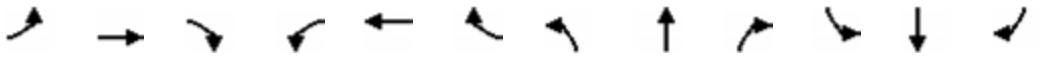


Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	193	481	165	27	35	50	199	30	32	776	52	120
Future Volume (vph)	193	481	165	27	35	50	199	30	32	776	52	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Lane Util. Factor	1.00	0.95				1.00	0.91		1.00	0.95		1.00
Frpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Frt	1.00	0.96				1.00	0.98		1.00	0.99		0.85
Flt Protected	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (prot)	1752	3355				1752	4921		1752	3472		1568
Flt Permitted	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (perm)	1752	3355				1752	4921		1752	3472		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	199	496	170	28	36	52	205	31	33	800	54	124
RTOR Reduction (vph)	0	1	0	0	0	0	8	0	0	0	0	69
Lane Group Flow (vph)	199	693	0	0	0	88	228	0	33	854	0	55
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA			Split	Split	NA		Split	NA		Prot
Protected Phases	3	3			7	7	7		5	5		5
Permitted Phases												
Actuated Green, G (s)	47.0	47.0				25.0	25.0		47.0	47.0		47.0
Effective Green, g (s)	47.0	47.0				25.0	25.0		47.0	47.0		47.0
Actuated g/C Ratio	0.19	0.19				0.10	0.10		0.19	0.19		0.19
Clearance Time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0				2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)	334	640				177	499		334	662		299
v/s Ratio Prot	0.11	c0.21				c0.05	0.05		0.02	c0.25		0.04
v/s Ratio Perm												
v/c Ratio	0.60	1.08				0.50	0.46		0.10	1.29		0.18
Uniform Delay, d1	91.0	99.6				104.7	104.3		82.2	99.6		83.6
Progression Factor	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.9	60.2				0.8	0.2		0.6	141.7		1.4
Delay (s)	92.9	159.8				105.5	104.5		82.8	241.3		84.9
Level of Service	F	F				F	F		F	F		F
Approach Delay (s/veh)		144.9					104.8			217.0		
Approach LOS		F					F			F		

Intersection Summary			
HCM 2000 Control Delay (s/veh)	139.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	246.3	Sum of lost time (s)	30.0
Intersection Capacity Utilization	121.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	142	362	480	38	79	399	318	11
Future Volume (vph)	142	362	480	38	79	399	318	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0			6.0	6.0	
Lane Util. Factor		0.86	0.86			0.97	0.88	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	
Frt		1.00	0.99			1.00	0.85	
Flt Protected		0.95	0.98			0.95	1.00	
Satd. Flow (prot)		1507	4643			3400	2760	
Flt Permitted		0.95	0.98			0.95	1.00	
Satd. Flow (perm)		1507	4643			3400	2760	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	146	373	495	39	81	411	328	11
RTOR Reduction (vph)	0	0	2	0	0	0	69	0
Lane Group Flow (vph)	0	258	793	0	0	492	270	0
Confl. Peds. (#/hr)				4				3
Confl. Bikes (#/hr)				1				2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	Split	NA		Prot	Prot	Prot	
Protected Phases	6	6	6		4	4	4	
Permitted Phases								
Actuated Green, G (s)		57.0	57.0			40.3	40.3	
Effective Green, g (s)		57.0	57.0			40.3	40.3	
Actuated g/C Ratio		0.23	0.23			0.16	0.16	
Clearance Time (s)		6.0	6.0			6.0	6.0	
Vehicle Extension (s)		4.0	4.0			2.5	2.5	
Lane Grp Cap (vph)		348	1074			556	451	
v/s Ratio Prot		c0.17	0.17			c0.14	0.10	
v/s Ratio Perm								
v/c Ratio		0.74	0.74			0.88	0.60	
Uniform Delay, d1		87.8	87.7			100.7	95.5	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		13.3	4.6			15.4	1.8	
Delay (s)		101.1	92.3			116.2	97.3	
Level of Service		F	F			F	F	
Approach Delay (s/veh)			94.5			108.4		
Approach LOS			F			F		

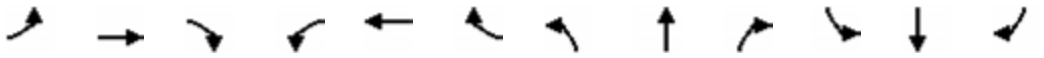
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	233	30	73	305	118	50	982	61	108	1178	48
Future Volume (veh/h)	35	233	30	73	305	118	50	982	61	108	1178	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	36	243	22	76	318	59	52	1023	61	112	1227	48
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	118	718	64	232	408	339	97	1948	116	139	2076	81
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.05	0.58	0.58	0.08	0.60	0.60
Sat Flow, veh/h	997	3265	293	1102	1856	1544	1767	3378	201	1767	3459	135
Grp Volume(v), veh/h	36	130	135	76	318	59	52	534	550	112	625	650
Grp Sat Flow(s),veh/h/ln	997	1763	1795	1102	1856	1544	1767	1763	1816	1767	1763	1831
Q Serve(g_s), s	4.2	7.5	7.6	7.5	19.4	3.7	3.4	22.1	22.1	7.5	26.3	26.4
Cycle Q Clear(g_c), s	23.6	7.5	7.6	15.1	19.4	3.7	3.4	22.1	22.1	7.5	26.3	26.4
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.11	1.00		0.07
Lane Grp Cap(c), veh/h	118	387	395	232	408	339	97	1016	1047	139	1058	1099
V/C Ratio(X)	0.30	0.34	0.34	0.33	0.78	0.17	0.54	0.53	0.53	0.81	0.59	0.59
Avail Cap(c_a), veh/h	157	455	464	275	479	399	295	1016	1047	295	1058	1099
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.2	39.4	39.5	45.9	44.1	38.0	55.2	15.4	15.4	54.4	14.8	14.9
Incr Delay (d2), s/veh	1.4	0.5	0.5	0.8	6.9	0.2	4.5	1.9	1.9	10.4	2.4	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.3	3.5	2.1	9.6	1.4	1.7	9.1	9.4	3.7	10.8	11.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.6	39.9	40.0	46.7	51.0	38.2	59.8	17.4	17.3	64.8	17.3	17.2
LnGrp LOS	E	D	D	D	D	D	E	B	B	E	B	B
Approach Vol, veh/h		301			453			1136			1387	
Approach Delay, s/veh		42.0			48.6			19.3			21.1	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.4	74.2		31.4	11.6	77.0		31.4				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	54.0		31.0	20.0	54.0		31.0				
Max Q Clear Time (g_c+I1), s	9.5	24.1		25.6	5.4	28.4		21.4				
Green Ext Time (p_c), s	0.2	17.4		0.8	0.1	18.3		1.6				

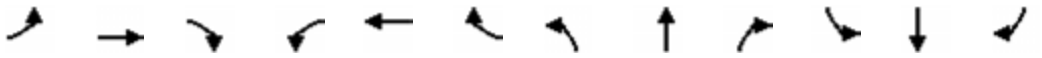
Intersection Summary												
HCM 7th Control Delay, s/veh			26.2									
HCM 7th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	800	90	321	1112	434	156	1101	283	335	1206	162
Future Volume (veh/h)	256	800	90	321	1112	434	156	1101	283	335	1206	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	267	833	85	334	1158	246	162	1147	88	349	1256	57
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	461	1354	137	382	1359	410	336	1419	440	395	1507	467
Arrive On Green	0.14	0.30	0.30	0.12	0.28	0.28	0.10	0.29	0.29	0.12	0.31	0.31
Sat Flow, veh/h	3302	4477	454	3302	4879	1471	3302	4879	1513	3302	4879	1513
Grp Volume(v), veh/h	267	604	314	334	1158	246	162	1147	88	349	1256	57
Grp Sat Flow(s),veh/h/ln	1651	1626	1679	1651	1626	1471	1651	1626	1513	1651	1626	1513
Q Serve(g_s), s	10.6	22.3	22.5	13.9	31.4	14.5	6.5	30.5	6.1	14.6	33.5	3.8
Cycle Q Clear(g_c), s	10.6	22.3	22.5	13.9	31.4	14.5	6.5	30.5	6.1	14.6	33.5	3.8
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	984	508	382	1359	410	336	1419	440	395	1507	467
V/C Ratio(X)	0.58	0.61	0.62	0.87	0.85	0.60	0.48	0.81	0.20	0.88	0.83	0.12
Avail Cap(c_a), veh/h	461	984	508	425	1359	410	377	1499	465	425	1568	486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	41.8	41.9	60.9	47.8	22.4	59.4	46.0	37.4	60.7	45.0	34.7
Incr Delay (d2), s/veh	1.8	2.9	5.6	16.9	6.9	6.4	1.1	4.1	0.6	18.4	4.7	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	9.1	9.9	6.6	13.3	5.6	2.7	12.5	2.3	7.0	13.8	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.2	44.7	47.5	77.8	54.7	28.7	60.5	50.2	38.0	79.0	49.8	35.1
LnGrp LOS	E	D	D	E	D	C	E	D	D	E	D	D
Approach Vol, veh/h		1185			1738			1397			1662	
Approach Delay, s/veh		48.5			55.4			50.6			55.4	
Approach LOS		D			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.2	49.2	25.5	45.0	22.8	46.7	22.2	48.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	45.0	16.0	39.0	18.0	43.0	18.0	37.0
Max Q Clear Time (g_c+I1), s	8.5	35.5	12.6	33.4	16.6	32.5	15.9	24.5
Green Ext Time (p_c), s	0.3	7.7	0.3	4.8	0.2	8.1	0.3	7.6

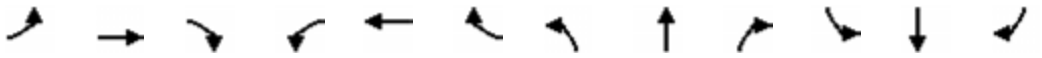
Intersection Summary	
HCM 7th Control Delay, s/veh	52.9
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	656	160	772	675	38	239	879	807	144	1010	182
Future Volume (vph)	186	656	160	772	675	38	239	879	807	144	1010	182
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1900	1830	1830	1900	1830
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Lane Util. Factor	0.86	0.86	1.00	0.94	0.95		0.97	0.95	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.98	
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)	1452	4578	1510	4760	3345		3274	3505	2658	3274	4902	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1452	4578	1510	4760	3345		3274	3505	2658	3274	4902	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	188	663	162	780	682	38	241	888	815	145	1020	184
RTOR Reduction (vph)	0	0	132	0	3	0	0	0	0	0	19	0
Lane Group Flow (vph)	169	682	30	780	717	0	241	888	815	145	1185	0
Confl. Peds. (#/hr)						6						6
Confl. Bikes (#/hr)						1						6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		7	7		5	2	7	1	6	
Permitted Phases			8						2			
Actuated Green, G (s)	26.0	26.0	26.0	36.9	36.9		13.5	41.4	78.3	11.7	39.6	
Effective Green, g (s)	26.0	26.0	26.0	36.9	36.9		13.5	41.4	78.3	11.7	39.6	
Actuated g/C Ratio	0.19	0.19	0.19	0.26	0.26		0.10	0.30	0.56	0.08	0.28	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5	3.0	3.0	4.5	
Lane Grp Cap (vph)	269	850	280	1254	881		315	1036	1486	273	1386	
v/s Ratio Prot	0.12	c0.15		0.16	c0.21		0.07	c0.25	0.14	0.04	c0.24	
v/s Ratio Perm			0.02						0.16			
v/c Ratio	0.63	0.80	0.11	0.62	0.81		0.77	0.86	0.55	0.53	0.86	
Uniform Delay, d1	52.5	54.5	47.4	45.4	48.3		61.7	46.5	19.6	61.5	47.5	
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	4.5	5.5	0.2	1.0	5.8		10.6	9.1	0.4	2.0	6.9	
Delay (s)	57.1	60.0	47.5	46.4	54.1		72.3	55.6	20.0	63.5	54.4	
Level of Service	E	E	D	D	D		E	E	C	E	D	
Approach Delay (s/veh)		57.5			50.1			42.8			55.4	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	50.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	89.4%	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												
Traffic Volume (veh/h)	112	273	120	120	161	120	141	963	93	179	931	55
Future Volume (veh/h)	112	273	120	120	161	120	141	963	93	179	931	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.95	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	124	303	23	133	179	27	157	1070	39	199	1034	25
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	148	737	305	157	654	97	181	1172	496	224	1806	533
Arrive On Green	0.08	0.21	0.21	0.09	0.21	0.21	0.10	0.33	0.33	0.04	0.12	0.12
Sat Flow, veh/h	1767	3526	1459	1767	3056	451	1767	3526	1493	1767	5066	1495
Grp Volume(v), veh/h	124	303	23	133	102	104	157	1070	39	199	1034	25
Grp Sat Flow(s),veh/h/ln	1767	1763	1459	1767	1763	1744	1767	1763	1493	1767	1689	1495
Q Serve(g_s), s	9.7	10.4	1.8	10.4	6.7	7.0	12.2	40.7	2.5	15.7	27.0	2.1
Cycle Q Clear(g_c), s	9.7	10.4	1.8	10.4	6.7	7.0	12.2	40.7	2.5	15.7	27.0	2.1
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	737	305	157	377	374	181	1172	496	224	1806	533
V/C Ratio(X)	0.84	0.41	0.08	0.85	0.27	0.28	0.87	0.91	0.08	0.89	0.57	0.05
Avail Cap(c_a), veh/h	240	831	344	240	377	374	240	1172	496	240	1806	533
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	63.2	47.9	44.5	62.8	45.9	46.0	61.9	44.8	32.0	66.1	51.7	40.7
Incr Delay (d2), s/veh	12.9	1.0	0.3	15.4	1.0	1.1	21.6	12.3	0.3	28.2	1.2	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	4.6	0.7	5.3	3.0	3.1	6.5	19.4	0.9	9.2	12.5	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.1	48.9	44.8	78.3	46.9	47.1	83.4	57.1	32.3	94.3	52.9	40.8
LnGrp LOS	E	D	D	E	D	D	F	E	C	F	D	D
Approach Vol, veh/h		450			339			1266			1258	
Approach Delay, s/veh		56.2			59.3			59.6			59.2	
Approach LOS		E			E			E			E	

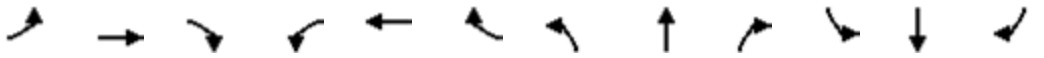
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.8	57.5	18.5	40.2	20.4	60.9	17.7	41.0
Change Period (Y+Rc), s	6.0	11.0	6.0	* 11	6.0	* 11	6.0	11.0
Max Green Setting (Gmax), s	19.0	40.0	19.0	* 33	19.0	* 45	19.0	28.0
Max Q Clear Time (g_c+I1), s	17.7	42.7	12.4	12.4	14.2	29.0	11.7	9.0
Green Ext Time (p_c), s	0.1	0.0	0.2	3.6	0.2	10.4	0.1	2.0

Intersection Summary	
HCM 7th Control Delay, s/veh	58.9
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



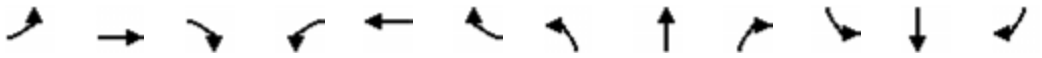
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	38	122	125	44	66	74	1223	24	25	916	149
Future Volume (veh/h)	270	38	122	125	44	66	74	1223	24	25	916	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	290	41	29	134	47	24	80	1315	25	27	985	82
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	314	230	162	158	162	83	100	2454	47	82	2378	722
Arrive On Green	0.18	0.23	0.23	0.09	0.14	0.14	0.06	0.48	0.48	0.02	0.15	0.15
Sat Flow, veh/h	1767	998	706	1767	1142	583	1767	5115	97	1767	5066	1538
Grp Volume(v), veh/h	290	0	70	134	0	71	80	868	472	27	985	82
Grp Sat Flow(s),veh/h/ln	1767	0	1705	1767	0	1725	1767	1689	1835	1767	1689	1538
Q Serve(g_s), s	22.6	0.0	4.6	10.5	0.0	5.2	6.3	25.2	25.2	2.1	24.6	6.4
Cycle Q Clear(g_c), s	22.6	0.0	4.6	10.5	0.0	5.2	6.3	25.2	25.2	2.1	24.6	6.4
Prop In Lane	1.00		0.41	1.00		0.34	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	314	0	392	158	0	244	100	1620	881	82	2378	722
V/C Ratio(X)	0.92	0.00	0.18	0.85	0.00	0.29	0.80	0.54	0.54	0.33	0.41	0.11
Avail Cap(c_a), veh/h	356	0	600	239	0	493	151	1620	881	126	2378	722
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.50	0.50	0.50	0.80	0.80	0.80
Uniform Delay (d), s/veh	56.6	0.0	43.3	62.8	0.0	53.8	65.2	25.5	25.5	66.8	41.8	34.1
Incr Delay (d2), s/veh	27.1	0.0	0.2	15.9	0.0	0.7	8.5	0.6	1.2	1.8	0.4	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.3	0.0	3.6	9.3	0.0	4.2	5.0	13.5	14.7	1.8	16.1	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	83.7	0.0	43.5	78.6	0.0	54.4	73.7	26.1	26.7	68.6	42.2	34.3
LnGrp LOS	F		D	E		D	E	C	C	E	D	C
Approach Vol, veh/h		360			205			1420			1094	
Approach Delay, s/veh		75.9			70.2			29.0			42.3	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.5	73.2	17.2	37.2	13.9	71.7	29.5	24.8
Change Period (Y+Rc), s	6.0	6.0	4.6	5.0	6.0	6.0	4.6	5.0
Max Green Setting (Gmax), s	10.0	40.2	18.9	49.3	12.0	38.2	28.2	40.0
Max Q Clear Time (g_c+I1), s	4.1	27.2	12.5	6.6	8.3	26.6	24.6	7.2
Green Ext Time (p_c), s	0.0	10.3	0.2	0.4	0.0	8.0	0.3	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	41.9
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	734	899	224	92	437	84	267	1062	173	246	911	310
Future Volume (veh/h)	734	899	224	92	437	84	267	1062	173	246	911	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	781	956	128	98	465	15	284	1130	54	262	969	277
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	1177	1090	483	311	829	254	337	1484	459	465	1673	890
Arrive On Green	0.24	0.31	0.31	0.09	0.16	0.16	0.03	0.10	0.10	0.14	0.33	0.33
Sat Flow, veh/h	4983	3526	1563	3428	5066	1552	3428	5066	1566	3428	5066	1570
Grp Volume(v), veh/h	781	956	128	98	465	15	284	1130	54	262	969	277
Grp Sat Flow(s),veh/h/ln	1661	1763	1563	1714	1689	1552	1714	1689	1566	1714	1689	1570
Q Serve(g_s), s	19.9	36.0	8.6	3.7	11.8	1.1	11.5	30.5	3.3	10.0	22.2	4.2
Cycle Q Clear(g_c), s	19.9	36.0	8.6	3.7	11.8	1.1	11.5	30.5	3.3	10.0	22.2	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1177	1090	483	311	829	254	337	1484	459	465	1673	890
V/C Ratio(X)	0.66	0.88	0.26	0.31	0.56	0.06	0.84	0.76	0.12	0.56	0.58	0.31
Avail Cap(c_a), veh/h	1177	1133	503	343	1484	455	392	1484	459	465	1673	890
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	45.8	36.4	59.6	53.9	49.4	66.6	58.5	26.3	56.6	38.8	5.3
Incr Delay (d2), s/veh	3.0	8.9	0.8	0.6	1.6	0.3	11.8	3.2	0.4	4.9	1.5	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	16.6	3.4	1.6	5.1	0.5	5.8	14.2	1.8	4.6	9.3	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.4	54.7	37.2	60.1	55.5	49.7	78.4	61.7	26.7	61.5	40.3	6.2
LnGrp LOS	D	D	D	E	E	D	E	E	C	E	D	A
Approach Vol, veh/h		1865			578			1468			1508	
Approach Delay, s/veh		52.1			56.2			63.6			37.7	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	47.0	18.7	49.3	19.8	52.2	39.1	28.9
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	41.0	14.0	45.0	16.0	41.0	18.0	41.0
Max Q Clear Time (g_c+I1), s	12.0	32.5	5.7	38.0	13.5	24.2	21.9	13.8
Green Ext Time (p_c), s	0.3	6.6	0.1	5.3	0.2	11.8	0.0	6.4

Intersection Summary	
HCM 7th Control Delay, s/veh	51.7
HCM 7th LOS	D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	208	603	0	1837	1240	0
Future Volume (veh/h)	208	603	0	1837	1240	0
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	0	1856	1856	0
Adj Flow Rate, veh/h	221	617	0	1954	1319	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	420	747	0	3115	3115	0
Arrive On Green	0.24	0.24	0.00	0.61	0.61	0.00
Sat Flow, veh/h	1767	3145	0	5400	5400	0
Grp Volume(v), veh/h	221	617	0	1954	1319	0
Grp Sat Flow(s),veh/h/ln	1767	1572	0	1689	1689	0
Q Serve(g_s), s	11.4	19.5	0.0	25.4	14.2	0.0
Cycle Q Clear(g_c), s	11.4	19.5	0.0	25.4	14.2	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	420	747	0	3115	3115	0
V/C Ratio(X)	0.53	0.83	0.00	0.63	0.42	0.00
Avail Cap(c_a), veh/h	757	1348	0	3115	3115	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.9	38.0	0.0	12.7	10.5	0.0
Incr Delay (d2), s/veh	1.0	2.4	0.0	1.0	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	7.7	0.0	8.6	4.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	35.9	40.4	0.0	13.6	11.0	0.0
LnGrp LOS	D	D		B	B	
Approach Vol, veh/h	838			1954	1319	
Approach Delay, s/veh	39.2			13.6	11.0	
Approach LOS	D			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		75.0		30.0		75.0
Change Period (Y+Rc), s		* 10		5.1		10.4
Max Green Setting (Gmax), s		* 50		45.0		44.5
Max Q Clear Time (g_c+I1), s		27.4		21.5		16.2
Green Ext Time (p_c), s		21.3		3.4		22.9

Intersection Summary		
HCM 7th Control Delay, s/veh	18.0	
HCM 7th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	345	112	1128	0	0	1088
Future Volume (veh/h)	345	112	1128	0	0	1088
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	0	0	1856
Adj Flow Rate, veh/h	236	246	1213	0	0	1170
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	0	0	3
Cap, veh/h	327	291	3380	0	0	3380
Arrive On Green	0.19	0.19	0.67	0.00	0.00	0.67
Sat Flow, veh/h	1767	1572	5400	0	0	5400
Grp Volume(v), veh/h	236	246	1213	0	0	1170
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	0	0	1689
Q Serve(g_s), s	13.2	15.9	11.0	0.0	0.0	10.5
Cycle Q Clear(g_c), s	13.2	15.9	11.0	0.0	0.0	10.5
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	327	291	3380	0	0	3380
V/C Ratio(X)	0.72	0.84	0.36	0.00	0.00	0.35
Avail Cap(c_a), veh/h	757	674	3380	0	0	3380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	40.2	41.3	7.6	0.0	0.0	7.6
Incr Delay (d2), s/veh	3.0	6.6	0.3	0.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	6.6	3.5	0.0	0.0	3.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	43.2	48.0	7.9	0.0	0.0	7.8
LnGrp LOS	D	D	A			A
Approach Vol, veh/h	482		1213			1170
Approach Delay, s/veh	45.6		7.9			7.8
Approach LOS	D		A			A

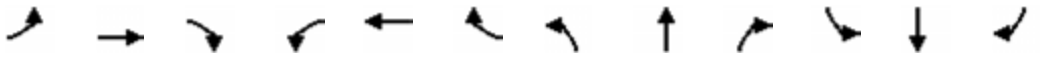
Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	80.5			80.5	24.5
Change Period (Y+Rc), s	10.4			* 10	5.1
Max Green Setting (Gmax), s	44.5			* 50	45.0
Max Q Clear Time (g_c+I1), s	13.0			12.5	17.9
Green Ext Time (p_c), s	23.6			25.9	1.6

Intersection Summary	
HCM 7th Control Delay, s/veh	14.2
HCM 7th LOS	B

Notes

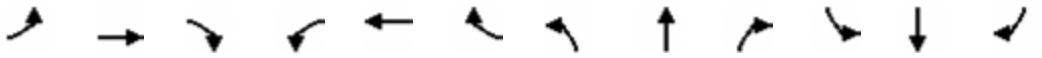
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	685	0	243	0	0	0	282	1157	0	0	1360	971
Future Volume (vph)	685	0	243	0	0	0	282	1157	0	0	1360	971
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0				6.5	6.5			6.5	6.5
Lane Util. Factor	0.94		1.00				0.97	0.91			0.91	1.00
Frpb, ped/bikes	1.00		0.99				1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00		1.00				1.00	1.00			1.00	1.00
Frt	1.00		0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	4942		1548				3400	5036			5036	1548
Flt Permitted	0.95		1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)	4942		1548				3400	5036			5036	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	745	0	264	0	0	0	307	1258	0	0	1478	1055
RTOR Reduction (vph)	0	0	205	0	0	0	0	0	0	0	0	378
Lane Group Flow (vph)	745	0	59	0	0	0	307	1258	0	0	1478	677
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm				Prot	NA		Prot	NA	Perm
Protected Phases	4				3		5	2		1	6	
Permitted Phases			4	3								6
Actuated Green, G (s)	24.4		24.4				15.6	72.6			50.5	50.5
Effective Green, g (s)	24.4		24.4				15.6	72.6			50.5	50.5
Actuated g/C Ratio	0.22		0.22				0.14	0.66			0.46	0.46
Clearance Time (s)	6.0		6.0				6.5	6.5			6.5	6.5
Vehicle Extension (s)	3.0		3.0				3.0	5.5			5.5	5.5
Lane Grp Cap (vph)	1101		344				484	3338			2322	713
v/s Ratio Prot	c0.15						c0.09	0.25			0.29	
v/s Ratio Perm			0.04									c0.44
v/c Ratio	0.68		0.17				0.63	0.38			0.64	0.95
Uniform Delay, d1	38.9		34.4				44.3	8.3			22.5	28.3
Progression Factor	1.00		1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2	1.7		0.2				2.7	0.2			0.9	22.6
Delay (s)	40.6		34.6				47.0	8.5			23.4	50.9
Level of Service	D		C				D	A			C	D
Approach Delay (s/veh)		39.0			0.0			16.0			34.8	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	25.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



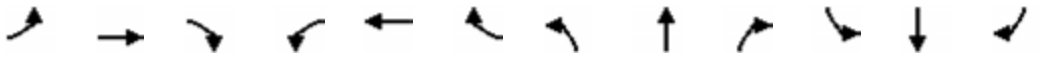
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	190	118	42	67	51	113	1174	71	183	1164	119
Future Volume (veh/h)	208	190	118	42	67	51	113	1174	71	183	1164	119
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	221	202	27	45	71	13	120	1249	40	195	1238	121
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	328	771	343	260	771	343	307	2717	830	348	2608	255
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.05	0.54	0.54	0.07	0.56	0.56
Sat Flow, veh/h	1300	3526	1568	1140	3526	1568	1767	5066	1547	1767	4686	458
Grp Volume(v), veh/h	221	202	27	45	71	13	120	1249	40	195	892	467
Grp Sat Flow(s),veh/h/ln	1300	1763	1568	1140	1763	1568	1767	1689	1547	1767	1689	1766
Q Serve(g_s), s	18.3	5.3	1.5	3.8	1.8	0.7	3.4	17.0	1.4	5.5	17.8	17.8
Cycle Q Clear(g_c), s	20.1	5.3	1.5	9.1	1.8	0.7	3.4	17.0	1.4	5.5	17.8	17.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	328	771	343	260	771	343	307	2717	830	348	1880	983
V/C Ratio(X)	0.67	0.26	0.08	0.17	0.09	0.04	0.39	0.46	0.05	0.56	0.47	0.47
Avail Cap(c_a), veh/h	509	1261	561	418	1261	561	617	2717	830	623	1880	983
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	36.2	34.7	40.0	34.8	34.4	11.9	16.0	12.3	12.2	14.9	14.9
Incr Delay (d2), s/veh	1.8	0.1	0.1	0.2	0.0	0.0	0.3	0.6	0.1	0.5	0.9	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	2.2	0.6	1.1	0.8	0.3	1.2	6.0	0.5	1.9	6.3	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.6	36.4	34.8	40.2	34.9	34.5	12.2	16.5	12.4	12.7	15.8	16.6
LnGrp LOS	D	D	C	D	C	C	B	B	B	B	B	B
Approach Vol, veh/h		450			129			1409			1554	
Approach Delay, s/veh		40.3			36.7			16.0			15.7	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.1	67.0		30.8	11.8	69.3		30.8				
Change Period (Y+Rc), s	6.5	7.0		6.3	6.5	7.0		6.3				
Max Green Setting (Gmax), s	25.0	60.0		40.0	25.0	60.0		40.0				
Max Q Clear Time (g_c+I1), s	7.5	19.0		22.1	5.4	19.8		11.1				
Green Ext Time (p_c), s	0.1	27.5		1.4	0.1	28.4		0.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.7									
HCM 7th LOS			B									

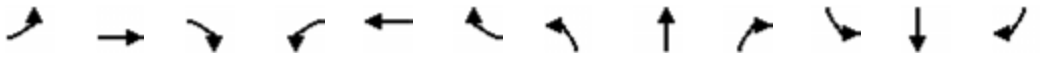
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	168	25	1088	0	0	0	0	1260	540	112	1246	0
Future Volume (vph)	168	25	1088	0	0	0	0	1260	540	112	1246	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8	4.0					4.0	4.0	4.8	9.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1689	1568					5036	2699	3400	5036	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1665	1689	1568					5036	2699	3400	5036	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	185	27	1196	0	0	0	0	1385	593	123	1369	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	105	107	1196	0	0	0	0	1385	593	123	1369	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free					NA	custom	Prot	NA	
Protected Phases	4	4						2 3		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	11.7	11.7	100.7					62.3	46.1	9.1	75.2	
Effective Green, g (s)	11.7	11.7	100.7					62.3	46.1	9.1	75.2	
Actuated g/C Ratio	0.12	0.12	1.00					0.62	0.46	0.09	0.75	
Clearance Time (s)	4.8	4.8							4.0	4.8	9.0	
Vehicle Extension (s)	3.0	3.0							5.0	3.0	5.0	
Lane Grp Cap (vph)	193	196	1568					3115	1235	307	3760	
v/s Ratio Prot	0.06	0.06						0.28		0.04	0.27	
v/s Ratio Perm			c0.76						0.22			
v/c Ratio	0.54	0.55	0.76					0.44	0.48	0.40	0.36	
Uniform Delay, d1	42.0	42.0	0.0					10.1	19.0	43.2	4.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.1	3.1	3.6					0.2	0.6	0.9	0.1	
Delay (s)	45.1	45.1	3.6					10.3	19.6	44.1	4.6	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s/veh)		9.8			0.0			13.1			7.8	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	21.6
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



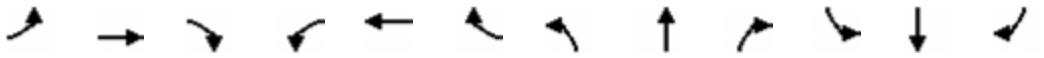
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	0	275	609	141	11	199	728	0	0	640	140
Future Volume (veh/h)	127	0	275	609	141	11	199	728	0	0	640	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856	1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h	141	0	26	677	157	11	221	809	0	0	711	34
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	3	3	3	3	3	3	0	0	3	3
Cap, veh/h	0	0	0	933	452	32	334	1464	0	0	1220	366
Arrive On Green	0.00	0.00	0.00	0.26	0.26	0.26	0.10	0.42	0.00	0.00	0.24	0.24
Sat Flow, veh/h		0		3534	1712	120	3428	3618	0	0	5233	1520
Grp Volume(v), veh/h		0.0		677	0	168	221	809	0	0	711	34
Grp Sat Flow(s),veh/h/ln				1767	0	1832	1714	1763	0	0	1689	1520
Q Serve(g_s), s				10.9	0.0	4.6	3.9	10.9	0.0	0.0	7.7	1.1
Cycle Q Clear(g_c), s				10.9	0.0	4.6	3.9	10.9	0.0	0.0	7.7	1.1
Prop In Lane				1.00		0.07	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				933	0	484	334	1464	0	0	1220	366
V/C Ratio(X)				0.73	0.00	0.35	0.66	0.55	0.00	0.00	0.58	0.09
Avail Cap(c_a), veh/h				1985	0	1029	1155	2546	0	0	3658	1098
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				20.9	0.0	18.6	27.1	13.8	0.0	0.0	20.9	18.4
Incr Delay (d2), s/veh				1.1	0.0	0.4	0.8	0.3	0.0	0.0	0.4	0.1
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.1	0.0	1.8	1.5	3.6	0.0	0.0	2.7	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				22.0	0.0	19.0	28.0	14.2	0.0	0.0	21.3	18.5
LnGrp LOS				C		B	C	B			C	B
Approach Vol, veh/h					845			1030			745	
Approach Delay, s/veh					21.4			17.1			21.2	
Approach LOS					C			B			C	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	35.9	26.4	10.9	25.0
Change Period (Y+Rc), s	10.0	10.0	4.8	10.0
Max Green Setting (Gmax), s	45.0	35.0	21.0	45.0
Max Q Clear Time (g_c+I1), s	12.9	12.9	5.9	9.7
Green Ext Time (p_c), s	6.0	3.4	0.3	5.1

Intersection Summary	
HCM 7th Control Delay, s/veh	19.7
HCM 7th LOS	B

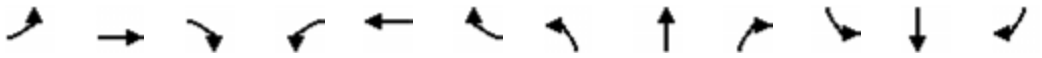
Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	330	32	96	211	28	12	1344	393	29	960	101
Future Volume (vph)	86	330	32	96	211	28	12	1344	393	29	960	101
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
Total Lost time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1688	3331		1688	3317		1688	3376	1510	1688	3376	1510
Flt Permitted	0.95	1.00		0.95	1.00		0.20	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1688	3331		1688	3317		362	3376	1510	140	3376	1510
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	359	35	104	229	30	13	1461	427	32	1043	110
RTOR Reduction (vph)	0	4	0	0	7	0	0	0	44	0	0	40
Lane Group Flow (vph)	93	390	0	104	252	0	13	1461	383	32	1043	70
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	13.1	26.1		13.0	26.0		70.1	70.1	70.1	70.1	70.1	70.1
Effective Green, g (s)	13.1	26.1		13.0	26.0		70.1	70.1	70.1	70.1	70.1	70.1
Actuated g/C Ratio	0.09	0.19		0.09	0.19		0.50	0.50	0.50	0.50	0.50	0.50
Clearance Time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Vehicle Extension (s)	3.0	5.0		2.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	158	621		156	616		181	1692	757	70	1692	757
v/s Ratio Prot	0.06	c0.12		c0.06	0.08			c0.43			0.31	
v/s Ratio Perm							0.04		0.25	0.23		0.05
v/c Ratio	0.59	0.63		0.67	0.41		0.07	0.86	0.51	0.46	0.62	0.09
Uniform Delay, d1	60.8	52.4		61.3	50.1		18.0	30.6	23.3	22.5	25.1	18.2
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	5.5	2.8		8.1	0.9		0.4	5.3	1.1	9.6	1.0	0.1
Delay (s)	66.3	55.2		69.4	51.1		18.4	35.9	24.4	32.1	26.1	18.3
Level of Service	E	E		E	D		B	D	C	C	C	B
Approach Delay (s/veh)		57.3			56.3			33.2			25.6	
Approach LOS		E			E			C			C	

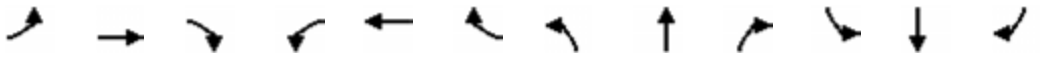
Intersection Summary			
HCM 2000 Control Delay (s/veh)	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	139.8	Sum of lost time (s)	30.6
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	329	31	90	198	29	42	1176	59	59	1006	127
Future Volume (veh/h)	199	329	31	90	198	29	42	1176	59	59	1006	127
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	212	350	7	96	211	22	45	1251	60	63	1070	124
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	262	397	331	119	660	68	293	2209	106	100	1549	179
Arrive On Green	0.08	0.22	0.22	0.07	0.21	0.21	0.17	0.46	0.46	0.06	0.35	0.35
Sat Flow, veh/h	3302	1787	1489	1702	3102	320	1702	4766	229	1702	4424	512
Grp Volume(v), veh/h	212	350	7	96	114	119	45	854	457	63	786	408
Grp Sat Flow(s),veh/h/ln	1651	1787	1489	1702	1698	1724	1702	1626	1742	1702	1626	1684
Q Serve(g_s), s	8.8	26.5	0.3	7.8	8.0	8.1	3.1	26.7	26.7	5.1	29.0	29.1
Cycle Q Clear(g_c), s	8.8	26.5	0.3	7.8	8.0	8.1	3.1	26.7	26.7	5.1	29.0	29.1
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.13	1.00		0.30
Lane Grp Cap(c), veh/h	262	397	331	119	361	367	293	1508	807	100	1138	589
V/C Ratio(X)	0.81	0.88	0.02	0.81	0.32	0.32	0.15	0.57	0.57	0.63	0.69	0.69
Avail Cap(c_a), veh/h	354	460	383	182	437	443	293	1508	807	195	1138	589
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.4	52.7	18.5	64.2	46.5	46.6	49.3	27.3	27.3	64.4	39.0	39.0
Incr Delay (d2), s/veh	9.8	19.8	0.1	14.2	1.4	1.4	1.1	1.5	2.9	6.4	3.4	6.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	14.0	0.2	3.7	3.4	3.5	1.4	10.4	11.4	2.4	11.9	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.2	72.5	18.5	78.4	47.9	48.0	50.4	28.9	30.2	70.8	42.4	45.6
LnGrp LOS	E	E	B	E	D	D	D	C	C	E	D	D
Approach Vol, veh/h		569			329			1356			1257	
Approach Delay, s/veh		72.1			56.8			30.0			44.9	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.8	38.1	30.1	55.0	18.1	36.8	14.2	70.9
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	36.0	14.0	49.0	15.0	36.0	16.0	47.0
Max Q Clear Time (g_c+I1), s	9.8	28.5	5.1	31.1	10.8	10.1	7.1	28.7
Green Ext Time (p_c), s	0.1	2.2	0.0	12.5	0.3	2.5	0.1	13.4

Intersection Summary	
HCM 7th Control Delay, s/veh	44.7
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	374	30	52	154	13	65	1069	122	13	794	256
Future Volume (veh/h)	201	374	30	52	154	13	65	1069	122	13	794	256
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	226	420	30	58	173	12	73	1201	88	15	892	177
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	281	508	36	113	230	16	527	2051	915	67	1133	498
Arrive On Green	0.08	0.15	0.15	0.06	0.13	0.13	0.30	0.58	0.58	0.04	0.32	0.32
Sat Flow, veh/h	3428	3338	238	1767	1715	119	1767	3526	1572	1767	3526	1550
Grp Volume(v), veh/h	226	221	229	58	0	185	73	1201	88	15	892	177
Grp Sat Flow(s),veh/h/ln	1714	1763	1813	1767	0	1834	1767	1763	1572	1767	1763	1550
Q Serve(g_s), s	9.1	17.0	17.2	4.4	0.0	13.6	4.2	30.3	3.5	1.2	32.2	9.3
Cycle Q Clear(g_c), s	9.1	17.0	17.2	4.4	0.0	13.6	4.2	30.3	3.5	1.2	32.2	9.3
Prop In Lane	1.00		0.13	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	268	276	113	0	246	527	2051	915	67	1133	498
V/C Ratio(X)	0.80	0.82	0.83	0.51	0.00	0.75	0.14	0.59	0.10	0.22	0.79	0.36
Avail Cap(c_a), veh/h	453	434	447	234	0	452	527	2051	915	240	1133	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.1	57.5	57.6	63.4	0.0	58.4	36.0	18.6	13.0	65.4	43.1	20.9
Incr Delay (d2), s/veh	5.3	6.7	6.9	3.6	0.0	4.6	0.5	1.2	0.2	1.7	5.6	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	8.0	8.3	2.1	0.0	6.6	1.9	11.9	1.2	0.5	14.5	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.5	64.2	64.5	67.0	0.0	63.0	36.5	19.8	13.2	67.0	48.7	22.9
LnGrp LOS	E	E	E	E		E	D	B	B	E	D	C
Approach Vol, veh/h		676			243			1362			1084	
Approach Delay, s/veh		65.7			63.9			20.3			44.7	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.5	26.8	47.7	51.0	17.0	24.3	11.3	87.4
Change Period (Y+Rc), s	5.5	5.5	6.0	6.0	5.5	5.5	6.0	6.0
Max Green Setting (Gmax), s	18.5	34.5	19.0	45.0	18.5	34.5	19.0	45.0
Max Q Clear Time (g_c+I1), s	6.4	19.2	6.2	34.2	11.1	15.6	3.2	32.3
Green Ext Time (p_c), s	0.1	2.1	0.1	7.5	0.4	0.8	0.0	10.0

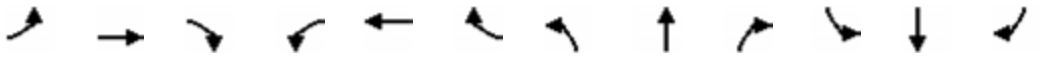
Intersection Summary	
HCM 7th Control Delay, s/veh	40.4
HCM 7th LOS	D

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	80	225	174	19	21	67	387	27	51	458	57	199
Future Volume (vph)	80	225	174	19	21	67	387	27	51	458	57	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Lane Util. Factor	1.00	0.95				1.00	0.91		1.00	0.95		1.00
Frpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Frt	1.00	0.93				1.00	0.99		1.00	0.98		0.85
Flt Protected	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (prot)	1752	3262				1752	4978		1752	3446		1568
Flt Permitted	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (perm)	1752	3262				1752	4978		1752	3446		1568
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	96	271	210	23	25	81	466	33	61	552	69	240
RTOR Reduction (vph)	0	2	0	0	0	0	3	0	0	0	0	182
Lane Group Flow (vph)	96	502	0	0	0	106	496	0	61	621	0	58
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA			Split	Split	NA		Split	NA		Prot
Protected Phases	3	3			7	7	7		5	5		5
Permitted Phases												
Actuated Green, G (s)	41.1	41.1				29.5	29.5		47.2	47.2		47.2
Effective Green, g (s)	41.1	41.1				29.5	29.5		47.2	47.2		47.2
Actuated g/C Ratio	0.17	0.17				0.12	0.12		0.20	0.20		0.20
Clearance Time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0				2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)	301	560				216	614		345	680		309
v/s Ratio Prot	0.05	c0.15				0.06	c0.10		0.03	c0.18		0.04
v/s Ratio Perm												
v/c Ratio	0.32	0.90				0.49	0.81		0.18	0.91		0.19
Uniform Delay, d1	86.7	96.9				97.8	102.0		79.8	93.9		80.0
Progression Factor	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.2	16.5				0.6	7.3		1.1	18.8		1.3
Delay (s)	87.0	113.5				98.4	109.3		80.9	112.7		81.3
Level of Service	F	F				F	F		F	F		F
Approach Delay (s/veh)		109.2					107.4			102.5		
Approach LOS		F					F			F		

Intersection Summary			
HCM 2000 Control Delay (s/veh)	106.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	239.1	Sum of lost time (s)	30.0
Intersection Capacity Utilization	104.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	136	339	591	61	44	295	243	18
Future Volume (vph)	136	339	591	61	44	295	243	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0			6.0	6.0	
Lane Util. Factor		0.86	0.86			0.97	0.88	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	
Frt		1.00	0.99			1.00	0.85	
Flt Protected		0.95	0.99			0.95	1.00	
Satd. Flow (prot)		1507	4647			3400	2760	
Flt Permitted		0.95	0.99			0.95	1.00	
Satd. Flow (perm)		1507	4647			3400	2760	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	164	408	712	73	53	355	293	22
RTOR Reduction (vph)	0	0	3	0	0	0	71	0
Lane Group Flow (vph)	0	331	1023	0	0	408	244	0
Confl. Peds. (#/hr)				4				3
Confl. Bikes (#/hr)				1				2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	Split	NA		Prot	Prot	Prot	
Protected Phases	6	6	6		4	4	4	
Permitted Phases								
Actuated Green, G (s)		57.3	57.3			34.0	34.0	
Effective Green, g (s)		57.3	57.3			34.0	34.0	
Actuated g/C Ratio		0.24	0.24			0.14	0.14	
Clearance Time (s)		6.0	6.0			6.0	6.0	
Vehicle Extension (s)		4.0	4.0			2.5	2.5	
Lane Grp Cap (vph)		361	1113			483	392	
v/s Ratio Prot		0.22	c0.22			c0.12	0.09	
v/s Ratio Perm								
v/c Ratio		0.92	0.92			0.84	0.62	
Uniform Delay, d1		88.6	88.6			100.0	96.5	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		30.4	13.4			12.6	2.6	
Delay (s)		118.9	102.1			112.6	99.2	
Level of Service		F	F			F	F	
Approach Delay (s/veh)			106.2			106.7		
Approach LOS			F			F		

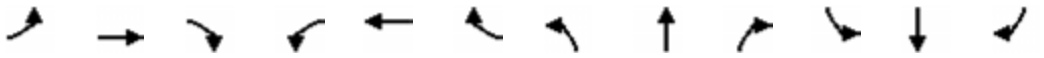
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	359	7	30	155	42	14	836	40	135	814	23
Future Volume (veh/h)	29	359	7	30	155	42	14	836	40	135	814	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	32	390	6	33	168	7	15	909	41	147	885	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	156	581	9	119	303	252	46	2101	95	176	2403	65
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.03	0.61	0.61	0.10	0.69	0.69
Sat Flow, veh/h	1195	3552	55	978	1856	1540	1767	3433	155	1767	3506	95
Grp Volume(v), veh/h	32	193	203	33	168	7	15	467	483	147	445	464
Grp Sat Flow(s),veh/h/ln	1195	1763	1844	978	1856	1540	1767	1763	1825	1767	1763	1838
Q Serve(g_s), s	3.0	12.4	12.4	3.9	10.0	0.5	1.0	16.8	16.8	9.8	12.8	12.8
Cycle Q Clear(g_c), s	13.0	12.4	12.4	16.3	10.0	0.5	1.0	16.8	16.8	9.8	12.8	12.8
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.08	1.00		0.05
Lane Grp Cap(c), veh/h	156	288	301	119	303	252	46	1079	1117	176	1208	1260
V/C Ratio(X)	0.21	0.67	0.67	0.28	0.55	0.03	0.32	0.43	0.43	0.84	0.37	0.37
Avail Cap(c_a), veh/h	269	455	476	212	479	398	295	1079	1117	295	1208	1260
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	47.2	47.2	54.8	46.2	42.2	57.4	12.3	12.3	53.1	7.9	7.9
Incr Delay (d2), s/veh	0.6	2.7	2.6	1.3	1.6	0.0	4.0	1.3	1.2	10.0	0.9	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.7	6.0	1.0	4.7	0.2	0.5	6.8	7.0	4.8	4.8	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	52.8	49.9	49.8	56.1	47.7	42.2	61.3	13.5	13.5	63.0	8.8	8.8
LnGrp LOS	D	D	D	E	D	D	E	B	B	E	A	A
Approach Vol, veh/h		428			208			965			1056	
Approach Delay, s/veh		50.0			48.9			14.3			16.3	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.9	78.4		24.6	8.1	87.2		24.6				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	54.0		31.0	20.0	54.0		31.0				
Max Q Clear Time (g_c+I1), s	11.8	18.8		15.0	3.0	14.8		18.3				
Green Ext Time (p_c), s	0.2	16.3		2.3	0.0	16.2		0.8				

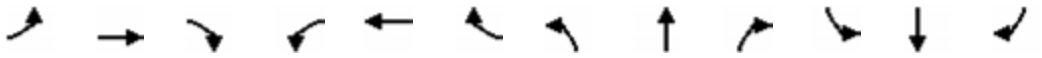
Intersection Summary												
HCM 7th Control Delay, s/veh			23.6									
HCM 7th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	1186	68	297	818	419	106	1059	466	300	964	27
Future Volume (veh/h)	178	1186	68	297	818	419	106	1059	466	300	964	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	180	1198	65	300	826	218	107	1070	271	303	974	6
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	497	1562	85	348	1394	421	419	1399	434	349	1295	402
Arrive On Green	0.15	0.33	0.33	0.11	0.29	0.29	0.13	0.29	0.29	0.11	0.27	0.27
Sat Flow, veh/h	3302	4723	256	3302	4879	1472	3302	4879	1513	3302	4879	1513
Grp Volume(v), veh/h	180	825	438	300	826	218	107	1070	271	303	974	6
Grp Sat Flow(s),veh/h/ln	1651	1626	1727	1651	1626	1472	1651	1626	1513	1651	1626	1513
Q Serve(g_s), s	6.9	31.8	31.9	12.5	20.4	12.7	4.1	28.1	21.8	12.6	25.6	0.4
Cycle Q Clear(g_c), s	6.9	31.8	31.9	12.5	20.4	12.7	4.1	28.1	21.8	12.6	25.6	0.4
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	497	1076	571	348	1394	421	419	1399	434	349	1295	402
V/C Ratio(X)	0.36	0.77	0.77	0.86	0.59	0.52	0.26	0.77	0.62	0.87	0.75	0.01
Avail Cap(c_a), veh/h	497	1076	571	401	1394	421	419	1499	465	377	1499	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.4	42.0	42.0	61.6	43.0	22.5	55.1	45.6	43.4	61.6	47.2	37.9
Incr Delay (d2), s/veh	0.4	5.2	9.5	15.5	1.9	4.5	0.3	3.1	4.5	18.0	2.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	13.2	14.7	5.9	8.3	4.8	1.7	11.5	8.5	6.1	10.5	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.9	47.3	51.5	77.1	44.9	27.0	55.5	48.8	47.9	79.6	50.1	38.0
LnGrp LOS	D	D	D	E	D	C	E	D	D	E	D	D
Approach Vol, veh/h		1443			1344			1448			1283	
Approach Delay, s/veh		49.4			49.2			49.1			57.0	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.8	43.2	27.1	46.0	20.8	46.1	20.8	52.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	43.0	17.0	40.0	16.0	43.0	17.0	40.0
Max Q Clear Time (g_c+I1), s	6.1	27.6	8.9	22.4	14.6	30.1	14.5	33.9
Green Ext Time (p_c), s	0.2	9.5	0.3	10.5	0.2	10.0	0.3	5.1

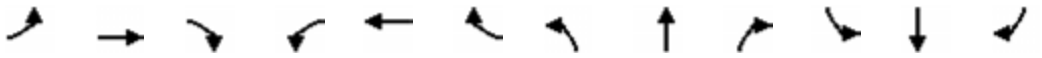
Intersection Summary	
HCM 7th Control Delay, s/veh	51.0
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	869	136	487	373	18	99	871	839	95	819	73
Future Volume (vph)	194	869	136	487	373	18	99	871	839	95	819	73
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1900	1830	1830	1900	1830
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Lane Util. Factor	0.86	0.86	1.00	0.94	0.95		0.97	0.95	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.99	
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)	1452	4579	1510	4760	3349		3274	3505	2658	3274	4964	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1452	4579	1510	4760	3349		3274	3505	2658	3274	4964	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	202	905	142	507	389	19	103	907	874	99	853	76
RTOR Reduction (vph)	0	0	104	0	2	0	0	0	0	0	6	0
Lane Group Flow (vph)	182	925	38	507	406	0	103	907	874	99	923	0
Confl. Peds. (#/hr)						6						6
Confl. Bikes (#/hr)						1						6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		7	7		5	2	7	1	6	
Permitted Phases			8						2			
Actuated Green, G (s)	40.1	40.1	40.1	30.6	30.6		18.0	46.4	77.0	10.6	39.0	
Effective Green, g (s)	40.1	40.1	40.1	30.6	30.6		18.0	46.4	77.0	10.6	39.0	
Actuated g/C Ratio	0.26	0.26	0.26	0.20	0.20		0.12	0.31	0.51	0.07	0.26	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5	3.0	3.0	4.5	
Lane Grp Cap (vph)	383	1210	399	960	675		388	1072	1349	228	1276	
v/s Ratio Prot	0.13	c0.20		0.11	0.12		0.03	c0.26	c0.13	0.03	c0.19	
v/s Ratio Perm			0.02						0.20			
v/c Ratio	0.48	0.76	0.09	0.53	0.60		0.27	0.85	0.65	0.43	0.72	
Uniform Delay, d1	46.9	51.4	42.1	54.1	55.0		60.8	49.3	27.4	67.7	51.4	
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	0.9	2.9	0.1	0.5	1.5		0.4	6.8	1.1	1.3	2.3	
Delay (s)	47.9	54.4	42.2	54.6	56.5		61.2	56.1	28.5	69.0	53.8	
Level of Service	D	D	D	D	E		E	E	C	E	D	
Approach Delay (s/veh)		52.0			55.5			43.6			55.2	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	50.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	151.7	Sum of lost time (s)	24.0
Intersection Capacity Utilization	83.4%	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												
Traffic Volume (veh/h)	118	153	61	89	308	112	109	1108	58	175	1138	136
Future Volume (veh/h)	118	153	61	89	308	112	109	1108	58	175	1138	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.94	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	127	165	17	96	331	95	121	1231	22	194	1264	62
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	151	733	303	118	507	142	145	1272	540	215	2027	601
Arrive On Green	0.09	0.21	0.21	0.07	0.19	0.19	0.08	0.36	0.36	0.24	0.80	0.80
Sat Flow, veh/h	1767	3526	1458	1767	2675	751	1767	3526	1498	1767	5066	1501
Grp Volume(v), veh/h	127	165	17	96	216	210	121	1231	22	194	1264	62
Grp Sat Flow(s),veh/h/ln	1767	1763	1458	1767	1763	1664	1767	1763	1498	1767	1689	1501
Q Serve(g_s), s	9.9	5.4	1.3	7.5	15.8	16.4	9.4	48.0	1.3	14.9	13.9	1.3
Cycle Q Clear(g_c), s	9.9	5.4	1.3	7.5	15.8	16.4	9.4	48.0	1.3	14.9	13.9	1.3
Prop In Lane	1.00		1.00	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	151	733	303	118	334	315	145	1272	540	215	2027	601
V/C Ratio(X)	0.84	0.23	0.06	0.81	0.65	0.67	0.83	0.97	0.04	0.90	0.62	0.10
Avail Cap(c_a), veh/h	202	831	344	202	353	333	240	1272	540	240	2027	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91
Uniform Delay (d), s/veh	63.1	46.1	44.4	64.4	52.4	52.6	63.3	43.9	29.0	52.2	9.8	8.5
Incr Delay (d2), s/veh	20.8	0.4	0.2	12.4	6.5	7.6	12.0	18.6	0.1	29.8	1.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	2.4	0.5	3.7	7.5	7.4	4.7	23.6	0.5	7.4	3.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	83.9	46.5	44.6	76.8	58.8	60.3	75.3	62.5	29.2	82.0	11.1	8.8
LnGrp LOS	F	D	D	E	E	E	E	E	C	F	B	A
Approach Vol, veh/h		309			522			1374			1520	
Approach Delay, s/veh		61.8			62.7			63.1			20.0	
Approach LOS		E			E			E			C	

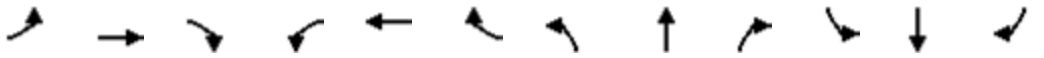
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	61.5	15.4	40.1	17.5	67.0	17.9	37.5
Change Period (Y+Rc), s	6.0	11.0	6.0	* 11	6.0	* 11	6.0	11.0
Max Green Setting (Gmax), s	19.0	43.0	16.0	* 33	19.0	* 48	16.0	28.0
Max Q Clear Time (g_c+I1), s	16.9	50.0	9.5	7.4	11.4	15.9	11.9	18.4
Green Ext Time (p_c), s	0.1	0.0	0.1	2.0	0.2	20.6	0.1	3.0

Intersection Summary	
HCM 7th Control Delay, s/veh	45.4
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



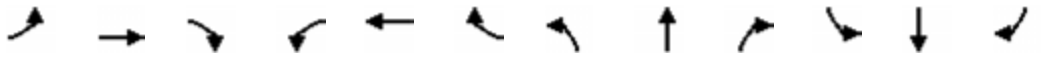
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	12	30	131	63	57	52	1180	21	61	1345	194
Future Volume (veh/h)	105	12	30	131	63	57	52	1180	21	61	1345	194
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	111	13	3	138	66	31	55	1242	21	64	1416	140
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	134	212	49	163	191	90	89	2779	47	116	2822	857
Arrive On Green	0.08	0.15	0.15	0.09	0.16	0.16	0.10	1.00	1.00	0.02	0.18	0.18
Sat Flow, veh/h	1767	1447	334	1767	1180	554	1767	5128	87	1767	5066	1539
Grp Volume(v), veh/h	111	0	16	138	0	97	55	818	445	64	1416	140
Grp Sat Flow(s),veh/h/ln	1767	0	1781	1767	0	1734	1767	1689	1838	1767	1689	1539
Q Serve(g_s), s	8.7	0.0	1.1	10.8	0.0	7.0	4.2	0.0	0.0	5.0	35.2	10.7
Cycle Q Clear(g_c), s	8.7	0.0	1.1	10.8	0.0	7.0	4.2	0.0	0.0	5.0	35.2	10.7
Prop In Lane	1.00		0.19	1.00		0.32	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	134	0	260	163	0	281	89	1830	996	116	2822	857
V/C Ratio(X)	0.83	0.00	0.06	0.85	0.00	0.34	0.62	0.45	0.45	0.55	0.50	0.16
Avail Cap(c_a), veh/h	207	0	534	242	0	555	114	1830	996	126	2822	857
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.12	0.12	0.12	0.34	0.34	0.34
Uniform Delay (d), s/veh	63.8	0.0	51.5	62.6	0.0	52.0	61.6	0.0	0.0	66.5	39.7	29.7
Incr Delay (d2), s/veh	14.7	0.0	0.1	16.3	0.0	0.7	0.8	0.1	0.2	1.5	0.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.0	0.0	0.9	9.5	0.0	5.6	2.6	0.0	0.1	3.8	19.8	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.4	0.0	51.6	78.9	0.0	52.8	62.5	0.1	0.2	67.9	39.9	29.8
LnGrp LOS	E		D	E		D	E	A	A	E	D	C
Approach Vol, veh/h		127			235			1318			1620	
Approach Delay, s/veh		75.0			68.1			2.7			40.1	
Approach LOS		E			E			A			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	81.9	17.5	25.5	13.1	84.0	15.2	27.7
Change Period (Y+Rc), s	6.0	6.0	4.6	5.0	6.0	6.0	4.6	5.0
Max Green Setting (Gmax), s	10.0	47.2	19.2	42.0	9.0	48.2	16.4	44.8
Max Q Clear Time (g_c+I1), s	7.0	2.0	12.8	3.1	6.2	37.2	10.7	9.0
Green Ext Time (p_c), s	0.0	23.9	0.2	0.1	0.0	9.5	0.1	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	28.5
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	416	492	153	269	1074	162	375	894	115	144	1324	481
Future Volume (veh/h)	416	492	153	269	1074	162	375	894	115	144	1324	481
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	452	535	49	292	1167	50	408	972	38	157	1439	455
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	570	1042	462	342	1424	439	441	1556	481	432	1543	658
Arrive On Green	0.11	0.30	0.30	0.10	0.28	0.28	0.04	0.10	0.10	0.13	0.30	0.30
Sat Flow, veh/h	4983	3526	1563	3428	5066	1561	3428	5066	1566	3428	5066	1569
Grp Volume(v), veh/h	452	535	49	292	1167	50	408	972	38	157	1439	455
Grp Sat Flow(s),veh/h/ln	1661	1763	1563	1714	1689	1561	1714	1689	1566	1714	1689	1569
Q Serve(g_s), s	12.4	17.6	3.2	11.7	30.1	3.3	16.6	25.8	2.3	5.9	38.6	12.3
Cycle Q Clear(g_c), s	12.4	17.6	3.2	11.7	30.1	3.3	16.6	25.8	2.3	5.9	38.6	12.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	570	1042	462	342	1424	439	441	1556	481	432	1543	658
V/C Ratio(X)	0.79	0.51	0.11	0.85	0.82	0.11	0.93	0.62	0.08	0.36	0.93	0.69
Avail Cap(c_a), veh/h	570	1042	462	392	1484	457	441	1556	481	432	1543	658
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.4	40.9	35.9	62.0	47.0	37.4	66.4	55.2	24.1	56.0	47.3	14.7
Incr Delay (d2), s/veh	10.9	1.1	0.3	15.0	4.5	0.3	24.4	1.8	0.3	2.4	11.7	5.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	7.7	1.2	5.7	12.9	1.3	9.2	11.9	1.2	2.7	17.5	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.3	42.0	36.1	77.1	51.5	37.7	90.8	57.0	24.4	58.4	58.9	20.6
LnGrp LOS	E	D	D	E	D	D	F	E	C	E	E	C
Approach Vol, veh/h		1036			1509			1418			2051	
Approach Delay, s/veh		54.5			56.0			65.8			50.4	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	49.0	20.0	47.4	24.0	48.6	22.0	45.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	43.0	16.0	41.0	18.0	41.0	16.0	41.0
Max Q Clear Time (g_c+I1), s	7.9	27.8	13.7	19.6	18.6	40.6	14.4	32.1
Green Ext Time (p_c), s	0.3	9.6	0.2	7.0	0.0	0.4	0.3	7.0

Intersection Summary	
HCM 7th Control Delay, s/veh	56.1
HCM 7th LOS	E

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	328	952	0	1790	1430	0
Future Volume (veh/h)	328	952	0	1790	1430	0
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	0	1856	1856	0
Adj Flow Rate, veh/h	342	978	0	1865	1490	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	618	1101	0	2639	2639	0
Arrive On Green	0.35	0.35	0.00	0.52	0.52	0.00
Sat Flow, veh/h	1767	3145	0	5400	5400	0
Grp Volume(v), veh/h	342	978	0	1865	1490	0
Grp Sat Flow(s),veh/h/ln	1767	1572	0	1689	1689	0
Q Serve(g_s), s	18.7	35.2	0.0	33.5	24.0	0.0
Cycle Q Clear(g_c), s	18.7	35.2	0.0	33.5	24.0	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	618	1101	0	2639	2639	0
V/C Ratio(X)	0.55	0.89	0.00	0.71	0.56	0.00
Avail Cap(c_a), veh/h	736	1310	0	2639	2639	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.4	36.8	0.0	21.8	19.5	0.0
Incr Delay (d2), s/veh	0.8	6.9	0.0	1.6	0.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	14.4	0.0	12.8	9.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	32.2	43.7	0.0	23.4	20.4	0.0
LnGrp LOS	C	D		C	C	
Approach Vol, veh/h	1320			1865	1490	
Approach Delay, s/veh	40.7			23.4	20.4	
Approach LOS	D			C	C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	72.9	47.1	72.9
Change Period (Y+Rc), s	* 10	5.1	10.4
Max Green Setting (Gmax), s	* 60	50.0	54.5
Max Q Clear Time (g_c+I1), s	35.5	37.2	26.0
Green Ext Time (p_c), s	22.8	4.8	24.7

Intersection Summary	
HCM 7th Control Delay, s/veh	27.3
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	285	90	1329	800	0	1211
Future Volume (veh/h)	285	90	1329	800	0	1211
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	0	1856
Adj Flow Rate, veh/h	191	198	1384	788	0	1261
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	0	3
Cap, veh/h	265	235	2435	1134	0	3653
Arrive On Green	0.15	0.15	0.72	0.72	0.00	0.72
Sat Flow, veh/h	1767	1572	3544	1572	0	5400
Grp Volume(v), veh/h	191	198	1384	788	0	1261
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	1572	0	1689
Q Serve(g_s), s	12.4	14.7	23.2	33.6	0.0	11.1
Cycle Q Clear(g_c), s	12.4	14.7	23.2	33.6	0.0	11.1
Prop In Lane	1.00	1.00		1.00	0.00	
Lane Grp Cap(c), veh/h	265	235	2435	1134	0	3653
V/C Ratio(X)	0.72	0.84	0.57	0.69	0.00	0.35
Avail Cap(c_a), veh/h	810	721	2435	1134	0	3653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.6	49.6	7.9	9.4	0.0	6.2
Incr Delay (d2), s/veh	3.7	7.9	1.0	3.5	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	6.3	7.3	10.5	0.0	3.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	52.3	57.5	8.9	12.9	0.0	6.5
LnGrp LOS	D	E	A	B		A
Approach Vol, veh/h	389		2172			1261
Approach Delay, s/veh	55.0		10.3			6.5
Approach LOS	D		B			A

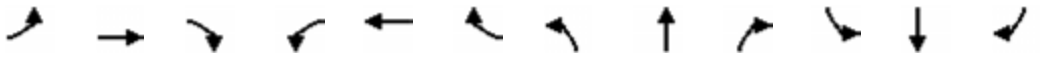
Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	96.9			96.9	23.1
Change Period (Y+Rc), s	10.4			* 10	5.1
Max Green Setting (Gmax), s	49.5			* 55	55.0
Max Q Clear Time (g_c+I1), s	35.6			13.1	16.7
Green Ext Time (p_c), s	13.7			30.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	13.6
HCM 7th LOS	B

Notes

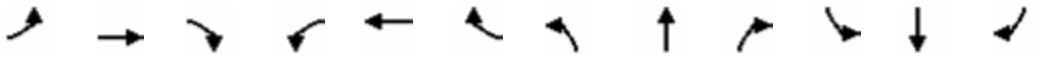
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	956	0	357	0	0	0	426	1337	0	3	1240	781
Future Volume (vph)	956	0	357	0	0	0	426	1337	0	3	1240	781
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0				6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.94		1.00				0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes	1.00		0.99				1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00		1.00				1.00	1.00		1.00	1.00	1.00
Frt	1.00		0.85				1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95		1.00				0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	4942		1548				3400	5036		1752	5036	1548
Flt Permitted	0.95		1.00				0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	4942		1548				3400	5036		1752	5036	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1039	0	388	0	0	0	463	1453	0	3	1348	849
RTOR Reduction (vph)	0	0	268	0	0	0	0	0	0	0	0	358
Lane Group Flow (vph)	1039	0	120	0	0	0	463	1453	0	3	1348	491
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm				Prot	NA		Prot	NA	Perm
Protected Phases	4				3		5	2		1	6	
Permitted Phases			4	3								6
Actuated Green, G (s)	34.3		34.3				22.4	75.4		2.2	55.2	55.2
Effective Green, g (s)	34.3		34.3				22.4	75.4		2.2	55.2	55.2
Actuated g/C Ratio	0.26		0.26				0.17	0.58		0.02	0.42	0.42
Clearance Time (s)	6.0		6.0				6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0		3.0				3.0	5.5		3.0	5.5	5.5
Lane Grp Cap (vph)	1294		405				581	2900		29	2123	652
v/s Ratio Prot	c0.21						c0.14	0.29		0.00	0.27	
v/s Ratio Perm			0.08									c0.32
v/c Ratio	0.80		0.30				0.80	0.50		0.10	0.63	0.75
Uniform Delay, d1	45.1		38.6				52.1	16.5		63.4	29.9	32.1
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.7		0.4				7.5	0.3		1.6	1.0	6.1
Delay (s)	48.8		39.1				59.6	16.9		64.9	30.9	38.2
Level of Service	D		D				E	B		E	C	D
Approach Delay (s/veh)		46.2			0.0			27.2			33.7	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	130.9	Sum of lost time (s)	25.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



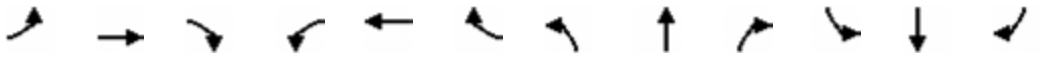
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	118	82	98	287	214	167	1301	16	45	1194	210
Future Volume (veh/h)	149	118	82	98	287	214	167	1301	16	45	1194	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	160	127	18	105	309	48	180	1399	9	48	1284	212
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	247	899	400	341	899	400	285	2750	840	261	2232	369
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.07	0.54	0.54	0.03	0.51	0.51
Sat Flow, veh/h	1015	3526	1569	1231	3526	1569	1767	5066	1547	1767	4370	722
Grp Volume(v), veh/h	160	127	18	105	309	48	180	1399	9	48	992	504
Grp Sat Flow(s),veh/h/ln	1015	1763	1569	1231	1763	1569	1767	1689	1547	1767	1689	1715
Q Serve(g_s), s	18.0	3.3	1.0	8.5	8.4	2.8	5.6	20.5	0.3	1.5	23.9	23.9
Cycle Q Clear(g_c), s	26.4	3.3	1.0	11.7	8.4	2.8	5.6	20.5	0.3	1.5	23.9	23.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.42
Lane Grp Cap(c), veh/h	247	899	400	341	899	400	285	2750	840	261	1725	876
V/C Ratio(X)	0.65	0.14	0.05	0.31	0.34	0.12	0.63	0.51	0.01	0.18	0.58	0.58
Avail Cap(c_a), veh/h	334	1200	534	446	1200	534	544	2750	840	577	1725	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	33.8	33.0	38.4	35.7	33.6	16.8	17.0	12.3	13.9	19.9	19.9
Incr Delay (d2), s/veh	2.1	0.1	0.0	0.4	0.2	0.1	0.9	0.7	0.0	0.1	1.4	2.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	1.4	0.4	2.5	3.5	1.0	2.1	7.4	0.1	0.6	8.9	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.6	33.9	33.0	38.7	35.9	33.7	17.6	17.6	12.4	14.0	21.3	22.7
LnGrp LOS	D	C	C	D	D	C	B	B	B	B	C	C
Approach Vol, veh/h		305			462			1588			1544	
Approach Delay, s/veh		41.6			36.3			17.6			21.5	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.5	70.8		36.3	14.2	67.0		36.3				
Change Period (Y+Rc), s	6.5	7.0		6.3	6.5	7.0		6.3				
Max Green Setting (Gmax), s	25.0	60.0		40.0	25.0	60.0		40.0				
Max Q Clear Time (g_c+I1), s	3.5	22.5		28.4	7.6	25.9		13.7				
Green Ext Time (p_c), s	0.0	28.1		0.9	0.1	27.1		1.8				

Intersection Summary			
HCM 7th Control Delay, s/veh		23.3	
HCM 7th LOS		C	

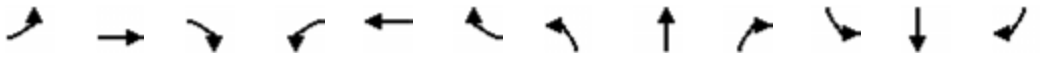
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	289	50	607	0	0	0	0	1684	568	241	1420	0
Future Volume (vph)	289	50	607	0	0	0	0	1684	568	241	1420	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8	4.0					4.0	4.0	4.8	9.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1692	1568					5036	2699	3400	5036	
Flt Permitted	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1665	1692	1568					5036	2699	3400	5036	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	314	54	660	0	0	0	0	1830	617	262	1543	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	182	186	660	0	0	0	0	1830	617	262	1543	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free					NA	custom	Prot	NA	
Protected Phases	4	4						2 3		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	17.7	17.7	112.0					62.5	46.2	14.2	80.5	
Effective Green, g (s)	17.7	17.7	112.0					62.5	46.2	14.2	80.5	
Actuated g/C Ratio	0.16	0.16	1.00					0.56	0.41	0.13	0.72	
Clearance Time (s)	4.8	4.8							4.0	4.8	9.0	
Vehicle Extension (s)	3.0	3.0							5.0	3.0	5.0	
Lane Grp Cap (vph)	263	267	1568					2810	1113	431	3619	
v/s Ratio Prot	0.11	c0.11						c0.36		c0.08	0.31	
v/s Ratio Perm			0.42						0.23			
v/c Ratio	0.69	0.70	0.42					0.65	0.55	0.61	0.43	
Uniform Delay, d1	44.6	44.6	0.0					17.2	25.1	46.3	6.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.6	7.7	0.8					0.7	1.0	2.4	0.2	
Delay (s)	52.2	52.3	0.8					17.9	26.1	48.7	6.6	
Level of Service	D	D	A					B	C	D	A	
Approach Delay (s/veh)		19.2			0.0			20.0			12.7	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	112.0	Sum of lost time (s)	21.6
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



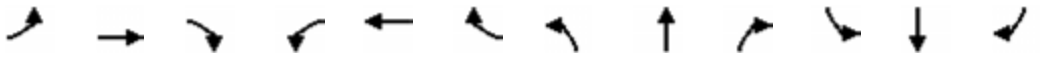
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	0	616	611	314	25	485	636	0	0	672	169
Future Volume (veh/h)	146	0	616	611	314	25	485	636	0	0	672	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856	1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h	152	0	252	659	294	25	505	662	0	0	700	36
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	0	3	3	3	3	3	3	0	0	3	3
Cap, veh/h	0	0	0	912	435	37	614	1649	0	0	1129	339
Arrive On Green	0.00	0.00	0.00	0.26	0.26	0.26	0.18	0.47	0.00	0.00	0.22	0.22
Sat Flow, veh/h		0		3534	1684	143	3428	3618	0	0	5233	1519
Grp Volume(v), veh/h		0.0		659	0	319	505	662	0	0	700	36
Grp Sat Flow(s),veh/h/ln				1767	0	1827	1714	1763	0	0	1689	1519
Q Serve(g_s), s				12.4	0.0	11.4	10.3	9.0	0.0	0.0	9.1	1.4
Cycle Q Clear(g_c), s				12.4	0.0	11.4	10.3	9.0	0.0	0.0	9.1	1.4
Prop In Lane				1.00		0.08	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				912	0	471	614	1649	0	0	1129	339
V/C Ratio(X)				0.72	0.00	0.68	0.82	0.40	0.00	0.00	0.62	0.11
Avail Cap(c_a), veh/h				1696	0	877	987	2175	0	0	3125	937
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				24.7	0.0	24.3	28.8	12.7	0.0	0.0	25.6	22.6
Incr Delay (d2), s/veh				1.1	0.0	1.7	1.4	0.2	0.0	0.0	0.6	0.1
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.9	0.0	4.7	4.0	3.1	0.0	0.0	3.4	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				25.8	0.0	26.0	30.2	12.9	0.0	0.0	26.1	22.7
LnGrp LOS				C		C	C	B			C	C
Approach Vol, veh/h					978			1167			736	
Approach Delay, s/veh					25.9			20.4			25.9	
Approach LOS					C			C			C	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	44.1	28.8	17.9	26.3
Change Period (Y+Rc), s	10.0	10.0	4.8	10.0
Max Green Setting (Gmax), s	45.0	35.0	21.0	45.0
Max Q Clear Time (g_c+I1), s	11.0	14.4	12.3	11.1
Green Ext Time (p_c), s	4.7	4.3	0.7	5.0

Intersection Summary	
HCM 7th Control Delay, s/veh	23.7
HCM 7th LOS	C

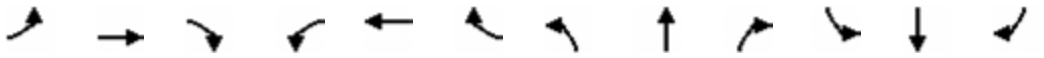
Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	249	15	327	450	53	16	1082	220	26	1279	286
Future Volume (vph)	77	249	15	327	450	53	16	1082	220	26	1279	286
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
Total Lost time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1688	3348		1688	3322		1688	3376	1510	1688	3376	1510
Flt Permitted	0.95	1.00		0.95	1.00		0.08	1.00	1.00	0.14	1.00	1.00
Satd. Flow (perm)	1688	3348		1688	3322		139	3376	1510	254	3376	1510
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	79	257	15	337	464	55	16	1115	227	27	1319	295
RTOR Reduction (vph)	0	3	0	0	5	0	0	0	45	0	0	83
Lane Group Flow (vph)	79	269	0	337	514	0	16	1115	182	27	1319	212
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	12.7	25.0		34.0	46.3		70.0	70.0	70.0	70.0	70.0	70.0
Effective Green, g (s)	12.7	25.0		34.0	46.3		70.0	70.0	70.0	70.0	70.0	70.0
Actuated g/C Ratio	0.08	0.16		0.21	0.29		0.44	0.44	0.44	0.44	0.44	0.44
Clearance Time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Vehicle Extension (s)	3.0	5.0		2.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	134	524		359	963		60	1480	662	111	1480	662
v/s Ratio Prot	0.05	0.08		c0.20	c0.15			0.33			c0.39	
v/s Ratio Perm							0.12		0.12	0.11		0.14
v/c Ratio	0.59	0.51		0.94	0.53		0.27	0.75	0.27	0.24	0.89	0.32
Uniform Delay, d1	70.9	61.7		61.8	47.6		28.5	37.6	28.6	28.2	41.3	29.3
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	6.5	1.7		31.4	1.0		4.9	2.6	0.5	2.4	7.7	0.6
Delay (s)	77.4	63.4		93.2	48.6		33.4	40.2	29.1	30.5	48.9	29.8
Level of Service	E	E		F	D		C	D	C	C	D	C
Approach Delay (s/veh)		66.6			66.2			38.3			45.2	
Approach LOS		E			E			D			D	

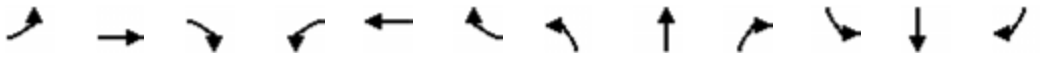
Intersection Summary			
HCM 2000 Control Delay (s/veh)	49.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	159.6	Sum of lost time (s)	30.6
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	275	50	171	489	80	36	980	67	16	1165	197
Future Volume (veh/h)	216	275	50	171	489	80	36	980	67	16	1165	197
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	223	284	11	176	504	72	37	1010	65	16	1201	193
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	295	341	284	182	621	88	283	2277	146	51	1478	238
Arrive On Green	0.09	0.19	0.19	0.11	0.21	0.21	0.17	0.49	0.49	0.03	0.35	0.35
Sat Flow, veh/h	3302	1787	1488	1702	2978	424	1702	4679	301	1702	4224	679
Grp Volume(v), veh/h	223	284	11	176	286	290	37	702	373	16	925	469
Grp Sat Flow(s),veh/h/ln	1651	1787	1488	1702	1698	1704	1702	1626	1727	1702	1626	1650
Q Serve(g_s), s	9.2	21.4	0.6	14.4	22.5	22.7	2.6	19.8	19.8	1.3	36.2	36.2
Cycle Q Clear(g_c), s	9.2	21.4	0.6	14.4	22.5	22.7	2.6	19.8	19.8	1.3	36.2	36.2
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.17	1.00		0.41
Lane Grp Cap(c), veh/h	295	341	284	182	354	355	283	1583	841	51	1138	578
V/C Ratio(X)	0.76	0.83	0.04	0.97	0.81	0.81	0.13	0.44	0.44	0.32	0.81	0.81
Avail Cap(c_a), veh/h	354	460	383	182	437	438	283	1583	841	195	1138	578
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.3	54.5	21.3	62.2	52.7	52.8	49.7	23.5	23.5	66.5	41.3	41.3
Incr Delay (d2), s/veh	7.5	15.2	0.2	56.3	13.4	13.9	1.0	0.9	1.7	3.5	6.4	11.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	11.0	0.3	8.9	10.5	10.7	1.2	7.5	8.2	0.6	15.2	16.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.7	69.7	21.5	118.5	66.2	66.7	50.7	24.4	25.2	70.0	47.7	53.2
LnGrp LOS	E	E	C	F	E	E	D	C	C	E	D	D
Approach Vol, veh/h		518			752			1112			1410	
Approach Delay, s/veh		68.7			78.6			25.6			49.8	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	33.7	29.3	55.0	19.5	36.2	10.2	74.1
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	36.0	14.0	49.0	15.0	36.0	16.0	47.0
Max Q Clear Time (g_c+I1), s	16.4	23.4	4.6	38.2	11.2	24.7	3.3	21.8
Green Ext Time (p_c), s	0.0	2.5	0.0	9.0	0.2	4.4	0.0	14.3

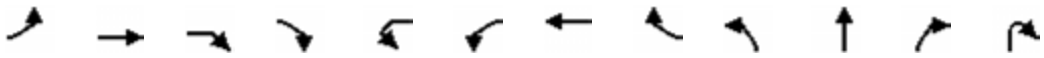
Intersection Summary	
HCM 7th Control Delay, s/veh	51.0
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	201	52	88	282	24	56	837	77	9	1059	325
Future Volume (veh/h)	230	201	52	88	282	24	56	837	77	9	1059	325
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	237	207	38	91	291	23	58	863	41	9	1092	214
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	288	610	110	123	322	25	311	1892	844	45	1360	598
Arrive On Green	0.08	0.20	0.20	0.07	0.19	0.19	0.18	0.54	0.54	0.03	0.39	0.39
Sat Flow, veh/h	3428	2983	538	1767	1697	134	1767	3526	1572	1767	3526	1551
Grp Volume(v), veh/h	237	121	124	91	0	314	58	863	41	9	1092	214
Grp Sat Flow(s),veh/h/ln	1714	1763	1759	1767	0	1831	1767	1763	1572	1767	1763	1551
Q Serve(g_s), s	9.5	8.2	8.5	7.1	0.0	23.5	3.9	21.0	1.7	0.7	38.6	13.8
Cycle Q Clear(g_c), s	9.5	8.2	8.5	7.1	0.0	23.5	3.9	21.0	1.7	0.7	38.6	13.8
Prop In Lane	1.00		0.31	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	360	359	123	0	348	311	1892	844	45	1360	598
V/C Ratio(X)	0.82	0.34	0.35	0.74	0.00	0.90	0.19	0.46	0.05	0.20	0.80	0.36
Avail Cap(c_a), veh/h	355	434	433	183	0	451	311	1892	844	177	1360	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.1	47.6	47.7	63.9	0.0	55.5	49.1	19.9	15.4	66.8	38.3	30.6
Incr Delay (d2), s/veh	12.2	0.5	0.6	8.5	0.0	17.9	1.3	0.8	0.1	2.2	5.1	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	3.6	3.7	3.4	0.0	12.4	1.8	8.5	0.6	0.3	17.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.3	48.1	48.2	72.4	0.0	73.3	50.4	20.7	15.5	69.0	43.4	32.3
LnGrp LOS	E	D	D	E		E	D	C	B	E	D	C
Approach Vol, veh/h		482			405			962			1315	
Approach Delay, s/veh		61.5			73.1			22.3			41.7	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	34.1	30.7	60.0	17.2	32.1	9.5	81.1
Change Period (Y+Rc), s	5.5	5.5	6.0	6.0	5.5	5.5	6.0	6.0
Max Green Setting (Gmax), s	14.5	34.5	14.0	54.0	14.5	34.5	14.0	54.0
Max Q Clear Time (g_c+I1), s	9.1	10.5	5.9	40.6	11.5	25.5	2.7	23.0
Green Ext Time (p_c), s	0.1	1.3	0.1	10.3	0.2	1.1	0.0	13.8

Intersection Summary	
HCM 7th Control Delay, s/veh	42.9
HCM 7th LOS	D

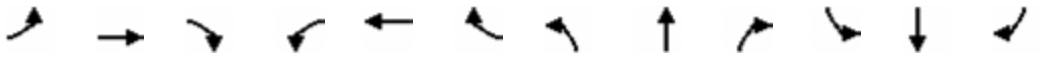


Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	193	501	165	27	35	50	212	30	32	776	52	120
Future Volume (vph)	193	501	165	27	35	50	212	30	32	776	52	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Lane Util. Factor	1.00	0.95				1.00	0.91		1.00	0.95		1.00
Frpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Frt	1.00	0.96				1.00	0.98		1.00	0.99		0.85
Flt Protected	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (prot)	1752	3359				1752	4928		1752	3472		1568
Flt Permitted	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (perm)	1752	3359				1752	4928		1752	3472		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	199	516	170	28	36	52	219	31	33	800	54	124
RTOR Reduction (vph)	0	1	0	0	0	0	7	0	0	0	0	69
Lane Group Flow (vph)	199	713	0	0	0	88	243	0	33	854	0	55
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA			Split	Split	NA		Split	NA		Prot
Protected Phases	3	3			7	7	7		5	5		5
Permitted Phases												
Actuated Green, G (s)	47.0	47.0				25.0	25.0		47.0	47.0		47.0
Effective Green, g (s)	47.0	47.0				25.0	25.0		47.0	47.0		47.0
Actuated g/C Ratio	0.19	0.19				0.10	0.10		0.19	0.19		0.19
Clearance Time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0				2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)	334	640				177	500		334	662		299
v/s Ratio Prot	0.11	c0.21				c0.05	0.05		0.02	c0.25		0.04
v/s Ratio Perm												
v/c Ratio	0.60	1.11				0.50	0.49		0.10	1.29		0.18
Uniform Delay, d1	91.0	99.6				104.7	104.6		82.2	99.6		83.6
Progression Factor	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.9	71.3				0.8	0.3		0.6	141.7		1.4
Delay (s)	92.9	170.9				105.5	104.8		82.8	241.3		84.9
Level of Service	F	F				F	F		F	F		F
Approach Delay (s/veh)		153.9					105.0			217.0		
Approach LOS		F					F			F		

Intersection Summary			
HCM 2000 Control Delay (s/veh)	141.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	246.3	Sum of lost time (s)	30.0
Intersection Capacity Utilization	121.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	142	362	480	38	79	399	318	11
Future Volume (vph)	142	362	480	38	79	399	318	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0			6.0	6.0	
Lane Util. Factor		0.86	0.86			0.97	0.88	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	
Frt		1.00	0.99			1.00	0.85	
Flt Protected		0.95	0.98			0.95	1.00	
Satd. Flow (prot)		1507	4643			3400	2760	
Flt Permitted		0.95	0.98			0.95	1.00	
Satd. Flow (perm)		1507	4643			3400	2760	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	146	373	495	39	81	411	328	11
RTOR Reduction (vph)	0	0	2	0	0	0	69	0
Lane Group Flow (vph)	0	258	793	0	0	492	270	0
Confl. Peds. (#/hr)				4				3
Confl. Bikes (#/hr)				1				2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	Split	NA		Prot	Prot	Prot	
Protected Phases	6	6	6		4	4	4	
Permitted Phases								
Actuated Green, G (s)		57.0	57.0			40.3	40.3	
Effective Green, g (s)		57.0	57.0			40.3	40.3	
Actuated g/C Ratio		0.23	0.23			0.16	0.16	
Clearance Time (s)		6.0	6.0			6.0	6.0	
Vehicle Extension (s)		4.0	4.0			2.5	2.5	
Lane Grp Cap (vph)		348	1074			556	451	
v/s Ratio Prot		c0.17	0.17			c0.14	0.10	
v/s Ratio Perm								
v/c Ratio		0.74	0.74			0.88	0.60	
Uniform Delay, d1		87.8	87.7			100.7	95.5	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		13.3	4.6			15.4	1.8	
Delay (s)		101.1	92.3			116.2	97.3	
Level of Service		F	F			F	F	
Approach Delay (s/veh)			94.5			108.4		
Approach LOS			F			F		

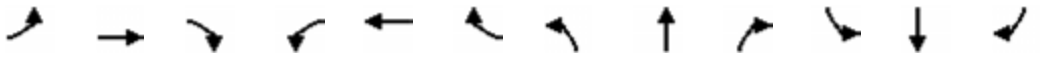
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	253	30	73	318	118	50	982	61	108	1178	48
Future Volume (veh/h)	35	253	30	73	318	118	50	982	61	108	1178	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	36	264	23	76	331	62	52	1023	61	112	1227	48
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	118	742	64	231	420	350	97	1925	115	139	2053	80
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.05	0.57	0.57	0.08	0.59	0.59
Sat Flow, veh/h	982	3277	283	1081	1856	1544	1767	3378	201	1767	3459	135
Grp Volume(v), veh/h	36	141	146	76	331	62	52	534	550	112	625	650
Grp Sat Flow(s),veh/h/ln	982	1763	1797	1081	1856	1544	1767	1763	1816	1767	1763	1831
Q Serve(g_s), s	4.3	8.1	8.2	7.6	20.2	3.9	3.4	22.4	22.4	7.5	26.8	26.8
Cycle Q Clear(g_c), s	24.4	8.1	8.2	15.8	20.2	3.9	3.4	22.4	22.4	7.5	26.8	26.8
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.11	1.00		0.07
Lane Grp Cap(c), veh/h	118	399	407	231	420	350	97	1004	1035	139	1046	1087
V/C Ratio(X)	0.31	0.35	0.36	0.33	0.79	0.18	0.54	0.53	0.53	0.81	0.60	0.60
Avail Cap(c_a), veh/h	149	455	464	265	479	399	295	1004	1035	295	1046	1087
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.2	39.0	39.1	45.7	43.7	37.4	55.2	15.9	15.9	54.4	15.4	15.4
Incr Delay (d2), s/veh	1.5	0.5	0.5	0.8	7.6	0.2	4.5	2.0	2.0	10.4	2.5	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.6	3.7	2.1	10.0	1.5	1.7	9.3	9.6	3.7	11.0	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.6	39.5	39.6	46.6	51.2	37.6	59.8	17.9	17.9	64.8	17.9	17.8
LnGrp LOS	E	D	D	D	D	D	E	B	B	E	B	B
Approach Vol, veh/h		323			469			1136			1387	
Approach Delay, s/veh		41.5			48.7			19.8			21.6	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.4	73.4		32.2	11.6	76.2		32.2				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	54.0		31.0	20.0	54.0		31.0				
Max Q Clear Time (g_c+I1), s	9.5	24.4		26.4	5.4	28.8		22.2				
Green Ext Time (p_c), s	0.2	17.3		0.7	0.1	18.1		1.6				

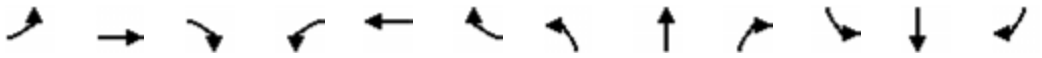
Intersection Summary			
HCM 7th Control Delay, s/veh		26.8	
HCM 7th LOS		C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	256	820	90	321	1125	434	156	1101	283	335	1206	162
Future Volume (veh/h)	256	820	90	321	1125	434	156	1101	283	335	1206	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	267	854	85	334	1172	246	162	1147	88	349	1256	57
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	461	1358	134	382	1359	410	336	1419	440	395	1507	467
Arrive On Green	0.14	0.30	0.30	0.12	0.28	0.28	0.10	0.29	0.29	0.12	0.31	0.31
Sat Flow, veh/h	3302	4489	444	3302	4879	1471	3302	4879	1513	3302	4879	1513
Grp Volume(v), veh/h	267	617	322	334	1172	246	162	1147	88	349	1256	57
Grp Sat Flow(s),veh/h/ln	1651	1626	1681	1651	1626	1471	1651	1626	1513	1651	1626	1513
Q Serve(g_s), s	10.6	22.9	23.1	13.9	31.9	14.5	6.5	30.5	6.1	14.6	33.5	3.8
Cycle Q Clear(g_c), s	10.6	22.9	23.1	13.9	31.9	14.5	6.5	30.5	6.1	14.6	33.5	3.8
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	984	508	382	1359	410	336	1419	440	395	1507	467
V/C Ratio(X)	0.58	0.63	0.63	0.87	0.86	0.60	0.48	0.81	0.20	0.88	0.83	0.12
Avail Cap(c_a), veh/h	461	984	508	425	1359	410	377	1499	465	425	1568	486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	42.0	42.1	60.9	48.0	22.4	59.4	46.0	37.4	60.7	45.0	34.7
Incr Delay (d2), s/veh	1.8	3.0	5.9	16.9	7.4	6.4	1.1	4.1	0.6	18.4	4.7	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	9.4	10.2	6.6	13.5	5.6	2.7	12.5	2.3	7.0	13.8	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.2	45.1	48.0	77.8	55.4	28.7	60.5	50.2	38.0	79.0	49.8	35.1
LnGrp LOS	E	D	D	E	E	C	E	D	D	E	D	D
Approach Vol, veh/h		1206			1752			1397			1662	
Approach Delay, s/veh		48.8			55.9			50.6			55.4	
Approach LOS		D			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.2	49.2	25.5	45.0	22.8	46.7	22.2	48.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	45.0	16.0	39.0	18.0	43.0	18.0	37.0
Max Q Clear Time (g_c+I1), s	8.5	35.5	12.6	33.9	16.6	32.5	15.9	25.1
Green Ext Time (p_c), s	0.3	7.7	0.3	4.4	0.2	8.1	0.3	7.5

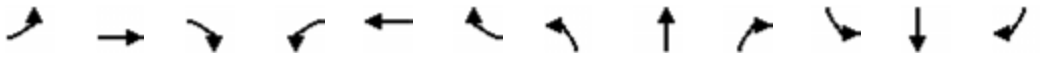
Intersection Summary	
HCM 7th Control Delay, s/veh	53.1
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	656	160	772	675	38	239	879	807	144	1010	182
Future Volume (vph)	186	656	160	772	675	38	239	879	807	144	1010	182
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1900	1830	1830	1900	1830
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Lane Util. Factor	0.86	0.86	1.00	0.94	0.95		0.97	0.95	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.98	
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)	1452	4578	1510	4760	3345		3274	3505	2658	3274	4902	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1452	4578	1510	4760	3345		3274	3505	2658	3274	4902	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	188	663	162	780	682	38	241	888	815	145	1020	184
RTOR Reduction (vph)	0	0	132	0	3	0	0	0	0	0	19	0
Lane Group Flow (vph)	169	682	30	780	717	0	241	888	815	145	1185	0
Confl. Peds. (#/hr)						6						6
Confl. Bikes (#/hr)						1						6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		7	7		5	2	7	1	6	
Permitted Phases			8						2			
Actuated Green, G (s)	26.0	26.0	26.0	36.9	36.9		13.5	41.4	78.3	11.7	39.6	
Effective Green, g (s)	26.0	26.0	26.0	36.9	36.9		13.5	41.4	78.3	11.7	39.6	
Actuated g/C Ratio	0.19	0.19	0.19	0.26	0.26		0.10	0.30	0.56	0.08	0.28	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5	3.0	3.0	4.5	
Lane Grp Cap (vph)	269	850	280	1254	881		315	1036	1486	273	1386	
v/s Ratio Prot	0.12	c0.15		0.16	c0.21		0.07	c0.25	0.14	0.04	c0.24	
v/s Ratio Perm			0.02						0.16			
v/c Ratio	0.63	0.80	0.11	0.62	0.81		0.77	0.86	0.55	0.53	0.86	
Uniform Delay, d1	52.5	54.5	47.4	45.4	48.3		61.7	46.5	19.6	61.5	47.5	
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	4.5	5.5	0.2	1.0	5.8		10.6	9.1	0.4	2.0	6.9	
Delay (s)	57.1	60.0	47.5	46.4	54.1		72.3	55.6	20.0	63.5	54.4	
Level of Service	E	E	D	D	D		E	E	C	E	D	
Approach Delay (s/veh)		57.5			50.1			42.8			55.4	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	50.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	89.4%	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												
Traffic Volume (veh/h)	113	379	127	246	168	195	147	1045	331	300	947	58
Future Volume (veh/h)	113	379	127	246	168	195	147	1045	331	300	947	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.95	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	126	421	95	273	187	41	163	1161	332	333	1052	60
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	219	889	192	328	876	373	220	1279	366	390	1861	106
Arrive On Green	0.06	0.22	0.22	0.10	0.25	0.25	0.06	0.33	0.33	0.04	0.13	0.13
Sat Flow, veh/h	3428	4108	886	3428	3526	1500	3428	3860	1104	3428	4888	278
Grp Volume(v), veh/h	126	343	173	273	187	41	163	1016	477	333	726	386
Grp Sat Flow(s),veh/h/ln	1714	1689	1617	1714	1763	1500	1714	1689	1587	1714	1689	1789
Q Serve(g_s), s	5.0	12.4	13.2	11.0	5.9	3.0	6.5	40.3	40.3	13.5	28.3	28.4
Cycle Q Clear(g_c), s	5.0	12.4	13.2	11.0	5.9	3.0	6.5	40.3	40.3	13.5	28.3	28.4
Prop In Lane	1.00		0.55	1.00		1.00	1.00		0.70	1.00		0.16
Lane Grp Cap(c), veh/h	219	731	350	328	876	373	220	1119	526	390	1286	681
V/C Ratio(X)	0.58	0.47	0.50	0.83	0.21	0.11	0.74	0.91	0.91	0.85	0.56	0.57
Avail Cap(c_a), veh/h	465	796	381	465	876	373	465	1119	526	465	1286	681
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89
Uniform Delay (d), s/veh	63.7	47.8	48.1	62.2	41.8	40.7	64.4	44.8	44.8	66.2	50.3	50.3
Incr Delay (d2), s/veh	2.4	1.3	3.0	8.5	0.3	0.4	4.9	12.2	22.0	11.4	1.6	3.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.3	5.5	5.1	2.6	1.1	3.0	18.4	18.7	6.9	13.1	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.1	49.1	51.1	70.7	42.1	41.0	69.2	57.0	66.8	77.6	51.9	53.3
LnGrp LOS	E	D	D	E	D	D	E	E	E	E	D	D
Approach Vol, veh/h		642			501			1656			1445	
Approach Delay, s/veh		53.0			57.6			61.0			58.2	
Approach LOS		D			E			E			E	

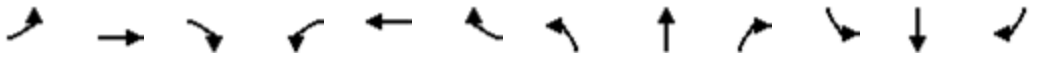
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.9	57.4	19.4	41.3	15.0	64.3	14.9	45.8
Change Period (Y+Rc), s	6.0	11.0	6.0	* 11	6.0	* 11	6.0	11.0
Max Green Setting (Gmax), s	19.0	40.0	19.0	* 33	19.0	* 45	19.0	28.0
Max Q Clear Time (g_c+I1), s	15.5	42.3	13.0	15.2	8.5	30.4	7.0	7.9
Green Ext Time (p_c), s	0.4	0.0	0.5	5.6	0.3	10.0	0.3	2.3

Intersection Summary	
HCM 7th Control Delay, s/veh	58.4
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



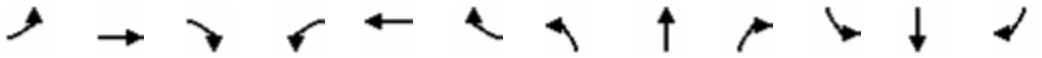
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	282	40	128	124	46	20	78	1369	36	7	1141	156
Future Volume (veh/h)	282	40	128	124	46	20	78	1369	36	7	1141	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	303	43	49	133	49	10	84	1472	38	8	1227	99
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	387	217	248	355	415	85	106	2947	76	34	2735	831
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.04	0.39	0.39	0.01	0.18	0.18
Sat Flow, veh/h	1321	780	889	1283	1488	304	1767	5075	131	1767	5066	1539
Grp Volume(v), veh/h	303	0	92	133	0	59	84	980	530	8	1227	99
Grp Sat Flow(s),veh/h/ln	1321	0	1669	1283	0	1792	1767	1689	1829	1767	1689	1539
Q Serve(g_s), s	31.1	0.0	5.9	12.4	0.0	3.4	6.6	30.8	30.8	0.6	30.3	7.6
Cycle Q Clear(g_c), s	34.5	0.0	5.9	18.3	0.0	3.4	6.6	30.8	30.8	0.6	30.3	7.6
Prop In Lane	1.00		0.53	1.00		0.17	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	387	0	465	355	0	500	106	1961	1062	34	2735	831
V/C Ratio(X)	0.78	0.00	0.20	0.37	0.00	0.12	0.79	0.50	0.50	0.24	0.45	0.12
Avail Cap(c_a), veh/h	443	0	536	410	0	576	240	1961	1062	240	2735	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.52	0.52	0.52	0.67	0.67	0.67
Uniform Delay (d), s/veh	50.5	0.0	38.5	45.5	0.0	37.7	66.3	27.3	27.3	68.5	38.9	29.6
Incr Delay (d2), s/veh	7.8	0.0	0.2	0.7	0.0	0.1	6.9	0.5	0.9	2.4	0.4	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	16.7	0.0	4.5	7.3	0.0	2.8	5.3	17.4	18.8	0.5	18.8	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.3	0.0	38.7	46.2	0.0	37.8	73.2	27.8	28.2	70.9	39.3	29.8
LnGrp LOS	E		D	D		D	E	C	C	E	D	C
Approach Vol, veh/h		395			192			1594			1334	
Approach Delay, s/veh		53.8			43.6			30.3			38.8	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	87.3		44.0	14.4	81.6		44.0				
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	19.0	59.0		45.0	19.0	59.0		45.0				
Max Q Clear Time (g_c+I1), s	2.6	32.8		36.5	8.6	32.3		20.3				
Green Ext Time (p_c), s	0.0	19.8		1.1	0.1	18.0		0.7				

Intersection Summary			
HCM 7th Control Delay, s/veh		36.9	
HCM 7th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	834	1053	280	96	501	94	298	1136	177	263	1071	402
Future Volume (veh/h)	834	1053	280	96	501	94	298	1136	177	263	1071	402
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	887	1120	188	102	533	19	317	1209	59	280	1139	373
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	1162	1133	503	312	909	279	368	1484	459	422	1564	851
Arrive On Green	0.23	0.32	0.32	0.09	0.18	0.18	0.04	0.10	0.10	0.12	0.31	0.31
Sat Flow, veh/h	4983	3526	1564	3428	5066	1554	3428	5066	1566	3428	5066	1569
Grp Volume(v), veh/h	887	1120	188	102	533	19	317	1209	59	280	1139	373
Grp Sat Flow(s),veh/h/ln	1661	1763	1564	1714	1689	1554	1714	1689	1566	1714	1689	1569
Q Serve(g_s), s	23.2	44.2	13.0	3.9	13.5	1.4	12.9	32.8	3.6	10.9	28.1	6.6
Cycle Q Clear(g_c), s	23.2	44.2	13.0	3.9	13.5	1.4	12.9	32.8	3.6	10.9	28.1	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1162	1133	503	312	909	279	368	1484	459	422	1564	851
V/C Ratio(X)	0.76	0.99	0.37	0.33	0.59	0.07	0.86	0.81	0.13	0.66	0.73	0.44
Avail Cap(c_a), veh/h	1162	1133	503	343	1484	455	392	1484	459	422	1564	851
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.83	0.83	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	47.2	36.6	59.6	52.7	47.7	66.5	59.5	26.4	58.6	43.1	6.6
Incr Delay (d2), s/veh	4.8	24.0	1.3	0.6	1.7	0.3	14.4	4.2	0.5	8.0	3.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	22.5	5.1	1.7	5.8	0.6	6.7	15.4	1.9	5.2	12.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.9	71.2	37.9	60.2	54.3	48.0	80.9	63.7	26.9	66.6	46.2	8.2
LnGrp LOS	D	E	D	E	D	D	F	E	C	E	D	A
Approach Vol, veh/h		2195			654			1585			1792	
Approach Delay, s/veh		61.8			55.1			65.8			41.5	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.2	47.0	18.8	51.0	21.0	49.2	38.6	31.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	41.0	14.0	45.0	16.0	41.0	18.0	41.0
Max Q Clear Time (g_c+I1), s	12.9	34.8	5.9	46.2	14.9	30.1	25.2	15.5
Green Ext Time (p_c), s	0.3	5.2	0.1	0.0	0.1	9.2	0.0	7.2

Intersection Summary	
HCM 7th Control Delay, s/veh	56.2
HCM 7th LOS	E

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	250	697	0	2022	1409	0
Future Volume (veh/h)	250	697	0	2022	1409	0
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	0	1856	1856	0
Adj Flow Rate, veh/h	266	731	0	2151	1499	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	489	870	0	2917	2917	0
Arrive On Green	0.28	0.28	0.00	0.58	0.58	0.00
Sat Flow, veh/h	1767	3145	0	5400	5400	0
Grp Volume(v), veh/h	266	731	0	2151	1499	0
Grp Sat Flow(s),veh/h/ln	1767	1572	0	1689	1689	0
Q Serve(g_s), s	13.5	23.0	0.0	32.9	18.7	0.0
Cycle Q Clear(g_c), s	13.5	23.0	0.0	32.9	18.7	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	489	870	0	2917	2917	0
V/C Ratio(X)	0.54	0.84	0.00	0.74	0.51	0.00
Avail Cap(c_a), veh/h	757	1348	0	2917	2917	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.3	35.8	0.0	16.4	13.4	0.0
Incr Delay (d2), s/veh	0.9	3.0	0.0	1.7	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	9.0	0.0	11.7	6.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	33.3	38.7	0.0	18.1	14.1	0.0
LnGrp LOS	C	D		B	B	
Approach Vol, veh/h	997			2151	1499	
Approach Delay, s/veh	37.3			18.1	14.1	
Approach LOS	D			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		70.9		34.1		70.9
Change Period (Y+Rc), s		* 10		5.1		10.4
Max Green Setting (Gmax), s		* 50		45.0		44.5
Max Q Clear Time (g_c+I1), s		34.9		25.0		20.7
Green Ext Time (p_c), s		14.4		4.0		21.0

Intersection Summary		
HCM 7th Control Delay, s/veh	20.9	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	367	138	1306	0	0	1260
Future Volume (veh/h)	367	138	1306	0	0	1260
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	0	0	1856
Adj Flow Rate, veh/h	267	276	1404	0	0	1355
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	0	0	3
Cap, veh/h	363	323	3278	0	0	3278
Arrive On Green	0.21	0.21	0.65	0.00	0.00	0.65
Sat Flow, veh/h	1767	1572	5400	0	0	5400
Grp Volume(v), veh/h	267	276	1404	0	0	1355
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	0	0	1689
Q Serve(g_s), s	14.9	17.8	14.2	0.0	0.0	13.5
Cycle Q Clear(g_c), s	14.9	17.8	14.2	0.0	0.0	13.5
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	363	323	3278	0	0	3278
V/C Ratio(X)	0.74	0.85	0.43	0.00	0.00	0.41
Avail Cap(c_a), veh/h	757	674	3278	0	0	3278
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	39.1	40.2	9.0	0.0	0.0	8.9
Incr Delay (d2), s/veh	2.9	6.5	0.4	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	7.4	4.6	0.0	0.0	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	42.0	46.7	9.5	0.0	0.0	9.3
LnGrp LOS	D	D	A			A
Approach Vol, veh/h	543		1404			1355
Approach Delay, s/veh	44.4		9.5			9.3
Approach LOS	D		A			A

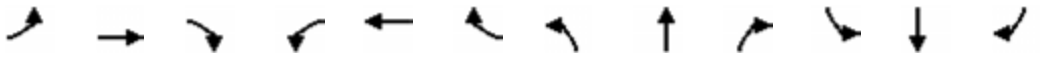
Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	78.3			78.3	26.7
Change Period (Y+Rc), s	10.4			* 10	5.1
Max Green Setting (Gmax), s	44.5			* 50	45.0
Max Q Clear Time (g_c+I1), s	16.2			15.5	19.8
Green Ext Time (p_c), s	23.7			27.1	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	15.1
HCM 7th LOS	B

Notes

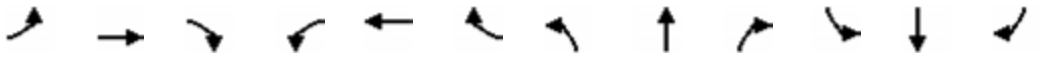
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	698	0	346	0	0	0	311	1394	0	0	2014	1027
Future Volume (vph)	698	0	346	0	0	0	311	1394	0	0	2014	1027
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0				6.5	6.5			6.5	6.5
Lane Util. Factor	0.94		1.00				0.97	0.91			0.91	1.00
Frpb, ped/bikes	1.00		0.99				1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00		1.00				1.00	1.00			1.00	1.00
Frt	1.00		0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	4942		1548				3400	5036			5036	1548
Flt Permitted	0.95		1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)	4942		1548				3400	5036			5036	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	759	0	376	0	0	0	338	1515	0	0	2189	1116
RTOR Reduction (vph)	0	0	290	0	0	0	0	0	0	0	0	274
Lane Group Flow (vph)	759	0	86	0	0	0	338	1515	0	0	2189	842
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm				Prot	NA		Prot	NA	Perm
Protected Phases	4				3		5	2		1	6	
Permitted Phases			4	3								6
Actuated Green, G (s)	25.4		25.4				16.6	73.6			50.5	50.5
Effective Green, g (s)	25.4		25.4				16.6	73.6			50.5	50.5
Actuated g/C Ratio	0.23		0.23				0.15	0.66			0.45	0.45
Clearance Time (s)	6.0		6.0				6.5	6.5			6.5	6.5
Vehicle Extension (s)	3.0		3.0				3.0	5.5			5.5	5.5
Lane Grp Cap (vph)	1125		352				506	3324			2280	701
v/s Ratio Prot	c0.15						c0.10	0.30			0.43	
v/s Ratio Perm			0.06									c0.54
v/c Ratio	0.67		0.24				0.67	0.46			0.96	1.20
Uniform Delay, d1	39.3		35.2				44.8	9.2			29.5	30.5
Progression Factor	1.00		1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2	1.6		0.4				3.3	0.2			11.3	103.8
Delay (s)	40.9		35.6				48.2	9.5			40.8	134.3
Level of Service	D		D				D	A			D	F
Approach Delay (s/veh)		39.1			0.0			16.5			72.4	
Approach LOS		D			A			B			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	49.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	25.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



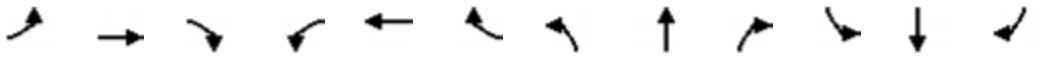
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	303	120	50	85	54	142	1499	116	191	1319	125
Future Volume (veh/h)	273	303	120	50	85	54	142	1499	116	191	1319	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	290	322	33	53	90	16	151	1595	67	203	1403	127
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	382	961	428	262	961	428	263	2489	760	266	2391	216
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.06	0.49	0.49	0.07	0.51	0.51
Sat Flow, veh/h	1275	3526	1569	1017	3526	1569	1767	5066	1547	1767	4722	427
Grp Volume(v), veh/h	290	322	33	53	90	16	151	1595	67	203	1003	527
Grp Sat Flow(s),veh/h/ln	1275	1763	1569	1017	1763	1569	1767	1689	1547	1767	1689	1772
Q Serve(g_s), s	26.8	8.9	1.9	5.4	2.3	0.9	5.1	28.5	2.8	6.9	25.5	25.5
Cycle Q Clear(g_c), s	29.1	8.9	1.9	14.3	2.3	0.9	5.1	28.5	2.8	6.9	25.5	25.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	382	961	428	262	961	428	263	2489	760	266	1710	897
V/C Ratio(X)	0.76	0.34	0.08	0.20	0.09	0.04	0.57	0.64	0.09	0.76	0.59	0.59
Avail Cap(c_a), veh/h	452	1155	514	318	1155	514	521	2489	760	497	1710	897
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	35.5	33.0	41.3	33.1	32.6	17.7	23.0	16.5	21.9	21.2	21.2
Incr Delay (d2), s/veh	5.6	0.2	0.1	0.3	0.0	0.0	0.7	1.3	0.2	1.7	1.5	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	3.8	0.7	1.3	1.0	0.3	1.9	10.7	1.0	2.7	9.6	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.6	35.7	33.0	41.5	33.2	32.7	18.4	24.3	16.7	23.6	22.6	24.0
LnGrp LOS	D	D	C	D	C	C	B	C	B	C	C	C
Approach Vol, veh/h		645			159			1813			1733	
Approach Delay, s/veh		41.8			35.9			23.6			23.2	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.5	67.0		39.6	13.7	68.8		39.6				
Change Period (Y+Rc), s	6.5	7.0		6.3	6.5	7.0		6.3				
Max Green Setting (Gmax), s	25.0	60.0		40.0	25.0	60.0		40.0				
Max Q Clear Time (g_c+I1), s	8.9	30.5		31.1	7.1	27.5		16.3				
Green Ext Time (p_c), s	0.1	25.5		1.7	0.1	26.5		0.6				

Intersection Summary			
HCM 7th Control Delay, s/veh		26.6	
HCM 7th LOS		C	

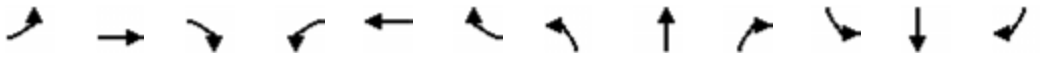
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	27	1334	0	0	0	0	1377	563	117	1709	0
Future Volume (vph)	176	27	1334	0	0	0	0	1377	563	117	1709	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8	4.0					4.0	4.0	4.8	9.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1690	1568					5036	2699	3400	5036	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1665	1690	1568					5036	2699	3400	5036	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	193	30	1466	0	0	0	0	1513	619	129	1878	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	110	113	1466	0	0	0	0	1513	619	129	1878	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free					NA	custom	Prot	NA	
Protected Phases	4	4						2 3		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	12.1	12.1	101.3					62.3	46.1	9.3	75.4	
Effective Green, g (s)	12.1	12.1	101.3					62.3	46.1	9.3	75.4	
Actuated g/C Ratio	0.12	0.12	1.00					0.62	0.46	0.09	0.74	
Clearance Time (s)	4.8	4.8							4.0	4.8	9.0	
Vehicle Extension (s)	3.0	3.0							5.0	3.0	5.0	
Lane Grp Cap (vph)	198	201	1568					3097	1228	312	3748	
v/s Ratio Prot	0.07	0.07						0.30		0.04	0.37	
v/s Ratio Perm			c0.93						0.23			
v/c Ratio	0.56	0.56	0.93					0.49	0.50	0.41	0.50	
Uniform Delay, d1	42.1	42.1	0.0					10.7	19.5	43.4	5.3	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	3.6	11.8					0.3	0.7	0.9	0.2	
Delay (s)	45.4	45.7	11.8					11.0	20.2	44.3	5.5	
Level of Service	D	D	B					B	C	D	A	
Approach Delay (s/veh)		16.2			0.0			13.7			8.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	21.6
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



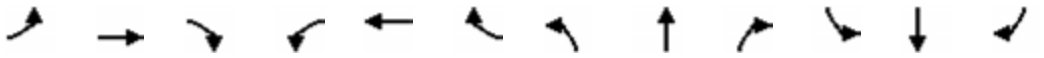
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	0	380	963	164	12	236	761	0	0	668	146
Future Volume (veh/h)	133	0	380	963	164	12	236	761	0	0	668	146
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856	1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h	148	0	36	1070	182	12	262	846	0	0	742	38
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	3	3	3	3	3	3	0	0	3	3
Cap, veh/h	0	0	0	1263	615	41	356	1378	0	0	1149	345
Arrive On Green	0.00	0.00	0.00	0.36	0.36	0.36	0.10	0.39	0.00	0.00	0.23	0.23
Sat Flow, veh/h		0		3534	1720	113	3428	3618	0	0	5233	1519
Grp Volume(v), veh/h		0.0		1070	0	194	262	846	0	0	742	38
Grp Sat Flow(s),veh/h/ln				1767	0	1833	1714	1763	0	0	1689	1519
Q Serve(g_s), s				22.2	0.0	6.0	5.9	15.3	0.0	0.0	10.5	1.6
Cycle Q Clear(g_c), s				22.2	0.0	6.0	5.9	15.3	0.0	0.0	10.5	1.6
Prop In Lane				1.00		0.06	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1263	0	655	356	1378	0	0	1149	345
V/C Ratio(X)				0.85	0.00	0.30	0.74	0.61	0.00	0.00	0.65	0.11
Avail Cap(c_a), veh/h				1557	0	807	906	1996	0	0	2869	860
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				23.5	0.0	18.4	34.6	19.4	0.0	0.0	27.8	24.4
Incr Delay (d2), s/veh				3.8	0.0	0.2	1.1	0.4	0.0	0.0	0.6	0.1
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.0	0.0	2.4	2.4	5.7	0.0	0.0	4.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				27.3	0.0	18.6	35.7	19.8	0.0	0.0	28.5	24.5
LnGrp LOS				C		B	D	B			C	C
Approach Vol, veh/h					1264			1108			780	
Approach Delay, s/veh					26.0			23.6			28.3	
Approach LOS					C			C			C	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	41.1	38.4	13.0	28.0
Change Period (Y+Rc), s	10.0	10.0	4.8	10.0
Max Green Setting (Gmax), s	45.0	35.0	21.0	45.0
Max Q Clear Time (g_c+I1), s	17.3	24.2	7.9	12.5
Green Ext Time (p_c), s	6.1	4.2	0.4	5.3

Intersection Summary	
HCM 7th Control Delay, s/veh	25.7
HCM 7th LOS	C

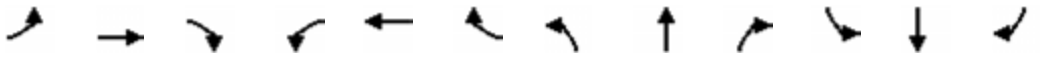
Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	599	34	102	341	60	13	1451	412	37	1062	138
Future Volume (vph)	307	599	34	102	341	60	13	1451	412	37	1062	138
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
Total Lost time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1688	3348		1688	3300		1688	3376	1510	1688	3376	1510
Flt Permitted	0.95	1.00		0.95	1.00		0.12	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1688	3348		1688	3300		216	3376	1510	101	3376	1510
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	334	651	37	111	371	65	14	1577	448	40	1154	150
RTOR Reduction (vph)	0	2	0	0	9	0	0	0	50	0	0	49
Lane Group Flow (vph)	334	686	0	111	427	0	14	1577	398	40	1154	101
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	34.0	48.2		15.2	29.4		70.1	70.1	70.1	70.1	70.1	70.1
Effective Green, g (s)	34.0	48.2		15.2	29.4		70.1	70.1	70.1	70.1	70.1	70.1
Actuated g/C Ratio	0.21	0.29		0.09	0.18		0.43	0.43	0.43	0.43	0.43	0.43
Clearance Time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Vehicle Extension (s)	3.0	5.0		2.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	349	983		156	591		92	1442	645	43	1442	645
v/s Ratio Prot	c0.20	c0.20		0.07	0.13			c0.47			0.34	
v/s Ratio Perm							0.06		0.26	0.39		0.07
v/c Ratio	0.96	0.70		0.71	0.72		0.15	1.09	0.62	0.93	0.80	0.16
Uniform Delay, d1	64.3	51.5		72.3	63.5		28.8	47.0	36.6	44.7	40.9	28.8
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	36.6	2.8		12.0	5.3		1.6	53.6	2.5	112.9	3.7	0.2
Delay (s)	100.9	54.2		84.3	68.8		30.4	100.6	39.1	157.6	44.7	29.1
Level of Service	F	D		F	E		C	F	D	F	D	C
Approach Delay (s/veh)		69.5			72.0			86.6			46.3	
Approach LOS		E			E			F			D	

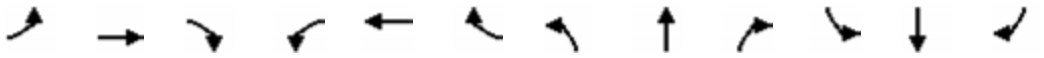
Intersection Summary			
HCM 2000 Control Delay (s/veh)	70.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	164.1	Sum of lost time (s)	30.6
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	626	36	139	306	40	45	1345	239	74	1120	143
Future Volume (veh/h)	251	626	36	139	306	40	45	1345	239	74	1120	143
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	267	666	10	148	326	36	48	1431	237	79	1191	140
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	314	460	383	170	807	88	182	1665	275	104	1546	182
Arrive On Green	0.10	0.26	0.26	0.10	0.26	0.26	0.11	0.40	0.40	0.06	0.35	0.35
Sat Flow, veh/h	3302	1787	1490	1702	3081	337	1702	4205	696	1702	4416	519
Grp Volume(v), veh/h	267	666	10	148	178	184	48	1107	561	79	877	454
Grp Sat Flow(s),veh/h/ln	1651	1787	1490	1702	1698	1721	1702	1626	1648	1702	1626	1682
Q Serve(g_s), s	11.1	36.0	0.5	12.0	12.1	12.3	3.6	43.6	43.7	6.4	33.6	33.6
Cycle Q Clear(g_c), s	11.1	36.0	0.5	12.0	12.1	12.3	3.6	43.6	43.7	6.4	33.6	33.6
Prop In Lane	1.00		1.00	1.00		0.20	1.00		0.42	1.00		0.31
Lane Grp Cap(c), veh/h	314	460	383	170	445	451	182	1288	652	104	1138	589
V/C Ratio(X)	0.85	1.45	0.03	0.87	0.40	0.41	0.26	0.86	0.86	0.76	0.77	0.77
Avail Cap(c_a), veh/h	354	460	383	182	445	451	182	1288	652	195	1138	589
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.4	52.0	20.8	62.1	42.6	42.7	57.4	38.7	38.7	64.7	40.5	40.5
Incr Delay (d2), s/veh	16.1	214.1	0.1	32.2	1.6	1.6	3.5	7.6	13.9	10.6	5.1	9.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	43.3	0.3	6.5	5.1	5.3	1.7	18.1	19.5	3.1	14.0	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.5	266.1	20.8	94.3	44.2	44.3	60.9	46.3	52.7	75.3	45.6	49.9
LnGrp LOS	E	F	C	F	D	D	E	D	D	E	D	D
Approach Vol, veh/h		943			510			1716			1410	
Approach Delay, s/veh		210.4			58.8			48.8			48.6	
Approach LOS		F			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	43.0	21.0	55.0	20.3	43.7	14.6	61.4
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	36.0	14.0	49.0	15.0	36.0	16.0	47.0
Max Q Clear Time (g_c+I1), s	14.0	38.0	5.6	35.6	13.1	14.3	8.4	45.7
Green Ext Time (p_c), s	0.0	0.0	0.0	10.6	0.2	3.8	0.1	1.2

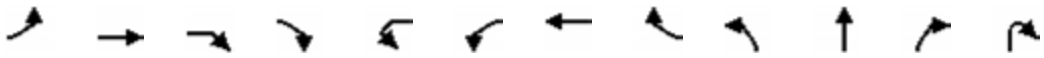
Intersection Summary	
HCM 7th Control Delay, s/veh	83.1
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	352	390	66	55	161	14	93	1270	128	14	909	306
Future Volume (veh/h)	352	390	66	55	161	14	93	1270	128	14	909	306
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	396	438	64	62	181	13	104	1427	91	16	1021	223
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	441	580	84	115	212	15	462	1915	854	70	1133	498
Arrive On Green	0.13	0.19	0.19	0.07	0.12	0.12	0.26	0.54	0.54	0.04	0.32	0.32
Sat Flow, veh/h	3428	3089	449	1767	1711	123	1767	3526	1572	1767	3526	1550
Grp Volume(v), veh/h	396	249	253	62	0	194	104	1427	91	16	1021	223
Grp Sat Flow(s),veh/h/ln	1714	1763	1775	1767	0	1833	1767	1763	1572	1767	1763	1550
Q Serve(g_s), s	15.9	18.7	18.9	4.8	0.0	14.5	6.5	43.5	3.9	1.2	38.7	11.0
Cycle Q Clear(g_c), s	15.9	18.7	18.9	4.8	0.0	14.5	6.5	43.5	3.9	1.2	38.7	11.0
Prop In Lane	1.00		0.25	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	441	331	333	115	0	228	462	1915	854	70	1133	498
V/C Ratio(X)	0.90	0.75	0.76	0.54	0.00	0.85	0.23	0.75	0.11	0.23	0.90	0.45
Avail Cap(c_a), veh/h	453	434	437	234	0	452	462	1915	854	240	1133	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.1	53.8	53.8	63.4	0.0	60.1	40.6	24.5	15.5	65.1	45.4	17.9
Incr Delay (d2), s/veh	19.9	5.2	5.5	3.9	0.0	8.7	1.1	2.7	0.3	1.6	11.5	2.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	8.7	8.8	2.2	0.0	7.2	2.9	17.7	1.4	0.6	18.2	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	80.0	58.9	59.3	67.3	0.0	68.8	41.7	27.2	15.8	66.8	56.9	20.8
LnGrp LOS	F	E	E	E		E	D	C	B	E	E	C
Approach Vol, veh/h		898			256			1622			1260	
Approach Delay, s/veh		68.4			68.4			27.5			50.6	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	31.8	42.6	51.0	23.5	22.9	11.6	82.0
Change Period (Y+Rc), s	5.5	5.5	6.0	6.0	5.5	5.5	6.0	6.0
Max Green Setting (Gmax), s	18.5	34.5	19.0	45.0	18.5	34.5	19.0	45.0
Max Q Clear Time (g_c+I1), s	6.8	20.9	8.5	40.7	17.9	16.5	3.2	45.5
Green Ext Time (p_c), s	0.1	2.3	0.1	3.6	0.1	0.9	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	46.4
HCM 7th LOS	D

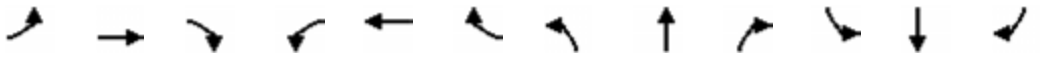


Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	84	411	182	20	22	70	467	29	54	494	60	208
Future Volume (vph)	84	411	182	20	22	70	467	29	54	494	60	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Lane Util. Factor	1.00	0.95				1.00	0.91		1.00	0.95		1.00
Frpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Frt	1.00	0.95				1.00	0.99		1.00	0.98		0.85
Flt Protected	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (prot)	1752	3332				1752	4985		1752	3448		1568
Flt Permitted	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (perm)	1752	3332				1752	4985		1752	3448		1568
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	101	495	219	24	27	84	563	35	65	595	72	251
RTOR Reduction (vph)	0	1	0	0	0	0	3	0	0	0	0	181
Lane Group Flow (vph)	101	737	0	0	0	111	595	0	65	667	0	70
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA			Split	Split	NA		Split	NA		Prot
Protected Phases	3	3			7	7	7		5	5		5
Permitted Phases												
Actuated Green, G (s)	47.1	47.1				35.6	35.6		47.1	47.1		47.1
Effective Green, g (s)	47.1	47.1				35.6	35.6		47.1	47.1		47.1
Actuated g/C Ratio	0.18	0.18				0.14	0.14		0.18	0.18		0.18
Clearance Time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0				2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)	320	610				242	689		320	631		287
v/s Ratio Prot	0.06	c0.22				0.06	c0.12		0.04	c0.19		0.04
v/s Ratio Perm												
v/c Ratio	0.32	1.21				0.46	0.86		0.20	1.06		0.25
Uniform Delay, d1	91.1	105.1				101.9	108.4		89.1	105.1		89.9
Progression Factor	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.2	108.6				0.5	10.6		1.4	51.8		2.0
Delay (s)	91.3	213.7				102.4	119.0		90.6	156.9		91.9
Level of Service	F	F				F	F		F	F		F
Approach Delay (s/veh)		198.9					116.4			135.9		
Approach LOS		F					F			F		

Intersection Summary			
HCM 2000 Control Delay (s/veh)	144.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	257.2	Sum of lost time (s)	30.0
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	142	354	631	66	46	351	308	19
Future Volume (vph)	142	354	631	66	46	351	308	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0			6.0	6.0	
Lane Util. Factor		0.86	0.86			0.97	0.88	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	
Frt		1.00	0.99			1.00	0.85	
Flt Protected		0.95	0.99			0.95	1.00	
Satd. Flow (prot)		1507	4647			3400	2760	
Flt Permitted		0.95	0.99			0.95	1.00	
Satd. Flow (perm)		1507	4647			3400	2760	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	171	427	760	80	55	423	371	23
RTOR Reduction (vph)	0	0	3	0	0	0	70	0
Lane Group Flow (vph)	0	355	1080	0	0	478	324	0
Confl. Peds. (#/hr)				4				3
Confl. Bikes (#/hr)				1				2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	Split	NA		Prot	Prot	Prot	
Protected Phases	6	6	6		4	4	4	
Permitted Phases								
Actuated Green, G (s)		57.1	57.1			40.3	40.3	
Effective Green, g (s)		57.1	57.1			40.3	40.3	
Actuated g/C Ratio		0.22	0.22			0.16	0.16	
Clearance Time (s)		6.0	6.0			6.0	6.0	
Vehicle Extension (s)		4.0	4.0			2.5	2.5	
Lane Grp Cap (vph)		334	1031			532	432	
v/s Ratio Prot		c0.24	0.23			c0.14	0.12	
v/s Ratio Perm								
v/c Ratio		1.06	1.05			0.90	0.75	
Uniform Delay, d1		100.1	100.1			106.4	103.6	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		66.9	41.3			17.7	6.8	
Delay (s)		166.9	141.3			124.2	110.5	
Level of Service		F	F			F	F	
Approach Delay (s/veh)			147.6			118.0		
Approach LOS			F			F		

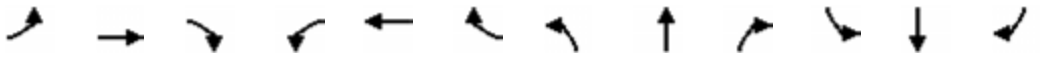
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	661	11	32	248	44	26	872	48	177	927	32
Future Volume (veh/h)	31	661	11	32	248	44	26	872	48	177	927	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	34	718	11	35	270	12	28	948	49	192	1008	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	198	903	14	107	472	393	71	1689	87	221	2022	66
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.04	0.50	0.50	0.13	0.58	0.58
Sat Flow, veh/h	1087	3553	54	720	1856	1545	1767	3408	176	1767	3484	114
Grp Volume(v), veh/h	34	356	373	35	270	12	28	490	507	192	510	531
Grp Sat Flow(s),veh/h/ln	1087	1763	1844	720	1856	1545	1767	1763	1821	1767	1763	1835
Q Serve(g_s), s	3.4	22.7	22.7	5.7	15.2	0.7	1.9	23.3	23.3	12.8	20.5	20.5
Cycle Q Clear(g_c), s	18.6	22.7	22.7	28.4	15.2	0.7	1.9	23.3	23.3	12.8	20.5	20.5
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.10	1.00		0.06
Lane Grp Cap(c), veh/h	198	448	469	107	472	393	71	874	903	221	1023	1065
V/C Ratio(X)	0.17	0.79	0.80	0.33	0.57	0.03	0.39	0.56	0.56	0.87	0.50	0.50
Avail Cap(c_a), veh/h	203	455	476	110	479	399	295	874	903	295	1023	1065
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	41.8	41.8	55.1	39.1	33.6	56.1	21.1	21.1	51.5	14.9	14.9
Incr Delay (d2), s/veh	0.4	9.3	8.9	1.8	1.6	0.0	3.5	2.6	2.5	18.6	1.7	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	11.1	11.5	1.1	7.1	0.3	0.9	10.1	10.4	6.8	8.5	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.6	51.1	50.8	56.8	40.6	33.7	59.6	23.7	23.7	70.2	16.6	16.5
LnGrp LOS	D	D	D	E	D	C	E	C	C	E	B	B
Approach Vol, veh/h		763			317			1025			1233	
Approach Delay, s/veh		50.8			42.2			24.7			24.9	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.0	64.5		35.5	9.9	74.6		35.5				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	54.0		31.0	20.0	54.0		31.0				
Max Q Clear Time (g_c+I1), s	14.8	25.3		24.7	3.9	22.5		30.4				
Green Ext Time (p_c), s	0.2	15.5		2.6	0.0	17.1		0.1				

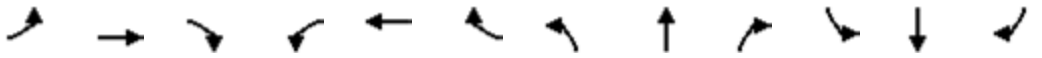
Intersection Summary												
HCM 7th Control Delay, s/veh			32.4									
HCM 7th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	1410	71	310	953	475	127	1259	501	355	1005	65
Future Volume (veh/h)	232	1410	71	310	953	475	127	1259	501	355	1005	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	234	1424	68	313	963	286	128	1272	311	359	1015	17
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	417	1441	69	360	1394	421	477	1474	457	377	1328	412
Arrive On Green	0.13	0.30	0.30	0.11	0.29	0.29	0.14	0.30	0.30	0.11	0.27	0.27
Sat Flow, veh/h	3302	4758	227	3302	4879	1472	3302	4879	1513	3302	4879	1513
Grp Volume(v), veh/h	234	973	519	313	963	286	128	1272	311	359	1015	17
Grp Sat Flow(s),veh/h/ln	1651	1626	1733	1651	1626	1472	1651	1626	1513	1651	1626	1513
Q Serve(g_s), s	9.3	41.7	41.7	13.1	24.6	17.4	4.8	34.5	25.3	15.1	26.8	1.2
Cycle Q Clear(g_c), s	9.3	41.7	41.7	13.1	24.6	17.4	4.8	34.5	25.3	15.1	26.8	1.2
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	417	985	525	360	1394	421	477	1474	457	377	1328	412
V/C Ratio(X)	0.56	0.99	0.99	0.87	0.69	0.68	0.27	0.86	0.68	0.95	0.76	0.04
Avail Cap(c_a), veh/h	417	985	525	401	1394	421	477	1499	465	377	1499	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	48.5	48.5	61.4	44.5	23.0	53.3	46.1	42.9	61.6	46.8	37.5
Incr Delay (d2), s/veh	1.7	25.9	36.4	16.8	2.8	8.6	0.3	6.1	5.9	33.8	3.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	19.9	22.7	6.2	10.0	6.8	2.0	14.4	10.0	8.0	11.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.2	74.4	85.0	78.2	47.3	31.6	53.6	52.2	48.8	95.4	50.0	37.6
LnGrp LOS	E	E	F	E	D	C	D	D	D	F	D	D
Approach Vol, veh/h		1726			1562			1711			1391	
Approach Delay, s/veh		75.5			50.6			51.7			61.6	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.2	44.1	23.7	46.0	22.0	48.3	21.3	48.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	43.0	17.0	40.0	16.0	43.0	17.0	40.0
Max Q Clear Time (g_c+I1), s	6.8	28.8	11.3	26.6	17.1	36.5	15.1	43.7
Green Ext Time (p_c), s	0.2	9.3	0.4	9.8	0.0	5.8	0.2	0.0

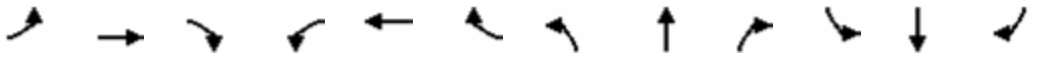
Intersection Summary	
HCM 7th Control Delay, s/veh	60.0
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	1027	142	607	482	19	104	1034	1013	99	974	77
Future Volume (vph)	203	1027	142	607	482	19	104	1034	1013	99	974	77
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1900	1830	1830	1900	1830
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Lane Util. Factor	0.86	0.86	1.00	0.94	0.95		0.97	0.95	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.99	
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)	1452	4579	1510	4760	3354		3274	3505	2658	3274	4971	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1452	4579	1510	4760	3354		3274	3505	2658	3274	4971	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	211	1070	148	632	502	20	108	1077	1055	103	1015	80
RTOR Reduction (vph)	0	0	96	0	2	0	0	0	0	0	5	0
Lane Group Flow (vph)	190	1091	52	632	520	0	108	1077	1055	103	1090	0
Confl. Peds. (#/hr)						6						6
Confl. Bikes (#/hr)						1						6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		7	7		5	2	7	1	6	
Permitted Phases			8						2			
Actuated Green, G (s)	46.3	46.3	46.3	30.8	30.8		15.6	50.2	81.0	10.8	45.4	
Effective Green, g (s)	46.3	46.3	46.3	30.8	30.8		15.6	50.2	81.0	10.8	45.4	
Actuated g/C Ratio	0.29	0.29	0.29	0.19	0.19		0.10	0.31	0.50	0.07	0.28	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5	3.0	3.0	4.5	
Lane Grp Cap (vph)	414	1307	431	904	637		315	1085	1328	218	1392	
v/s Ratio Prot	0.13	c0.24		0.13	c0.16		0.03	c0.31	0.15	0.03	c0.22	
v/s Ratio Perm			0.03						0.25			
v/c Ratio	0.46	0.83	0.12	0.70	0.82		0.34	0.99	0.79	0.47	0.78	
Uniform Delay, d1	47.6	54.3	42.8	61.3	62.9		68.5	55.8	33.6	72.9	53.8	
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	0.8	4.8	0.1	2.4	8.0		0.7	25.5	3.4	1.6	3.3	
Delay (s)	48.4	59.1	43.0	63.7	70.9		69.1	81.2	37.0	74.5	57.1	
Level of Service	D	E	D	E	E		E	F	D	E	E	
Approach Delay (s/veh)		56.0			67.0			59.8			58.6	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	60.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	162.1	Sum of lost time (s)	24.0
Intersection Capacity Utilization	93.7%	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												
Traffic Volume (veh/h)	109	175	65	222	321	129	114	1107	188	160	1185	142
Future Volume (veh/h)	109	175	65	222	321	129	114	1107	188	160	1185	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	117	188	19	239	345	25	127	1230	195	178	1317	149
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	218	928	90	291	778	329	219	1757	279	245	1878	212
Arrive On Green	0.06	0.20	0.20	0.09	0.22	0.22	0.06	0.40	0.40	0.14	0.82	0.82
Sat Flow, veh/h	3428	4654	453	3428	3526	1491	3428	4376	694	3428	4591	519
Grp Volume(v), veh/h	117	134	73	239	345	25	127	949	476	178	969	497
Grp Sat Flow(s),veh/h/ln	1714	1689	1730	1714	1763	1491	1714	1689	1693	1714	1689	1734
Q Serve(g_s), s	4.6	4.6	4.9	9.6	11.8	1.9	5.0	32.8	32.8	7.0	17.1	17.1
Cycle Q Clear(g_c), s	4.6	4.6	4.9	9.6	11.8	1.9	5.0	32.8	32.8	7.0	17.1	17.1
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.41	1.00		0.30
Lane Grp Cap(c), veh/h	218	673	345	291	778	329	219	1356	680	245	1381	709
V/C Ratio(X)	0.54	0.20	0.21	0.82	0.44	0.08	0.58	0.70	0.70	0.73	0.70	0.70
Avail Cap(c_a), veh/h	392	796	408	392	778	329	465	1356	680	465	1381	709
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.88	0.88
Uniform Delay (d), s/veh	63.5	46.7	46.8	63.0	47.1	43.2	63.7	34.9	34.9	58.7	9.1	9.1
Incr Delay (d2), s/veh	2.0	0.4	0.8	9.8	1.1	0.3	2.4	3.0	5.9	3.6	2.6	5.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.0	2.2	4.5	5.2	0.7	2.3	13.7	14.3	2.9	3.7	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.6	47.1	47.7	72.8	48.2	43.5	66.1	37.9	40.8	62.3	11.7	14.1
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	B	B
Approach Vol, veh/h		324			609			1552			1644	
Approach Delay, s/veh		53.9			57.7			41.1			17.9	
Approach LOS		D			E			D			B	

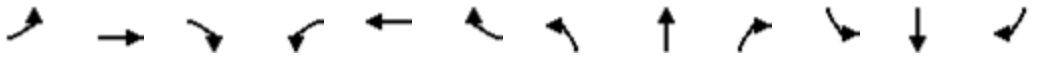
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	67.2	17.9	38.9	14.9	68.3	14.9	41.9
Change Period (Y+Rc), s	6.0	11.0	6.0	* 11	6.0	* 11	6.0	11.0
Max Green Setting (Gmax), s	19.0	43.0	16.0	* 33	19.0	* 48	16.0	28.0
Max Q Clear Time (g_c+I1), s	9.0	34.8	11.6	6.9	7.0	19.1	6.6	13.8
Green Ext Time (p_c), s	0.4	7.1	0.3	2.4	0.3	21.0	0.2	3.4

Intersection Summary	
HCM 7th Control Delay, s/veh	35.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



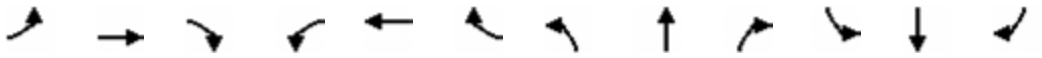
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	13	32	145	66	18	55	1283	35	3	1436	203
Future Volume (veh/h)	110	13	32	145	66	18	55	1283	35	3	1436	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.97	0.98		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	116	14	5	153	69	11	58	1351	36	3	1512	150
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	226	225	80	276	270	43	90	3532	94	14	3310	1006
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.10	1.00	1.00	0.00	0.22	0.22
Sat Flow, veh/h	1290	1292	462	1360	1554	248	1767	5070	135	1767	5066	1539
Grp Volume(v), veh/h	116	0	19	153	0	80	58	900	487	3	1512	150
Grp Sat Flow(s),veh/h/ln	1290	0	1754	1360	0	1801	1767	1689	1828	1767	1689	1539
Q Serve(g_s), s	12.0	0.0	1.3	14.8	0.0	5.4	4.4	0.0	0.0	0.2	36.4	11.1
Cycle Q Clear(g_c), s	17.3	0.0	1.3	16.1	0.0	5.4	4.4	0.0	0.0	0.2	36.4	11.1
Prop In Lane	1.00		0.26	1.00		0.14	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	226	0	305	276	0	314	90	2353	1273	14	3310	1006
V/C Ratio(X)	0.51	0.00	0.06	0.55	0.00	0.26	0.64	0.38	0.38	0.22	0.46	0.15
Avail Cap(c_a), veh/h	315	0	426	369	0	438	177	2353	1273	177	3310	1006
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.70	0.70	0.70	0.31	0.31	0.31
Uniform Delay (d), s/veh	57.5	0.0	48.3	55.0	0.0	50.0	61.6	0.0	0.0	69.4	33.3	23.4
Incr Delay (d2), s/veh	1.8	0.0	0.1	1.7	0.0	0.4	5.2	0.3	0.6	2.4	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.3	0.0	1.0	9.0	0.0	4.5	3.6	0.2	0.4	0.2	20.2	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.3	0.0	48.4	56.7	0.0	50.4	66.8	0.3	0.6	71.8	33.4	23.5
LnGrp LOS	E		D	E		D	E	A	A	E	C	C
Approach Vol, veh/h		135			233			1445			1665	
Approach Delay, s/veh		57.7			54.6			3.1			32.6	
Approach LOS		E			D			A			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	103.5		29.4	13.2	97.5		29.4				
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	14.0	75.0		34.0	14.0	75.0		34.0				
Max Q Clear Time (g_c+I1), s	2.2	2.0		19.3	6.4	38.4		18.1				
Green Ext Time (p_c), s	0.0	34.2		0.3	0.0	27.5		0.8				

Intersection Summary												
HCM 7th Control Delay, s/veh			22.8									
HCM 7th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	483	564	167	279	1225	171	408	926	121	153	1347	546
Future Volume (veh/h)	483	564	167	279	1225	171	408	926	121	153	1347	546
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	525	613	67	303	1332	54	443	1007	41	166	1464	525
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	570	1065	472	352	1471	453	441	1556	481	400	1496	643
Arrive On Green	0.11	0.30	0.30	0.10	0.29	0.29	0.04	0.10	0.10	0.12	0.30	0.30
Sat Flow, veh/h	4983	3526	1563	3428	5066	1561	3428	5066	1566	3428	5066	1569
Grp Volume(v), veh/h	525	613	67	303	1332	54	443	1007	41	166	1464	525
Grp Sat Flow(s),veh/h/ln	1661	1763	1563	1714	1689	1561	1714	1689	1566	1714	1689	1569
Q Serve(g_s), s	14.6	20.6	4.4	12.2	35.4	3.6	18.0	26.8	2.4	6.3	40.1	19.5
Cycle Q Clear(g_c), s	14.6	20.6	4.4	12.2	35.4	3.6	18.0	26.8	2.4	6.3	40.1	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	570	1065	472	352	1471	453	441	1556	481	400	1496	643
V/C Ratio(X)	0.92	0.58	0.14	0.86	0.91	0.12	1.01	0.65	0.09	0.41	0.98	0.82
Avail Cap(c_a), veh/h	570	1065	472	392	1484	457	441	1556	481	400	1496	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.4	41.3	35.6	61.8	47.8	36.5	67.0	55.6	23.9	57.4	48.9	18.6
Incr Delay (d2), s/veh	22.7	1.5	0.4	16.2	8.9	0.3	42.6	2.0	0.3	3.1	18.7	11.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	9.0	1.7	6.0	15.7	1.4	10.9	12.4	1.3	2.9	19.1	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.0	42.8	36.0	78.0	56.7	36.8	109.6	57.6	24.2	60.5	67.6	29.5
LnGrp LOS	F	D	D	E	E	D	F	E	C	E	E	C
Approach Vol, veh/h		1205			1689			1491			2155	
Approach Delay, s/veh		60.4			59.9			72.1			57.8	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.3	49.0	20.4	48.3	24.0	47.3	22.0	46.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	43.0	16.0	41.0	18.0	41.0	16.0	41.0
Max Q Clear Time (g_c+I1), s	8.3	28.8	14.2	22.6	20.0	42.1	16.6	37.4
Green Ext Time (p_c), s	0.3	9.4	0.2	7.5	0.0	0.0	0.0	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	62.1
HCM 7th LOS	E

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	353	969	0	1889	1533	0
Future Volume (veh/h)	353	969	0	1889	1533	0
Initial Q (Qb), veh	0	12	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	0	1856	1856	0
Adj Flow Rate, veh/h	368	1009	0	1968	1597	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	651	1158	0	3688	3688	0
Arrive On Green	0.36	0.36	0.00	0.51	0.51	0.00
Sat Flow, veh/h	1767	3145	0	5400	5400	0
Grp Volume(v), veh/h	368	1009	0	1968	1597	0
Grp Sat Flow(s),veh/h/ln	1767	1572	0	1689	1689	0
Q Serve(g_s), s	20.2	36.3	0.0	37.2	27.0	0.0
Cycle Q Clear(g_c), s	20.2	36.3	0.0	37.2	27.0	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	651	1158	0	3688	3688	0
V/C Ratio(X)	0.57	0.87	0.00	0.53	0.43	0.00
Avail Cap(c_a), veh/h	736	1310	0	2592	2592	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.3	36.1	0.0	19.7	17.6	0.0
Incr Delay (d2), s/veh	0.8	6.1	0.0	0.6	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	6.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	16.4	0.0	11.9	8.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	31.0	48.1	0.0	20.2	17.9	0.0
LnGrp LOS	C	D		C	B	
Approach Vol, veh/h	1377			1968	1597	
Approach Delay, s/veh	43.6			20.2	17.9	
Approach LOS	D			C	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		71.8		48.2		71.8
Change Period (Y+Rc), s		* 10		5.1		10.4
Max Green Setting (Gmax), s		* 60		50.0		54.5
Max Q Clear Time (g_c+I1), s		39.2		38.3		29.0
Green Ext Time (p_c), s		19.6		4.8		23.0

Intersection Summary		
HCM 7th Control Delay, s/veh	26.0	
HCM 7th LOS	C	

Notes
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	312	103	1428	834	0	1298
Future Volume (veh/h)	312	103	1428	834	0	1298
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	0	1856
Adj Flow Rate, veh/h	212	220	1488	823	0	1352
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	0	3
Cap, veh/h	291	259	2385	1111	0	3578
Arrive On Green	0.16	0.16	0.71	0.71	0.00	0.71
Sat Flow, veh/h	1767	1572	3544	1572	0	5400
Grp Volume(v), veh/h	212	220	1488	823	0	1352
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	1572	0	1689
Q Serve(g_s), s	13.7	16.3	27.8	38.7	0.0	12.8
Cycle Q Clear(g_c), s	13.7	16.3	27.8	38.7	0.0	12.8
Prop In Lane	1.00	1.00		1.00	0.00	
Lane Grp Cap(c), veh/h	291	259	2385	1111	0	3578
V/C Ratio(X)	0.73	0.85	0.62	0.74	0.00	0.38
Avail Cap(c_a), veh/h	810	721	2385	1111	0	3578
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.6	48.7	9.2	10.9	0.0	7.1
Incr Delay (d2), s/veh	3.5	7.7	1.2	4.5	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	6.9	9.0	12.5	0.0	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	51.1	56.4	10.5	15.3	0.0	7.4
LnGrp LOS	D	E	B	B		A
Approach Vol, veh/h	432		2311			1352
Approach Delay, s/veh	53.8		12.2			7.4
Approach LOS	D		B			A

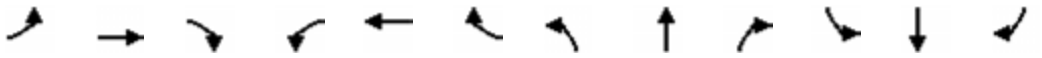
Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	95.2			95.2	24.8
Change Period (Y+Rc), s	10.4			* 10	5.1
Max Green Setting (Gmax), s	49.5			* 55	55.0
Max Q Clear Time (g_c+I1), s	40.7			14.8	18.3
Green Ext Time (p_c), s	8.8			30.7	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	15.0
HCM 7th LOS	B

Notes

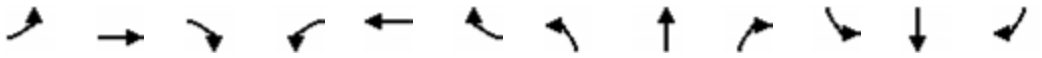
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	996	0	396	0	0	0	527	1934	0	4	1512	783
Future Volume (vph)	996	0	396	0	0	0	527	1934	0	4	1512	783
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0				6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.94		1.00				0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes	1.00		0.99				1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00		1.00				1.00	1.00		1.00	1.00	1.00
Frt	1.00		0.85				1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95		1.00				0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	4942		1548				3400	5036		1752	5036	1548
Flt Permitted	0.95		1.00				0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	4942		1548				3400	5036		1752	5036	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1083	0	430	0	0	0	573	2102	0	4	1643	851
RTOR Reduction (vph)	0	0	283	0	0	0	0	0	0	0	0	301
Lane Group Flow (vph)	1083	0	147	0	0	0	573	2102	0	4	1643	550
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm				Prot	NA		Prot	NA	Perm
Protected Phases	4				3		5	2		1	6	
Permitted Phases			4	3								6
Actuated Green, G (s)	36.2		36.2				25.0	78.2		2.3	55.5	55.5
Effective Green, g (s)	36.2		36.2				25.0	78.2		2.3	55.5	55.5
Actuated g/C Ratio	0.27		0.27				0.18	0.58		0.02	0.41	0.41
Clearance Time (s)	6.0		6.0				6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0		3.0				3.0	5.5		3.0	5.5	5.5
Lane Grp Cap (vph)	1318		412				626	2902		29	2059	633
v/s Ratio Prot	c0.22						c0.17	0.42		0.00	0.33	
v/s Ratio Perm			0.09									c0.36
v/c Ratio	0.82		0.36				0.92	0.72		0.14	0.80	0.87
Uniform Delay, d1	46.7		40.3				54.3	20.9		65.7	35.2	36.8
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.3		0.5				18.1	1.2		2.2	2.7	13.4
Delay (s)	51.0		40.8				72.4	22.1		67.9	37.8	50.2
Level of Service	D		D				E	C		E	D	D
Approach Delay (s/veh)		48.1			0.0			32.9			42.1	
Approach LOS		D			A			C			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	135.7	Sum of lost time (s)	25.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



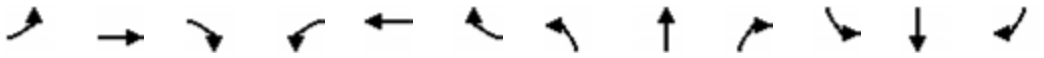
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	188	142	81	140	394	223	160	1518	25	47	1545	219
Future Volume (veh/h)	188	142	81	140	394	223	160	1518	25	47	1545	219
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	202	153	26	151	424	72	172	1632	14	51	1661	223
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	251	1099	489	391	1099	489	211	2540	776	194	2109	282
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.07	0.50	0.50	0.03	0.47	0.47
Sat Flow, veh/h	894	3526	1569	1194	3526	1569	1767	5066	1547	1767	4512	603
Grp Volume(v), veh/h	202	153	26	151	424	72	172	1632	14	51	1242	642
Grp Sat Flow(s),veh/h/ln	894	1763	1569	1194	1763	1569	1767	1689	1547	1767	1689	1738
Q Serve(g_s), s	27.9	4.0	1.5	13.4	12.1	4.2	6.4	30.4	0.6	1.9	39.7	40.1
Cycle Q Clear(g_c), s	40.0	4.0	1.5	17.4	12.1	4.2	6.4	30.4	0.6	1.9	39.7	40.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	251	1099	489	391	1099	489	211	2540	776	194	1579	813
V/C Ratio(X)	0.81	0.14	0.05	0.39	0.39	0.15	0.82	0.64	0.02	0.26	0.79	0.79
Avail Cap(c_a), veh/h	251	1099	489	391	1099	489	438	2540	776	480	1579	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.7	31.8	30.9	38.0	34.6	31.9	27.3	23.5	16.1	19.7	28.8	28.9
Incr Delay (d2), s/veh	16.9	0.0	0.0	0.5	0.2	0.1	2.9	1.3	0.0	0.3	4.0	7.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	1.7	0.6	3.9	5.1	1.6	2.6	11.5	0.2	0.7	15.8	17.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.6	31.8	30.9	38.5	34.7	32.0	30.2	24.8	16.1	20.0	32.8	36.6
LnGrp LOS	E	C	C	D	C	C	C	C	B	B	C	D
Approach Vol, veh/h		381			647			1818			1935	
Approach Delay, s/veh		50.7			35.3			25.2			33.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	71.3		46.3	15.0	67.0		46.3				
Change Period (Y+Rc), s	6.5	7.0		6.3	6.5	7.0		6.3				
Max Green Setting (Gmax), s	25.0	60.0		40.0	25.0	60.0		40.0				
Max Q Clear Time (g_c+I1), s	3.9	32.4		42.0	8.4	42.1		19.4				
Green Ext Time (p_c), s	0.0	24.0		0.0	0.1	16.9		2.6				

Intersection Summary												
HCM 7th Control Delay, s/veh			32.1									
HCM 7th LOS			C									

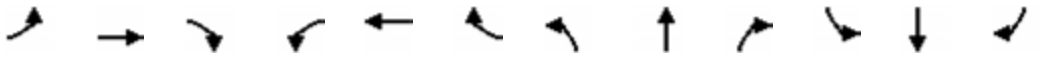
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	53	674	0	0	0	0	2003	592	252	1627	0
Future Volume (vph)	302	53	674	0	0	0	0	2003	592	252	1627	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8	4.0					4.0	4.0	4.8	9.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1693	1568					5036	2699	3400	5036	
Flt Permitted	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1665	1693	1568					5036	2699	3400	5036	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	328	58	733	0	0	0	0	2177	643	274	1768	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	190	196	733	0	0	0	0	2177	643	274	1768	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free					NA	custom	Prot	NA	
Protected Phases	4	4						2 3		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	18.7	18.7	113.6					62.5	46.3	14.8	81.1	
Effective Green, g (s)	18.7	18.7	113.6					62.5	46.3	14.8	81.1	
Actuated g/C Ratio	0.16	0.16	1.00					0.55	0.41	0.13	0.71	
Clearance Time (s)	4.8	4.8							4.0	4.8	9.0	
Vehicle Extension (s)	3.0	3.0							5.0	3.0	5.0	
Lane Grp Cap (vph)	274	278	1568					2770	1100	442	3595	
v/s Ratio Prot	0.11	c0.12						c0.43		0.08	0.35	
v/s Ratio Perm			c0.47						0.24			
v/c Ratio	0.69	0.71	0.47					0.79	0.58	0.62	0.49	
Uniform Delay, d1	44.7	44.8	0.0					20.2	26.2	46.7	7.2	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.4	7.9	1.0					1.8	1.2	2.6	0.2	
Delay (s)	52.1	52.7	1.0					22.0	27.4	49.3	7.4	
Level of Service	D	D	A					C	C	D	A	
Approach Delay (s/veh)		18.7			0.0			23.3			13.0	
Approach LOS		B			A			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



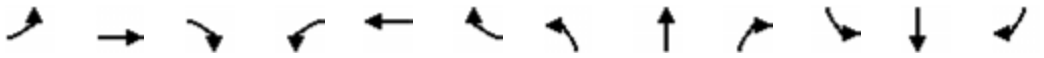
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	0	669	762	336	27	573	664	0	0	703	177
Future Volume (veh/h)	153	0	669	762	336	27	573	664	0	0	703	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856	1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h	159	0	329	794	350	27	597	692	0	0	732	38
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	0	3	3	3	3	3	3	0	0	3	3
Cap, veh/h	0	0	0	1018	489	38	685	1677	0	0	1110	333
Arrive On Green	0.00	0.00	0.00	0.29	0.29	0.29	0.20	0.48	0.00	0.00	0.22	0.22
Sat Flow, veh/h		0		3534	1699	131	3428	3618	0	0	5233	1519
Grp Volume(v), veh/h		0.0		794	0	377	597	692	0	0	732	38
Grp Sat Flow(s),veh/h/ln				1767	0	1830	1714	1763	0	0	1689	1519
Q Serve(g_s), s				17.5	0.0	15.6	14.3	10.8	0.0	0.0	11.2	1.7
Cycle Q Clear(g_c), s				17.5	0.0	15.6	14.3	10.8	0.0	0.0	11.2	1.7
Prop In Lane				1.00		0.07	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1018	0	527	685	1677	0	0	1110	333
V/C Ratio(X)				0.78	0.00	0.72	0.87	0.41	0.00	0.00	0.66	0.11
Avail Cap(c_a), veh/h				1462	0	757	851	1875	0	0	2694	808
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				27.7	0.0	27.0	32.8	14.5	0.0	0.0	30.2	26.5
Incr Delay (d2), s/veh				1.7	0.0	1.8	7.1	0.2	0.0	0.0	0.7	0.2
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.1	0.0	6.6	6.3	3.9	0.0	0.0	4.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				29.4	0.0	28.8	39.9	14.6	0.0	0.0	30.8	26.6
LnGrp LOS				C		C	D	B			C	C
Approach Vol, veh/h					1171			1289			770	
Approach Delay, s/veh					29.2			26.4			30.6	
Approach LOS					C			C			C	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	50.2	34.4	21.7	28.5
Change Period (Y+Rc), s	10.0	10.0	4.8	10.0
Max Green Setting (Gmax), s	45.0	35.0	21.0	45.0
Max Q Clear Time (g_c+I1), s	12.8	19.5	16.3	13.2
Green Ext Time (p_c), s	4.9	4.8	0.6	5.2

Intersection Summary	
HCM 7th Control Delay, s/veh	28.4
HCM 7th LOS	C

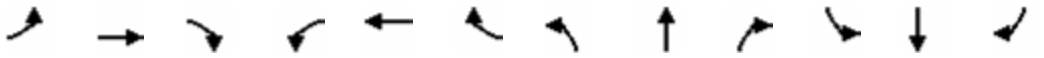
Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	404	16	343	716	49	17	1226	231	29	1440	484
Future Volume (vph)	135	404	16	343	716	49	17	1226	231	29	1440	484
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
Total Lost time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1688	3357		1688	3343		1688	3376	1510	1688	3376	1510
Flt Permitted	0.95	1.00		0.95	1.00		0.06	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1688	3357		1688	3343		101	3376	1510	135	3376	1510
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	139	416	16	354	738	51	18	1264	238	30	1485	499
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	48	0	0	130
Lane Group Flow (vph)	139	430	0	354	786	0	18	1264	190	30	1485	369
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	19.5	35.2		34.1	49.8		70.3	70.3	70.3	70.3	70.3	70.3
Effective Green, g (s)	19.5	35.2		34.1	49.8		70.3	70.3	70.3	70.3	70.3	70.3
Actuated g/C Ratio	0.11	0.21		0.20	0.29		0.41	0.41	0.41	0.41	0.41	0.41
Clearance Time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Vehicle Extension (s)	3.0	5.0		2.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	193	694		338	978		41	1394	623	55	1394	623
v/s Ratio Prot	0.08	0.13		c0.21	c0.24			0.37			c0.44	
v/s Ratio Perm							0.18		0.13	0.22		0.24
v/c Ratio	0.72	0.62		1.05	0.80		0.44	0.91	0.31	0.55	1.07	0.59
Uniform Delay, d1	72.7	61.4		68.1	55.7		35.8	46.9	33.6	37.8	49.9	38.8
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	12.4	2.4		61.9	5.5		14.9	9.3	0.6	18.0	43.6	2.3
Delay (s)	85.1	63.9		129.9	61.2		50.7	56.1	34.1	55.9	93.5	41.1
Level of Service	F	E		F	E		D	E	C	E	F	D
Approach Delay (s/veh)		69.0			82.5			52.6			80.0	
Approach LOS		E			F			D			E	

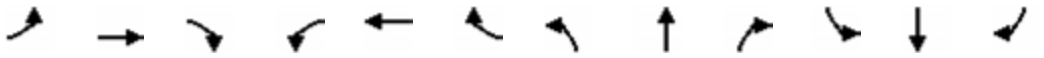
Intersection Summary			
HCM 2000 Control Delay (s/veh)	71.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	170.2	Sum of lost time (s)	30.6
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	402	55	343	771	91	41	1074	148	22	1280	229
Future Volume (veh/h)	238	402	55	343	771	91	41	1074	148	22	1280	229
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	245	414	14	354	795	87	42	1107	142	23	1320	225
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	325	444	370	182	792	87	185	1838	236	65	1464	249
Arrive On Green	0.10	0.25	0.25	0.11	0.26	0.26	0.11	0.42	0.42	0.04	0.35	0.35
Sat Flow, veh/h	3302	1787	1490	1702	3082	337	1702	4368	560	1702	4183	713
Grp Volume(v), veh/h	245	414	14	354	438	444	42	824	425	23	1026	519
Grp Sat Flow(s),veh/h/ln	1651	1787	1490	1702	1698	1721	1702	1626	1675	1702	1626	1643
Q Serve(g_s), s	10.1	31.7	0.7	15.0	36.0	36.0	3.2	27.5	27.6	1.8	42.0	42.0
Cycle Q Clear(g_c), s	10.1	31.7	0.7	15.0	36.0	36.0	3.2	27.5	27.6	1.8	42.0	42.0
Prop In Lane	1.00		1.00	1.00		0.20	1.00		0.33	1.00		0.43
Lane Grp Cap(c), veh/h	325	444	370	182	437	443	185	1369	705	65	1138	575
V/C Ratio(X)	0.75	0.93	0.04	1.94	1.00	1.00	0.23	0.60	0.60	0.36	0.90	0.90
Avail Cap(c_a), veh/h	354	460	383	182	437	443	185	1369	705	195	1138	575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.5	51.5	21.4	62.5	52.0	52.0	57.0	31.5	31.5	65.7	43.2	43.2
Incr Delay (d2), s/veh	8.2	27.2	0.1	443.0	43.9	43.6	2.8	2.0	3.8	3.3	11.5	19.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	17.4	0.4	28.7	19.9	20.2	1.5	10.8	11.5	0.9	18.3	19.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.6	78.7	21.5	505.5	95.9	95.6	59.8	33.4	35.3	68.9	54.7	63.1
LnGrp LOS	E	E	C	F	F	F	E	C	D	E	D	E
Approach Vol, veh/h		673			1236			1291			1568	
Approach Delay, s/veh		74.2			213.1			34.9			57.7	
Approach LOS		E			F			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	41.8	21.2	55.0	20.8	43.0	11.3	64.9
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	36.0	14.0	49.0	15.0	36.0	16.0	47.0
Max Q Clear Time (g_c+I1), s	17.0	33.7	5.2	44.0	12.1	38.0	3.8	29.6
Green Ext Time (p_c), s	0.0	1.0	0.0	4.6	0.2	0.0	0.0	12.5

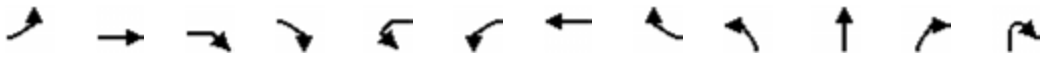
Intersection Summary	
HCM 7th Control Delay, s/veh	94.1
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	210	86	92	294	26	94	985	81	10	1248	427
Future Volume (veh/h)	261	210	86	92	294	26	94	985	81	10	1248	427
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	269	216	56	95	303	25	97	1015	42	10	1287	303
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	318	614	155	123	334	28	283	1827	815	49	1360	598
Arrive On Green	0.09	0.22	0.22	0.07	0.20	0.20	0.16	0.52	0.52	0.03	0.39	0.39
Sat Flow, veh/h	3428	2785	706	1767	1691	140	1767	3526	1572	1767	3526	1551
Grp Volume(v), veh/h	269	135	137	95	0	328	97	1015	42	10	1287	303
Grp Sat Flow(s),veh/h/ln	1714	1763	1728	1767	0	1830	1767	1763	1572	1767	1763	1551
Q Serve(g_s), s	10.8	9.0	9.4	7.4	0.0	24.5	6.8	27.3	1.9	0.8	49.4	20.9
Cycle Q Clear(g_c), s	10.8	9.0	9.4	7.4	0.0	24.5	6.8	27.3	1.9	0.8	49.4	20.9
Prop In Lane	1.00		0.41	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	318	388	381	123	0	361	283	1827	815	49	1360	598
V/C Ratio(X)	0.85	0.35	0.36	0.77	0.00	0.91	0.34	0.56	0.05	0.20	0.95	0.51
Avail Cap(c_a), veh/h	355	434	426	183	0	451	283	1827	815	177	1360	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.5	46.1	46.2	64.0	0.0	55.0	52.3	22.8	16.7	66.6	41.6	32.8
Incr Delay (d2), s/veh	15.8	0.5	0.6	11.0	0.0	19.3	3.3	1.2	0.1	2.0	14.6	3.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	4.0	4.1	3.7	0.0	13.1	3.2	11.1	0.7	0.4	23.3	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.3	46.6	46.8	75.0	0.0	74.2	55.5	24.0	16.8	68.6	56.2	35.9
LnGrp LOS	E	D	D	E		E	E	C	B	E	E	D
Approach Vol, veh/h		541			423			1154			1600	
Approach Delay, s/veh		62.4			74.4			26.4			52.4	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	36.3	28.4	60.0	18.5	33.1	9.9	78.5
Change Period (Y+Rc), s	5.5	5.5	6.0	6.0	5.5	5.5	6.0	6.0
Max Green Setting (Gmax), s	14.5	34.5	14.0	54.0	14.5	34.5	14.0	54.0
Max Q Clear Time (g_c+I1), s	9.4	11.4	8.8	51.4	12.8	26.5	2.8	29.3
Green Ext Time (p_c), s	0.1	1.4	0.1	2.4	0.2	1.1	0.0	14.4

Intersection Summary	
HCM 7th Control Delay, s/veh	48.3
HCM 7th LOS	D

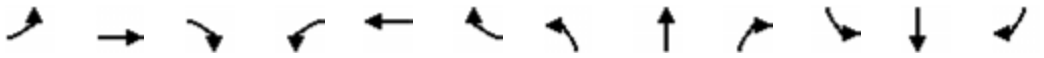


Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	203	575	172	29	37	53	344	32	34	840	55	126
Future Volume (vph)	203	575	172	29	37	53	344	32	34	840	55	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Lane Util. Factor	1.00	0.95				1.00	0.91		1.00	0.95		1.00
Frpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Frt	1.00	0.96				1.00	0.99		1.00	0.99		0.85
Flt Protected	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (prot)	1752	3369				1752	4962		1752	3472		1568
Flt Permitted	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (perm)	1752	3369				1752	4962		1752	3472		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	209	593	177	30	38	55	355	33	35	866	57	130
RTOR Reduction (vph)	0	1	0	0	0	0	4	0	0	0	0	68
Lane Group Flow (vph)	209	799	0	0	0	93	384	0	35	923	0	62
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA			Split	Split	NA		Split	NA		Prot
Protected Phases	3	3			7	7	7		5	5		5
Permitted Phases												
Actuated Green, G (s)	47.0	47.0				25.9	25.9		47.0	47.0		47.0
Effective Green, g (s)	47.0	47.0				25.9	25.9		47.0	47.0		47.0
Actuated g/C Ratio	0.19	0.19				0.10	0.10		0.19	0.19		0.19
Clearance Time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0				2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)	326	627				179	509		326	646		292
v/s Ratio Prot	0.12	c0.24				0.05	c0.08		0.02	c0.27		0.04
v/s Ratio Perm												
v/c Ratio	0.64	1.27				0.52	0.75		0.11	1.43		0.21
Uniform Delay, d1	94.9	102.7				107.3	110.1		85.2	102.7		87.0
Progression Factor	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	3.2	135.7				1.1	5.6		0.7	201.8		1.7
Delay (s)	98.1	238.4				108.4	115.7		85.9	304.5		88.7
Level of Service	F	F				F	F		F	F		F
Approach Delay (s/veh)		209.3					114.2			271.7		
Approach LOS		F					F			F		

Intersection Summary			
HCM 2000 Control Delay (s/veh)	167.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	252.3	Sum of lost time (s)	30.0
Intersection Capacity Utilization	125.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	148	378	531	41	83	457	388	12
Future Volume (vph)	148	378	531	41	83	457	388	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0			6.0	6.0	
Lane Util. Factor		0.86	0.86			0.97	0.88	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	
Frt		1.00	0.99			1.00	0.85	
Flt Protected		0.95	0.98			0.95	1.00	
Satd. Flow (prot)		1507	4647			3400	2760	
Flt Permitted		0.95	0.98			0.95	1.00	
Satd. Flow (perm)		1507	4647			3400	2760	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	153	390	547	42	86	471	400	12
RTOR Reduction (vph)	0	0	2	0	0	0	68	0
Lane Group Flow (vph)	0	278	852	0	0	557	344	0
Confl. Peds. (#/hr)				4				3
Confl. Bikes (#/hr)				1				2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	Split	NA		Prot	Prot	Prot	
Protected Phases	6	6	6		4	4	4	
Permitted Phases								
Actuated Green, G (s)		57.0	57.0			45.4	45.4	
Effective Green, g (s)		57.0	57.0			45.4	45.4	
Actuated g/C Ratio		0.23	0.23			0.18	0.18	
Clearance Time (s)		6.0	6.0			6.0	6.0	
Vehicle Extension (s)		4.0	4.0			2.5	2.5	
Lane Grp Cap (vph)		340	1049			611	496	
v/s Ratio Prot		c0.18	0.18			c0.16	0.12	
v/s Ratio Perm								
v/c Ratio		0.82	0.81			0.91	0.69	
Uniform Delay, d1		92.7	92.6			101.5	96.9	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		19.2	6.9			17.9	3.8	
Delay (s)		111.9	99.5			119.4	100.8	
Level of Service		F	F			F	F	
Approach Delay (s/veh)			102.5			111.5		
Approach LOS			F			F		

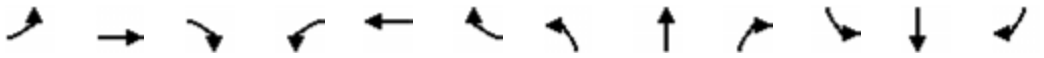
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	363	41	79	583	123	59	1024	66	141	1314	71
Future Volume (veh/h)	37	363	41	79	583	123	59	1024	66	141	1314	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	39	378	36	82	607	81	61	1067	65	147	1369	71
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	60	839	79	214	479	399	102	1744	106	176	1905	99
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.06	0.52	0.52	0.10	0.56	0.56
Sat Flow, veh/h	749	3248	307	963	1856	1545	1767	3373	205	1767	3410	176
Grp Volume(v), veh/h	39	204	210	82	607	81	61	558	574	147	706	734
Grp Sat Flow(s),veh/h/ln	749	1763	1792	963	1856	1545	1767	1763	1815	1767	1763	1824
Q Serve(g_s), s	0.0	11.7	11.8	9.4	31.0	4.9	4.0	26.8	26.8	9.8	35.4	35.6
Cycle Q Clear(g_c), s	31.0	11.7	11.8	21.2	31.0	4.9	4.0	26.8	26.8	9.8	35.4	35.6
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.11	1.00		0.10
Lane Grp Cap(c), veh/h	60	455	463	214	479	399	102	912	939	176	985	1019
V/C Ratio(X)	0.65	0.45	0.45	0.38	1.27	0.20	0.60	0.61	0.61	0.84	0.72	0.72
Avail Cap(c_a), veh/h	60	455	463	214	479	399	295	912	939	295	985	1019
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.0	37.3	37.4	46.3	44.5	34.8	55.2	20.5	20.5	53.1	19.5	19.5
Incr Delay (d2), s/veh	22.1	0.7	0.7	1.1	135.6	0.2	5.4	3.1	3.0	10.0	4.5	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	5.2	5.3	2.3	32.0	1.9	2.0	11.6	11.9	4.8	15.2	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	82.1	38.0	38.1	47.4	180.1	35.1	60.6	23.5	23.4	63.0	24.0	23.9
LnGrp LOS	F	D	D	D	F	D	E	C	C	E	C	C
Approach Vol, veh/h		453			770			1193			1587	
Approach Delay, s/veh		41.8			150.7			25.4			27.6	
Approach LOS		D			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.9	67.1		36.0	12.0	72.0		36.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	54.0		31.0	20.0	54.0		31.0				
Max Q Clear Time (g_c+I1), s	11.8	28.8		33.0	6.0	37.6		33.0				
Green Ext Time (p_c), s	0.2	16.2		0.0	0.1	13.8		0.0				

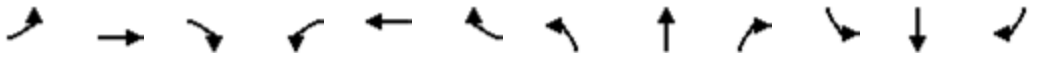
Intersection Summary												
HCM 7th Control Delay, s/veh			52.2									
HCM 7th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	916	94	335	1285	494	173	1302	304	387	1257	216
Future Volume (veh/h)	310	916	94	335	1285	494	173	1302	304	387	1257	216
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	323	954	89	349	1339	311	180	1356	109	403	1309	113
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	385	1245	116	395	1359	410	396	1487	461	425	1529	474
Arrive On Green	0.12	0.28	0.28	0.12	0.28	0.28	0.12	0.30	0.30	0.13	0.31	0.31
Sat Flow, veh/h	3302	4517	420	3302	4879	1471	3302	4879	1513	3302	4879	1513
Grp Volume(v), veh/h	323	686	357	349	1339	311	180	1356	109	403	1309	113
Grp Sat Flow(s),veh/h/ln	1651	1626	1685	1651	1626	1471	1651	1626	1513	1651	1626	1513
Q Serve(g_s), s	13.4	27.1	27.3	14.6	38.2	19.0	7.1	37.5	7.6	17.0	35.2	7.8
Cycle Q Clear(g_c), s	13.4	27.1	27.3	14.6	38.2	19.0	7.1	37.5	7.6	17.0	35.2	7.8
Prop In Lane	1.00		0.25	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	385	896	464	395	1359	410	396	1487	461	425	1529	474
V/C Ratio(X)	0.84	0.77	0.77	0.88	0.99	0.76	0.45	0.91	0.24	0.95	0.86	0.24
Avail Cap(c_a), veh/h	385	896	464	425	1359	410	396	1499	465	425	1568	486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.5	46.6	46.6	60.7	50.2	22.8	57.3	46.9	36.5	60.5	45.1	35.7
Incr Delay (d2), s/veh	15.0	6.2	11.6	18.4	21.1	12.4	0.8	9.4	0.7	31.0	5.6	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	11.5	12.6	7.0	17.7	7.8	3.0	16.0	2.8	8.8	14.6	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.5	52.7	58.2	79.0	71.3	35.2	58.2	56.2	37.2	91.5	50.7	36.4
LnGrp LOS	E	D	E	E	E	D	E	E	D	F	D	D
Approach Vol, veh/h		1366			1999			1645			1825	
Approach Delay, s/veh		59.6			67.1			55.2			58.8	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.8	49.9	22.3	45.0	24.0	48.7	22.8	44.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	45.0	16.0	39.0	18.0	43.0	18.0	37.0
Max Q Clear Time (g_c+I1), s	9.1	37.2	15.4	40.2	19.0	39.5	16.6	29.3
Green Ext Time (p_c), s	0.3	6.6	0.1	0.0	0.0	3.2	0.2	5.6

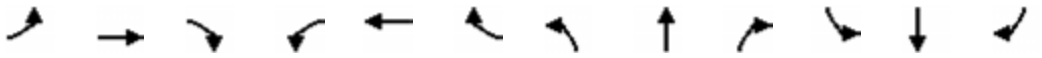
Intersection Summary	
HCM 7th Control Delay, s/veh	60.5
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	797	167	928	828	40	250	1056	949	151	1194	190
Future Volume (vph)	194	797	167	928	828	40	250	1056	949	151	1194	190
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1900	1830	1830	1900	1830
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Lane Util. Factor	0.86	0.86	1.00	0.94	0.95		0.97	0.95	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.98	
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)	1452	4578	1510	4760	3350		3274	3505	2658	3274	4916	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1452	4578	1510	4760	3350		3274	3505	2658	3274	4916	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	196	805	169	937	836	40	253	1067	959	153	1206	192
RTOR Reduction (vph)	0	0	136	0	2	0	0	0	0	0	15	0
Lane Group Flow (vph)	176	825	33	937	874	0	253	1067	959	153	1383	0
Confl. Peds. (#/hr)						6						6
Confl. Bikes (#/hr)						1						6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		7	7		5	2	7	1	6	
Permitted Phases			8						2			
Actuated Green, G (s)	27.5	27.5	27.5	35.5	35.5		13.5	41.0	76.5	12.0	39.5	
Effective Green, g (s)	27.5	27.5	27.5	35.5	35.5		13.5	41.0	76.5	12.0	39.5	
Actuated g/C Ratio	0.20	0.20	0.20	0.25	0.25		0.10	0.29	0.55	0.09	0.28	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5	3.0	3.0	4.5	
Lane Grp Cap (vph)	285	899	296	1207	849		315	1026	1452	280	1387	
v/s Ratio Prot	0.12	c0.18		0.20	c0.26		0.08	c0.30	0.17	0.05	c0.28	
v/s Ratio Perm			0.02						0.19			
v/c Ratio	0.62	0.92	0.11	0.78	1.03		0.80	1.04	0.66	0.55	1.00	
Uniform Delay, d1	51.4	55.1	46.2	48.6	52.3		61.9	49.5	22.5	61.4	50.2	
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	3.9	13.9	0.2	3.2	38.6		13.7	39.0	1.1	2.2	23.5	
Delay (s)	55.4	69.0	46.4	51.8	90.8		75.7	88.5	23.7	63.6	73.7	
Level of Service	E	E	D	D	F		E	F	C	E	E	
Approach Delay (s/veh)		63.7			70.6			59.8			72.7	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	66.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	98.4%	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												
Traffic Volume (veh/h)	118	380	127	258	168	205	147	1076	331	334	1030	58
Future Volume (veh/h)	118	380	127	258	168	205	147	1076	331	334	1030	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.95	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	131	422	95	287	187	42	163	1196	332	371	1144	61
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	219	890	191	342	890	379	220	1233	342	425	1849	99
Arrive On Green	0.06	0.22	0.22	0.10	0.25	0.25	0.06	0.32	0.32	0.04	0.12	0.12
Sat Flow, veh/h	3428	4110	885	3428	3526	1501	3428	3889	1079	3428	4909	262
Grp Volume(v), veh/h	131	343	174	287	187	42	163	1039	489	371	787	418
Grp Sat Flow(s),veh/h/ln	1714	1689	1618	1714	1763	1501	1714	1689	1591	1714	1689	1793
Q Serve(g_s), s	5.2	12.4	13.2	11.5	5.9	3.0	6.5	42.5	42.5	15.1	30.9	31.0
Cycle Q Clear(g_c), s	5.2	12.4	13.2	11.5	5.9	3.0	6.5	42.5	42.5	15.1	30.9	31.0
Prop In Lane	1.00		0.55	1.00		1.00	1.00		0.68	1.00		0.15
Lane Grp Cap(c), veh/h	219	731	350	342	890	379	220	1071	504	425	1272	676
V/C Ratio(X)	0.60	0.47	0.50	0.84	0.21	0.11	0.74	0.97	0.97	0.87	0.62	0.62
Avail Cap(c_a), veh/h	465	796	381	465	890	379	465	1071	504	465	1272	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.88	0.88
Uniform Delay (d), s/veh	63.8	47.8	48.1	61.9	41.3	40.3	64.4	47.2	47.2	66.0	51.8	51.8
Incr Delay (d2), s/veh	2.6	1.3	3.0	9.7	0.3	0.4	4.9	21.2	33.4	14.1	2.0	3.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	5.3	5.5	5.4	2.6	1.1	3.0	20.6	21.1	7.8	14.4	15.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.4	49.1	51.1	71.6	41.6	40.6	69.2	68.3	80.5	80.1	53.7	55.5
LnGrp LOS	E	D	D	E	D	D	E	E	F	F	D	E
Approach Vol, veh/h		648			516			1691			1576	
Approach Delay, s/veh		53.2			58.2			72.0			60.4	
Approach LOS		D			E			E			E	

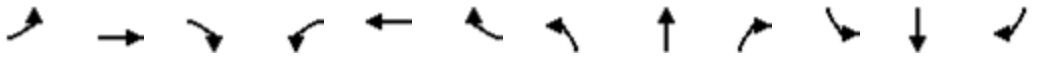
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.3	55.4	20.0	41.3	15.0	63.7	14.9	46.3
Change Period (Y+Rc), s	6.0	11.0	6.0	* 11	6.0	* 11	6.0	11.0
Max Green Setting (Gmax), s	19.0	40.0	19.0	* 33	19.0	* 45	19.0	28.0
Max Q Clear Time (g_c+I1), s	17.1	44.5	13.5	15.2	8.5	33.0	7.2	7.9
Green Ext Time (p_c), s	0.3	0.0	0.5	5.6	0.3	9.0	0.3	2.3

Intersection Summary	
HCM 7th Control Delay, s/veh	63.5
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



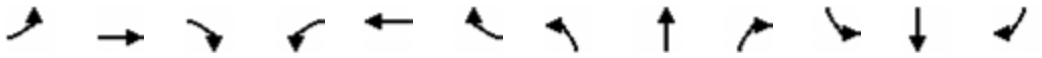
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	282	40	128	139	46	67	78	1414	38	26	1156	156
Future Volume (veh/h)	282	40	128	139	46	67	78	1414	38	26	1156	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	303	43	38	149	49	7	84	1520	40	28	1243	100
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	318	200	176	174	263	215	104	2418	64	84	2357	716
Arrive On Green	0.18	0.22	0.22	0.10	0.14	0.14	0.08	0.63	0.63	0.02	0.15	0.15
Sat Flow, veh/h	1767	895	791	1767	1856	1516	1767	5072	133	1767	5066	1538
Grp Volume(v), veh/h	303	0	81	149	49	7	84	1012	548	28	1243	100
Grp Sat Flow(s),veh/h/ln	1767	0	1686	1767	1856	1516	1767	1689	1828	1767	1689	1538
Q Serve(g_s), s	23.8	0.0	5.5	11.6	3.3	0.6	6.5	25.5	25.5	2.2	31.6	7.9
Cycle Q Clear(g_c), s	23.8	0.0	5.5	11.6	3.3	0.6	6.5	25.5	25.5	2.2	31.6	7.9
Prop In Lane	1.00		0.47	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	318	0	376	174	263	215	104	1610	871	84	2357	716
V/C Ratio(X)	0.95	0.00	0.22	0.86	0.19	0.03	0.81	0.63	0.63	0.33	0.53	0.14
Avail Cap(c_a), veh/h	318	0	536	261	530	433	114	1610	871	126	2357	716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.46	0.46	0.46	0.65	0.65	0.65
Uniform Delay (d), s/veh	56.8	0.0	44.4	62.1	53.0	51.8	63.8	18.1	18.1	66.7	45.1	35.0
Incr Delay (d2), s/veh	37.9	0.0	0.3	16.1	0.3	0.1	16.7	0.9	1.6	1.5	0.6	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	20.2	0.0	4.3	10.1	2.8	0.4	5.4	11.4	12.4	1.8	19.5	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	94.7	0.0	44.7	78.2	53.3	51.9	80.4	18.9	19.7	68.2	45.6	35.3
LnGrp LOS	F		D	E	D	D	F	B	B	E	D	D
Approach Vol, veh/h		384			205			1644			1371	
Approach Delay, s/veh		84.1			71.4			22.3			45.3	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	72.7	18.4	36.2	14.2	71.1	29.8	24.8
Change Period (Y+Rc), s	6.0	6.0	4.6	5.0	6.0	6.0	4.6	5.0
Max Green Setting (Gmax), s	10.0	43.2	20.7	44.5	9.0	44.2	25.2	40.0
Max Q Clear Time (g_c+I1), s	4.2	27.5	13.6	7.5	8.5	33.6	25.8	5.3
Green Ext Time (p_c), s	0.0	13.1	0.2	0.5	0.0	8.5	0.0	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	40.5
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	834	1053	286	100	501	94	315	1202	186	263	1095	402
Future Volume (veh/h)	834	1053	286	100	501	94	315	1202	186	263	1095	402
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	887	1120	194	106	533	19	335	1279	69	280	1165	373
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	1163	1133	503	313	909	279	384	1484	459	421	1539	844
Arrive On Green	0.23	0.32	0.32	0.09	0.18	0.18	0.04	0.10	0.10	0.12	0.30	0.30
Sat Flow, veh/h	4983	3526	1564	3428	5066	1554	3428	5066	1566	3428	5066	1569
Grp Volume(v), veh/h	887	1120	194	106	533	19	335	1279	69	280	1165	373
Grp Sat Flow(s),veh/h/ln	1661	1763	1564	1714	1689	1554	1714	1689	1566	1714	1689	1569
Q Serve(g_s), s	23.2	44.2	13.5	4.1	13.5	1.4	13.6	34.8	4.2	10.9	29.1	6.8
Cycle Q Clear(g_c), s	23.2	44.2	13.5	4.1	13.5	1.4	13.6	34.8	4.2	10.9	29.1	6.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1163	1133	503	313	909	279	384	1484	459	421	1539	844
V/C Ratio(X)	0.76	0.99	0.39	0.34	0.59	0.07	0.87	0.86	0.15	0.66	0.76	0.44
Avail Cap(c_a), veh/h	1163	1133	503	343	1484	455	392	1484	459	421	1539	844
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	47.2	36.8	59.6	52.7	47.7	66.4	60.5	26.6	58.6	44.1	6.7
Incr Delay (d2), s/veh	4.8	24.0	1.3	0.6	1.7	0.3	15.7	5.6	0.6	8.0	3.5	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	22.5	5.2	1.8	5.8	0.6	7.1	16.6	2.3	5.2	12.5	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.8	71.2	38.1	60.3	54.3	48.0	82.1	66.0	27.1	66.7	47.6	8.4
LnGrp LOS	D	E	D	E	D	D	F	E	C	E	D	A
Approach Vol, veh/h		2201			658			1683			1818	
Approach Delay, s/veh		61.7			55.1			67.6			42.5	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.2	47.0	18.8	51.0	21.7	48.5	38.7	31.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	41.0	14.0	45.0	16.0	41.0	18.0	41.0
Max Q Clear Time (g_c+I1), s	12.9	36.8	6.1	46.2	15.6	31.1	25.2	15.5
Green Ext Time (p_c), s	0.3	3.6	0.1	0.0	0.1	8.5	0.0	7.2

Intersection Summary	
HCM 7th Control Delay, s/veh	57.1
HCM 7th LOS	E

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	250	715	0	2088	1415	0
Future Volume (veh/h)	250	715	0	2088	1415	0
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	0	1856	1856	0
Adj Flow Rate, veh/h	266	751	0	2221	1505	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	500	890	0	2884	2884	0
Arrive On Green	0.28	0.28	0.00	0.57	0.57	0.00
Sat Flow, veh/h	1767	3145	0	5400	5400	0
Grp Volume(v), veh/h	266	751	0	2221	1505	0
Grp Sat Flow(s),veh/h/ln	1767	1572	0	1689	1689	0
Q Serve(g_s), s	13.3	23.6	0.0	35.3	19.1	0.0
Cycle Q Clear(g_c), s	13.3	23.6	0.0	35.3	19.1	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	500	890	0	2884	2884	0
V/C Ratio(X)	0.53	0.84	0.00	0.77	0.52	0.00
Avail Cap(c_a), veh/h	757	1348	0	2884	2884	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.8	35.4	0.0	17.3	13.9	0.0
Incr Delay (d2), s/veh	0.9	3.2	0.0	2.1	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	9.3	0.0	12.7	6.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	32.6	38.6	0.0	19.4	14.5	0.0
LnGrp LOS	C	D		B	B	
Approach Vol, veh/h	1017			2221	1505	
Approach Delay, s/veh	37.1			19.4	14.5	
Approach LOS	D			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		70.2		34.8		70.2
Change Period (Y+Rc), s		* 10		5.1		10.4
Max Green Setting (Gmax), s		* 50		45.0		44.5
Max Q Clear Time (g_c+I1), s		37.3		25.6		21.1
Green Ext Time (p_c), s		12.1		4.1		20.7

Intersection Summary		
HCM 7th Control Delay, s/veh	21.6	
HCM 7th LOS	C	

Notes
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	367	138	1323	0	0	1266
Future Volume (veh/h)	367	138	1323	0	0	1266
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	0	0	1856
Adj Flow Rate, veh/h	267	276	1423	0	0	1361
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	0	0	3
Cap, veh/h	363	323	3278	0	0	3278
Arrive On Green	0.21	0.21	0.65	0.00	0.00	0.65
Sat Flow, veh/h	1767	1572	5400	0	0	5400
Grp Volume(v), veh/h	267	276	1423	0	0	1361
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	0	0	1689
Q Serve(g_s), s	14.9	17.8	14.5	0.0	0.0	13.6
Cycle Q Clear(g_c), s	14.9	17.8	14.5	0.0	0.0	13.6
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	363	323	3278	0	0	3278
V/C Ratio(X)	0.74	0.85	0.43	0.00	0.00	0.42
Avail Cap(c_a), veh/h	757	674	3278	0	0	3278
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	39.1	40.2	9.1	0.0	0.0	8.9
Incr Delay (d2), s/veh	2.9	6.5	0.4	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	7.4	4.7	0.0	0.0	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	42.0	46.7	9.5	0.0	0.0	9.3
LnGrp LOS	D	D	A			A
Approach Vol, veh/h	543		1423			1361
Approach Delay, s/veh	44.4		9.5			9.3
Approach LOS	D		A			A

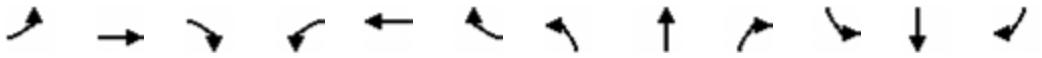
Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	78.3			78.3	26.7
Change Period (Y+Rc), s	10.4			* 10	5.1
Max Green Setting (Gmax), s	44.5			* 50	45.0
Max Q Clear Time (g_c+I1), s	16.5			15.6	19.8
Green Ext Time (p_c), s	23.7			27.1	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	15.1
HCM 7th LOS	B

Notes

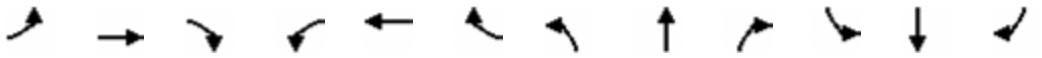
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	739	0	346	0	0	0	311	1394	0	0	2014	1045
Future Volume (vph)	739	0	346	0	0	0	311	1394	0	0	2014	1045
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0				6.5	6.5			6.5	6.5
Lane Util. Factor	0.94		1.00				0.97	0.91			0.91	1.00
Frpb, ped/bikes	1.00		0.99				1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00		1.00				1.00	1.00			1.00	1.00
Frt	1.00		0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	4942		1548				3400	5036			5036	1548
Flt Permitted	0.95		1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)	4942		1548				3400	5036			5036	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	803	0	376	0	0	0	338	1515	0	0	2189	1136
RTOR Reduction (vph)	0	0	287	0	0	0	0	0	0	0	0	282
Lane Group Flow (vph)	803	0	89	0	0	0	338	1515	0	0	2189	854
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm				Prot	NA		Prot	NA	Perm
Protected Phases	4				3		5	2		1	6	
Permitted Phases			4	3								6
Actuated Green, G (s)	26.7		26.7				16.8	73.7			50.4	50.4
Effective Green, g (s)	26.7		26.7				16.8	73.7			50.4	50.4
Actuated g/C Ratio	0.24		0.24				0.15	0.65			0.45	0.45
Clearance Time (s)	6.0		6.0				6.5	6.5			6.5	6.5
Vehicle Extension (s)	3.0		3.0				3.0	5.5			5.5	5.5
Lane Grp Cap (vph)	1168		366				505	3287			2248	691
v/s Ratio Prot	c0.16						c0.10	0.30			0.43	
v/s Ratio Perm			0.06									c0.55
v/c Ratio	0.69		0.24				0.67	0.46			0.97	1.24
Uniform Delay, d1	39.3		34.9				45.4	9.7			30.6	31.2
Progression Factor	1.00		1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2	1.7		0.3				3.4	0.3			13.5	118.2
Delay (s)	41.0		35.3				48.8	10.0			44.1	149.4
Level of Service	D		D				D	A			D	F
Approach Delay (s/veh)		39.2			0.0			17.1			80.1	
Approach LOS		D			A			B			F	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	54.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	112.9	Sum of lost time (s)	25.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



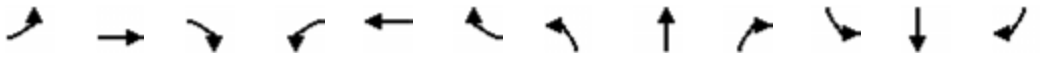
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	303	137	50	85	54	148	1499	116	191	1319	125
Future Volume (veh/h)	273	303	137	50	85	54	148	1499	116	191	1319	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	290	322	37	53	90	16	157	1595	67	203	1403	126
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	382	961	428	261	961	428	266	2489	760	266	2385	214
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.06	0.49	0.49	0.07	0.50	0.50
Sat Flow, veh/h	1275	3526	1569	1013	3526	1569	1767	5066	1547	1767	4726	424
Grp Volume(v), veh/h	290	322	37	53	90	16	157	1595	67	203	1003	526
Grp Sat Flow(s),veh/h/ln	1275	1763	1569	1013	1763	1569	1767	1689	1547	1767	1689	1773
Q Serve(g_s), s	26.8	8.9	2.1	5.4	2.3	0.9	5.3	28.5	2.8	6.9	25.5	25.5
Cycle Q Clear(g_c), s	29.1	8.9	2.1	14.3	2.3	0.9	5.3	28.5	2.8	6.9	25.5	25.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	382	961	428	261	961	428	266	2489	760	266	1704	895
V/C Ratio(X)	0.76	0.33	0.09	0.20	0.09	0.04	0.59	0.64	0.09	0.76	0.59	0.59
Avail Cap(c_a), veh/h	452	1155	514	317	1155	514	520	2489	760	497	1704	895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	35.5	33.1	41.3	33.1	32.6	17.8	23.1	16.5	21.9	21.3	21.3
Incr Delay (d2), s/veh	5.6	0.2	0.1	0.3	0.0	0.0	0.8	1.3	0.2	1.7	1.5	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	3.8	0.8	1.3	1.0	0.3	2.0	10.8	1.0	2.7	9.6	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.6	35.7	33.1	41.6	33.2	32.7	18.6	24.3	16.7	23.6	22.8	24.1
LnGrp LOS	D	D	C	D	C	C	B	C	B	C	C	C
Approach Vol, veh/h		649			159			1819			1732	
Approach Delay, s/veh		41.8			35.9			23.6			23.3	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.5	67.0		39.6	13.9	68.6		39.6				
Change Period (Y+Rc), s	6.5	7.0		6.3	6.5	7.0		6.3				
Max Green Setting (Gmax), s	25.0	60.0		40.0	25.0	60.0		40.0				
Max Q Clear Time (g_c+I1), s	8.9	30.5		31.1	7.3	27.5		16.3				
Green Ext Time (p_c), s	0.1	25.5		1.7	0.1	26.4		0.6				

Intersection Summary			
HCM 7th Control Delay, s/veh		26.6	
HCM 7th LOS		C	

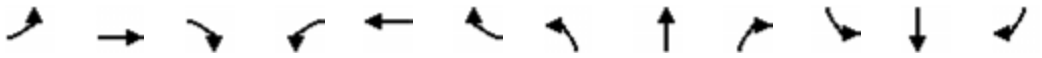
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	27	1334	0	0	0	0	1377	563	117	1727	0
Future Volume (vph)	176	27	1334	0	0	0	0	1377	563	117	1727	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8	4.0					4.0	4.0	4.8	9.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1690	1568					5036	2699	3400	5036	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1665	1690	1568					5036	2699	3400	5036	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	193	30	1466	0	0	0	0	1513	619	129	1898	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	110	113	1466	0	0	0	0	1513	619	129	1898	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free					NA	custom	Prot	NA	
Protected Phases	4	4						2 3		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	12.1	12.1	101.3					62.3	46.1	9.3	75.4	
Effective Green, g (s)	12.1	12.1	101.3					62.3	46.1	9.3	75.4	
Actuated g/C Ratio	0.12	0.12	1.00					0.62	0.46	0.09	0.74	
Clearance Time (s)	4.8	4.8							4.0	4.8	9.0	
Vehicle Extension (s)	3.0	3.0							5.0	3.0	5.0	
Lane Grp Cap (vph)	198	201	1568					3097	1228	312	3748	
v/s Ratio Prot	0.07	0.07						0.30		0.04	0.38	
v/s Ratio Perm			c0.93						0.23			
v/c Ratio	0.56	0.56	0.93					0.49	0.50	0.41	0.51	
Uniform Delay, d1	42.1	42.1	0.0					10.7	19.5	43.4	5.3	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	3.6	11.8					0.3	0.7	0.9	0.2	
Delay (s)	45.4	45.7	11.8					11.0	20.2	44.3	5.5	
Level of Service	D	D	B					B	C	D	A	
Approach Delay (s/veh)		16.2			0.0			13.7			8.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	21.6
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



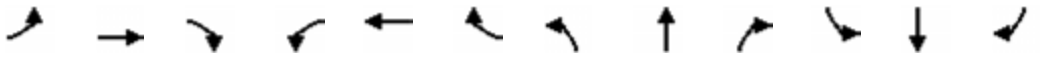
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	0	380	981	164	12	236	761	0	0	668	146
Future Volume (veh/h)	133	0	380	981	164	12	236	761	0	0	668	146
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856	1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h	148	0	36	1090	182	12	262	846	0	0	742	38
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	3	3	3	3	3	3	0	0	3	3
Cap, veh/h	0	0	0	1277	621	41	355	1373	0	0	1145	343
Arrive On Green	0.00	0.00	0.00	0.36	0.36	0.36	0.10	0.39	0.00	0.00	0.23	0.23
Sat Flow, veh/h		0		3534	1720	113	3428	3618	0	0	5233	1519
Grp Volume(v), veh/h		0.0		1090	0	194	262	846	0	0	742	38
Grp Sat Flow(s),veh/h/ln				1767	0	1833	1714	1763	0	0	1689	1519
Q Serve(g_s), s				22.8	0.0	6.1	6.0	15.5	0.0	0.0	10.7	1.6
Cycle Q Clear(g_c), s				22.8	0.0	6.1	6.0	15.5	0.0	0.0	10.7	1.6
Prop In Lane				1.00		0.06	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1277	0	662	355	1373	0	0	1145	343
V/C Ratio(X)				0.85	0.00	0.29	0.74	0.62	0.00	0.00	0.65	0.11
Avail Cap(c_a), veh/h				1542	0	800	898	1978	0	0	2842	852
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				23.7	0.0	18.3	34.9	19.7	0.0	0.0	28.2	24.6
Incr Delay (d2), s/veh				4.2	0.0	0.2	1.1	0.5	0.0	0.0	0.6	0.1
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.3	0.0	2.4	2.4	5.8	0.0	0.0	4.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				27.8	0.0	18.5	36.0	20.1	0.0	0.0	28.8	24.8
LnGrp LOS				C		B	D	C			C	C
Approach Vol, veh/h					1284			1108			780	
Approach Delay, s/veh					26.4			23.9			28.6	
Approach LOS					C			C			C	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	41.2	39.0	13.1	28.1
Change Period (Y+Rc), s	10.0	10.0	4.8	10.0
Max Green Setting (Gmax), s	45.0	35.0	21.0	45.0
Max Q Clear Time (g_c+I1), s	17.5	24.8	8.0	12.7
Green Ext Time (p_c), s	6.1	4.1	0.4	5.3

Intersection Summary	
HCM 7th Control Delay, s/veh	26.1
HCM 7th LOS	C

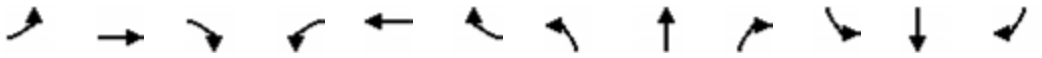
Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	599	34	102	341	66	13	1451	412	54	1062	138
Future Volume (vph)	307	599	34	102	341	66	13	1451	412	54	1062	138
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
Total Lost time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1688	3348		1688	3293		1688	3376	1510	1688	3376	1510
Flt Permitted	0.95	1.00		0.95	1.00		0.12	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1688	3348		1688	3293		215	3376	1510	101	3376	1510
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	334	651	37	111	371	72	14	1577	448	59	1154	150
RTOR Reduction (vph)	0	2	0	0	10	0	0	0	50	0	0	49
Lane Group Flow (vph)	334	686	0	111	433	0	14	1577	398	59	1154	101
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	34.0	48.5		15.2	29.7		70.1	70.1	70.1	70.1	70.1	70.1
Effective Green, g (s)	34.0	48.5		15.2	29.7		70.1	70.1	70.1	70.1	70.1	70.1
Actuated g/C Ratio	0.21	0.30		0.09	0.18		0.43	0.43	0.43	0.43	0.43	0.43
Clearance Time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Vehicle Extension (s)	3.0	5.0		2.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	349	987		156	594		91	1439	643	43	1439	643
v/s Ratio Prot	c0.20	c0.20		0.07	0.13			0.47			0.34	
v/s Ratio Perm							0.06		0.26	c0.58		0.07
v/c Ratio	0.96	0.69		0.71	0.73		0.15	1.10	0.62	1.37	0.80	0.16
Uniform Delay, d1	64.5	51.4		72.5	63.6		28.9	47.2	36.7	47.2	41.1	29.0
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	36.6	2.7		12.0	5.5		1.6	54.5	2.6	265.0	3.8	0.2
Delay (s)	101.0	54.1		84.5	69.0		30.6	101.6	39.3	312.1	44.9	29.2
Level of Service	F	D		F	E		C	F	D	F	D	C
Approach Delay (s/veh)		69.4			72.1			87.4			54.7	
Approach LOS		E			E			F			D	

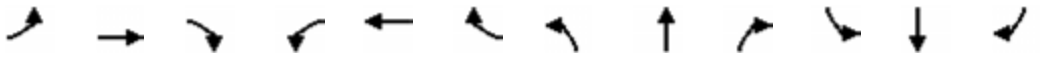
Intersection Summary			
HCM 2000 Control Delay (s/veh)	73.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	164.4	Sum of lost time (s)	30.6
Intersection Capacity Utilization	110.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	626	36	139	306	40	45	1357	239	74	1154	160
Future Volume (veh/h)	257	626	36	139	306	40	45	1357	239	74	1154	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	273	666	10	148	326	36	48	1444	237	79	1228	157
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	320	460	383	170	802	88	182	1667	273	104	1529	195
Arrive On Green	0.10	0.26	0.26	0.10	0.26	0.26	0.11	0.40	0.40	0.06	0.35	0.35
Sat Flow, veh/h	3302	1787	1490	1702	3081	337	1702	4211	690	1702	4369	558
Grp Volume(v), veh/h	273	666	10	148	178	184	48	1115	566	79	914	471
Grp Sat Flow(s),veh/h/ln	1651	1787	1490	1702	1698	1721	1702	1626	1649	1702	1626	1674
Q Serve(g_s), s	11.4	36.0	0.5	12.0	12.2	12.4	3.6	44.1	44.2	6.4	35.6	35.6
Cycle Q Clear(g_c), s	11.4	36.0	0.5	12.0	12.2	12.4	3.6	44.1	44.2	6.4	35.6	35.6
Prop In Lane	1.00		1.00	1.00		0.20	1.00		0.42	1.00		0.33
Lane Grp Cap(c), veh/h	320	460	383	170	442	448	182	1288	653	104	1138	586
V/C Ratio(X)	0.85	1.45	0.03	0.87	0.40	0.41	0.26	0.87	0.87	0.76	0.80	0.80
Avail Cap(c_a), veh/h	354	460	383	182	442	448	182	1288	653	195	1138	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.2	52.0	20.8	62.1	42.8	42.9	57.4	38.9	38.9	64.7	41.1	41.1
Incr Delay (d2), s/veh	16.8	214.1	0.1	32.2	1.6	1.7	3.5	8.0	14.5	10.6	6.0	11.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	43.3	0.3	6.5	5.1	5.3	1.7	18.3	19.8	3.1	14.9	16.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.1	266.1	20.8	94.3	44.4	44.5	60.9	46.8	53.4	75.3	47.2	52.3
LnGrp LOS	E	F	C	F	D	D	E	D	D	E	D	D
Approach Vol, veh/h		949			510			1729			1464	
Approach Delay, s/veh		209.7			59.0			49.4			50.3	
Approach LOS		F			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	43.0	21.0	55.0	20.6	43.4	14.6	61.4
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	36.0	14.0	49.0	15.0	36.0	16.0	47.0
Max Q Clear Time (g_c+I1), s	14.0	38.0	5.6	37.6	13.4	14.4	8.4	46.2
Green Ext Time (p_c), s	0.0	0.0	0.0	9.4	0.2	3.8	0.1	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	83.4
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	358	390	66	55	161	14	93	1276	128	14	926	323
Future Volume (veh/h)	358	390	66	55	161	14	93	1276	128	14	926	323
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	402	438	64	62	181	13	104	1434	91	16	1040	237
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	446	585	85	115	212	15	459	1910	852	70	1133	498
Arrive On Green	0.13	0.19	0.19	0.07	0.12	0.12	0.26	0.54	0.54	0.04	0.32	0.32
Sat Flow, veh/h	3428	3089	449	1767	1711	123	1767	3526	1572	1767	3526	1550
Grp Volume(v), veh/h	402	249	253	62	0	194	104	1434	91	16	1040	237
Grp Sat Flow(s),veh/h/ln	1714	1763	1775	1767	0	1833	1767	1763	1572	1767	1763	1550
Q Serve(g_s), s	16.2	18.7	18.9	4.8	0.0	14.5	6.5	44.0	3.9	1.2	39.8	11.8
Cycle Q Clear(g_c), s	16.2	18.7	18.9	4.8	0.0	14.5	6.5	44.0	3.9	1.2	39.8	11.8
Prop In Lane	1.00		0.25	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	446	334	336	115	0	228	459	1910	852	70	1133	498
V/C Ratio(X)	0.90	0.75	0.75	0.54	0.00	0.85	0.23	0.75	0.11	0.23	0.92	0.48
Avail Cap(c_a), veh/h	453	434	437	234	0	452	459	1910	852	240	1133	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.0	53.6	53.7	63.4	0.0	60.1	40.7	24.8	15.6	65.1	45.7	18.0
Incr Delay (d2), s/veh	20.6	5.0	5.3	3.9	0.0	8.7	1.1	2.8	0.3	1.6	13.1	3.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	8.6	8.8	2.2	0.0	7.2	2.9	18.0	1.4	0.6	18.9	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	80.6	58.6	59.0	67.3	0.0	68.8	41.9	27.6	15.9	66.8	58.8	21.2
LnGrp LOS	F	E	E	E		E	D	C	B	E	E	C
Approach Vol, veh/h		904			256			1629			1293	
Approach Delay, s/veh		68.5			68.4			27.8			52.0	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	32.0	42.4	51.0	23.7	22.9	11.6	81.8
Change Period (Y+Rc), s	5.5	5.5	6.0	6.0	5.5	5.5	6.0	6.0
Max Green Setting (Gmax), s	18.5	34.5	19.0	45.0	18.5	34.5	19.0	45.0
Max Q Clear Time (g_c+I1), s	6.8	20.9	8.5	41.8	18.2	16.5	3.2	46.0
Green Ext Time (p_c), s	0.1	2.3	0.1	2.8	0.1	0.9	0.0	0.0

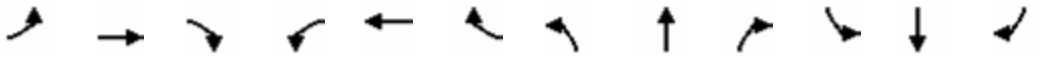
Intersection Summary	
HCM 7th Control Delay, s/veh	47.0
HCM 7th LOS	D

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	84	417	182	20	22	70	484	29	54	494	60	208
Future Volume (vph)	84	417	182	20	22	70	484	29	54	494	60	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Lane Util. Factor	1.00	0.95				1.00	0.91		1.00	0.95		1.00
Frpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Frt	1.00	0.95				1.00	0.99		1.00	0.98		0.85
Flt Protected	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (prot)	1752	3333				1752	4986		1752	3448		1568
Flt Permitted	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (perm)	1752	3333				1752	4986		1752	3448		1568
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	101	502	219	24	27	84	583	35	65	595	72	251
RTOR Reduction (vph)	0	1	0	0	0	0	3	0	0	0	0	181
Lane Group Flow (vph)	101	744	0	0	0	111	615	0	65	667	0	70
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA			Split	Split	NA		Split	NA		Prot
Protected Phases	3	3			7	7	7		5	5		5
Permitted Phases												
Actuated Green, G (s)	47.1	47.1				36.8	36.8		47.1	47.1		47.1
Effective Green, g (s)	47.1	47.1				36.8	36.8		47.1	47.1		47.1
Actuated g/C Ratio	0.18	0.18				0.14	0.14		0.18	0.18		0.18
Clearance Time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0				2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)	319	607				249	709		319	628		285
v/s Ratio Prot	0.06	c0.22				0.06	c0.12		0.04	c0.19		0.04
v/s Ratio Perm												
v/c Ratio	0.32	1.23				0.45	0.87		0.20	1.06		0.25
Uniform Delay, d1	91.8	105.8				101.6	108.5		89.8	105.8		90.6
Progression Factor	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.2	115.8				0.5	10.6		1.4	53.5		2.1
Delay (s)	92.0	221.6				102.0	119.1		91.3	159.3		92.6
Level of Service	F	F				F	F		F	F		F
Approach Delay (s/veh)		206.1					116.5			137.8		
Approach LOS		F					F			F		

Intersection Summary			
HCM 2000 Control Delay (s/veh)	146.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	258.6	Sum of lost time (s)	30.0
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	142	354	631	66	46	351	308	19
Future Volume (vph)	142	354	631	66	46	351	308	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0			6.0	6.0	
Lane Util. Factor		0.86	0.86			0.97	0.88	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	
Frt		1.00	0.99			1.00	0.85	
Flt Protected		0.95	0.99			0.95	1.00	
Satd. Flow (prot)		1507	4647			3400	2760	
Flt Permitted		0.95	0.99			0.95	1.00	
Satd. Flow (perm)		1507	4647			3400	2760	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	171	427	760	80	55	423	371	23
RTOR Reduction (vph)	0	0	3	0	0	0	70	0
Lane Group Flow (vph)	0	355	1080	0	0	478	324	0
Confl. Peds. (#/hr)				4				3
Confl. Bikes (#/hr)				1				2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	Split	NA		Prot	Prot	Prot	
Protected Phases	6	6	6		4	4	4	
Permitted Phases								
Actuated Green, G (s)		57.1	57.1			40.5	40.5	
Effective Green, g (s)		57.1	57.1			40.5	40.5	
Actuated g/C Ratio		0.22	0.22			0.16	0.16	
Clearance Time (s)		6.0	6.0			6.0	6.0	
Vehicle Extension (s)		4.0	4.0			2.5	2.5	
Lane Grp Cap (vph)		332	1026			532	432	
v/s Ratio Prot		c0.24	0.23			c0.14	0.12	
v/s Ratio Perm								
v/c Ratio		1.07	1.05			0.90	0.75	
Uniform Delay, d1		100.8	100.8			107.0	104.2	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		69.0	43.0			17.7	6.7	
Delay (s)		169.7	143.7			124.8	110.9	
Level of Service		F	F			F	F	
Approach Delay (s/veh)			150.1			118.5		
Approach LOS			F			F		

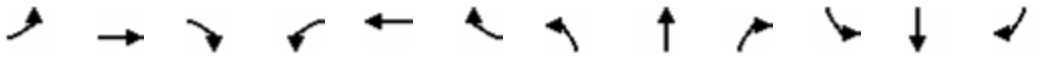
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	667	11	32	265	44	26	872	48	177	927	32
Future Volume (veh/h)	31	667	11	32	265	44	26	872	48	177	927	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	34	725	11	35	288	12	28	948	49	192	1008	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	188	910	14	107	475	396	71	1683	87	221	2015	66
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.04	0.49	0.49	0.13	0.58	0.58
Sat Flow, veh/h	1069	3553	54	716	1856	1545	1767	3408	176	1767	3484	114
Grp Volume(v), veh/h	34	360	376	35	288	12	28	490	507	192	510	531
Grp Sat Flow(s),veh/h/ln	1069	1763	1844	716	1856	1545	1767	1763	1821	1767	1763	1835
Q Serve(g_s), s	3.5	22.9	22.9	5.8	16.4	0.7	1.9	23.4	23.4	12.8	20.6	20.6
Cycle Q Clear(g_c), s	19.9	22.9	22.9	28.7	16.4	0.7	1.9	23.4	23.4	12.8	20.6	20.6
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.10	1.00		0.06
Lane Grp Cap(c), veh/h	188	451	472	107	475	396	71	871	899	221	1020	1061
V/C Ratio(X)	0.18	0.80	0.80	0.33	0.61	0.03	0.39	0.56	0.56	0.87	0.50	0.50
Avail Cap(c_a), veh/h	190	455	476	108	479	399	295	871	899	295	1020	1061
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.1	41.7	41.7	55.1	39.3	33.5	56.1	21.3	21.3	51.5	15.0	15.0
Incr Delay (d2), s/veh	0.5	9.5	9.1	1.8	2.2	0.0	3.5	2.6	2.5	18.6	1.8	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	11.2	11.7	1.1	7.7	0.3	0.9	10.1	10.5	6.8	8.5	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.5	51.2	50.8	56.9	41.5	33.5	59.6	23.9	23.8	70.2	16.8	16.7
LnGrp LOS	D	D	D	E	D	C	E	C	C	E	B	B
Approach Vol, veh/h		770			335			1025			1233	
Approach Delay, s/veh		50.9			42.8			24.9			25.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.0	64.3		35.7	9.9	74.4		35.7				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	54.0		31.0	20.0	54.0		31.0				
Max Q Clear Time (g_c+I1), s	14.8	25.4		24.9	3.9	22.6		30.7				
Green Ext Time (p_c), s	0.2	15.4		2.5	0.0	17.1		0.1				

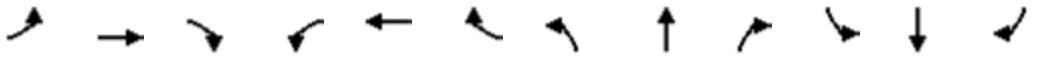
Intersection Summary												
HCM 7th Control Delay, s/veh			32.7									
HCM 7th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	1416	71	310	970	475	127	1259	501	355	1005	65
Future Volume (veh/h)	232	1416	71	310	970	475	127	1259	501	355	1005	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	234	1430	68	313	980	286	128	1272	311	359	1015	17
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	417	1442	69	360	1394	421	477	1474	457	377	1328	412
Arrive On Green	0.13	0.30	0.30	0.11	0.29	0.29	0.14	0.30	0.30	0.11	0.27	0.27
Sat Flow, veh/h	3302	4759	226	3302	4879	1472	3302	4879	1513	3302	4879	1513
Grp Volume(v), veh/h	234	977	521	313	980	286	128	1272	311	359	1015	17
Grp Sat Flow(s),veh/h/ln	1651	1626	1733	1651	1626	1472	1651	1626	1513	1651	1626	1513
Q Serve(g_s), s	9.3	41.9	41.9	13.1	25.1	17.4	4.8	34.5	25.3	15.1	26.8	1.2
Cycle Q Clear(g_c), s	9.3	41.9	41.9	13.1	25.1	17.4	4.8	34.5	25.3	15.1	26.8	1.2
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	417	985	525	360	1394	421	477	1474	457	377	1328	412
V/C Ratio(X)	0.56	0.99	0.99	0.87	0.70	0.68	0.27	0.86	0.68	0.95	0.76	0.04
Avail Cap(c_a), veh/h	417	985	525	401	1394	421	477	1499	465	377	1499	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	48.6	48.6	61.4	44.7	23.0	53.3	46.1	42.9	61.6	46.8	37.5
Incr Delay (d2), s/veh	1.7	26.8	37.3	16.8	3.0	8.6	0.3	6.1	5.9	33.8	3.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.1	27.5	30.8	10.3	15.5	11.1	3.6	20.6	15.2	12.6	16.4	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.2	75.4	85.9	78.2	47.7	31.6	53.6	52.2	48.8	95.4	50.0	37.6
LnGrp LOS	E	E	F	E	D	C	D	D	D	F	D	D
Approach Vol, veh/h		1732			1579			1711			1391	
Approach Delay, s/veh		76.4			50.8			51.7			61.6	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.2	44.1	23.7	46.0	22.0	48.3	21.3	48.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	43.0	17.0	40.0	16.0	43.0	17.0	40.0
Max Q Clear Time (g_c+I1), s	6.8	28.8	11.3	27.1	17.1	36.5	15.1	43.9
Green Ext Time (p_c), s	0.2	9.3	0.4	9.5	0.0	5.8	0.2	0.0

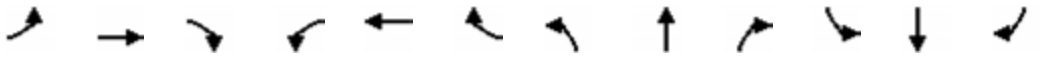
Intersection Summary	
HCM 7th Control Delay, s/veh	60.3
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	1027	142	607	482	19	104	1034	1013	99	974	77
Future Volume (vph)	203	1027	142	607	482	19	104	1034	1013	99	974	77
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1900	1830	1830	1900	1830
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Lane Util. Factor	0.86	0.86	1.00	0.94	0.95		0.97	0.95	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.99	
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)	1452	4579	1510	4760	3354		3274	3505	2658	3274	4971	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1452	4579	1510	4760	3354		3274	3505	2658	3274	4971	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	211	1070	148	632	502	20	108	1077	1055	103	1015	80
RTOR Reduction (vph)	0	0	96	0	2	0	0	0	0	0	5	0
Lane Group Flow (vph)	190	1091	52	632	520	0	108	1077	1055	103	1090	0
Confl. Peds. (#/hr)						6						6
Confl. Bikes (#/hr)						1						6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		7	7		5	2	7	1	6	
Permitted Phases			8						2			
Actuated Green, G (s)	46.3	46.3	46.3	30.8	30.8		15.6	50.2	81.0	10.8	45.4	
Effective Green, g (s)	46.3	46.3	46.3	30.8	30.8		15.6	50.2	81.0	10.8	45.4	
Actuated g/C Ratio	0.29	0.29	0.29	0.19	0.19		0.10	0.31	0.50	0.07	0.28	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5	3.0	3.0	4.5	
Lane Grp Cap (vph)	414	1307	431	904	637		315	1085	1328	218	1392	
v/s Ratio Prot	0.13	c0.24		0.13	c0.16		0.03	c0.31	0.15	0.03	c0.22	
v/s Ratio Perm			0.03						0.25			
v/c Ratio	0.46	0.83	0.12	0.70	0.82		0.34	0.99	0.79	0.47	0.78	
Uniform Delay, d1	47.6	54.3	42.8	61.3	62.9		68.5	55.8	33.6	72.9	53.8	
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	0.8	4.8	0.1	2.4	8.0		0.7	25.5	3.4	1.6	3.3	
Delay (s)	48.4	59.1	43.0	63.7	70.9		69.1	81.2	37.0	74.5	57.1	
Level of Service	D	E	D	E	E		E	F	D	E	E	
Approach Delay (s/veh)		56.0			67.0			59.8			58.6	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	60.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	162.1	Sum of lost time (s)	24.0
Intersection Capacity Utilization	93.7%	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												
Traffic Volume (veh/h)	124	180	65	229	321	159	114	1205	188	220	1250	142
Future Volume (veh/h)	124	180	65	229	321	159	114	1205	188	220	1250	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.95	1.00		0.95	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	133	194	21	246	345	30	127	1339	196	244	1389	150
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	219	921	96	298	784	332	219	1704	249	296	1879	203
Arrive On Green	0.06	0.20	0.20	0.09	0.22	0.22	0.06	0.38	0.38	0.17	0.81	0.81
Sat Flow, veh/h	3428	4619	481	3428	3526	1492	3428	4431	648	3428	4617	499
Grp Volume(v), veh/h	133	140	75	246	345	30	127	1020	515	244	1016	523
Grp Sat Flow(s),veh/h/ln	1714	1689	1723	1714	1763	1492	1714	1689	1702	1714	1689	1738
Q Serve(g_s), s	5.3	4.8	5.1	9.9	11.8	2.2	5.0	37.3	37.3	9.6	19.7	19.7
Cycle Q Clear(g_c), s	5.3	4.8	5.1	9.9	11.8	2.2	5.0	37.3	37.3	9.6	19.7	19.7
Prop In Lane	1.00		0.28	1.00		1.00	1.00		0.38	1.00		0.29
Lane Grp Cap(c), veh/h	219	673	343	298	784	332	219	1299	655	296	1374	708
V/C Ratio(X)	0.61	0.21	0.22	0.82	0.44	0.09	0.58	0.79	0.79	0.83	0.74	0.74
Avail Cap(c_a), veh/h	392	796	406	392	784	332	465	1299	655	465	1374	708
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87
Uniform Delay (d), s/veh	63.8	46.8	46.9	62.9	46.9	43.2	63.7	38.0	38.0	56.9	9.5	9.6
Incr Delay (d2), s/veh	2.7	0.4	0.9	10.5	1.1	0.3	2.4	4.8	9.2	5.9	3.1	6.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	2.0	2.3	4.7	5.2	0.8	2.3	15.9	16.9	4.0	4.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.5	47.2	47.8	73.3	48.0	43.5	66.1	42.8	47.2	62.9	12.7	15.5
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	B	B
Approach Vol, veh/h		348			621			1662			1783	
Approach Delay, s/veh		54.7			57.8			46.0			20.4	
Approach LOS		D			E			D			C	

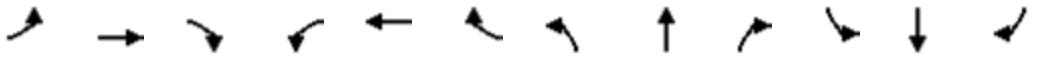
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.1	64.8	18.2	38.9	14.9	68.0	14.9	42.1
Change Period (Y+Rc), s	6.0	11.0	6.0	* 11	6.0	* 11	6.0	11.0
Max Green Setting (Gmax), s	19.0	43.0	16.0	* 33	19.0	* 45	16.0	28.0
Max Q Clear Time (g_c+I1), s	11.6	39.3	11.9	7.1	7.0	21.7	7.3	13.8
Green Ext Time (p_c), s	0.5	3.4	0.3	2.5	0.3	18.4	0.2	3.5

Intersection Summary	
HCM 7th Control Delay, s/veh	38.0
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



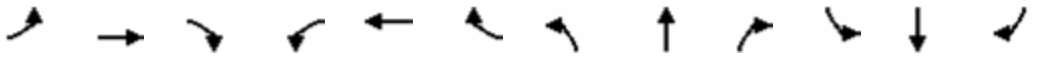
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	13	32	155	66	58	55	1313	36	62	1489	203
Future Volume (veh/h)	110	13	32	155	66	58	55	1313	36	62	1489	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	116	14	3	163	69	9	58	1382	37	65	1567	153
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	142	215	46	187	319	262	90	2675	72	116	2747	834
Arrive On Green	0.08	0.15	0.15	0.11	0.17	0.17	0.10	1.00	1.00	0.02	0.18	0.18
Sat Flow, veh/h	1767	1470	315	1767	1856	1523	1767	5069	136	1767	5066	1539
Grp Volume(v), veh/h	116	0	17	163	69	9	58	921	498	65	1567	153
Grp Sat Flow(s),veh/h/ln	1767	0	1785	1767	1856	1523	1767	1689	1828	1767	1689	1539
Q Serve(g_s), s	9.0	0.0	1.1	12.7	4.5	0.7	4.4	0.0	0.0	5.1	39.6	11.8
Cycle Q Clear(g_c), s	9.0	0.0	1.1	12.7	4.5	0.7	4.4	0.0	0.0	5.1	39.6	11.8
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	142	0	261	187	319	262	90	1782	965	116	2747	834
V/C Ratio(X)	0.82	0.00	0.07	0.87	0.22	0.03	0.64	0.52	0.52	0.56	0.57	0.18
Avail Cap(c_a), veh/h	245	0	535	232	543	446	101	1782	965	126	2747	834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.60	0.60	0.60	0.21	0.21	0.21
Uniform Delay (d), s/veh	63.4	0.0	51.5	61.6	49.8	48.3	61.6	0.0	0.0	66.5	42.6	31.2
Incr Delay (d2), s/veh	11.0	0.0	0.1	24.3	0.3	0.1	6.8	0.6	1.2	1.0	0.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.0	0.0	1.0	11.4	3.9	0.5	3.7	0.3	0.6	3.5	21.1	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	74.4	0.0	51.6	85.9	50.2	48.3	68.4	0.6	1.2	67.5	42.7	31.3
LnGrp LOS	E		D	F	D	D	E	A	A	E	D	C
Approach Vol, veh/h		133			241			1477			1785	
Approach Delay, s/veh		71.5			74.3			3.5			42.7	
Approach LOS		E			E			A			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	79.9	19.4	25.5	13.2	81.9	15.8	29.1
Change Period (Y+Rc), s	6.0	6.0	4.6	5.0	6.0	6.0	4.6	5.0
Max Green Setting (Gmax), s	10.0	48.0	18.4	42.0	8.0	50.0	19.4	41.0
Max Q Clear Time (g_c+I1), s	7.1	2.0	14.7	3.1	6.4	41.6	11.0	6.5
Green Ext Time (p_c), s	0.0	27.8	0.1	0.1	0.0	7.7	0.2	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	29.9
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	483	564	187	293	1225	171	421	977	127	153	1425	546
Future Volume (veh/h)	483	564	187	293	1225	171	421	977	127	153	1425	546
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	525	613	74	318	1332	54	458	1062	42	166	1549	525
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	570	1051	466	366	1471	453	441	1556	481	400	1496	643
Arrive On Green	0.11	0.30	0.30	0.11	0.29	0.29	0.04	0.10	0.10	0.12	0.30	0.30
Sat Flow, veh/h	4983	3526	1563	3428	5066	1561	3428	5066	1566	3428	5066	1569
Grp Volume(v), veh/h	525	613	74	318	1332	54	458	1062	42	166	1549	525
Grp Sat Flow(s),veh/h/ln	1661	1763	1563	1714	1689	1561	1714	1689	1566	1714	1689	1569
Q Serve(g_s), s	14.6	20.7	4.9	12.8	35.4	3.6	18.0	28.3	2.5	6.3	41.3	19.5
Cycle Q Clear(g_c), s	14.6	20.7	4.9	12.8	35.4	3.6	18.0	28.3	2.5	6.3	41.3	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	570	1051	466	366	1471	453	441	1556	481	400	1496	643
V/C Ratio(X)	0.92	0.58	0.16	0.87	0.91	0.12	1.04	0.68	0.09	0.41	1.04	0.82
Avail Cap(c_a), veh/h	570	1051	466	392	1484	457	441	1556	481	400	1496	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.4	41.8	36.2	61.6	47.8	36.5	67.0	56.3	23.5	57.4	49.3	18.6
Incr Delay (d2), s/veh	22.7	1.6	0.4	17.8	8.9	0.3	51.6	2.3	0.3	3.1	32.9	11.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	9.0	1.9	6.4	15.7	1.4	11.5	13.2	1.3	2.9	21.6	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.0	43.3	36.6	79.3	56.7	36.8	118.6	58.6	23.9	60.5	82.3	29.5
LnGrp LOS	F	D	D	E	E	D	F	E	C	E	F	C
Approach Vol, veh/h		1212			1704			1562			2240	
Approach Delay, s/veh		60.6			60.3			75.3			68.3	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.3	49.0	20.9	47.7	24.0	47.3	22.0	46.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	43.0	16.0	41.0	18.0	41.0	16.0	41.0
Max Q Clear Time (g_c+I1), s	8.3	30.3	14.8	22.7	20.0	43.3	16.6	37.4
Green Ext Time (p_c), s	0.3	8.9	0.1	7.6	0.0	0.0	0.0	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	66.5
HCM 7th LOS	E

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	353	1027	0	1940	1553	0
Future Volume (veh/h)	353	1027	0	1940	1553	0
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	0	1856	1856	0
Adj Flow Rate, veh/h	368	1060	0	2021	1618	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	659	1173	0	2523	2523	0
Arrive On Green	0.37	0.37	0.00	0.50	0.50	0.00
Sat Flow, veh/h	1767	3145	0	5400	5400	0
Grp Volume(v), veh/h	368	1060	0	2021	1618	0
Grp Sat Flow(s),veh/h/ln	1767	1572	0	1689	1689	0
Q Serve(g_s), s	19.8	38.3	0.0	40.0	28.3	0.0
Cycle Q Clear(g_c), s	19.8	38.3	0.0	40.0	28.3	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	659	1173	0	2523	2523	0
V/C Ratio(X)	0.56	0.90	0.00	0.80	0.64	0.00
Avail Cap(c_a), veh/h	736	1310	0	2523	2523	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	29.8	35.6	0.0	25.2	22.2	0.0
Incr Delay (d2), s/veh	0.7	8.5	0.0	2.8	1.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.3	22.3	0.0	22.2	16.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	30.5	44.1	0.0	27.9	23.5	0.0
LnGrp LOS	C	D		C	C	
Approach Vol, veh/h	1428			2021	1618	
Approach Delay, s/veh	40.6			27.9	23.5	
Approach LOS	D			C	C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	70.2	49.8	70.2
Change Period (Y+Rc), s	* 10	5.1	10.4
Max Green Setting (Gmax), s	* 60	50.0	54.5
Max Q Clear Time (g_c+I1), s	42.0	40.3	30.3
Green Ext Time (p_c), s	17.1	4.5	22.1

Intersection Summary	
HCM 7th Control Delay, s/veh	30.1
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	312	103	1441	834	0	1318
Future Volume (veh/h)	312	103	1441	834	0	1318
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	0	1856
Adj Flow Rate, veh/h	213	221	1501	824	0	1373
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	0	3
Cap, veh/h	292	260	2383	1110	0	3575
Arrive On Green	0.17	0.17	0.71	0.71	0.00	0.71
Sat Flow, veh/h	1767	1572	3544	1572	0	5400
Grp Volume(v), veh/h	213	221	1501	824	0	1373
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	1572	0	1689
Q Serve(g_s), s	13.7	16.4	28.3	38.9	0.0	13.1
Cycle Q Clear(g_c), s	13.7	16.4	28.3	38.9	0.0	13.1
Prop In Lane	1.00	1.00		1.00	0.00	
Lane Grp Cap(c), veh/h	292	260	2383	1110	0	3575
V/C Ratio(X)	0.73	0.85	0.63	0.74	0.00	0.38
Avail Cap(c_a), veh/h	810	721	2383	1110	0	3575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.6	48.7	9.4	10.9	0.0	7.1
Incr Delay (d2), s/veh	3.5	7.7	1.3	4.5	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	7.0	9.2	12.6	0.0	4.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	51.1	56.3	10.6	15.4	0.0	7.4
LnGrp LOS	D	E	B	B		A
Approach Vol, veh/h	434		2325			1373
Approach Delay, s/veh	53.7		12.3			7.4
Approach LOS	D		B			A

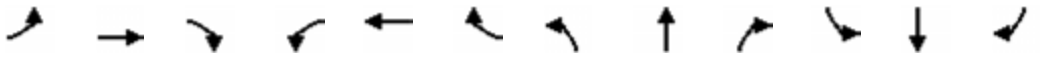
Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	95.1			95.1	24.9
Change Period (Y+Rc), s	10.4			* 10	5.1
Max Green Setting (Gmax), s	49.5			* 55	55.0
Max Q Clear Time (g_c+I1), s	40.9			15.1	18.4
Green Ext Time (p_c), s	8.6			30.9	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	15.1
HCM 7th LOS	B

Notes

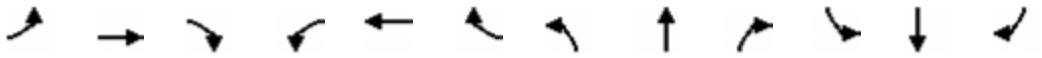
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1032	0	396	0	0	0	527	1934	0	4	1512	841
Future Volume (vph)	1032	0	396	0	0	0	527	1934	0	4	1512	841
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0				6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.94		1.00				0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes	1.00		0.99				1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00		1.00				1.00	1.00		1.00	1.00	1.00
Frt	1.00		0.85				1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95		1.00				0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	4942		1548				3400	5036		1752	5036	1548
Flt Permitted	0.95		1.00				0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	4942		1548				3400	5036		1752	5036	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1122	0	430	0	0	0	573	2102	0	4	1643	914
RTOR Reduction (vph)	0	0	270	0	0	0	0	0	0	0	0	325
Lane Group Flow (vph)	1122	0	160	0	0	0	573	2102	0	4	1643	589
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm				Prot	NA		Prot	NA	Perm
Protected Phases	4				3		5	2		1	6	
Permitted Phases			4	3								6
Actuated Green, G (s)	37.4		37.4				25.0	78.1		2.3	55.4	55.4
Effective Green, g (s)	37.4		37.4				25.0	78.1		2.3	55.4	55.4
Actuated g/C Ratio	0.27		0.27				0.18	0.57		0.02	0.40	0.40
Clearance Time (s)	6.0		6.0				6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0		3.0				3.0	5.5		3.0	5.5	5.5
Lane Grp Cap (vph)	1351		423				621	2875		29	2039	626
v/s Ratio Prot	c0.23						c0.17	0.42		0.00	0.33	
v/s Ratio Perm			0.10									c0.38
v/c Ratio	0.83		0.38				0.92	0.73		0.14	0.81	0.94
Uniform Delay, d1	46.7		40.3				55.0	21.6		66.3	35.9	39.1
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.5		0.6				19.4	1.3		2.2	2.8	23.1
Delay (s)	51.2		40.8				74.3	22.9		68.4	38.8	62.2
Level of Service	D		D				E	C		E	D	E
Approach Delay (s/veh)		48.3			0.0			33.9			47.2	
Approach LOS		D			A			C			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	42.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	136.8	Sum of lost time (s)	25.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



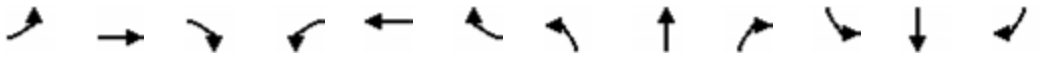
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	188	142	94	140	394	223	180	1518	25	47	1545	219
Future Volume (veh/h)	188	142	94	140	394	223	180	1518	25	47	1545	219
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	202	153	30	151	424	71	194	1632	14	51	1661	223
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	248	1091	486	387	1091	486	220	2556	781	194	2095	280
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.07	0.50	0.50	0.03	0.46	0.46
Sat Flow, veh/h	894	3526	1569	1190	3526	1569	1767	5066	1547	1767	4512	603
Grp Volume(v), veh/h	202	153	30	151	424	71	194	1632	14	51	1242	642
Grp Sat Flow(s),veh/h/ln	894	1763	1569	1190	1763	1569	1767	1689	1547	1767	1689	1738
Q Serve(g_s), s	27.8	4.0	1.7	13.6	12.2	4.2	7.3	30.4	0.6	1.9	40.2	40.6
Cycle Q Clear(g_c), s	40.0	4.0	1.7	17.6	12.2	4.2	7.3	30.4	0.6	1.9	40.2	40.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	248	1091	486	387	1091	486	220	2556	781	194	1568	807
V/C Ratio(X)	0.81	0.14	0.06	0.39	0.39	0.15	0.88	0.64	0.02	0.26	0.79	0.80
Avail Cap(c_a), veh/h	248	1091	486	387	1091	486	434	2556	781	479	1568	807
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.4	32.2	31.4	38.5	35.0	32.3	27.6	23.4	16.0	19.8	29.3	29.4
Incr Delay (d2), s/veh	17.9	0.0	0.0	0.5	0.2	0.1	4.5	1.2	0.0	0.3	4.2	8.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	1.7	0.7	3.9	5.1	1.6	3.0	11.5	0.2	0.8	16.1	17.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.3	32.2	31.4	39.0	35.2	32.4	32.1	24.6	16.0	20.1	33.5	37.4
LnGrp LOS	E	C	C	D	D	C	C	C	B	C	C	D
Approach Vol, veh/h		385			646			1840			1935	
Approach Delay, s/veh		51.6			35.8			25.3			34.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	72.2		46.3	15.9	67.0		46.3				
Change Period (Y+Rc), s	6.5	7.0		6.3	6.5	7.0		6.3				
Max Green Setting (Gmax), s	25.0	60.0		40.0	25.0	60.0		40.0				
Max Q Clear Time (g_c+I1), s	3.9	32.4		42.0	9.3	42.6		19.6				
Green Ext Time (p_c), s	0.0	24.0		0.0	0.1	16.5		2.5				

Intersection Summary		
HCM 7th Control Delay, s/veh		32.5
HCM 7th LOS		C

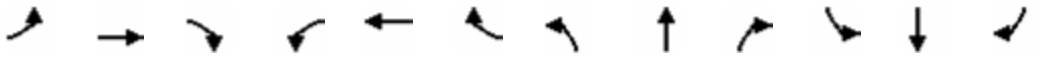
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	53	674	0	0	0	0	2003	592	252	1685	0
Future Volume (vph)	302	53	674	0	0	0	0	2003	592	252	1685	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8	4.0					4.0	4.0	4.8	9.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1693	1568					5036	2699	3400	5036	
Flt Permitted	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1665	1693	1568					5036	2699	3400	5036	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	328	58	733	0	0	0	0	2177	643	274	1832	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	190	196	733	0	0	0	0	2177	643	274	1832	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free					NA	custom	Prot	NA	
Protected Phases	4	4						2 3		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	18.7	18.7	113.6					62.5	46.3	14.8	81.1	
Effective Green, g (s)	18.7	18.7	113.6					62.5	46.3	14.8	81.1	
Actuated g/C Ratio	0.16	0.16	1.00					0.55	0.41	0.13	0.71	
Clearance Time (s)	4.8	4.8							4.0	4.8	9.0	
Vehicle Extension (s)	3.0	3.0							5.0	3.0	5.0	
Lane Grp Cap (vph)	274	278	1568					2770	1100	442	3595	
v/s Ratio Prot	0.11	c0.12						c0.43		0.08	0.36	
v/s Ratio Perm			c0.47						0.24			
v/c Ratio	0.69	0.71	0.47					0.79	0.58	0.62	0.51	
Uniform Delay, d1	44.7	44.8	0.0					20.2	26.2	46.7	7.3	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.4	7.9	1.0					1.8	1.2	2.6	0.2	
Delay (s)	52.1	52.7	1.0					22.0	27.4	49.3	7.5	
Level of Service	D	D	A					C	C	D	A	
Approach Delay (s/veh)		18.7			0.0			23.3			13.0	
Approach LOS		B			A			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



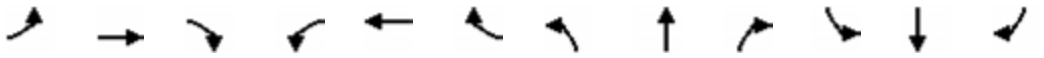
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	0	669	820	336	27	573	664	0	0	703	177
Future Volume (veh/h)	153	0	669	820	336	27	573	664	0	0	703	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856	1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h	159	0	331	854	350	27	597	692	0	0	732	39
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	0	3	3	3	3	3	3	0	0	3	3
Cap, veh/h	0	0	0	1064	511	39	681	1657	0	0	1097	329
Arrive On Green	0.00	0.00	0.00	0.30	0.30	0.30	0.20	0.47	0.00	0.00	0.22	0.22
Sat Flow, veh/h		0		3534	1699	131	3428	3618	0	0	5233	1519
Grp Volume(v), veh/h		0.0		854	0	377	597	692	0	0	732	39
Grp Sat Flow(s),veh/h/ln				1767	0	1830	1714	1763	0	0	1689	1519
Q Serve(g_s), s				19.5	0.0	15.9	14.8	11.3	0.0	0.0	11.6	1.8
Cycle Q Clear(g_c), s				19.5	0.0	15.9	14.8	11.3	0.0	0.0	11.6	1.8
Prop In Lane				1.00		0.07	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1064	0	551	681	1657	0	0	1097	329
V/C Ratio(X)				0.80	0.00	0.68	0.88	0.42	0.00	0.00	0.67	0.12
Avail Cap(c_a), veh/h				1416	0	733	824	1815	0	0	2609	782
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.1	0.0	26.9	34.0	15.3	0.0	0.0	31.3	27.5
Incr Delay (d2), s/veh				2.5	0.0	1.7	8.1	0.2	0.0	0.0	0.7	0.2
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.0	0.0	6.7	6.6	4.2	0.0	0.0	4.5	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				30.7	0.0	28.6	42.1	15.4	0.0	0.0	32.1	27.7
LnGrp LOS				C		C	D	B			C	C
Approach Vol, veh/h					1231			1289			771	
Approach Delay, s/veh					30.0			27.8			31.8	
Approach LOS					C			C			C	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	51.1	36.3	22.2	28.9
Change Period (Y+Rc), s	10.0	10.0	4.8	10.0
Max Green Setting (Gmax), s	45.0	35.0	21.0	45.0
Max Q Clear Time (g_c+I1), s	13.3	21.5	16.8	13.6
Green Ext Time (p_c), s	4.9	4.8	0.6	5.2

Intersection Summary	
HCM 7th Control Delay, s/veh	29.6
HCM 7th LOS	C

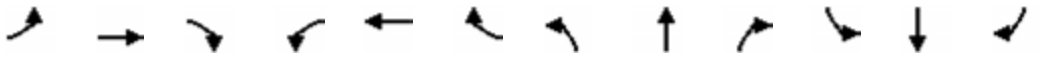
Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	404	16	343	716	69	17	1226	231	42	1440	484
Future Volume (vph)	135	404	16	343	716	69	17	1226	231	42	1440	484
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
Total Lost time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1688	3357		1688	3331		1688	3376	1510	1688	3376	1510
Flt Permitted	0.95	1.00		0.95	1.00		0.06	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1688	3357		1688	3331		101	3376	1510	131	3376	1510
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	139	416	16	354	738	71	18	1264	238	43	1485	499
RTOR Reduction (vph)	0	2	0	0	4	0	0	0	48	0	0	131
Lane Group Flow (vph)	139	430	0	354	805	0	18	1264	190	43	1485	368
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	19.6	36.4		34.2	51.0		70.3	70.3	70.3	70.3	70.3	70.3
Effective Green, g (s)	19.6	36.4		34.2	51.0		70.3	70.3	70.3	70.3	70.3	70.3
Actuated g/C Ratio	0.11	0.21		0.20	0.30		0.41	0.41	0.41	0.41	0.41	0.41
Clearance Time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Vehicle Extension (s)	3.0	5.0		2.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	192	712		336	990		41	1383	618	53	1383	618
v/s Ratio Prot	0.08	0.13		c0.21	c0.24			0.37			c0.44	
v/s Ratio Perm							0.18		0.13	0.33		0.24
v/c Ratio	0.72	0.60		1.05	0.81		0.44	0.91	0.31	0.81	1.07	0.60
Uniform Delay, d1	73.3	61.0		68.7	55.8		36.4	47.7	34.2	44.7	50.6	39.5
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	12.7	2.1		63.9	5.9		14.9	10.0	0.6	65.4	46.7	2.3
Delay (s)	86.0	63.2		132.5	61.7		51.3	57.7	34.8	110.1	97.3	41.8
Level of Service	F	E		F	E		D	E	C	F	F	D
Approach Delay (s/veh)		68.7			83.3			54.1			83.9	
Approach LOS		E			F			D			F	

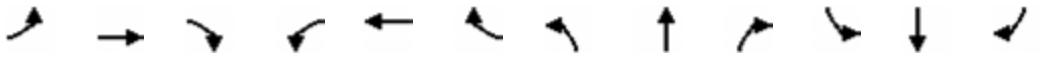
Intersection Summary			
HCM 2000 Control Delay (s/veh)	73.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	171.5	Sum of lost time (s)	30.6
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	258	402	55	343	771	91	41	1114	148	22	1306	242
Future Volume (veh/h)	258	402	55	343	771	91	41	1114	148	22	1306	242
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	266	414	14	354	795	87	42	1148	142	23	1346	236
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	325	444	370	182	792	87	185	1847	228	65	1457	255
Arrive On Green	0.10	0.25	0.25	0.11	0.26	0.26	0.11	0.42	0.42	0.04	0.35	0.35
Sat Flow, veh/h	3302	1787	1490	1702	3082	337	1702	4389	543	1702	4163	730
Grp Volume(v), veh/h	266	414	14	354	438	444	42	851	439	23	1052	530
Grp Sat Flow(s),veh/h/ln	1651	1787	1490	1702	1698	1721	1702	1626	1679	1702	1626	1640
Q Serve(g_s), s	11.1	31.7	0.7	15.0	36.0	36.0	3.2	28.7	28.8	1.8	43.5	43.5
Cycle Q Clear(g_c), s	11.1	31.7	0.7	15.0	36.0	36.0	3.2	28.7	28.8	1.8	43.5	43.5
Prop In Lane	1.00		1.00	1.00		0.20	1.00		0.32	1.00		0.44
Lane Grp Cap(c), veh/h	325	444	370	182	437	443	185	1369	706	65	1138	574
V/C Ratio(X)	0.82	0.93	0.04	1.94	1.00	1.00	0.23	0.62	0.62	0.36	0.92	0.92
Avail Cap(c_a), veh/h	354	460	383	182	437	443	185	1369	706	195	1138	574
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.9	51.5	21.4	62.5	52.0	52.0	57.0	31.8	31.8	65.7	43.7	43.7
Incr Delay (d2), s/veh	13.2	27.2	0.1	443.0	43.9	43.6	2.8	2.1	4.1	3.3	13.7	22.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	17.4	0.4	28.7	19.9	20.2	1.5	11.3	12.1	0.9	19.2	20.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.0	78.7	21.5	505.5	95.9	95.6	59.8	33.9	35.9	68.9	57.4	66.6
LnGrp LOS	E	E	C	F	F	F	E	C	D	E	E	E
Approach Vol, veh/h		694			1236			1332			1605	
Approach Delay, s/veh		76.1			213.1			35.4			60.6	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	41.8	21.2	55.0	20.8	43.0	11.3	64.9
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	36.0	14.0	49.0	15.0	36.0	16.0	47.0
Max Q Clear Time (g_c+I1), s	17.0	33.7	5.2	45.5	13.1	38.0	3.8	30.8
Green Ext Time (p_c), s	0.0	1.0	0.0	3.2	0.2	0.0	0.0	12.1

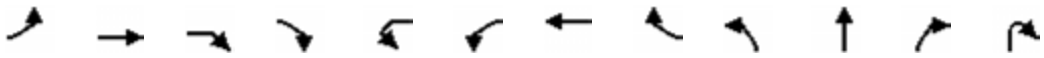
Intersection Summary	
HCM 7th Control Delay, s/veh	94.6
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	281	210	86	92	294	26	94	1005	81	10	1261	440
Future Volume (veh/h)	281	210	86	92	294	26	94	1005	81	10	1261	440
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	290	216	57	95	303	25	97	1036	42	10	1300	313
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	337	627	162	123	334	28	273	1807	806	49	1360	598
Arrive On Green	0.10	0.23	0.23	0.07	0.20	0.20	0.15	0.51	0.51	0.03	0.39	0.39
Sat Flow, veh/h	3428	2774	715	1767	1691	140	1767	3526	1572	1767	3526	1551
Grp Volume(v), veh/h	290	135	138	95	0	328	97	1036	42	10	1300	313
Grp Sat Flow(s),veh/h/ln	1714	1763	1727	1767	0	1830	1767	1763	1572	1767	1763	1551
Q Serve(g_s), s	11.7	9.0	9.4	7.4	0.0	24.5	6.9	28.4	1.9	0.8	50.2	21.7
Cycle Q Clear(g_c), s	11.7	9.0	9.4	7.4	0.0	24.5	6.9	28.4	1.9	0.8	50.2	21.7
Prop In Lane	1.00		0.41	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	337	398	390	123	0	361	273	1807	806	49	1360	598
V/C Ratio(X)	0.86	0.34	0.35	0.77	0.00	0.91	0.36	0.57	0.05	0.20	0.96	0.52
Avail Cap(c_a), veh/h	355	434	426	183	0	451	273	1807	806	177	1360	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.2	45.4	45.6	64.0	0.0	55.0	53.0	23.6	17.1	66.6	41.8	33.1
Incr Delay (d2), s/veh	18.2	0.5	0.5	11.0	0.0	19.3	3.6	1.3	0.1	2.0	15.9	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	4.0	4.1	3.7	0.0	13.1	3.3	11.6	0.7	0.4	23.9	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	80.4	45.9	46.1	75.0	0.0	74.2	56.5	24.9	17.2	68.6	57.8	36.3
LnGrp LOS	F	D	D	E		E	E	C	B	E	E	D
Approach Vol, veh/h		563			423			1175			1623	
Approach Delay, s/veh		63.7			74.4			27.2			53.7	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	37.1	27.6	60.0	19.3	33.1	9.9	77.8
Change Period (Y+Rc), s	5.5	5.5	6.0	6.0	5.5	5.5	6.0	6.0
Max Green Setting (Gmax), s	14.5	34.5	14.0	54.0	14.5	34.5	14.0	54.0
Max Q Clear Time (g_c+I1), s	9.4	11.4	8.9	52.2	13.7	26.5	2.8	30.4
Green Ext Time (p_c), s	0.1	1.4	0.1	1.7	0.1	1.1	0.0	14.2

Intersection Summary	
HCM 7th Control Delay, s/veh	49.3
HCM 7th LOS	D

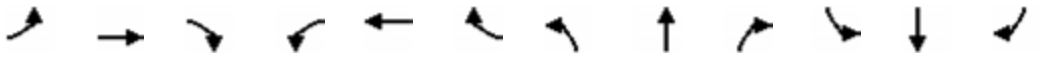


Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	203	595	172	29	37	53	357	32	34	840	55	126
Future Volume (vph)	203	595	172	29	37	53	357	32	34	840	55	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Lane Util. Factor	1.00	0.95				1.00	0.91		1.00	0.95		1.00
Frpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Frt	1.00	0.96				1.00	0.99		1.00	0.99		0.85
Flt Protected	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (prot)	1752	3372				1752	4964		1752	3472		1568
Flt Permitted	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (perm)	1752	3372				1752	4964		1752	3472		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	209	613	177	30	38	55	368	33	35	866	57	130
RTOR Reduction (vph)	0	1	0	0	0	0	4	0	0	0	0	68
Lane Group Flow (vph)	209	819	0	0	0	93	397	0	35	923	0	62
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA			Split	Split	NA		Split	NA		Prot
Protected Phases	3	3			7	7	7		5	5		5
Permitted Phases												
Actuated Green, G (s)	47.0	47.0				26.2	26.2		47.0	47.0		47.0
Effective Green, g (s)	47.0	47.0				26.2	26.2		47.0	47.0		47.0
Actuated g/C Ratio	0.19	0.19				0.10	0.10		0.19	0.19		0.19
Clearance Time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0				2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)	325	627				181	514		325	646		291
v/s Ratio Prot	0.12	c0.24				0.05	c0.08		0.02	c0.27		0.04
v/s Ratio Perm												
v/c Ratio	0.64	1.31				0.51	0.77		0.11	1.43		0.21
Uniform Delay, d1	95.0	102.8				107.2	110.3		85.4	102.8		87.2
Progression Factor	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	3.2	149.2				1.0	6.5		0.7	201.8		1.7
Delay (s)	98.3	252.0				108.2	116.7		86.1	304.6		88.8
Level of Service	F	F				F	F		F	F		F
Approach Delay (s/veh)		220.8					115.1			271.8		
Approach LOS		F					F			F		

Intersection Summary			
HCM 2000 Control Delay (s/veh)	170.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	252.6	Sum of lost time (s)	30.0
Intersection Capacity Utilization	125.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	148	378	531	41	83	457	388	12
Future Volume (vph)	148	378	531	41	83	457	388	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0			6.0	6.0	
Lane Util. Factor		0.86	0.86			0.97	0.88	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	
Frt		1.00	0.99			1.00	0.85	
Flt Protected		0.95	0.98			0.95	1.00	
Satd. Flow (prot)		1507	4647			3400	2760	
Flt Permitted		0.95	0.98			0.95	1.00	
Satd. Flow (perm)		1507	4647			3400	2760	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	153	390	547	42	86	471	400	12
RTOR Reduction (vph)	0	0	2	0	0	0	68	0
Lane Group Flow (vph)	0	278	852	0	0	557	344	0
Confl. Peds. (#/hr)				4				3
Confl. Bikes (#/hr)				1				2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	Split	NA		Prot	Prot	Prot	
Protected Phases	6	6	6		4	4	4	
Permitted Phases								
Actuated Green, G (s)		57.0	57.0			45.4	45.4	
Effective Green, g (s)		57.0	57.0			45.4	45.4	
Actuated g/C Ratio		0.23	0.23			0.18	0.18	
Clearance Time (s)		6.0	6.0			6.0	6.0	
Vehicle Extension (s)		4.0	4.0			2.5	2.5	
Lane Grp Cap (vph)		340	1048			611	496	
v/s Ratio Prot		c0.18	0.18			c0.16	0.12	
v/s Ratio Perm								
v/c Ratio		0.82	0.81			0.91	0.69	
Uniform Delay, d1		92.9	92.8			101.6	97.1	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		19.2	6.9			17.9	3.8	
Delay (s)		112.1	99.7			119.6	100.9	
Level of Service		F	F			F	F	
Approach Delay (s/veh)			102.7			111.6		
Approach LOS			F			F		

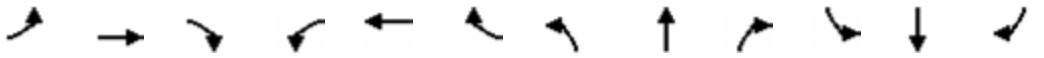
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	383	41	79	596	123	59	1024	66	141	1314	71
Future Volume (veh/h)	37	383	41	79	596	123	59	1024	66	141	1314	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	39	399	36	82	621	81	61	1067	65	147	1369	71
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	60	844	76	206	479	399	102	1744	106	176	1905	99
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.06	0.52	0.52	0.10	0.56	0.56
Sat Flow, veh/h	739	3265	293	945	1856	1545	1767	3373	205	1767	3410	176
Grp Volume(v), veh/h	39	214	221	82	621	81	61	558	574	147	706	734
Grp Sat Flow(s),veh/h/ln	739	1763	1795	945	1856	1545	1767	1763	1815	1767	1763	1824
Q Serve(g_s), s	0.0	12.3	12.5	9.6	31.0	4.9	4.0	26.8	26.8	9.8	35.4	35.6
Cycle Q Clear(g_c), s	31.0	12.3	12.5	22.1	31.0	4.9	4.0	26.8	26.8	9.8	35.4	35.6
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.11	1.00		0.10
Lane Grp Cap(c), veh/h	60	455	464	206	479	399	102	912	939	176	985	1019
V/C Ratio(X)	0.65	0.47	0.48	0.40	1.30	0.20	0.60	0.61	0.61	0.84	0.72	0.72
Avail Cap(c_a), veh/h	60	455	464	206	479	399	295	912	939	295	985	1019
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.0	37.6	37.6	47.0	44.5	34.8	55.2	20.5	20.5	53.1	19.5	19.5
Incr Delay (d2), s/veh	22.1	0.8	0.8	1.2	147.8	0.2	5.4	3.1	3.0	10.0	4.5	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	5.5	5.6	2.3	33.6	1.9	2.0	11.6	11.9	4.8	15.2	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	82.1	38.3	38.4	48.2	192.3	35.1	60.6	23.5	23.4	63.0	24.0	23.9
LnGrp LOS	F	D	D	D	F	D	E	C	C	E	C	C
Approach Vol, veh/h		474			784			1193			1587	
Approach Delay, s/veh		42.0			161.0			25.4			27.6	
Approach LOS		D			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.9	67.1		36.0	12.0	72.0		36.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	20.0	54.0		31.0	20.0	54.0		31.0				
Max Q Clear Time (g_c+I1), s	11.8	28.8		33.0	6.0	37.6		33.0				
Green Ext Time (p_c), s	0.2	16.2		0.0	0.1	13.8		0.0				

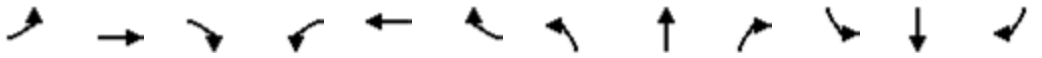
Intersection Summary												
HCM 7th Control Delay, s/veh			54.5									
HCM 7th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	936	94	335	1298	494	173	1302	304	387	1257	216
Future Volume (veh/h)	310	936	94	335	1298	494	173	1302	304	387	1257	216
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	323	975	89	349	1352	311	180	1356	110	403	1309	113
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	385	1247	114	395	1359	410	396	1487	461	425	1529	474
Arrive On Green	0.12	0.28	0.28	0.12	0.28	0.28	0.12	0.30	0.30	0.13	0.31	0.31
Sat Flow, veh/h	3302	4527	412	3302	4879	1471	3302	4879	1513	3302	4879	1513
Grp Volume(v), veh/h	323	700	364	349	1352	311	180	1356	110	403	1309	113
Grp Sat Flow(s),veh/h/ln	1651	1626	1687	1651	1626	1471	1651	1626	1513	1651	1626	1513
Q Serve(g_s), s	13.4	27.8	27.9	14.6	38.7	19.0	7.1	37.5	7.6	17.0	35.2	7.8
Cycle Q Clear(g_c), s	13.4	27.8	27.9	14.6	38.7	19.0	7.1	37.5	7.6	17.0	35.2	7.8
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	385	896	465	395	1359	410	396	1487	461	425	1529	474
V/C Ratio(X)	0.84	0.78	0.78	0.88	0.99	0.76	0.45	0.91	0.24	0.95	0.86	0.24
Avail Cap(c_a), veh/h	385	896	465	425	1359	410	396	1499	465	425	1568	486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.5	46.8	46.9	60.7	50.4	22.8	57.3	46.9	36.5	60.5	45.1	35.7
Incr Delay (d2), s/veh	15.0	6.7	12.5	18.4	23.2	12.4	0.8	9.4	0.7	31.0	5.6	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.4	17.5	19.0	11.3	25.2	12.4	5.3	22.5	5.2	13.6	20.8	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.5	53.5	59.3	79.0	73.6	35.2	58.2	56.2	37.2	91.5	50.7	36.4
LnGrp LOS	E	D	E	E	E	D	E	E	D	F	D	D
Approach Vol, veh/h		1387			2012			1646			1825	
Approach Delay, s/veh		60.2			68.6			55.2			58.8	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.8	49.9	22.3	45.0	24.0	48.7	22.8	44.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	45.0	16.0	39.0	18.0	43.0	18.0	37.0
Max Q Clear Time (g_c+I1), s	9.1	37.2	15.4	40.7	19.0	39.5	16.6	29.9
Green Ext Time (p_c), s	0.3	6.6	0.1	0.0	0.0	3.2	0.2	5.3

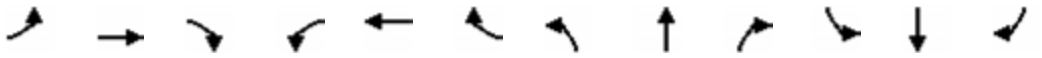
Intersection Summary	
HCM 7th Control Delay, s/veh	61.1
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	797	167	928	828	40	250	1056	949	151	1194	190
Future Volume (vph)	194	797	167	928	828	40	250	1056	949	151	1194	190
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1900	1830	1830	1900	1830
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Lane Util. Factor	0.86	0.86	1.00	0.94	0.95		0.97	0.95	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.98	
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)	1452	4578	1510	4760	3350		3274	3505	2658	3274	4916	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1452	4578	1510	4760	3350		3274	3505	2658	3274	4916	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	196	805	169	937	836	40	253	1067	959	153	1206	192
RTOR Reduction (vph)	0	0	136	0	2	0	0	0	0	0	15	0
Lane Group Flow (vph)	176	825	33	937	874	0	253	1067	959	153	1383	0
Confl. Peds. (#/hr)						6						6
Confl. Bikes (#/hr)						1						6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		7	7		5	2	7	1	6	
Permitted Phases			8						2			
Actuated Green, G (s)	27.5	27.5	27.5	35.5	35.5		13.5	41.0	76.5	12.0	39.5	
Effective Green, g (s)	27.5	27.5	27.5	35.5	35.5		13.5	41.0	76.5	12.0	39.5	
Actuated g/C Ratio	0.20	0.20	0.20	0.25	0.25		0.10	0.29	0.55	0.09	0.28	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5	3.0	3.0	4.5	
Lane Grp Cap (vph)	285	899	296	1207	849		315	1026	1452	280	1387	
v/s Ratio Prot	0.12	c0.18		0.20	c0.26		0.08	c0.30	0.17	0.05	c0.28	
v/s Ratio Perm			0.02						0.19			
v/c Ratio	0.62	0.92	0.11	0.78	1.03		0.80	1.04	0.66	0.55	1.00	
Uniform Delay, d1	51.4	55.1	46.2	48.6	52.3		61.9	49.5	22.5	61.4	50.2	
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	3.9	13.9	0.2	3.2	38.6		13.7	39.0	1.1	2.2	23.5	
Delay (s)	55.4	69.0	46.4	51.8	90.8		75.7	88.5	23.7	63.6	73.7	
Level of Service	E	E	D	D	F		E	F	C	E	E	
Approach Delay (s/veh)		63.7			70.6			59.8			72.7	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	66.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	98.4%	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												
Traffic Volume (veh/h)	118	380	127	258	168	205	147	1076	331	334	1030	58
Future Volume (veh/h)	118	380	127	258	168	205	147	1076	331	334	1030	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	131	422	94	287	187	65	163	1196	332	371	1144	60
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	219	1009	215	294	939	401	220	5272	1463	392	6845	359
Arrive On Green	0.06	0.24	0.24	0.09	0.27	0.27	0.06	1.00	1.00	0.23	1.00	1.00
Sat Flow, veh/h	3428	4124	880	3428	3526	1505	3428	3932	1091	3428	4922	258
Grp Volume(v), veh/h	131	342	174	287	187	65	163	1027	501	371	785	419
Grp Sat Flow(s),veh/h/ln	1714	1689	1627	1714	1763	1505	1714	1689	1647	1714	1689	1802
Q Serve(g_s), s	5.2	11.9	12.6	11.7	5.8	4.6	6.5	0.0	0.0	14.9	0.0	0.0
Cycle Q Clear(g_c), s	5.2	11.9	12.6	11.7	5.8	4.6	6.5	0.0	0.0	14.9	0.0	0.0
Prop In Lane	1.00		0.54	1.00		1.00	1.00		0.66	1.00		0.14
Lane Grp Cap(c), veh/h	219	826	398	294	939	401	220	4528	2208	392	4697	2507
V/C Ratio(X)	0.60	0.41	0.44	0.98	0.20	0.16	0.74	0.23	0.23	0.95	0.17	0.17
Avail Cap(c_a), veh/h	245	917	442	294	939	401	269	4528	2208	392	4697	2507
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.88	0.88
Uniform Delay (d), s/veh	63.8	44.4	44.7	63.9	39.8	39.4	64.4	0.0	0.0	53.6	0.0	0.0
Incr Delay (d2), s/veh	3.3	0.9	2.1	45.9	0.3	0.5	8.3	0.1	0.2	29.5	0.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	5.0	5.3	6.9	2.5	1.8	3.1	0.1	0.1	7.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.0	45.4	46.8	109.8	40.1	39.9	72.7	0.1	0.2	83.1	0.1	0.1
LnGrp LOS	E	D	D	F	D	D	E	A	A	F	A	A
Approach Vol, veh/h		647			539			1691			1575	
Approach Delay, s/veh		50.1			77.2			7.1			19.6	
Approach LOS		D			E			A			B	

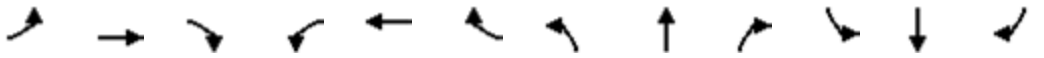
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	202.9	18.0	45.2	15.0	209.9	14.9	48.3
Change Period (Y+Rc), s	6.0	11.0	6.0	* 11	6.0	* 11	6.0	11.0
Max Green Setting (Gmax), s	16.0	45.0	12.0	* 38	11.0	* 55	10.0	35.0
Max Q Clear Time (g_c+I1), s	16.9	2.0	13.7	14.6	8.5	2.0	7.2	7.8
Green Ext Time (p_c), s	0.0	29.8	0.0	6.4	0.1	24.3	0.1	2.9

Intersection Summary	
HCM 7th Control Delay, s/veh	26.3
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



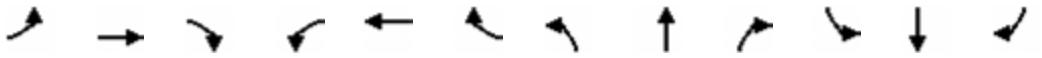
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	282	40	128	139	46	67	78	1414	38	26	1156	156
Future Volume (veh/h)	282	40	128	139	46	67	78	1414	38	26	1156	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	303	43	44	149	49	28	84	1520	40	28	1243	94
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	319	185	190	174	263	215	103	2414	64	84	2355	715
Arrive On Green	0.18	0.22	0.22	0.10	0.14	0.14	0.12	0.95	0.95	0.02	0.15	0.15
Sat Flow, veh/h	1767	828	847	1767	1856	1516	1767	5072	133	1767	5066	1538
Grp Volume(v), veh/h	303	0	87	149	49	28	84	1012	548	28	1243	94
Grp Sat Flow(s),veh/h/ln	1767	0	1674	1767	1856	1516	1767	1689	1828	1767	1689	1538
Q Serve(g_s), s	23.7	0.0	6.0	11.6	3.3	2.3	6.5	5.0	5.0	2.2	31.6	7.4
Cycle Q Clear(g_c), s	23.7	0.0	6.0	11.6	3.3	2.3	6.5	5.0	5.0	2.2	31.6	7.4
Prop In Lane	1.00		0.51	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	319	0	375	174	263	215	103	1608	870	84	2355	715
V/C Ratio(X)	0.95	0.00	0.23	0.86	0.19	0.13	0.81	0.63	0.63	0.33	0.53	0.13
Avail Cap(c_a), veh/h	319	0	532	263	530	433	114	1608	870	126	2355	715
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.51	0.51	0.51	0.65	0.65	0.65
Uniform Delay (d), s/veh	56.7	0.0	44.5	62.1	53.0	52.6	61.1	1.9	1.9	66.7	45.1	34.8
Incr Delay (d2), s/veh	36.9	0.0	0.3	15.9	0.3	0.3	18.8	1.0	1.8	1.5	0.6	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	20.1	0.0	4.6	10.1	2.8	1.6	5.4	1.8	2.3	1.8	19.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	93.6	0.0	44.8	78.0	53.3	52.8	79.9	2.8	3.7	68.2	45.7	35.1
LnGrp LOS	F		D	E	D	D	E	A	A	E	D	D
Approach Vol, veh/h		390			226			1644			1365	
Approach Delay, s/veh		82.7			69.5			7.0			45.4	
Approach LOS		F			E			A			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	72.6	18.4	36.3	14.2	71.1	29.9	24.8
Change Period (Y+Rc), s	6.0	6.0	4.6	5.0	6.0	6.0	4.6	5.0
Max Green Setting (Gmax), s	10.0	43.1	20.8	44.5	9.0	44.1	25.3	40.0
Max Q Clear Time (g_c+I1), s	4.2	7.0	13.6	8.0	8.5	33.6	25.7	5.3
Green Ext Time (p_c), s	0.0	26.1	0.2	0.5	0.0	8.5	0.0	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	33.5
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	834	1053	286	100	501	94	315	1202	186	263	1095	402
Future Volume (veh/h)	834	1053	286	100	501	94	315	1202	186	263	1095	402
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	887	1120	197	106	533	19	335	1279	69	280	1165	375
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	1284	1219	541	313	909	279	318	1484	459	338	1513	874
Arrive On Green	0.26	0.35	0.35	0.09	0.18	0.18	0.03	0.10	0.10	0.10	0.30	0.30
Sat Flow, veh/h	4983	3526	1564	3428	5066	1554	3428	5066	1566	3428	5066	1569
Grp Volume(v), veh/h	887	1120	197	106	533	19	335	1279	69	280	1165	375
Grp Sat Flow(s),veh/h/ln	1661	1763	1564	1714	1689	1554	1714	1689	1566	1714	1689	1569
Q Serve(g_s), s	22.5	42.7	13.2	4.1	13.5	1.4	13.0	34.8	4.2	11.2	29.3	6.0
Cycle Q Clear(g_c), s	22.5	42.7	13.2	4.1	13.5	1.4	13.0	34.8	4.2	11.2	29.3	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1284	1219	541	313	909	279	318	1484	459	338	1513	874
V/C Ratio(X)	0.69	0.92	0.36	0.34	0.59	0.07	1.05	0.86	0.15	0.83	0.77	0.43
Avail Cap(c_a), veh/h	1284	1234	548	318	1484	455	318	1484	459	338	1513	874
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	43.9	34.3	59.6	52.7	47.7	67.9	60.5	26.6	61.9	44.7	6.2
Incr Delay (d2), s/veh	3.1	11.7	1.1	0.6	1.7	0.3	59.5	5.6	0.6	20.3	3.8	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	20.0	5.1	1.8	5.8	0.6	8.6	16.6	2.3	5.8	12.6	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.0	55.7	35.4	60.3	54.3	48.0	127.4	66.0	27.1	82.2	48.6	7.8
LnGrp LOS	D	E	D	E	D	D	F	E	C	F	D	A
Approach Vol, veh/h		2204			658			1683			1820	
Approach Delay, s/veh		51.6			55.1			76.6			45.3	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.8	47.0	18.8	54.4	19.0	47.8	42.1	31.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	13.0	41.0	13.0	49.0	13.0	41.0	21.0	41.0
Max Q Clear Time (g_c+I1), s	13.2	36.8	6.1	44.7	15.0	31.3	24.5	15.5
Green Ext Time (p_c), s	0.0	3.6	0.1	3.7	0.0	8.3	0.0	7.2

Intersection Summary	
HCM 7th Control Delay, s/veh	56.8
HCM 7th LOS	E

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	250	715	0	2088	1415	0
Future Volume (veh/h)	250	715	0	2088	1415	0
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	0	1856	1856	0
Adj Flow Rate, veh/h	266	751	0	2221	1505	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	500	890	0	2884	2884	0
Arrive On Green	0.28	0.28	0.00	0.57	0.57	0.00
Sat Flow, veh/h	1767	3145	0	5400	5400	0
Grp Volume(v), veh/h	266	751	0	2221	1505	0
Grp Sat Flow(s),veh/h/ln	1767	1572	0	1689	1689	0
Q Serve(g_s), s	13.3	23.6	0.0	35.3	19.1	0.0
Cycle Q Clear(g_c), s	13.3	23.6	0.0	35.3	19.1	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	500	890	0	2884	2884	0
V/C Ratio(X)	0.53	0.84	0.00	0.77	0.52	0.00
Avail Cap(c_a), veh/h	757	1348	0	2884	2884	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.8	35.4	0.0	17.3	13.9	0.0
Incr Delay (d2), s/veh	0.9	3.2	0.0	2.1	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	9.3	0.0	12.7	6.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	32.6	38.6	0.0	19.4	14.5	0.0
LnGrp LOS	C	D		B	B	
Approach Vol, veh/h	1017			2221	1505	
Approach Delay, s/veh	37.1			19.4	14.5	
Approach LOS	D			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		70.2		34.8		70.2
Change Period (Y+Rc), s		* 10		5.1		10.4
Max Green Setting (Gmax), s		* 50		45.0		44.5
Max Q Clear Time (g_c+I1), s		37.3		25.6		21.1
Green Ext Time (p_c), s		12.1		4.1		20.7

Intersection Summary		
HCM 7th Control Delay, s/veh	21.6	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	367	138	1323	0	0	1266
Future Volume (veh/h)	367	138	1323	0	0	1266
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	0	0	1856
Adj Flow Rate, veh/h	259	268	1423	0	0	1361
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	0	0	3
Cap, veh/h	345	307	3421	0	0	3421
Arrive On Green	0.20	0.20	0.68	0.00	0.00	0.68
Sat Flow, veh/h	1767	1572	5400	0	0	5400
Grp Volume(v), veh/h	259	268	1423	0	0	1361
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	0	0	1689
Q Serve(g_s), s	16.6	19.8	15.2	0.0	0.0	14.3
Cycle Q Clear(g_c), s	16.6	19.8	15.2	0.0	0.0	14.3
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	345	307	3421	0	0	3421
V/C Ratio(X)	0.75	0.87	0.42	0.00	0.00	0.40
Avail Cap(c_a), veh/h	573	510	3421	0	0	3421
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	45.5	46.8	8.8	0.0	0.0	8.6
Incr Delay (d2), s/veh	3.3	8.9	0.4	0.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	8.5	5.1	0.0	0.0	4.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	48.8	55.7	9.2	0.0	0.0	9.0
LnGrp LOS	D	E	A			A
Approach Vol, veh/h	527		1423			1361
Approach Delay, s/veh	52.3		9.2			9.0
Approach LOS	D		A			A

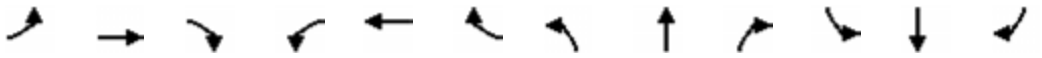
Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	91.4			91.4	28.6
Change Period (Y+Rc), s	10.4			* 10	5.1
Max Green Setting (Gmax), s	65.6			* 71	38.9
Max Q Clear Time (g_c+I1), s	17.2			16.3	21.8
Green Ext Time (p_c), s	37.4			39.2	1.6

Intersection Summary	
HCM 7th Control Delay, s/veh	16.0
HCM 7th LOS	B

Notes

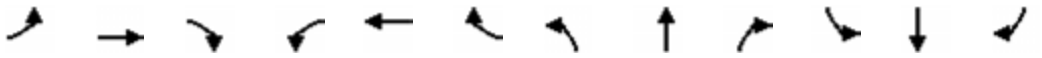
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	739	0	346	0	0	0	311	1394	0	0	2014	1045
Future Volume (vph)	739	0	346	0	0	0	311	1394	0	0	2014	1045
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0				6.5	6.5			6.5	6.5
Lane Util. Factor	0.94		1.00				0.97	0.91			0.91	1.00
Frpb, ped/bikes	1.00		0.99				1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00		1.00				1.00	1.00			1.00	1.00
Frt	1.00		0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	4942		1548				3400	5036			5036	1548
Flt Permitted	0.95		1.00				0.95	1.00			1.00	1.00
Satd. Flow (perm)	4942		1548				3400	5036			5036	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	803	0	376	0	0	0	338	1515	0	0	2189	1136
RTOR Reduction (vph)	0	0	260	0	0	0	0	0	0	0	0	320
Lane Group Flow (vph)	803	0	116	0	0	0	338	1515	0	0	2189	816
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm				Prot	NA		Prot	NA	Perm
Protected Phases	4				3		5	2		1	6	
Permitted Phases			4	3								6
Actuated Green, G (s)	26.5		26.5				12.5	74.7			55.7	55.7
Effective Green, g (s)	26.5		26.5				12.5	74.7			55.7	55.7
Actuated g/C Ratio	0.23		0.23				0.11	0.66			0.49	0.49
Clearance Time (s)	6.0		6.0				6.5	6.5			6.5	6.5
Vehicle Extension (s)	3.0		3.0				3.0	5.5			5.5	5.5
Lane Grp Cap (vph)	1151		360				373	3308			2467	758
v/s Ratio Prot	c0.16						c0.10	0.30			0.43	
v/s Ratio Perm			0.07									c0.53
v/c Ratio	0.70		0.32				0.91	0.46			0.89	1.08
Uniform Delay, d1	39.9		36.2				50.0	9.6			26.2	29.0
Progression Factor	1.00		1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2	1.9		0.5				24.7	0.2			4.7	55.3
Delay (s)	41.8		36.7				74.7	9.8			30.9	84.3
Level of Service	D		D				E	A			C	F
Approach Delay (s/veh)		40.2			0.0			21.7			49.1	
Approach LOS		D			A			C			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	113.7	Sum of lost time (s)	25.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



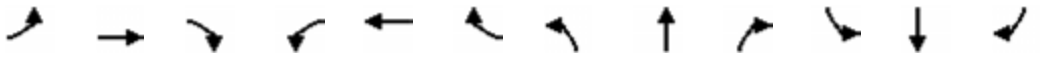
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	303	137	50	85	54	148	1499	116	191	1319	125
Future Volume (veh/h)	273	303	137	50	85	54	148	1499	116	191	1319	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	290	322	45	53	90	16	157	1595	53	203	1403	123
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	425	1018	453	299	1018	453	252	2178	665	239	2037	179
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.06	0.43	0.43	0.06	0.43	0.43
Sat Flow, veh/h	1275	3526	1569	1006	3526	1569	1767	5066	1547	1767	4736	415
Grp Volume(v), veh/h	290	322	45	53	90	16	157	1595	53	203	1000	526
Grp Sat Flow(s),veh/h/ln	1275	1763	1569	1006	1763	1569	1767	1689	1547	1767	1689	1775
Q Serve(g_s), s	19.3	6.4	1.9	3.9	1.7	0.7	4.5	23.6	1.8	5.5	21.6	21.6
Cycle Q Clear(g_c), s	21.0	6.4	1.9	10.4	1.7	0.7	4.5	23.6	1.8	5.5	21.6	21.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	425	1018	453	299	1018	453	252	2178	665	239	1452	763
V/C Ratio(X)	0.68	0.32	0.10	0.18	0.09	0.04	0.62	0.73	0.08	0.85	0.69	0.69
Avail Cap(c_a), veh/h	637	1606	715	466	1606	715	252	2178	665	239	1452	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	25.0	23.4	29.1	23.4	23.0	17.6	21.3	15.1	21.1	20.8	20.8
Incr Delay (d2), s/veh	1.4	0.1	0.1	0.2	0.0	0.0	3.5	2.2	0.2	23.2	2.7	5.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	2.5	0.7	0.9	0.7	0.2	1.8	8.6	0.6	3.6	8.0	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.5	25.2	23.5	29.3	23.4	23.0	21.1	23.6	15.4	44.3	23.5	25.8
LnGrp LOS	C	C	C	C	C	C	C	C	B	D	C	C
Approach Vol, veh/h		657			159			1805			1729	
Approach Delay, s/veh		28.3			25.3			23.1			26.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	45.7		32.3	12.0	45.7		32.3				
Change Period (Y+Rc), s	6.5	7.0		6.3	6.5	7.0		6.3				
Max Green Setting (Gmax), s	5.5	38.7		41.0	5.5	38.7		41.0				
Max Q Clear Time (g_c+I1), s	7.5	25.6		23.0	6.5	23.6		12.4				
Green Ext Time (p_c), s	0.0	12.1		2.2	0.0	13.4		0.6				

Intersection Summary			
HCM 7th Control Delay, s/veh		25.4	
HCM 7th LOS		C	

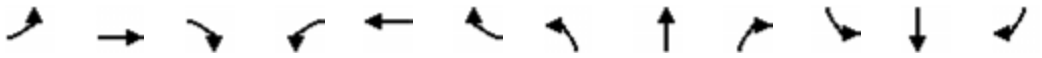
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	27	1334	0	0	0	0	1377	563	117	1727	0
Future Volume (vph)	176	27	1334	0	0	0	0	1377	563	117	1727	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8	4.0					4.0	4.0	4.8	9.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1690	1568					5036	2697	3400	5036	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1665	1690	1568					5036	2697	3400	5036	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	193	30	1466	0	0	0	0	1513	619	129	1898	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	110	113	1466	0	0	0	0	1513	619	129	1898	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free					NA	custom	Prot	NA	
Protected Phases	4	4						2 3		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	6.2	6.2	72.1					43.4	22.0	4.9	52.1	
Effective Green, g (s)	6.2	6.2	72.1					43.4	22.0	4.9	52.1	
Actuated g/C Ratio	0.09	0.09	1.00					0.60	0.31	0.07	0.72	
Clearance Time (s)	4.8	4.8							4.0	4.8	9.0	
Vehicle Extension (s)	3.0	3.0							5.0	3.0	5.0	
Lane Grp Cap (vph)	143	145	1568					3031	822	231	3639	
v/s Ratio Prot	0.07	0.07						0.30		0.04	0.38	
v/s Ratio Perm			c0.93						0.23			
v/c Ratio	0.77	0.78	0.93					0.50	0.75	0.56	0.52	
Uniform Delay, d1	32.2	32.3	0.0					8.2	22.6	32.6	4.5	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	21.7	22.8	11.8					0.3	4.7	2.9	0.3	
Delay (s)	53.9	55.0	11.8					8.4	27.3	35.5	4.7	
Level of Service	D	E	B					A	C	D	A	
Approach Delay (s/veh)		17.4			0.0			13.9			6.7	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	72.1	Sum of lost time (s)	21.6
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



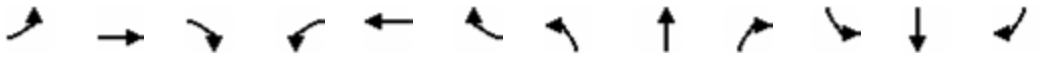
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	0	380	981	164	12	236	761	0	0	668	146
Future Volume (veh/h)	133	0	380	981	164	12	236	761	0	0	668	146
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856	1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h	148	0	200	1090	182	12	262	846	0	0	742	36
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	0	3	3	3	3	3	3	0	0	3	3
Cap, veh/h	0	0	0	1283	625	41	287	1294	0	0	1107	332
Arrive On Green	0.00	0.00	0.00	0.36	0.36	0.36	0.08	0.37	0.00	0.00	0.22	0.22
Sat Flow, veh/h		0		3534	1720	113	3428	3618	0	0	5233	1519
Grp Volume(v), veh/h		0.0		1090	0	194	262	846	0	0	742	36
Grp Sat Flow(s),veh/h/ln				1767	0	1833	1714	1763	0	0	1689	1519
Q Serve(g_s), s				21.0	0.0	5.6	5.6	14.8	0.0	0.0	9.9	1.4
Cycle Q Clear(g_c), s				21.0	0.0	5.6	5.6	14.8	0.0	0.0	9.9	1.4
Prop In Lane				1.00		0.06	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1283	0	666	287	1294	0	0	1107	332
V/C Ratio(X)				0.85	0.00	0.29	0.91	0.65	0.00	0.00	0.67	0.11
Avail Cap(c_a), veh/h				1526	0	792	287	1760	0	0	1777	533
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.7	0.0	16.8	33.7	19.5	0.0	0.0	26.5	23.2
Incr Delay (d2), s/veh				4.1	0.0	0.2	31.0	0.6	0.0	0.0	0.7	0.1
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.4	0.0	2.2	3.4	5.5	0.0	0.0	3.7	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				25.8	0.0	17.0	64.7	20.1	0.0	0.0	27.2	23.3
LnGrp LOS				C		B	E	C			C	C
Approach Vol, veh/h					1284			1108			778	
Approach Delay, s/veh					24.5			30.6			27.0	
Approach LOS					C			C			C	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	37.2	36.9	11.0	26.2
Change Period (Y+Rc), s	10.0	10.0	4.8	10.0
Max Green Setting (Gmax), s	37.0	32.0	6.2	26.0
Max Q Clear Time (g_c+I1), s	16.8	23.0	7.6	11.9
Green Ext Time (p_c), s	5.6	3.8	0.0	4.1

Intersection Summary	
HCM 7th Control Delay, s/veh	27.3
HCM 7th LOS	C

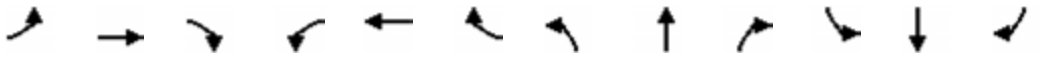
Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	599	34	102	341	66	13	1451	412	54	1062	138
Future Volume (vph)	307	599	34	102	341	66	13	1451	412	54	1062	138
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
Total Lost time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1688	3348		1688	3293		1688	3376	1510	1688	3376	1510
Flt Permitted	0.95	1.00		0.95	1.00		0.14	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1688	3348		1688	3293		240	3376	1510	112	3376	1510
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	334	651	37	111	371	72	14	1577	448	59	1154	150
RTOR Reduction (vph)	0	3	0	0	12	0	0	0	87	0	0	84
Lane Group Flow (vph)	334	685	0	111	431	0	14	1577	361	59	1154	66
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	24.4	38.1		12.0	25.7		63.5	63.5	63.5	63.5	63.5	63.5
Effective Green, g (s)	24.4	38.1		12.0	25.7		63.5	63.5	63.5	63.5	63.5	63.5
Actuated g/C Ratio	0.17	0.26		0.08	0.18		0.44	0.44	0.44	0.44	0.44	0.44
Clearance Time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Vehicle Extension (s)	3.0	5.0		2.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	285	884		140	586		105	1486	664	49	1486	664
v/s Ratio Prot	c0.20	c0.20		0.07	0.13			0.47			0.34	
v/s Ratio Perm							0.06		0.24	c0.53		0.04
v/c Ratio	1.17	0.77		0.79	0.74		0.13	1.06	0.54	1.20	0.78	0.10
Uniform Delay, d1	59.9	49.1		64.9	56.0		24.0	40.3	29.7	40.3	34.3	23.6
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	108.2	5.0		24.2	5.8		1.2	41.5	1.6	194.3	3.1	0.1
Delay (s)	168.1	54.1		89.1	61.9		25.2	81.8	31.3	234.6	37.4	23.8
Level of Service	F	D		F	E		C	F	C	F	D	C
Approach Delay (s/veh)		91.3			67.3			70.3			44.4	
Approach LOS		F			E			E			D	

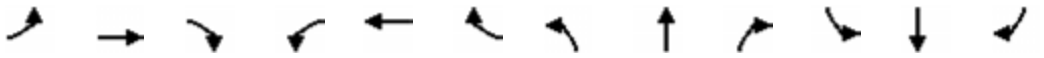
Intersection Summary			
HCM 2000 Control Delay (s/veh)	67.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	144.2	Sum of lost time (s)	30.6
Intersection Capacity Utilization	110.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	626	36	139	306	40	45	1357	239	74	1154	160
Future Volume (veh/h)	257	626	36	139	306	40	45	1357	239	74	1154	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	273	666	12	148	326	34	48	1444	237	79	1228	157
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	899	600	501	146	463	48	109	1396	229	104	1435	183
Arrive On Green	0.27	0.34	0.34	0.09	0.15	0.15	0.06	0.33	0.33	0.06	0.33	0.33
Sat Flow, veh/h	3302	1787	1491	1702	3100	321	1702	4211	690	1702	4368	558
Grp Volume(v), veh/h	273	666	12	148	177	183	48	1115	566	79	914	471
Grp Sat Flow(s),veh/h/ln	1651	1787	1491	1702	1698	1723	1702	1626	1648	1702	1626	1674
Q Serve(g_s), s	9.2	47.0	0.6	12.0	13.9	14.1	3.8	46.4	46.4	6.4	36.8	36.8
Cycle Q Clear(g_c), s	9.2	47.0	0.6	12.0	13.9	14.1	3.8	46.4	46.4	6.4	36.8	36.8
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.42	1.00		0.33
Lane Grp Cap(c), veh/h	899	600	501	146	254	257	109	1078	546	104	1069	550
V/C Ratio(X)	0.30	1.11	0.02	1.01	0.70	0.71	0.44	1.03	1.04	0.76	0.86	0.86
Avail Cap(c_a), veh/h	899	600	501	146	497	505	109	1078	546	109	1069	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.4	46.5	18.1	64.0	56.6	56.7	63.1	46.8	46.8	64.7	43.9	43.9
Incr Delay (d2), s/veh	0.2	70.7	0.1	78.4	9.2	9.5	12.3	36.5	48.1	24.7	8.8	15.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	32.3	0.3	8.2	6.4	6.6	2.0	23.6	25.6	3.5	15.8	17.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.6	117.2	18.2	142.4	65.8	66.2	75.3	83.3	94.9	89.4	52.7	59.5
LnGrp LOS	D	F	B	F	E	E	E	F	F	F	D	E
Approach Vol, veh/h		951			508			1729			1464	
Approach Delay, s/veh		94.0			88.2			86.9			56.9	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	54.0	15.0	52.0	45.1	27.9	14.6	52.4
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	47.0	9.0	46.0	18.0	41.0	9.0	46.0
Max Q Clear Time (g_c+I1), s	14.0	49.0	5.8	38.8	11.2	16.1	8.4	48.4
Green Ext Time (p_c), s	0.0	0.0	0.0	6.2	0.5	4.0	0.0	0.0

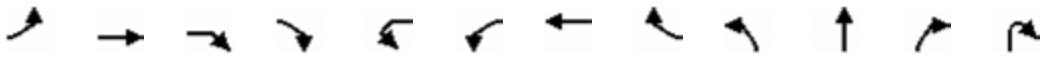
Intersection Summary	
HCM 7th Control Delay, s/veh	79.0
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	358	390	66	55	161	14	93	1276	128	14	926	323
Future Volume (veh/h)	358	390	66	55	161	14	93	1276	128	14	926	323
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	402	438	64	62	181	13	104	1434	74	16	1040	223
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	451	582	85	115	209	15	297	1913	853	70	1461	642
Arrive On Green	0.13	0.19	0.19	0.07	0.12	0.12	0.17	0.54	0.54	0.04	0.41	0.41
Sat Flow, veh/h	3428	3089	449	1767	1711	123	1767	3526	1572	1767	3526	1551
Grp Volume(v), veh/h	402	249	253	62	0	194	104	1434	74	16	1040	223
Grp Sat Flow(s),veh/h/ln	1714	1763	1775	1767	0	1833	1767	1763	1572	1767	1763	1551
Q Serve(g_s), s	16.2	18.7	18.9	4.8	0.0	14.5	7.3	43.9	3.2	1.2	34.3	13.8
Cycle Q Clear(g_c), s	16.2	18.7	18.9	4.8	0.0	14.5	7.3	43.9	3.2	1.2	34.3	13.8
Prop In Lane	1.00		0.25	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	451	332	335	115	0	224	297	1913	853	70	1461	642
V/C Ratio(X)	0.89	0.75	0.76	0.54	0.00	0.87	0.35	0.75	0.09	0.23	0.71	0.35
Avail Cap(c_a), veh/h	485	428	431	126	0	317	297	1913	853	151	1461	642
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.8	53.7	53.8	63.4	0.0	60.4	51.5	24.7	15.4	65.1	34.1	28.0
Incr Delay (d2), s/veh	17.6	5.3	5.6	3.9	0.0	16.3	3.2	2.8	0.2	1.6	3.0	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	8.7	8.9	2.2	0.0	7.7	3.4	17.9	1.2	0.6	14.8	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.4	59.0	59.4	67.3	0.0	76.6	54.7	27.4	15.6	66.8	37.0	29.5
LnGrp LOS	E	E	E	E		E	D	C	B	E	D	C
Approach Vol, veh/h		904			256			1612			1279	
Approach Delay, s/veh		67.3			74.4			28.7			36.1	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	31.9	29.5	64.0	23.9	22.6	11.6	82.0
Change Period (Y+Rc), s	5.5	5.5	6.0	6.0	5.5	5.5	6.0	6.0
Max Green Setting (Gmax), s	10.0	34.0	15.0	58.0	19.8	24.2	12.0	61.0
Max Q Clear Time (g_c+I1), s	6.8	20.9	9.3	36.3	18.2	16.5	3.2	45.9
Green Ext Time (p_c), s	0.0	2.3	0.1	14.7	0.3	0.5	0.0	12.8

Intersection Summary	
HCM 7th Control Delay, s/veh	42.5
HCM 7th LOS	D

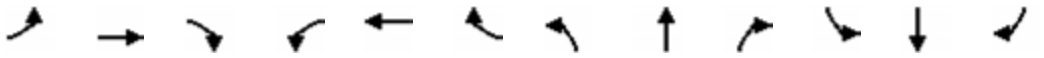


Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	84	417	182	20	22	70	484	29	54	494	60	208
Future Volume (vph)	84	417	182	20	22	70	484	29	54	494	60	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Lane Util. Factor	1.00	0.95				1.00	0.91		1.00	0.95		1.00
Frpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Frt	1.00	0.95				1.00	0.99		1.00	0.98		0.85
Flt Protected	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (prot)	1752	3333				1752	4986		1752	3448		1568
Flt Permitted	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (perm)	1752	3333				1752	4986		1752	3448		1568
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	101	502	219	24	27	84	583	35	65	595	72	251
RTOR Reduction (vph)	0	1	0	0	0	0	3	0	0	0	0	183
Lane Group Flow (vph)	101	744	0	0	0	111	615	0	65	667	0	68
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA			Split	Split	NA		Split	NA		Prot
Protected Phases	3	3			7	7	7		5	5		5
Permitted Phases												
Actuated Green, G (s)	57.0	57.0				31.0	31.0		51.0	51.0		51.0
Effective Green, g (s)	57.0	57.0				31.0	31.0		51.0	51.0		51.0
Actuated g/C Ratio	0.21	0.21				0.11	0.11		0.19	0.19		0.19
Clearance Time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0				2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)	363	690				197	562		324	639		290
v/s Ratio Prot	0.06	c0.22				0.06	c0.12		0.04	c0.19		0.04
v/s Ratio Perm												
v/c Ratio	0.28	1.08				0.56	1.09		0.20	1.04		0.23
Uniform Delay, d1	91.7	109.0				115.6	122.0		94.8	112.0		95.4
Progression Factor	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.2	57.4				2.2	66.5		1.4	47.5		1.9
Delay (s)	91.8	166.4				117.8	188.5		96.1	159.5		97.2
Level of Service	F	F				F	F		F	F		F
Approach Delay (s/veh)		157.5					177.7			139.4		
Approach LOS		F					F			F		

Intersection Summary			
HCM 2000 Control Delay (s/veh)	145.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	275.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	142	354	631	66	46	351	308	19
Future Volume (vph)	142	354	631	66	46	351	308	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0			6.0	6.0	
Lane Util. Factor		0.86	0.86			0.97	0.88	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	
Frt		1.00	0.99			1.00	0.85	
Flt Protected		0.95	0.99			0.95	1.00	
Satd. Flow (prot)		1507	4646			3400	2760	
Flt Permitted		0.95	0.99			0.95	1.00	
Satd. Flow (perm)		1507	4646			3400	2760	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	171	427	760	80	55	423	371	23
RTOR Reduction (vph)	0	0	3	0	0	0	72	0
Lane Group Flow (vph)	0	355	1080	0	0	478	322	0
Confl. Peds. (#/hr)				4				3
Confl. Bikes (#/hr)				1				2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	Split	NA		Prot	Prot	Prot	
Protected Phases	6	6	6		4	4	4	
Permitted Phases								
Actuated Green, G (s)		69.0	69.0			37.0	37.0	
Effective Green, g (s)		69.0	69.0			37.0	37.0	
Actuated g/C Ratio		0.25	0.25			0.13	0.13	
Clearance Time (s)		6.0	6.0			6.0	6.0	
Vehicle Extension (s)		4.0	4.0			2.5	2.5	
Lane Grp Cap (vph)		378	1165			457	371	
v/s Ratio Prot		c0.24	0.23			c0.14	0.12	
v/s Ratio Perm								
v/c Ratio		0.94	0.93			1.05	0.87	
Uniform Delay, d1		100.9	100.5			119.0	116.6	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		33.2	13.8			54.6	18.7	
Delay (s)		134.2	114.4			173.6	135.3	
Level of Service		F	F			F	F	
Approach Delay (s/veh)			119.2			156.3		
Approach LOS			F			F		

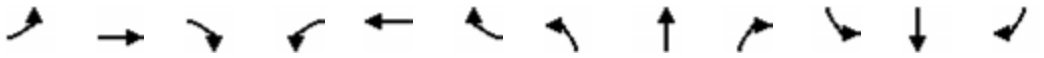
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	667	11	32	265	44	26	872	48	177	927	32
Future Volume (veh/h)	31	667	11	32	265	44	26	872	48	177	927	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	34	725	11	35	288	13	28	948	49	192	1008	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	194	928	14	111	485	404	71	1665	86	221	1997	65
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.04	0.49	0.49	0.13	0.57	0.57
Sat Flow, veh/h	1068	3553	54	716	1856	1545	1767	3408	176	1767	3484	114
Grp Volume(v), veh/h	34	360	376	35	288	13	28	490	507	192	510	531
Grp Sat Flow(s),veh/h/ln	1068	1763	1844	716	1856	1545	1767	1763	1821	1767	1763	1835
Q Serve(g_s), s	3.4	22.7	22.7	5.7	16.3	0.8	1.9	23.7	23.7	12.8	20.8	20.8
Cycle Q Clear(g_c), s	19.7	22.7	22.7	28.5	16.3	0.8	1.9	23.7	23.7	12.8	20.8	20.8
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.10	1.00		0.06
Lane Grp Cap(c), veh/h	194	460	482	111	485	404	71	861	890	221	1011	1052
V/C Ratio(X)	0.18	0.78	0.78	0.31	0.59	0.03	0.39	0.57	0.57	0.87	0.50	0.50
Avail Cap(c_a), veh/h	236	529	553	139	557	464	118	861	890	309	1011	1052
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	41.1	41.1	54.4	38.8	33.0	56.1	21.7	21.7	51.5	15.4	15.4
Incr Delay (d2), s/veh	0.4	6.5	6.3	1.6	1.3	0.0	3.5	2.7	2.6	16.8	1.8	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	10.8	11.2	1.1	7.5	0.3	0.9	10.3	10.6	6.7	8.6	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.8	47.7	47.4	55.9	40.1	33.1	59.6	24.5	24.4	68.3	17.2	17.1
LnGrp LOS	D	D	D	E	D	C	E	C	C	E	B	B
Approach Vol, veh/h		770			336			1025			1233	
Approach Delay, s/veh		47.5			41.5			25.4			25.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.0	63.6		36.3	9.9	73.8		36.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	21.0	48.0		36.0	8.0	61.0		36.0				
Max Q Clear Time (g_c+I1), s	14.8	25.7		24.7	3.9	22.8		30.5				
Green Ext Time (p_c), s	0.3	13.2		3.8	0.0	19.1		0.9				

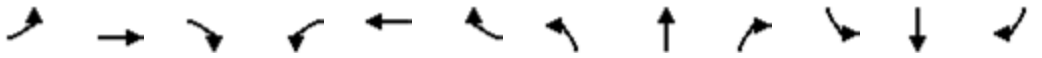
Intersection Summary			
HCM 7th Control Delay, s/veh		32.0	
HCM 7th LOS		C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	1416	71	310	970	475	127	1259	501	355	1005	65
Future Volume (veh/h)	232	1416	71	310	970	475	127	1259	501	355	1005	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	234	1430	68	313	980	303	128	1272	357	359	1015	17
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	298	1552	74	307	1603	485	424	1476	458	354	1372	425
Arrive On Green	0.09	0.33	0.33	0.09	0.33	0.33	0.13	0.30	0.30	0.11	0.28	0.28
Sat Flow, veh/h	3302	4760	226	3302	4879	1475	3302	4879	1513	3302	4879	1513
Grp Volume(v), veh/h	234	977	521	313	980	303	128	1272	357	359	1015	17
Grp Sat Flow(s),veh/h/ln	1651	1626	1734	1651	1626	1475	1651	1626	1513	1651	1626	1513
Q Serve(g_s), s	9.7	40.5	40.5	13.0	23.6	17.3	4.9	34.4	30.2	15.0	26.4	1.1
Cycle Q Clear(g_c), s	9.7	40.5	40.5	13.0	23.6	17.3	4.9	34.4	30.2	15.0	26.4	1.1
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	298	1061	565	307	1603	485	424	1476	458	354	1372	425
V/C Ratio(X)	0.78	0.92	0.92	1.02	0.61	0.63	0.30	0.86	0.78	1.01	0.74	0.04
Avail Cap(c_a), veh/h	298	1061	565	307	1603	485	424	1499	465	354	1603	497
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.3	45.4	45.4	63.5	39.5	20.2	55.3	46.1	44.6	62.5	45.7	36.6
Incr Delay (d2), s/veh	12.8	14.2	22.7	56.8	1.7	6.0	0.4	6.1	10.3	51.6	2.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	17.9	20.4	7.8	9.5	6.5	2.0	14.4	12.3	8.7	10.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.2	59.6	68.2	120.3	41.2	26.2	55.7	52.1	54.8	114.1	48.2	36.7
LnGrp LOS	E	E	E	F	D	C	E	D	D	F	D	D
Approach Vol, veh/h		1732			1596			1757			1391	
Approach Delay, s/veh		64.3			53.9			53.0			65.1	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	45.4	18.6	52.0	21.0	48.4	19.0	51.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	46.0	12.0	46.0	15.0	43.0	13.0	45.0
Max Q Clear Time (g_c+I1), s	6.9	28.4	11.7	25.6	17.0	36.4	15.0	42.5
Green Ext Time (p_c), s	0.1	10.9	0.0	13.8	0.0	5.9	0.0	2.3

Intersection Summary	
HCM 7th Control Delay, s/veh	58.8
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	1027	142	607	482	19	104	1034	1013	99	974	77
Future Volume (vph)	203	1027	142	607	482	19	104	1034	1013	99	974	77
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1900	1830	1830	1900	1830
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Lane Util. Factor	0.86	0.86	1.00	0.94	0.95		0.97	0.95	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.99	
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)	1452	4579	1510	4760	3354		3274	3505	2658	3274	4972	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1452	4579	1510	4760	3354		3274	3505	2658	3274	4972	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	211	1070	148	632	502	20	108	1077	1055	103	1015	80
RTOR Reduction (vph)	0	0	115	0	2	0	0	0	0	0	6	0
Lane Group Flow (vph)	190	1091	33	632	520	0	108	1077	1055	103	1089	0
Confl. Peds. (#/hr)						6						6
Confl. Bikes (#/hr)						1						6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		7	7		5	2	7	1	6	
Permitted Phases			8						2			
Actuated Green, G (s)	30.9	30.9	30.9	34.0	34.0		11.1	42.1	76.1	9.0	40.0	
Effective Green, g (s)	30.9	30.9	30.9	34.0	34.0		11.1	42.1	76.1	9.0	40.0	
Actuated g/C Ratio	0.22	0.22	0.22	0.24	0.24		0.08	0.30	0.54	0.06	0.29	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5	3.0	3.0	4.5	
Lane Grp Cap (vph)	320	1010	333	1156	814		259	1054	1444	210	1420	
v/s Ratio Prot	0.13	c0.24		0.13	0.15		0.03	c0.31	c0.18	0.03	c0.22	
v/s Ratio Perm			0.02						0.22			
v/c Ratio	0.59	1.08	0.10	0.55	0.64		0.42	1.02	0.73	0.49	0.77	
Uniform Delay, d1	48.9	54.6	43.5	46.3	47.5		61.4	49.0	24.2	63.3	45.7	
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	2.9	52.6	0.1	0.5	1.7		1.1	33.4	1.9	1.8	4.0	
Delay (s)	51.9	107.1	43.6	46.8	49.1		62.5	82.3	26.1	65.1	49.7	
Level of Service	D	F	D	D	D		E	F	C	E	D	
Approach Delay (s/veh)		93.2			47.9			54.9			51.1	
Approach LOS		F			D			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	61.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	93.7%	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												
Traffic Volume (veh/h)	124	180	65	229	321	159	114	1205	188	220	1250	142
Future Volume (veh/h)	124	180	65	229	321	159	114	1205	188	220	1250	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.95	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	133	194	19	246	345	33	127	1339	195	244	1389	149
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	219	1061	100	294	877	373	219	3456	503	288	3693	396
Arrive On Green	0.06	0.23	0.23	0.09	0.25	0.25	0.06	0.78	0.78	0.17	1.00	1.00
Sat Flow, veh/h	3428	4673	442	3428	3526	1500	3428	4446	647	3428	4629	497
Grp Volume(v), veh/h	133	138	75	246	345	33	127	1017	517	244	1013	525
Grp Sat Flow(s),veh/h/ln	1714	1689	1738	1714	1763	1500	1714	1689	1717	1714	1689	1749
Q Serve(g_s), s	5.3	4.6	4.9	9.9	11.4	2.4	5.0	13.4	13.4	9.7	0.0	0.0
Cycle Q Clear(g_c), s	5.3	4.6	4.9	9.9	11.4	2.4	5.0	13.4	13.4	9.7	0.0	0.0
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.38	1.00		0.28
Lane Grp Cap(c), veh/h	219	767	395	294	877	373	219	2625	1334	288	2694	1395
V/C Ratio(X)	0.61	0.18	0.19	0.84	0.39	0.09	0.58	0.39	0.39	0.85	0.38	0.38
Avail Cap(c_a), veh/h	245	917	472	318	907	386	245	2625	1334	318	2694	1395
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87
Uniform Delay (d), s/veh	63.8	43.6	43.7	63.0	43.8	40.4	63.7	5.0	5.0	57.3	0.0	0.0
Incr Delay (d2), s/veh	3.5	0.3	0.6	16.6	0.8	0.3	2.8	0.4	0.9	15.5	0.4	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	1.9	2.1	4.9	5.0	0.9	2.3	4.0	4.2	4.4	0.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.3	43.9	44.3	79.7	44.6	40.7	66.5	5.4	5.8	72.8	0.4	0.7
LnGrp LOS	E	D	D	E	D	D	E	A	A	E	A	A
Approach Vol, veh/h		346			624			1661			1782	
Approach Delay, s/veh		53.0			58.2			10.2			10.4	
Approach LOS		D			E			B			B	

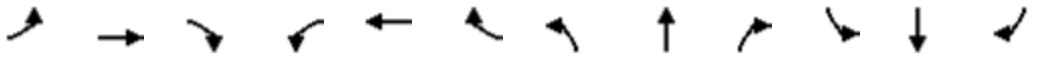
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.8	121.6	18.0	42.8	14.9	124.4	14.9	45.8
Change Period (Y+Rc), s	6.0	11.0	6.0	* 11	6.0	* 11	6.0	11.0
Max Green Setting (Gmax), s	13.0	47.0	13.0	* 38	10.0	* 55	10.0	36.0
Max Q Clear Time (g_c+I1), s	11.7	15.4	11.9	6.9	7.0	2.0	7.3	13.4
Green Ext Time (p_c), s	0.1	23.7	0.1	2.6	0.1	33.7	0.1	4.5

Intersection Summary	
HCM 7th Control Delay, s/veh	20.4
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



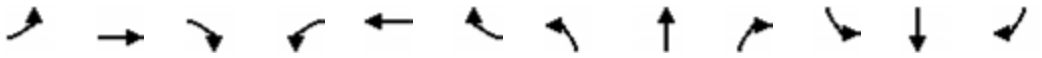
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	13	32	155	66	58	55	1313	36	62	1489	203
Future Volume (veh/h)	110	13	32	155	66	58	55	1313	36	62	1489	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	116	14	5	163	69	36	58	1382	37	65	1567	152
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	140	189	67	187	321	264	90	2675	72	116	2747	834
Arrive On Green	0.08	0.15	0.15	0.11	0.17	0.17	0.10	1.00	1.00	0.02	0.18	0.18
Sat Flow, veh/h	1767	1291	461	1767	1856	1523	1767	5069	136	1767	5066	1539
Grp Volume(v), veh/h	116	0	19	163	69	36	58	921	498	65	1567	152
Grp Sat Flow(s),veh/h/ln	1767	0	1752	1767	1856	1523	1767	1689	1828	1767	1689	1539
Q Serve(g_s), s	9.1	0.0	1.3	12.7	4.5	2.8	4.4	0.0	0.0	5.1	39.6	11.7
Cycle Q Clear(g_c), s	9.1	0.0	1.3	12.7	4.5	2.8	4.4	0.0	0.0	5.1	39.6	11.7
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	140	0	256	187	321	264	90	1782	965	116	2747	834
V/C Ratio(X)	0.83	0.00	0.07	0.87	0.21	0.14	0.64	0.52	0.52	0.56	0.57	0.18
Avail Cap(c_a), veh/h	221	0	526	232	569	467	101	1782	965	126	2747	834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.61	0.61	0.61	0.24	0.24	0.24
Uniform Delay (d), s/veh	63.5	0.0	51.6	61.6	49.7	49.0	61.6	0.0	0.0	66.5	42.6	31.1
Incr Delay (d2), s/veh	13.7	0.0	0.1	24.3	0.3	0.2	6.9	0.7	1.2	1.1	0.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	0.0	1.1	11.4	3.9	2.0	3.7	0.3	0.6	3.6	21.4	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.2	0.0	51.7	85.9	50.0	49.2	68.5	0.7	1.2	67.6	42.8	31.2
LnGrp LOS	E		D	F	D	D	E	A	A	E	D	C
Approach Vol, veh/h		135			268			1477			1784	
Approach Delay, s/veh		73.6			71.8			3.5			42.7	
Approach LOS		E			E			A			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	79.9	19.4	25.5	13.2	81.9	15.7	29.2
Change Period (Y+Rc), s	6.0	6.0	4.6	5.0	6.0	6.0	4.6	5.0
Max Green Setting (Gmax), s	10.0	48.0	18.4	42.0	8.0	50.0	17.5	42.9
Max Q Clear Time (g_c+I1), s	7.1	2.0	14.7	3.3	6.4	41.6	11.1	6.5
Green Ext Time (p_c), s	0.0	27.8	0.1	0.1	0.0	7.7	0.1	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	30.2
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	483	564	187	293	1225	171	421	977	127	153	1425	546
Future Volume (veh/h)	483	564	187	293	1225	171	421	977	127	153	1425	546
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	525	613	74	318	1332	54	458	1062	46	166	1549	525
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	534	1028	456	363	1471	453	441	1701	526	327	1532	643
Arrive On Green	0.11	0.29	0.29	0.11	0.29	0.29	0.04	0.11	0.11	0.10	0.30	0.30
Sat Flow, veh/h	4983	3526	1563	3428	5066	1561	3428	5066	1567	3428	5066	1569
Grp Volume(v), veh/h	525	613	74	318	1332	54	458	1062	46	166	1549	525
Grp Sat Flow(s),veh/h/ln	1661	1763	1563	1714	1689	1561	1714	1689	1567	1714	1689	1569
Q Serve(g_s), s	14.7	20.9	4.9	12.8	35.4	3.6	18.0	28.0	2.6	6.4	42.3	20.5
Cycle Q Clear(g_c), s	14.7	20.9	4.9	12.8	35.4	3.6	18.0	28.0	2.6	6.4	42.3	20.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	534	1028	456	363	1471	453	441	1701	526	327	1532	643
V/C Ratio(X)	0.98	0.60	0.16	0.88	0.91	0.12	1.04	0.62	0.09	0.51	1.01	0.82
Avail Cap(c_a), veh/h	534	1032	458	367	1484	457	441	1701	526	327	1532	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.4	42.5	36.9	61.7	47.8	36.5	67.0	53.8	21.8	60.2	48.8	19.1
Incr Delay (d2), s/veh	35.0	1.7	0.5	20.3	8.9	0.3	51.6	1.6	0.3	5.5	25.7	11.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	9.1	1.9	6.5	15.7	1.4	11.5	13.0	1.5	3.0	21.1	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	97.4	44.2	37.3	82.0	56.7	36.8	118.6	55.4	22.1	65.8	74.5	30.0
LnGrp LOS	F	D	D	F	E	D	F	E	C	E	F	C
Approach Vol, veh/h		1212			1704			1566			2240	
Approach Delay, s/veh		66.8			60.8			72.9			63.5	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.3	53.0	20.8	46.8	24.0	48.3	21.0	46.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	13.0	47.0	15.0	41.0	18.0	42.0	15.0	41.0
Max Q Clear Time (g_c+I1), s	8.4	30.0	14.8	22.9	20.0	44.3	16.7	37.4
Green Ext Time (p_c), s	0.2	11.2	0.0	7.5	0.0	0.0	0.0	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	65.6
HCM 7th LOS	E

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	353	1027	0	1940	1553	0
Future Volume (veh/h)	353	1027	0	1940	1553	0
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	0	1856	1856	0
Adj Flow Rate, veh/h	368	1064	0	2021	1618	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	671	1193	0	2489	2489	0
Arrive On Green	0.38	0.38	0.00	0.49	0.49	0.00
Sat Flow, veh/h	1767	3145	0	5400	5400	0
Grp Volume(v), veh/h	368	1064	0	2021	1618	0
Grp Sat Flow(s),veh/h/ln	1767	1572	0	1689	1689	0
Q Serve(g_s), s	19.6	38.1	0.0	40.5	28.6	0.0
Cycle Q Clear(g_c), s	19.6	38.1	0.0	40.5	28.6	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	671	1193	0	2489	2489	0
V/C Ratio(X)	0.55	0.89	0.00	0.81	0.65	0.00
Avail Cap(c_a), veh/h	794	1413	0	2489	2489	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	29.2	34.9	0.0	25.8	22.8	0.0
Incr Delay (d2), s/veh	0.7	6.7	0.0	3.0	1.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	15.4	0.0	16.0	11.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	29.9	41.6	0.0	28.8	24.1	0.0
LnGrp LOS	C	D		C	C	
Approach Vol, veh/h	1432			2021	1618	
Approach Delay, s/veh	38.6			28.8	24.1	
Approach LOS	D			C	C	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		69.4		50.6		69.4
Change Period (Y+Rc), s		* 10		5.1		10.4
Max Green Setting (Gmax), s		* 56		53.9		50.6
Max Q Clear Time (g_c+I1), s		42.5		40.1		30.6
Green Ext Time (p_c), s		12.8		5.5		18.4

Intersection Summary		
HCM 7th Control Delay, s/veh	30.1	
HCM 7th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	312	103	1441	834	0	1318
Future Volume (veh/h)	312	103	1441	834	0	1318
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	0	1856
Adj Flow Rate, veh/h	201	210	1501	793	0	1373
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	0	3
Cap, veh/h	272	242	2421	1127	0	3631
Arrive On Green	0.15	0.15	0.72	0.72	0.00	0.72
Sat Flow, veh/h	1767	1572	3544	1572	0	5400
Grp Volume(v), veh/h	201	210	1501	793	0	1373
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	1572	0	1689
Q Serve(g_s), s	13.0	15.6	27.2	34.6	0.0	12.6
Cycle Q Clear(g_c), s	13.0	15.6	27.2	34.6	0.0	12.6
Prop In Lane	1.00	1.00		1.00	0.00	
Lane Grp Cap(c), veh/h	272	242	2421	1127	0	3631
V/C Ratio(X)	0.74	0.87	0.62	0.70	0.00	0.38
Avail Cap(c_a), veh/h	367	326	2421	1127	0	3631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.5	49.6	8.7	9.7	0.0	6.6
Incr Delay (d2), s/veh	5.2	16.8	1.2	3.7	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	7.3	8.7	10.9	0.0	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	53.7	66.3	9.9	13.4	0.0	6.9
LnGrp LOS	D	E	A	B		A
Approach Vol, veh/h	411		2294			1373
Approach Delay, s/veh	60.1		11.1			6.9
Approach LOS	E		B			A

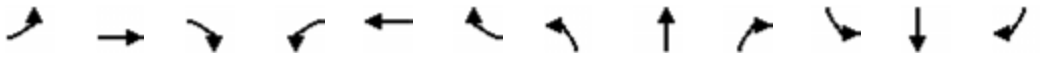
Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	96.4			96.4	23.6
Change Period (Y+Rc), s	10.4			* 10	5.1
Max Green Setting (Gmax), s	79.6			* 85	24.9
Max Q Clear Time (g_c+I1), s	36.6			14.6	17.6
Green Ext Time (p_c), s	42.0			47.3	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	14.6
HCM 7th LOS	B

Notes

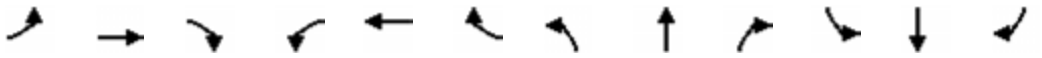
User approved volume balancing among the lanes for turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1032	0	396	0	0	0	527	1934	0	4	1512	841
Future Volume (vph)	1032	0	396	0	0	0	527	1934	0	4	1512	841
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0				6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.94		1.00				0.97	0.91		1.00	0.91	1.00
Frpb, ped/bikes	1.00		0.99				1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00		1.00				1.00	1.00		1.00	1.00	1.00
Frt	1.00		0.85				1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95		1.00				0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	4942		1548				3400	5036		1752	5036	1548
Flt Permitted	0.95		1.00				0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	4942		1548				3400	5036		1752	5036	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1122	0	430	0	0	0	573	2102	0	4	1643	914
RTOR Reduction (vph)	0	0	294	0	0	0	0	0	0	0	0	363
Lane Group Flow (vph)	1122	0	136	0	0	0	573	2102	0	4	1643	551
Confl. Peds. (#/hr)			1									
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		Perm				Prot	NA		Prot	NA	Perm
Protected Phases	4				3		5	2		1	6	
Permitted Phases			4	3								6
Actuated Green, G (s)	34.6		34.6				22.6	71.0		2.3	50.7	50.7
Effective Green, g (s)	34.6		34.6				22.6	71.0		2.3	50.7	50.7
Actuated g/C Ratio	0.27		0.27				0.18	0.56		0.02	0.40	0.40
Clearance Time (s)	6.0		6.0				6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0		3.0				3.0	5.5		3.0	5.5	5.5
Lane Grp Cap (vph)	1347		422				605	2817		31	2012	618
v/s Ratio Prot	c0.23						c0.17	0.42		0.00	0.33	
v/s Ratio Perm			0.09									c0.36
v/c Ratio	0.83		0.32				0.95	0.75		0.13	0.82	0.89
Uniform Delay, d1	43.4		36.8				51.6	21.1		61.3	34.0	35.5
Progression Factor	1.00		1.00				1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.6		0.4				24.0	1.4		1.9	3.1	16.4
Delay (s)	48.0		37.3				75.5	22.6		63.2	37.1	51.9
Level of Service	D		D				E	C		E	D	D
Approach Delay (s/veh)		45.0			0.0			33.9			42.4	
Approach LOS		D			A			C			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	126.9	Sum of lost time (s)	25.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



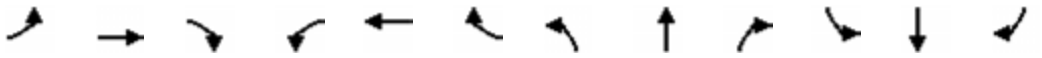
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	188	142	94	140	394	223	180	1518	25	47	1545	219
Future Volume (veh/h)	188	142	94	140	394	223	180	1518	25	47	1545	219
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	202	153	28	151	424	146	194	1632	13	51	1661	220
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	296	1254	558	462	1254	558	187	2061	629	177	1734	229
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.06	0.41	0.41	0.04	0.38	0.38
Sat Flow, veh/h	835	3526	1570	1192	3526	1570	1767	5066	1547	1767	4520	596
Grp Volume(v), veh/h	202	153	28	151	424	146	194	1632	13	51	1239	642
Grp Sat Flow(s),veh/h/ln	835	1763	1570	1192	1763	1570	1767	1689	1547	1767	1689	1739
Q Serve(g_s), s	23.2	2.9	1.2	9.7	8.7	6.6	6.1	28.0	0.5	1.7	35.5	35.8
Cycle Q Clear(g_c), s	32.0	2.9	1.2	12.6	8.7	6.6	6.1	28.0	0.5	1.7	35.5	35.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	296	1254	558	462	1254	558	187	2061	629	177	1295	667
V/C Ratio(X)	0.68	0.12	0.05	0.33	0.34	0.26	1.04	0.79	0.02	0.29	0.96	0.96
Avail Cap(c_a), veh/h	343	1455	648	530	1455	648	187	2061	629	199	1295	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.1	21.6	21.0	25.8	23.4	22.7	25.7	25.8	17.6	21.1	29.8	29.9
Incr Delay (d2), s/veh	3.9	0.0	0.0	0.3	0.1	0.2	76.8	3.2	0.1	0.3	16.6	26.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	1.1	0.4	2.6	3.4	2.3	6.4	10.7	0.2	0.7	15.9	18.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.1	21.6	21.0	26.1	23.6	22.9	102.5	29.0	17.7	21.4	46.4	56.6
LnGrp LOS	D	C	C	C	C	C	F	C	B	C	D	E
Approach Vol, veh/h		383			721			1839			1932	
Approach Delay, s/veh		30.8			24.0			36.7			49.1	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.3	47.4		41.6	12.6	45.1		41.6				
Change Period (Y+Rc), s	6.5	7.0		6.3	6.5	7.0		6.3				
Max Green Setting (Gmax), s	5.0	39.2		41.0	6.1	38.1		41.0				
Max Q Clear Time (g_c+I1), s	3.7	30.0		34.0	8.1	37.8		14.6				
Green Ext Time (p_c), s	0.0	8.6		1.0	0.0	0.3		2.9				

Intersection Summary	
HCM 7th Control Delay, s/veh	39.3
HCM 7th LOS	D

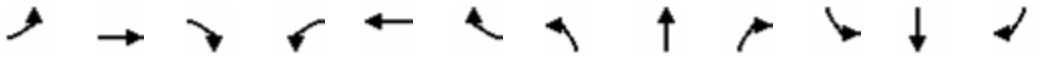
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	53	674	0	0	0	0	2003	592	252	1685	0
Future Volume (vph)	302	53	674	0	0	0	0	2003	592	252	1685	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	4.8	4.0					4.0	4.0	4.8	9.0	
Lane Util. Factor	0.95	0.95	1.00					0.91	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00					1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1693	1568					5036	2696	3400	5036	
Flt Permitted	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1665	1693	1568					5036	2696	3400	5036	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	328	58	733	0	0	0	0	2177	643	274	1832	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	190	196	733	0	0	0	0	2177	643	274	1832	0
Confl. Peds. (#/hr)									1			
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free					NA	custom	Prot	NA	
Protected Phases	4	4						2 3		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	11.0	11.0	79.8					43.0	22.0	8.2	55.0	
Effective Green, g (s)	11.0	11.0	79.8					43.0	22.0	8.2	55.0	
Actuated g/C Ratio	0.14	0.14	1.00					0.54	0.28	0.10	0.69	
Clearance Time (s)	4.8	4.8							4.0	4.8	9.0	
Vehicle Extension (s)	3.0	3.0							5.0	3.0	5.0	
Lane Grp Cap (vph)	229	233	1568					2713	743	349	3470	
v/s Ratio Prot	0.11	c0.12						c0.43		c0.08	0.36	
v/s Ratio Perm			0.47						c0.24			
v/c Ratio	0.83	0.84	0.47					0.80	0.87	0.79	0.53	
Uniform Delay, d1	33.5	33.5	0.0					14.9	27.5	34.9	6.1	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	21.3	23.0	1.0					2.1	11.2	11.0	0.3	
Delay (s)	54.8	56.6	1.0					17.0	38.7	46.0	6.3	
Level of Service	D	E	A					B	D	D	A	
Approach Delay (s/veh)		19.9			0.0			21.9			11.5	
Approach LOS		B			A			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	21.6
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



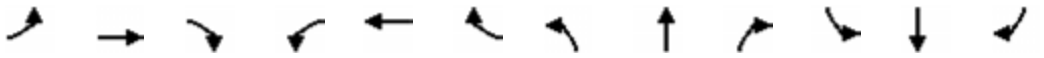
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	0	669	820	336	27	573	664	0	0	703	177
Future Volume (veh/h)	153	0	669	820	336	27	573	664	0	0	703	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	0	1856	1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h	159	0	213	854	350	26	597	692	0	0	732	36
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	0	3	3	3	3	3	3	0	0	3	3
Cap, veh/h	0	0	0	1059	511	38	687	1629	0	0	1036	311
Arrive On Green	0.00	0.00	0.00	0.30	0.30	0.30	0.20	0.46	0.00	0.00	0.20	0.20
Sat Flow, veh/h		0		3534	1704	127	3428	3618	0	0	5233	1518
Grp Volume(v), veh/h		0.0		854	0	376	597	692	0	0	732	36
Grp Sat Flow(s),veh/h/ln				1767	0	1831	1714	1763	0	0	1689	1518
Q Serve(g_s), s				18.7	0.0	15.2	14.2	11.0	0.0	0.0	11.3	1.6
Cycle Q Clear(g_c), s				18.7	0.0	15.2	14.2	11.0	0.0	0.0	11.3	1.6
Prop In Lane				1.00		0.07	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1059	0	549	687	1629	0	0	1036	311
V/C Ratio(X)				0.81	0.00	0.69	0.87	0.42	0.00	0.00	0.71	0.12
Avail Cap(c_a), veh/h				1347	0	698	866	2154	0	0	1527	458
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				27.1	0.0	25.9	32.5	15.1	0.0	0.0	31.0	27.2
Incr Delay (d2), s/veh				2.9	0.0	2.0	6.7	0.2	0.0	0.0	0.9	0.2
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.7	0.0	6.4	6.2	4.0	0.0	0.0	4.4	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				30.1	0.0	27.9	39.2	15.3	0.0	0.0	31.9	27.4
LnGrp LOS				C		C	D	B			C	C
Approach Vol, veh/h					1230			1289			768	
Approach Delay, s/veh					29.4			26.4			31.7	
Approach LOS					C			C			C	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		48.8		35.2	21.6	27.2						
Change Period (Y+Rc), s		10.0		10.0	4.8	10.0						
Max Green Setting (Gmax), s		51.3		32.0	21.2	25.3						
Max Q Clear Time (g_c+I1), s		13.0		20.7	16.2	13.3						
Green Ext Time (p_c), s		5.0		4.3	0.7	3.7						

Intersection Summary												
HCM 7th Control Delay, s/veh			28.7									
HCM 7th LOS			C									

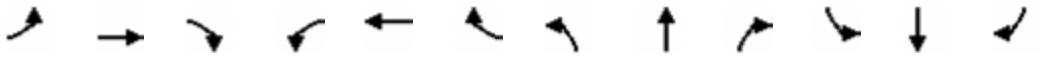
Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	404	16	343	716	69	17	1226	231	42	1440	484
Future Volume (vph)	135	404	16	343	716	69	17	1226	231	42	1440	484
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830	1830
Total Lost time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1688	3357		1688	3331		1688	3376	1510	1688	3376	1510
Flt Permitted	0.95	1.00		0.95	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1688	3357		1688	3331		119	3376	1510	146	3376	1510
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	139	416	16	354	738	71	18	1264	238	43	1485	499
RTOR Reduction (vph)	0	2	0	0	5	0	0	0	92	0	0	188
Lane Group Flow (vph)	139	430	0	354	804	0	18	1264	146	43	1485	311
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	13.3	25.9		28.4	41.0		59.5	59.5	59.5	59.5	59.5	59.5
Effective Green, g (s)	13.3	25.9		28.4	41.0		59.5	59.5	59.5	59.5	59.5	59.5
Actuated g/C Ratio	0.09	0.18		0.20	0.28		0.41	0.41	0.41	0.41	0.41	0.41
Clearance Time (s)	5.6	12.5		5.6	12.5		12.5	12.5	12.5	12.5	12.5	12.5
Vehicle Extension (s)	3.0	5.0		2.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	155	602		331	945		49	1391	622	60	1391	622
v/s Ratio Prot	0.08	0.13		c0.21	c0.24			0.37			c0.44	
v/s Ratio Perm							0.15		0.10	0.29		0.21
v/c Ratio	0.90	0.71		1.07	0.85		0.37	0.91	0.24	0.72	1.07	0.50
Uniform Delay, d1	64.9	55.8		58.0	48.8		29.4	39.9	27.6	35.4	42.5	31.4
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	43.1	5.0		69.1	8.1		9.5	9.4	0.4	39.9	44.4	1.3
Delay (s)	108.0	60.8		127.1	56.9		38.9	49.3	28.0	75.3	86.9	32.8
Level of Service	F	E		F	E		D	D	C	E	F	C
Approach Delay (s/veh)		72.3			78.3			45.9			73.3	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	66.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	144.4	Sum of lost time (s)	30.6
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	258	402	55	343	771	91	41	1114	148	22	1306	242
Future Volume (veh/h)	258	402	55	343	771	91	41	1114	148	22	1306	242
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	266	414	14	354	795	87	42	1148	142	23	1346	236
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	455	444	370	328	935	102	124	1470	182	65	1249	219
Arrive On Green	0.14	0.25	0.25	0.19	0.30	0.30	0.07	0.34	0.34	0.04	0.30	0.30
Sat Flow, veh/h	3302	1787	1490	1702	3082	337	1702	4388	542	1702	4162	729
Grp Volume(v), veh/h	266	414	14	354	438	444	42	851	439	23	1052	530
Grp Sat Flow(s),veh/h/ln	1651	1787	1490	1702	1698	1721	1702	1626	1678	1702	1626	1639
Q Serve(g_s), s	10.6	31.7	0.8	27.0	33.9	33.9	3.3	33.0	33.0	1.8	42.0	42.0
Cycle Q Clear(g_c), s	10.6	31.7	0.8	27.0	33.9	33.9	3.3	33.0	33.0	1.8	42.0	42.0
Prop In Lane	1.00		1.00	1.00		0.20	1.00		0.32	1.00		0.45
Lane Grp Cap(c), veh/h	455	444	370	328	515	522	124	1090	562	65	976	492
V/C Ratio(X)	0.58	0.93	0.04	1.08	0.85	0.85	0.34	0.78	0.78	0.36	1.08	1.08
Avail Cap(c_a), veh/h	455	460	383	328	570	578	124	1090	562	109	976	492
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.6	51.5	24.2	56.5	45.8	45.8	61.7	41.9	41.9	65.7	49.0	49.0
Incr Delay (d2), s/veh	1.9	27.2	0.1	72.2	13.4	13.3	7.2	5.6	10.4	3.3	52.2	63.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	17.4	0.4	17.7	15.5	15.7	1.6	13.7	14.9	0.9	23.7	25.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.5	78.7	24.4	128.7	59.2	59.1	68.9	47.5	52.3	68.9	101.2	112.4
LnGrp LOS	E	E	C	F	E	E	E	D	D	E	F	F
Approach Vol, veh/h		694			1236			1332			1605	
Approach Delay, s/veh		69.8			79.1			49.7			104.4	
Approach LOS		E			E			D			F	

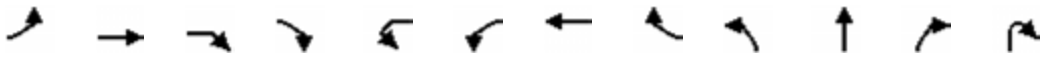
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.0	41.8	16.2	48.0	26.3	49.5	11.3	52.9
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	27.0	36.0	9.0	42.0	16.0	47.0	9.0	42.0
Max Q Clear Time (g_c+I1), s	29.0	33.7	5.3	44.0	12.6	35.9	3.8	35.0
Green Ext Time (p_c), s	0.0	1.0	0.0	0.0	0.3	6.6	0.0	5.8

Intersection Summary	
HCM 7th Control Delay, s/veh	78.1
HCM 7th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	281	210	86	92	294	26	94	1005	81	10	1261	440
Future Volume (veh/h)	281	210	86	92	294	26	94	1005	81	10	1261	440
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	290	216	57	95	303	25	97	1036	43	10	1300	310
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	339	621	160	123	329	27	213	1814	809	49	1486	654
Arrive On Green	0.10	0.22	0.22	0.07	0.19	0.19	0.12	0.51	0.51	0.03	0.42	0.42
Sat Flow, veh/h	3428	2774	715	1767	1691	140	1767	3526	1572	1767	3526	1551
Grp Volume(v), veh/h	290	135	138	95	0	328	97	1036	43	10	1300	310
Grp Sat Flow(s),veh/h/ln	1714	1763	1727	1767	0	1830	1767	1763	1572	1767	1763	1551
Q Serve(g_s), s	11.7	9.0	9.4	7.4	0.0	24.6	7.1	28.3	1.9	0.8	47.3	20.2
Cycle Q Clear(g_c), s	11.7	9.0	9.4	7.4	0.0	24.6	7.1	28.3	1.9	0.8	47.3	20.2
Prop In Lane	1.00		0.41	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	339	395	387	123	0	356	213	1814	809	49	1486	654
V/C Ratio(X)	0.86	0.34	0.36	0.77	0.00	0.92	0.45	0.57	0.05	0.20	0.87	0.47
Avail Cap(c_a), veh/h	380	434	426	145	0	399	213	1814	809	151	1486	654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.1	45.7	45.8	64.0	0.0	55.3	57.3	23.4	17.0	66.6	37.1	29.3
Incr Delay (d2), s/veh	15.9	0.5	0.6	19.1	0.0	24.9	6.8	1.3	0.1	2.0	7.5	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	4.0	4.1	3.9	0.0	13.7	3.5	11.6	0.7	0.4	21.0	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.0	46.2	46.4	83.1	0.0	80.3	64.1	24.7	17.1	68.6	44.6	31.7
LnGrp LOS	E	D	D	F		F	E	C	B	E	D	C
Approach Vol, veh/h		563			423			1176			1620	
Approach Delay, s/veh		62.6			80.9			27.6			42.3	
Approach LOS		E			F			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	36.8	22.9	65.0	19.3	32.7	9.9	78.0
Change Period (Y+Rc), s	5.5	5.5	6.0	6.0	5.5	5.5	6.0	6.0
Max Green Setting (Gmax), s	11.5	34.5	12.0	59.0	15.5	30.5	12.0	59.0
Max Q Clear Time (g_c+I1), s	9.4	11.4	9.1	49.3	13.7	26.6	2.8	30.3
Green Ext Time (p_c), s	0.0	1.4	0.0	8.6	0.2	0.6	0.0	16.1

Intersection Summary	
HCM 7th Control Delay, s/veh	45.1
HCM 7th LOS	D

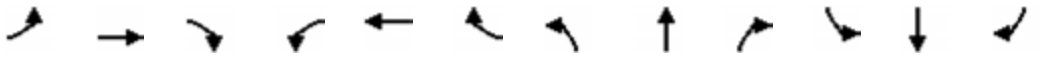


Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	203	595	172	29	37	53	357	32	34	840	55	126
Future Volume (vph)	203	595	172	29	37	53	357	32	34	840	55	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Lane Util. Factor	1.00	0.95				1.00	0.91		1.00	0.95		1.00
Frpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Frt	1.00	0.96				1.00	0.99		1.00	0.99		0.85
Flt Protected	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (prot)	1752	3372				1752	4964		1752	3472		1568
Flt Permitted	0.95	1.00				0.95	1.00		0.95	1.00		1.00
Satd. Flow (perm)	1752	3372				1752	4964		1752	3472		1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	209	613	177	30	38	55	368	33	35	866	57	130
RTOR Reduction (vph)	0	1	0	0	0	0	4	0	0	0	0	68
Lane Group Flow (vph)	209	819	0	0	0	93	397	0	35	923	0	62
Confl. Peds. (#/hr)								4				
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA			Split	Split	NA		Split	NA		Prot
Protected Phases	3	3			7	7	7		5	5		5
Permitted Phases												
Actuated Green, G (s)	61.0	61.0				25.0	25.0		68.0	68.0		68.0
Effective Green, g (s)	61.0	61.0				25.0	25.0		68.0	68.0		68.0
Actuated g/C Ratio	0.22	0.22				0.09	0.09		0.25	0.25		0.25
Clearance Time (s)	6.0	6.0				6.0	6.0		6.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0				2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)	388	747				159	451		433	858		387
v/s Ratio Prot	0.12	c0.24				0.05	c0.08		0.02	c0.27		0.04
v/s Ratio Perm												
v/c Ratio	0.54	1.10				0.58	0.88		0.08	1.08		0.16
Uniform Delay, d1	94.6	107.0				120.0	123.5		79.5	103.5		81.1
Progression Factor	1.00	1.00				1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.7	62.5				3.5	17.5		0.4	53.2		0.9
Delay (s)	95.3	169.5				123.5	141.0		79.9	156.7		82.0
Level of Service	F	F				F	F		E	F		F
Approach Delay (s/veh)		154.4					137.7			145.3		
Approach LOS		F					F			F		

Intersection Summary			
HCM 2000 Control Delay (s/veh)	152.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	275.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	125.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBL2	SBL	SBT	SBR	NWL2	NWL	NWR	NWR2
Lane Configurations								
Traffic Volume (vph)	148	378	531	41	83	457	388	12
Future Volume (vph)	148	378	531	41	83	457	388	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0			6.0	6.0	
Lane Util. Factor		0.86	0.86			0.97	0.88	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	
Frt		1.00	0.99			1.00	0.85	
Flt Protected		0.95	0.98			0.95	1.00	
Satd. Flow (prot)		1507	4647			3400	2760	
Flt Permitted		0.95	0.98			0.95	1.00	
Satd. Flow (perm)		1507	4647			3400	2760	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	153	390	547	42	86	471	400	12
RTOR Reduction (vph)	0	0	2	0	0	0	70	0
Lane Group Flow (vph)	0	278	852	0	0	557	342	0
Confl. Peds. (#/hr)				4				3
Confl. Bikes (#/hr)				1				2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	Split	NA		Prot	Prot	Prot	
Protected Phases	6	6	6		4	4	4	
Permitted Phases								
Actuated Green, G (s)		48.0	48.0			43.0	43.0	
Effective Green, g (s)		48.0	48.0			43.0	43.0	
Actuated g/C Ratio		0.17	0.17			0.16	0.16	
Clearance Time (s)		6.0	6.0			6.0	6.0	
Vehicle Extension (s)		4.0	4.0			2.5	2.5	
Lane Grp Cap (vph)		263	811			531	431	
v/s Ratio Prot		c0.18	0.18			c0.16	0.12	
v/s Ratio Perm								
v/c Ratio		1.06	1.05			1.05	0.79	
Uniform Delay, d1		113.5	113.5			116.0	111.7	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		71.3	45.8			52.5	9.4	
Delay (s)		184.8	159.3			168.5	121.1	
Level of Service		F	F			F	F	
Approach Delay (s/veh)			165.6			148.4		
Approach LOS			F			F		

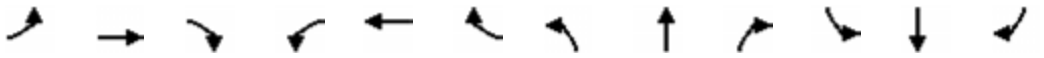
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	383	41	79	596	123	59	1024	66	141	1314	71
Future Volume (veh/h)	37	383	41	79	596	123	59	1024	66	141	1314	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	39	399	36	82	621	87	61	1067	65	147	1369	71
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	1198	107	323	680	567	102	1384	84	173	1536	79
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.06	0.41	0.41	0.10	0.45	0.45
Sat Flow, veh/h	735	3266	293	945	1856	1548	1767	3373	205	1767	3410	176
Grp Volume(v), veh/h	39	214	221	82	621	87	61	558	574	147	706	734
Grp Sat Flow(s),veh/h/ln	735	1763	1796	945	1856	1548	1767	1763	1815	1767	1763	1824
Q Serve(g_s), s	5.8	10.5	10.6	8.2	38.2	4.5	4.0	32.7	32.8	9.8	44.1	44.4
Cycle Q Clear(g_c), s	44.0	10.5	10.6	18.9	38.2	4.5	4.0	32.7	32.8	9.8	44.1	44.4
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.11	1.00		0.10
Lane Grp Cap(c), veh/h	95	646	659	323	680	567	102	723	745	173	794	821
V/C Ratio(X)	0.41	0.33	0.33	0.25	0.91	0.15	0.60	0.77	0.77	0.85	0.89	0.89
Avail Cap(c_a), veh/h	95	646	659	323	680	567	118	723	745	191	794	821
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.4	27.4	27.4	34.2	36.2	25.5	55.2	30.5	30.5	53.2	30.2	30.3
Incr Delay (d2), s/veh	2.8	0.3	0.3	0.4	16.7	0.1	6.1	7.8	7.6	26.5	14.2	14.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	4.5	4.7	1.9	19.9	1.7	2.0	15.2	15.7	5.6	21.3	22.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.2	27.7	27.7	34.7	52.9	25.6	61.3	38.3	38.1	79.8	44.5	44.5
LnGrp LOS	E	C	C	C	D	C	E	D	D	E	D	D
Approach Vol, veh/h		474			790			1193			1587	
Approach Delay, s/veh		30.4			48.0			39.4			47.7	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.8	54.2		49.0	12.0	59.0		49.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	13.0	48.0		44.0	8.0	53.0		44.0				
Max Q Clear Time (g_c+I1), s	11.8	34.8		46.0	6.0	46.4		40.2				
Green Ext Time (p_c), s	0.0	9.8		0.0	0.0	6.0		1.7				

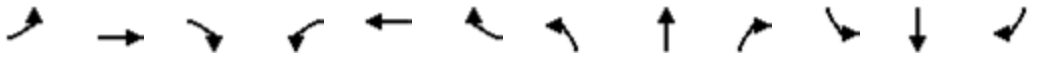
Intersection Summary												
HCM 7th Control Delay, s/veh			43.3									
HCM 7th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	936	94	335	1298	494	173	1302	304	387	1257	216
Future Volume (veh/h)	310	936	94	335	1298	494	173	1302	304	387	1257	216
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787	1787
Adj Flow Rate, veh/h	323	975	89	349	1352	311	180	1356	121	403	1309	117
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	362	1251	114	392	1394	421	331	1487	461	425	1625	504
Arrive On Green	0.11	0.28	0.28	0.12	0.29	0.29	0.10	0.30	0.30	0.13	0.33	0.33
Sat Flow, veh/h	3302	4527	412	3302	4879	1472	3302	4879	1513	3302	4879	1513
Grp Volume(v), veh/h	323	700	364	349	1352	311	180	1356	121	403	1309	117
Grp Sat Flow(s),veh/h/ln	1651	1626	1687	1651	1626	1472	1651	1626	1513	1651	1626	1513
Q Serve(g_s), s	13.5	27.8	27.9	14.6	38.3	18.8	7.3	37.5	8.5	17.0	34.2	7.8
Cycle Q Clear(g_c), s	13.5	27.8	27.9	14.6	38.3	18.8	7.3	37.5	8.5	17.0	34.2	7.8
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	362	899	466	392	1394	421	331	1487	461	425	1625	504
V/C Ratio(X)	0.89	0.78	0.78	0.89	0.97	0.74	0.54	0.91	0.26	0.95	0.81	0.23
Avail Cap(c_a), veh/h	362	899	466	401	1394	421	331	1499	465	425	1708	530
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.5	46.7	46.8	60.8	49.4	22.2	59.9	46.9	36.8	60.5	42.5	33.7
Incr Delay (d2), s/veh	23.4	6.6	12.3	20.7	17.9	11.1	1.8	9.4	0.8	31.0	3.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	11.8	13.0	7.1	17.4	7.6	3.1	16.0	3.2	8.8	13.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.9	53.3	59.0	81.5	67.3	33.3	61.8	56.2	37.6	91.5	46.1	34.4
LnGrp LOS	F	D	E	F	E	C	E	E	D	F	D	C
Approach Vol, veh/h		1387			2012			1657			1829	
Approach Delay, s/veh		62.2			64.5			55.5			55.4	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	52.6	21.3	46.0	24.0	48.7	22.6	44.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	49.0	15.0	40.0	18.0	43.0	17.0	38.0
Max Q Clear Time (g_c+I1), s	9.3	36.2	15.5	40.3	19.0	39.5	16.6	29.9
Green Ext Time (p_c), s	0.1	10.4	0.0	0.0	0.0	3.2	0.1	5.9

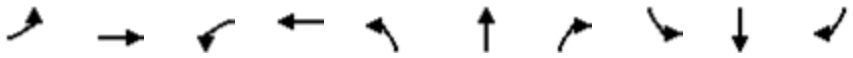
Intersection Summary	
HCM 7th Control Delay, s/veh	59.4
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	797	167	928	828	40	250	1056	949	151	1194	190
Future Volume (vph)	194	797	167	928	828	40	250	1056	949	151	1194	190
Ideal Flow (vphpl)	1830	1830	1830	1830	1830	1830	1830	1900	1830	1830	1900	1830
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Lane Util. Factor	0.86	0.86	1.00	0.94	0.95		0.97	0.95	0.88	0.97	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.98	
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)	1452	4578	1510	4760	3350		3274	3505	2658	3274	4916	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1452	4578	1510	4760	3350		3274	3505	2658	3274	4916	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	196	805	169	937	836	40	253	1067	959	153	1206	192
RTOR Reduction (vph)	0	0	138	0	2	0	0	0	0	0	15	0
Lane Group Flow (vph)	176	825	31	937	874	0	253	1067	959	153	1383	0
Confl. Peds. (#/hr)						6						6
Confl. Bikes (#/hr)						1						6
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		7	7		5	2	7	1	6	
Permitted Phases			8						2			
Actuated Green, G (s)	25.5	25.5	25.5	35.5	35.5		11.5	46.0	81.5	9.0	43.5	
Effective Green, g (s)	25.5	25.5	25.5	35.5	35.5		11.5	46.0	81.5	9.0	43.5	
Actuated g/C Ratio	0.18	0.18	0.18	0.25	0.25		0.08	0.33	0.58	0.06	0.31	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		6.5	6.5	5.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.5	3.0	3.0	4.5	
Lane Grp Cap (vph)	264	833	275	1207	849		268	1151	1547	210	1527	
v/s Ratio Prot	0.12	c0.18		0.20	c0.26		0.08	c0.30	0.16	0.05	c0.28	
v/s Ratio Perm			0.02						0.20			
v/c Ratio	0.67	0.99	0.11	0.78	1.03		0.94	0.93	0.62	0.73	0.91	
Uniform Delay, d1	53.3	57.1	47.8	48.6	52.3		63.9	45.4	19.1	64.3	46.3	
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	6.2	28.7	0.2	3.2	38.6		39.7	13.9	0.7	11.9	9.3	
Delay (s)	59.5	85.8	48.0	51.8	90.8		103.7	59.3	19.9	76.2	55.6	
Level of Service	E	F	D	D	F		F	E	B	E	E	
Approach Delay (s/veh)		76.4			70.6			47.6			57.6	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	61.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		

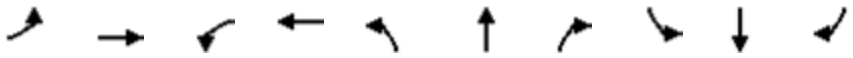
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	93	394	104	253	13	1461	427	13	1043	110
v/c Ratio	0.59	0.63	0.66	0.41	0.07	0.86	0.53	0.19	0.62	0.14
Control Delay (s/veh)	76.3	57.2	81.6	51.5	21.4	37.8	21.9	29.8	27.8	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.3	57.2	81.6	51.5	21.4	37.8	21.9	29.8	27.8	7.1
Queue Length 50th (ft)	82	173	92	105	6	589	200	6	345	13
Queue Length 95th (ft)	146	240	161	155	21	#803	343	26	477	51
Internal Link Dist (ft)		430		408		2400			656	
Turn Bay Length (ft)	195		195		180		125	320		300
Base Capacity (vph)	410	1672	410	1670	181	1691	801	70	1691	797
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.24	0.25	0.15	0.07	0.86	0.53	0.19	0.62	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	79	272	337	498	16	1115	227	13	1319	295
v/c Ratio	0.59	0.52	0.94	0.51	0.27	0.75	0.32	0.12	0.89	0.40
Control Delay (s/veh)	88.0	65.0	95.3	49.7	42.7	41.6	19.6	30.2	50.1	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	88.0	65.0	95.3	49.7	42.7	41.6	19.6	30.2	50.1	16.1
Queue Length 50th (ft)	81	137	350	227	11	508	96	8	661	99
Queue Length 95th (ft)	137	188	#545	299	35	597	164	25	770	177
Internal Link Dist (ft)		430		408		2400			656	
Turn Bay Length (ft)	195		195		180		125	320		300
Base Capacity (vph)	359	1470	359	1468	60	1480	707	111	1480	745
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.19	0.94	0.34	0.27	0.75	0.32	0.12	0.89	0.40

Intersection Summary

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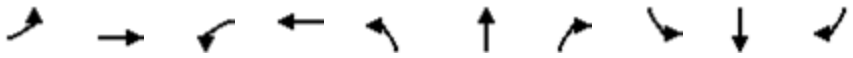
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	93	394	104	259	13	1461	427	32	1043	110
v/c Ratio	0.59	0.63	0.66	0.42	0.07	0.86	0.53	0.46	0.62	0.14
Control Delay (s/veh)	76.3	57.2	81.6	51.2	21.4	37.8	21.9	50.7	27.8	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.3	57.2	81.6	51.2	21.4	37.8	21.9	50.7	27.8	7.1
Queue Length 50th (ft)	82	173	92	106	6	589	200	18	345	13
Queue Length 95th (ft)	146	240	161	157	21	#803	343	#74	477	51
Internal Link Dist (ft)		430		408		2400			656	
Turn Bay Length (ft)	195		195		180		125	320		300
Base Capacity (vph)	410	1672	410	1666	181	1691	801	70	1691	797
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.24	0.25	0.16	0.07	0.86	0.53	0.46	0.62	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
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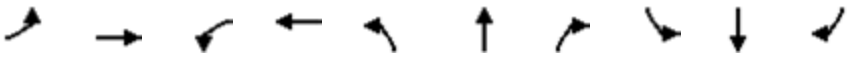

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	79	272	337	519	16	1115	227	27	1319	295
v/c Ratio	0.59	0.52	0.94	0.54	0.27	0.75	0.32	0.24	0.89	0.40
Control Delay (s/veh)	87.9	65.0	95.3	50.0	42.7	41.6	19.6	35.5	50.1	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	87.9	65.0	95.3	50.0	42.7	41.6	19.6	35.5	50.1	16.1
Queue Length 50th (ft)	81	137	350	237	11	508	96	18	661	99
Queue Length 95th (ft)	137	188	#545	312	35	597	164	47	770	177
Internal Link Dist (ft)		430		408		2400			656	
Turn Bay Length (ft)	195		195		180		125	320		300
Base Capacity (vph)	359	1470	359	1460	60	1480	707	111	1480	745
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.19	0.94	0.36	0.27	0.75	0.32	0.24	0.89	0.40

Intersection Summary

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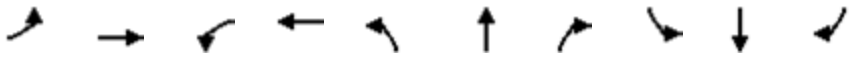

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	334	688	111	436	14	1577	448	40	1154	150
v/c Ratio	0.96	0.70	0.71	0.73	0.15	1.09	0.65	0.93	0.80	0.22
Control Delay (s/veh)	101.4	56.1	96.6	69.4	36.2	97.5	35.1	169.2	46.7	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	101.4	56.1	96.6	69.4	36.2	97.5	35.1	169.2	46.7	14.1
Queue Length 50th (ft)	354	345	117	230	9	~983	303	40	553	40
Queue Length 95th (ft)	#609	443	192	292	31	#1247	481	#136	723	100
Internal Link Dist (ft)		430		408		2400			656	
Turn Bay Length (ft)	195		195		180		125	320		300
Base Capacity (vph)	349	1431	349	1415	92	1441	694	43	1441	694
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.48	0.32	0.31	0.15	1.09	0.65	0.93	0.80	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
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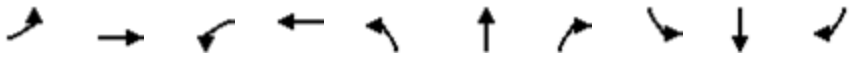

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	139	432	354	789	18	1264	238	30	1485	499
v/c Ratio	0.72	0.62	1.05	0.81	0.44	0.91	0.36	0.55	1.07	0.66
Control Delay (s/veh)	94.3	64.7	124.9	63.0	77.7	57.6	25.2	81.2	90.5	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	94.3	64.7	124.9	63.0	77.7	57.6	25.2	81.2	90.5	27.4
Queue Length 50th (ft)	149	232	~410	427	14	667	113	24	~920	246
Queue Length 95th (ft)	248	290	#744	541	#63	#1008	227	#96	#1304	467
Internal Link Dist (ft)		430		408		2400			656	
Turn Bay Length (ft)	195		195		180		125	320		300
Base Capacity (vph)	338	1386	338	1382	41	1393	670	55	1393	753
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.31	1.05	0.57	0.44	0.91	0.36	0.55	1.07	0.66

Intersection Summary

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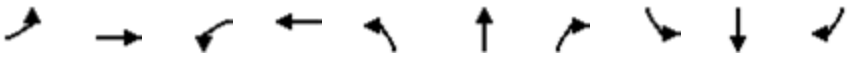

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	334	688	111	443	14	1577	448	59	1154	150
v/c Ratio	0.96	0.69	0.72	0.73	0.15	1.10	0.65	1.37	0.80	0.22
Control Delay (s/veh)	101.8	56.0	97.0	69.5	36.5	98.2	35.3	307.5	46.9	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	101.8	56.0	97.0	69.5	36.5	98.2	35.3	307.5	46.9	14.2
Queue Length 50th (ft)	355	345	117	233	9	~988	304	~82	556	40
Queue Length 95th (ft)	#609	443	192	297	31	#1247	481	#155	723	100
Internal Link Dist (ft)		430		408		2400			656	
Turn Bay Length (ft)	195		195		180		125	320		300
Base Capacity (vph)	349	1429	349	1411	91	1439	693	43	1439	693
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.48	0.32	0.31	0.15	1.10	0.65	1.37	0.80	0.22

Intersection Summary

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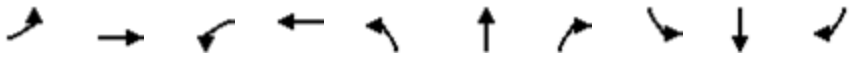

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	139	432	354	809	18	1264	238	43	1485	499
v/c Ratio	0.72	0.61	1.06	0.82	0.44	0.91	0.36	0.81	1.07	0.67
Control Delay (s/veh)	95.0	63.8	127.6	63.4	79.6	59.1	25.8	128.6	93.7	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	95.0	63.8	127.6	63.4	79.6	59.1	25.8	128.6	93.7	28.0
Queue Length 50th (ft)	151	232	~423	442	14	687	117	42	~948	254
Queue Length 95th (ft)	249	289	#754	560	#64	#1027	231	#149	#1327	474
Internal Link Dist (ft)		430		408		2400			656	
Turn Bay Length (ft)	195		195		180		125	320		300
Base Capacity (vph)	335	1375	335	1368	41	1383	666	53	1383	749
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.31	1.06	0.59	0.44	0.91	0.36	0.81	1.07	0.67

Intersection Summary

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Appendix C – Cumulative Projects

ID	Project Name	Location	Description
1	Harrison Ave Apartments	145 N Harrison Av Oxnard, CA	96 unit, four-story apartment complex on a 67,953 square foot vacant site (1.56-acres). The project includes a Density Bonus (requesting 3 concessions), Lot merger (five lots merged into one lot), Zone Change, and General Plan Amendment. 145-155 N. Harrison Avenue. APN: 201-0-113-105; 201-0-113-120; 201-0-113-130; 201-0-113-150; 201-0-113-160
2	Castro Residence	148 S Hayes Av OXnard CA	Construction of 1768 Square feet single family residence with two car garage
3	105 S Roosevelt Multi-Family	105 South Roosevelt Av Oxnard CA	Construction of a two-story 1,760 square-foot residential building on an existing 8,400 square-foot R-2 lot
4	Roosevelt Duplex	213 S Roosevelt Av, Oxnard CA	New 4,000 SF attached duplex
5	C Street Apartments	1227 1239 S C StOxnard CA	18 Unit apartment complex on 0.85 acre site. 1227 & 1239 South C Street, Oxnard CA
6	Single-Family Residence	204 S. Juanita Av Oxnard CA	Construct a 2,115 square-foot single-family residence with an attached two-car garage on a 6,925 square-foot lot located within the La Colonia Neighborhood.
7	Las Cortes Phase 3	6R3P+8FOxnard, CA, USA	129 affordable units on 8.2 acres, within the Las Cortes Planned Residential Group APN: 201-0-100-040, 201-0-080-090
8	Cooper Rd Mixed-use Comm	600 Cooper Rd Oxnard CA	Construct a two-story 5,671 square foot, mixed-use building consisting of 1,437 square-foot of commercial space on the first floor and two, 2-bedroom apartments on the second floor and 4 car garage parking on a 7,640 square foot lot APN 2010121175
9	Cooper Rd Mixed-use Res	600 Cooper Rd Oxnard CA	
10	First & A Street Apartments	137 First St Oxnard CA	34,452.2 square foot 5-story mixed use apartment building with 53 residential units (6 affordable), 27 parking spaces and 6,970.9 square-feet of open space on a 0.48-acre project site. (APN: 202-0-055-070)
11	Navigation Center	241 W 2nd St Oxnard CA	Active homeless shelter and 56 unit supportive housing project.
12	115 Palm Dr Res	115 Palm Dr Oxnard CA	Remodel an existing single-story, commercial office building and construct two, 2-bedroom residential units. One of the units (696 square feet) is proposed over the singl-story, 985 square-foot, commercial office building and the second residential unit (767 square feet) is proposed over a detached 3-car garage.
13	115 Palm Dr Comm	115 Palm Dr Oxnard CA	
14	Sandpiper Apartments Res	155 N A Street Oxnard CA	56 Unit, five story apartment building on 0.32 acres. Includes 2 ground floor commercial units
15	Sandpiper Apartments Comm	155 N A Street Oxnard CA	
16	Palm Dr Mixed-Use Development Res	140 Palm Dr Oxnard CA	Proposal to construct a 2-story mixed use development with 900 square foot commercial space with three apartment units on a 5,250 square foot lot. APN 200-0-052-130 located inthe 100 block of Palm Drive (140 Palm Dr.).
17	Palm Dr Mixed-Use Development Comm	140 Palm Dr Oxnard CA	
18	Encanto	1101 W Second St Oxnard CA	27 single family homes on a 4.1 acre site. The 3 bedroom single story homes will be 1,149 to 1,201 square feet in size on lots ranging between 3,838 and 9,752 square feet.
19	637/643 South C Street Apartment Res	637 643 S C St Oxnard CA	57,274 square foot 5-story mixed use apartment building with 36 residential units (4 affordable), 20 parking spaces, 1,619 square-feet of non-residential space and open space on a 0.32-acre project site.
20	637/643 South C Street Apartment Comm	637 643 S C St Oxnard CA	
21	613 South C Street Apartment Res	613 S C St Oxnard CA	26,308 square foot 5-story mixed use apartment building with 20 residential units (2 affordable), 12 parking spaces, 656 square-feet of non-residential space, and 1,053 square-feet of open space on a 0.16-acre project site
22	613 South C Street Apartment Comm	613 S C St Oxnard CA	
23	Billboard Lofts Res	800 S A St Oxnard CA	Construction of a 5-story building to include 51 condominiums and 4,024 square-feet of commercial space. APN: 202-0-183-120, -110, -100
24	Billboard Lofts Comm	800 S A St Oxnard CA	
25	C Street Apartments Res	761 S C St Oxnard CA	Construction of a 5-story, 175-unit apartment building. Structure will be podium structure with parking and retail space on ground floor with 4 levels of studio, 1-bed and 2-bed units. APN: 202-0-135-035
26	C Street Apartments Comm	761 S C St Oxnard CA	

ID	Project Name	Location	Description
27	19 Unit Apartment Complex	780 S G St Oxnard CA	19 unit, four-story apartment complex on a 21,000 square foot vacant site (0.48-acre). One to three dedroom units on upper floors with parking on ground level. (Across Oxnard Community Park East) APN 202-0-152-305, 315, & 325
28	Mister Softee Mobile Food Commissary	811 Mercantile St, Oxnard, CA	To allow for the renovation and tenant improvement of an existing 8,400 sq. ft. warehouse building on a 23,286 sq. ft. parcel. The project proposes the conversion of a 4,290 sq. ft of existing tenant space into a new mobile food commissary and will also include a 530 sq. ft. truck wash area and 222 sq. ft. trash enclosure within 9,458 sq. ft. of existing yard space.
29	Aspire Apartments	536 Meta St, Oxnard, CA	Construction of a 5-story building, 88 unit podium style apartment building.
30	Fast Food - Ives Avenue	1600 Ives Av Oxnard CA	Demolition of existing events center (existing monument sign and public art will remain on site) Development of: 2,533 square-foot fast food restaurant with drive thru Related improvements (parking, trash enclosure, sidewalks, patios, landscaping)
31	Fore RiverPark	2700 Ventura Rd, Oxnard CA	333 unit, five story apartment complex on 4.2 acre site within the RiverPark Specific Plan Community. 2700 & 2750 N. Ventura Rd. APN 132010008, 132010009
32	Detached Dwelling	2310 Saviers Rd, Oxnard Ca	Construct a detatached two-story, 1,500 square foot single family residence with five total garage spaces on a 16,700 square foot developed lot with two existing homes
33	Albany Apartments	2929 Albany Dr Oxnard CA	19 Residential Apartment Units on three combine lots of aproximately 53,975 Square Feet. 2929 and 2931 Albany Drive
34	Pleasant Valley Plaza	105 W. Pleasant Valley Rd. Oxnard CA	Remodel exiting shopping center, construct new 11,392 sf commercial/retail building with related site improvements to parking, landscaping, lighting, signage, etc.
35	Single Family Home with an ADU	412 Howell Rd Oxnard CA	Coversion of an existing 1,840 square foot church to a 1,296 square foot SFD, with an attached 408 square foot garage, and an attached 586 square foot ADU
36	Cypress Court Tiny Home Duplex	5208-5230 Cypress Road, Oxnard CA	30 dwelling units consisting of 15 one-bedroom units, 3 studio units, and 12 loft units ranging from 383 to 511 square feet in size.
37	Cypress Place at Garden City	5536 5582 Cypress Rd Oxnard CA	All-affordable 150 dwelling unit apartment complex on 5.22 acre site. 3-story buildings with units ranging between 572 and 1,012 sf in size; Includes learning center & maintenance buildings.
38	Duplex with ADU (5305 Saviers)	5305 Saviers Rd Oxnard CA	2,943 square foot duplex with a 984 square foot detached garage that has an attached 2nd floor 984 square foot ADU.
39	Duplex with ADU (5309 Saviers)	5309 Saviers Rd Oxnard CA	2,943 square foot duplex with a 984 square foot detached garage that has an attached 2nd floor 984 square foot ADU. 5905, 5909, 5913 Saviers Road
40	Duplex with ADU (5313 Saviers)	5313 Saviers Rd	2,943 square foot duplex with a 984 square foot detached garage that has an attached 2nd floor 984 square foot ADU. 5905, 5909, 5913 Saviers Road
41	Daya Enterprises Gas Station	5587 Saviers Rd Oxnard CA	Construction of a 3,000 convenience store and fueling station. APN: 222-0-011-110
42	Pantoja Trucking	4RWF+QF Oxnard, CA	Warehouse/shipping facility with outdoor vehicle storage and offices. 310 Hueneme Rd. APN 231009226
43	Pantoja Trucking	210 320 Hueneme Rd Oxnard CA	Develop a 2.81-acre undeveloped lot to accommodate overflow truck parking for the operation of an existing feight yard.
44	6001 Arcturus Avenue Outdoor Storage Yard Project	6001 Arcturus Av Oxnard CA	Proposal to operate a surface storage and parking facility to store shipping containers, tractors, trailers, trucks, automobiles, and other port related storage material on a 9-acre site
45	Arcturus Cold Storage	5980-5990 Arcturus Av Oxnard CA	Construction of a 103,705 square-foot, steel framed cold storage building with 36 truck loading docks and 270 truck/container storage spaces, container storage area with 90 containers stacked 3 levels high, and a 48-space vehicle parking lot.
46	Dansk Phase 2	2300 Pleasant Valley Rd, Oxnard CA	46 unit, two story apartment building on 1.05 acres. Requested zone change, general plan amendment and PD overlay.
47	Etting Road Affordable Apartments	2161 Etting Rd OxnardCA	Construction of 58 affordable apartment units for farmworkers and veterans.
48	Teal Club Specific Plan	NE Ventura Rd & Teal Club, Oxnard CA	990 residential units of varying density, single-family, townhomes, condominium, and apartment units; 24 acres, community park; 8 acres public/semi public use; 4 acres of mixed use, retail, commercial; 10 acres of Business/Research Park. 60,000 s.f. mixed use and retail; 1 ac. fire station site. APN: 183-0-070-240
49	Rancho Victoria Plaza Shopping Center	3700 W Fifth St Oxnard CA	Proposal to construct 8 retail/commerical buildings that will range between 3,388 and 6,472 square feet in size. Buildings will be constructed on separate lots. 3600-3700 W Fifth St
50	North Shore Subdivision	6Q25+6F Oxnard, CA	183 single-family homes and 109 detached condominiums. W Fifth Street and Harbor Blvd.

ID	Project Name	Location	Description
51	Portofino Place	5QWP+Q9 Oxnard, CA, USA	New 90 unit, planned development, duplex-townhome development on 7.6 acres. The project includes a subdivision map, General Plan amendment, Zone Change, & Special Use Permit. APN 185022102, 188022126, 188022301
52	Casa Aliento	1245 N Oxnard Blvd	Convert the former Vagabond Inn to a 70 unit permanent supportive housing complex
53	1345 N Oxnard Boulevard Apartments	1345 N Oxnard Blvd Oxnard CA	Construct a 4-story, 142 unit apartment complex on a 3.07 acre site that location north of an exsiting new/used automotive & recreational vehicle dealership. The apartment complex includes 82 1-bedroom units, 60 2-bedroom units, indoor and outdoor amenities and 180 parking spaces on ground floor. 2 ADUs are also proposed.
54	Starbucks Drive-Thru	2011 N Oxnard Bl	Construction of a 2,560 square-foot drive-thru coffee shop on an 8.72-acre site developed with an existing shopping center
55	The Village Wagon Wheel Development Projects (Planning Area 6/Lot 1) Park Place II	6RR7+2C Oxnard, CA, USA	33 attached condominiums (22 3-bedroom & 11 4-bedroom) in 11 Townhouse-style 3-story buildings on a 2.0 acre site. Private 2-car garage for each unit, and 25 on-street guest parking spaces. (affordable units for Village Specific Plan provided in Village Family Apartments). APN 139061035
56	The Village Wagon Wheel Development Projects (PA 7, 9, 10 & a portion of 8) Oxford Flats	6RQ8+R9 Oxnard, CA	Approved construction of 144 condominium dwelling units (36 2-bdrm., and 108 3-bdrm. units) in 12, four-story residential buildings on 6.51 acres within the Village Specific Plan area. (Lower-income affordable units for Village Specific Plan provided in Village Family Apartments). Lot 8 BP# 16-4174
57	The Village Wagon Wheel Development Project PA 14 (Lots 4 & 10) Mayfair	6RP8+V7 Oxnard, CA	Approved construction of 88 condominium dwelling units (57 2-bdrm., 29 3-bdrm., and 2 4-bdrm. units) in 6, three-story residential buildings on 4.03 acres within the Village Specific Plan area. (Lower-income affordable units for Village Specific Plan provided in Village Family Apartments)
58	Lot 1 of The Landing at Riverpark	6RV8+3J Oxnard, CA	Construction of a 3,442 square-foot gas station and convenience store building with a 1,160 square-foot car wash building, and an 875 square-foot car wash equipment storage building on Town Center Drive. APN 1320470175
59	RiverPark Hotels	6RR9+F8 Oxnard, CA	Active development of two, four-story hotels (TownePlace Suites and SpringHill Suites), each featuring 120 rooms. APN 132047005, 132047007, 132047009, 132047010, 132047012, 132047013, 132047015
60	Lot 4 of The Landing at Riverpark	6RR9+Q9 Oxnard, CA	Construction of a 7,236 square-foot multi-tenant commercial building with a drive-through. Lot 5 of The Landing at Town Center Dr, RiverPark.
61	The Pointe Apartments	2800 N. Oxnard Bl Oxnard, CA	Multi-family residential development of 280 apartment units which will consist of a mix of studios, 1 bedroom, 2 bedroom, and 3 bedroom on a 4.85 acre site. The project will be 4 story with 5.5 story above grade parking structure accommodating 490 spaces.
62	Silva Residence	2711 Colonia Av Oxnard, CA	New home w/ ADU - Development Design Review 1667 square foot single-family residence and 625 square-foot ADU
63	Vazquez Residence	2721 Colonia Av Oxnard, CA	New home w/ ADU - Development Design Review 1667 square foot single-family residence and 625 square-foot ADU
64	Rio Urbana	2714 E Vineyard Av, Oxnard CA	Annexation and SUP for 15,000 sf office bldg. Also PZ 17-620-01, 17-560-01, 17-300-03, 17-610-01, 17-535-02.. APN 1450232010. Pending LAFCO approval.
65	Oxnard Express Car Wash	481 Ventura Bl, Oxnard CA	Proposal to construct an automated 3,950 square foot, drive through car wash facility with 19 vacuum station canopy on a 38,807 square foot undeveloped site.
66	TRU Hotel by Hilton	180 W. Esplanade Oxnard, CA	A 44370 square foot 5 story building, infill project with 88 rooms.
67	Mister Carwash	2441 Vineyard Av Oxnard CA	A request to build a new 5,400 square foot automated car wash with 16 vacuum stalls and three standard parking spaces on a 1.4 acre parcel of land with a maximum height of 35 feet
68	U-Haul of North Oxnard	2420 N Oxnard Blvd Oxnard, CA	Reuse of existing structure for U-Haul, Truck Rentals, indoor mini-storage use, and general warehouse.
69	Lockwood II Senior Apartments	2001 Lockwood Oxnard CA	168 all-affordable senior living apartments
70	Lockwood I Senior Apartments	2001 Lockwood Oxnard CA	173 all-affordable senior living apartments
71	Lockwood III Apartments	2151 Lockwood St Oxnard CA	234 apartments on a 5.17 acre site
72	Starbucks Drive Thru	1720 Ventura Bl, Oxnard, CA	Demolition of existing 7,080 square foot commercial structure and construct a new 1,800 square foot Starbucks Coffee with drive-thru and 15 car stacking lane and 27 parking spaces on an 0.85 acre lot in the Rose-Santa Clara Specific Plan area.

ID	Project Name	Location	Description
73	Trojan Storage of Oxnard	2111 Auto Center Dr, Oxnard CA	The construction of a new self-storage facality within an existing 2.34 acre site consisting of a single-story buidling and three-story building with an office/retail area and manager's residential unit. The proposed self-storage facility includes 20 parking spaces, 3 loading spaces, landscaping, and a perimeter wrought iron fence along the westerly and easterly sides, and adjacent with the fornt of the building.
74	Solar Pacific Professional Development	1750 Solar Dr Oxnard CA	Eight building development with building areas ranging between 3,008 and 8,519 square feet. The tentative subdivision map proposes to subdivide the 3.69 acre site into nine parcels. (APN: 213-0-070-055)
75	101 Logistics Center	6V88+J8 Oxnard, CA	Construction of four industrial buildings totalling 778,720 square feet and related site improvements on four separate lots. Project site is 40.87 acres within the Sakioka Farms Business Park, located north of Sakioka Drive, south of Highway 101, east of Gravity Circle and west of Synergy Circle
76	Tentative Parcel Map for Industrial Condominium Purposes	2362 Sturgis Rd	One lot subdivision with 22 industrial condominium units of an existing 3.329-acre parcel that constins three buildings totaling 47,674 square feet. 2360-2364 Sturgis Road
77	Triplex	5201 Driftwood St, Oxnard CA	A condominium triplex on an undeveloped lot in the coastal zone. waived parcel map
78	Single-Family Beachfront House	855 Mandalay Beach Rd Oxnard CA	A 6,997 square-foot, single-family house and garage on a 3,744 sq square-foot lot.
79	Residential Beachfront Home	847 Mandalay Beach Rd Oxnard CA	Construct new 6,920 square foot, beachfront single family home with an attached 656 square foot garage on a vacant lot. APN 191-0-041-355 Lot 18 of Tract 4380
80	Duplex Condominium Subdivision	861 Dunes St Oxnard CA	Create 2 condominums on a single parcel
81	Residential Duplex	4981 Dunes Circle Oxnard CA	Construct a two-story, residential duplex on a 6,600 square foot vacant lot. APN 196-0-023-165
82	940 Dunes Duplex	940 Dunes Oxnard CA	Construction of a duplex residential structure located at 940 Dunes St. Square footage TBD
83	Avalon Homes Subdivision	5QV7+GC Oxnard CA	56 single-family homes and a tentative tract map for 2 lots on an 8.1-acre property. Dunes St Canal St.
84	Residential Beachfront Home	1121 Capri Wy Oxnard CA	Construct new 6,921 square foot, beachfront single family home with an attached 725 square foot garage on a vacant lot. APN 191-0-041-205
85	Triplex	5231 Neptune Square, Oxnard CA	A triplex on an undeveloped lot in the coastal zone
86	Seabridge K-5 Elementary School	4050 W. Wooley Rd, Oxnard CA	630 student elementary school campus and 2.5 acre park (by Dr Horton)
87	Rio Del Valle Middle School Campus Expansion	3100 N Rose Ave	Add 11.1 acres
88	Del Rio High School		School opened in 2023, expected to reach full enrollment in 2026

APPENDIX S

Tribal Consultation Letters and Responses

COMMUNITY DEVELOPMENT DEPARTMENT
PLANNING DIVISION
214 SOUTH C STREET
OXNARD, CALIFORNIA 93030
(805)385-7858
Fax (805) 385-7417

November 7, 2024

Cultural Resource Committee
Barbareño/Ventureño Band of Mission Indians
P.O. Box 364
Ojai, CA, 93024

RE: Assembly Bill 52 and Senate Bill 18 Consultation for the Maulhardt-Stiles Sub-Neighborhood Plan Project. The Plan Area includes five parcels. Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625 within the City of Oxnard, Ventura County, California.

Dear Cultural Resource Committee,

The City of Oxnard (City) is preparing to kick off an Initial Study for the Maulhardt-Stiles Sub-Neighborhood Plan Project (project). The project is subject to the California Environmental Quality Act (CEQA) and the City of Oxnard is the lead agency under CEQA. Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

The Maulhardt/Stiles Property (Project Site) includes 107 acres bordered by Rose Avenue on the east, Cesar Chavez Drive on the north, and Camino del Sol on the south in the City of Oxnard Northeast Community Specific Plan (NECSP) Area. Existing residential development in the East Village Neighborhood borders the Project site on the east. The NECSP allows the preparation of Sub-Neighborhood Plans to create distinctive neighborhoods that are consistent with the goals and objectives of the NECSP. The Sub-Neighborhood Plan proposed for the Project Site defines public spaces, including a site for high school, parks and bicycle and pedestrian circulation facilities and allows a mixture of residential, institutional, and commercial uses. The NECSP Sub-Neighborhood Plan would establish three planning areas, Planning Area A, B and C, that total 107 acres. Planning Area B is approximately 51 acres and consists of the existing Del Sol High School. Planning Areas A and C totals approximately 56 acres and lie in the northern and southern portion of the Sub-Neighborhood Plan, respectively. Del Sol High School, opened by Oxnard Union High School District in July 2023, occupies the central 50.7 acres of the Project Site. OUHSD prepared and certified an EIR in November 2019 for this new high school. The proposed Sub-Neighborhood Plan would allow development of up to 950 residential units on the 44.5 acres located immediately north of the high school (Area A) and approximately 12 acres located on the northeast corner of the Rose Avenue and Camino Del Sol (Area C), 40,000 square-feet of commercial space throughout the site, parks, and associated circulation consisting of roads, bike lanes and sidewalks throughout both Areas A and C.

The result of the Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

Required Entitlements include the following at this time:

- General Plan Amendment
- Specific Plan Amendment
- Zone Change
- Tentative Tract Map

The project site is located at Northeastern Corner of Rose Ave and Camino Del Sol within the City of Oxnard, Ventura County (Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625) within the Park, Residential Low Medium, and General Commercial land use designations and Community Reserve (CR), Multiple Family Residential Planned Development (R-2-PD), General Commercial Planned Development (C-2-PD) zoning district.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by CEQA lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The proposed project includes an General Plan and Specific Plan Amendment and, therefore, must also comply with California Public Resources Code § 65352.3 – 65352.4 (Senate Bill [SB] 18), which requires local governments to conduct meaningful consultation with California Native American tribes on the contact list maintained by the Native American Heritage Commission prior to the adoption or amendment of a city or county general plan for the purpose of protecting cultural places on lands affected by the proposal.

Your tribe's input is important to the City's planning process. We request that you advise us as early as possible if you wish to consult on the proposed project. Under AB 52, you have 30 days and under the provisions of SB 18, have 90 days from the date of receipt of this notice to advise the City if you are interested in further consultation. If you require any additional information or have any questions, please contact me 805-385-8272 or via e-mail at Joe.Pearson@oxnard.org. Thank you for your assistance.

Very Respectfully,

Joe Pearson II, AICP |Planning and Environmental Services Manager
City of Oxnard

Enclosed: Project Location Map and Site Plan

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214 SOUTH C STREET
OXNARD, CALIFORNIA 93030
(805)385-7858
Fax (805) 385-7417

November 7, 2024

Julio Quair, Chairperson
Chumash Council of Bakersfield
729 Texas Street
Bakersfield, CA, 93307

RE: Assembly Bill 52 and Senate Bill 18 Consultation for the Maulhardt-Stiles Sub-Neighborhood Plan Project. The Plan Area includes five parcels. Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625 within the City of Oxnard, Ventura County, California.

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Very Respectfully,

Joe Pearson II, AICP |Planning and Environmental Services Manager
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November 7, 2024

Gabe Frausto, Chairman
Coastal Band of the Chumash Nation
P.O. Box 40653
Santa Barbara, CA, 93140

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November 7, 2024

Violet Walker, Chairperson
Northern Chumash Tribal Council
P.O. Box 6533
Los Osos, CA, 93412

RE: Assembly Bill 52 and Senate Bill 18 Consultation for the Maulhardt-Stiles Sub-Neighborhood Plan Project. The Plan Area includes five parcels. Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625 within the City of Oxnard, Ventura County, California.

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The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by CEQA lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The proposed project includes an General Plan and Specific Plan Amendment and, therefore, must also comply with California Public Resources Code § 65352.3 – 65352.4 (Senate Bill [SB] 18), which requires local governments to conduct meaningful consultation with California Native American tribes on the contact list maintained by the Native American Heritage Commission prior to the adoption or amendment of a city or county general plan for the purpose of protecting cultural places on lands affected by the proposal.

Your tribe's input is important to the City's planning process. We request that you advise us as early as possible if you wish to consult on the proposed project. Under AB 52, you have 30 days and under the provisions of SB 18, have 90 days from the date of receipt of this notice to advise the City if you are interested in further consultation. If you require any additional information or have any questions, please contact me 805-385-8272 or via e-mail at Joe.Pearson@oxnard.org. Thank you for your assistance.

Very Respectfully,

Joe Pearson II, AICP |Planning and Environmental Services Manager
City of Oxnard

Enclosed: Project Location Map and Site Plan

COMMUNITY DEVELOPMENT DEPARTMENT
PLANNING DIVISION
214 SOUTH C STREET
OXNARD, CALIFORNIA 93030
(805)385-7858
Fax (805) 385-7417

November 7, 2024

Nakia Zavalla, Tribal Historic Preservation Officer
Santa Ynez Band of Chumash Indians
100 Via Juana Road
Santa Ynez, CA, 93460

RE: Assembly Bill 52 and Senate Bill 18 Consultation for the Maulhardt-Stiles Sub-Neighborhood Plan Project. The Plan Area includes five parcels. Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625 within the City of Oxnard, Ventura County, California.

Dear Nakia Zavalla, Tribal Historic Preservation Officer

The City of Oxnard (City) is preparing to kick off an Initial Study for the Maulhardt-Stiles Sub-Neighborhood Plan Project (project). The project is subject to the California Environmental Quality Act (CEQA) and the City of Oxnard is the lead agency under CEQA. Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

The Maulhardt/Stiles Property (Project Site) includes 107 acres bordered by Rose Avenue on the east, Cesar Chavez Drive on the north, and Camino del Sol on the south in the City of Oxnard Northeast Community Specific Plan (NECSP) Area. Existing residential development in the East Village Neighborhood borders the Project site on the east. The NECSP allows the preparation of Sub-Neighborhood Plans to create distinctive neighborhoods that are consistent with the goals and objectives of the NECSP. The Sub-Neighborhood Plan proposed for the Project Site defines public spaces, including a site for high school, parks and bicycle and pedestrian circulation facilities and allows a mixture of residential, institutional, and commercial uses. The NECSP Sub-Neighborhood Plan would establish three planning areas, Planning Area A, B and C, that total 107 acres. Planning Area B is approximately 51 acres and consists of the existing Del Sol High School. Planning Areas A and C totals approximately 56 acres and lie in the northern and southern portion of the Sub-Neighborhood Plan, respectively. Del Sol High School, opened by Oxnard Union High School District in July 2023, occupies the central 50.7 acres of the Project Site. OUHSD prepared and certified an EIR in November 2019 for this new high school. The proposed Sub-Neighborhood Plan would allow development of up to 950 residential units on the 44.5 acres located immediately north of the high school (Area A) and approximately 12 acres located on the northeast corner of the Rose Avenue and Camino Del Sol (Area C), 40,000 square-feet of commercial space throughout the site, parks, and associated circulation consisting of roads, bike lanes and sidewalks throughout both Areas A and C.

The result of the Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

Required Entitlements include the following at this time:

- General Plan Amendment
- Specific Plan Amendment
- Zone Change
- Tentative Tract Map

The project site is located at Northeastern Corner of Rose Ave and Camino Del Sol within the City of Oxnard, Ventura County (Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625) within the Park, Residential Low Medium, and General Commercial land use designations and Community Reserve (CR), Multiple Family Residential Planned Development (R-2-PD), General Commercial Planned Development (C-2-PD) zoning district.

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November 7, 2024

Crystal Mendoza, Elders' Council Administrative Assistant
Santa Ynez Band of Chumash Indians
100 Via Juana Road
Santa Ynez, CA, 93460

RE: Assembly Bill 52 and Senate Bill 18 Consultation for the Maulhardt-Stiles Sub-Neighborhood Plan Project. The Plan Area includes five parcels. Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625 within the City of Oxnard, Ventura County, California.

Dear Crystal Mendoza, Elders' Council Administrative Assistant

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Very Respectfully,

Joe Pearson II, AICP |Planning and Environmental Services Manager
City of Oxnard

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November 7, 2024

Wendy Teeter, Cultural Resources Archaeologist
Santa Ynez Band of Chumash Indians
100 Via Juana Road
Santa Ynez, CA, 93460

RE: Assembly Bill 52 and Senate Bill 18 Consultation for the Maulhardt-Stiles Sub-Neighborhood Plan Project. The Plan Area includes five parcels. Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625 within the City of Oxnard, Ventura County, California.

Dear Wendy Teeter, Cultural Resources Archaeologist

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Very Respectfully,

Joe Pearson II, AICP |Planning and Environmental Services Manager
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(805)385-7858
Fax (805) 385-7417

November 7, 2024

Dayna Barrios, Chairwoman
Band of Mission Indians
P.O. Box 364
Ojai, CA, 93024

RE: Assembly Bill 52 and Senate Bill 18 Consultation for the Maulhardt-Stiles Sub-Neighborhood Plan Project. The Plan Area includes five parcels. Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625 within the City of Oxnard, Ventura County, California.

Dear Dayna Barrios, Chairwoman

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The result of the Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

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Very Respectfully,

Joe Pearson II, AICP |Planning and Environmental Services Manager
City of Oxnard

Enclosed: Project Location Map and Site Plan

COMMUNITY DEVELOPMENT DEPARTMENT
PLANNING DIVISION
214 SOUTH C STREET
OXNARD, CALIFORNIA 93030
(805)385-7858
Fax (805) 385-7417

November 7, 2024

Annette Ayala, Cultural Resources Chair
Band of Mission Indians
188 So. Santa Rosa
Ventura, CA 93001

RE: Assembly Bill 52 and Senate Bill 18 Consultation for the Maulhardt-Stiles Sub-Neighborhood Plan Project. The Plan Area includes five parcels. Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625 within the City of Oxnard, Ventura County, California.

Dear Annette Ayala, Cultural Resources Chair

The City of Oxnard (City) is preparing to kick off an Initial Study for the Maulhardt-Stiles Sub-Neighborhood Plan Project (project). The project is subject to the California Environmental Quality Act (CEQA) and the City of Oxnard is the lead agency under CEQA. Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

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Fax (805) 385-7417

November 7, 2024

Frank Arredondo Chumash MLD, Tribal Chair
Ksen~Sku~Mu Chumash
836 Anacapa St # 161
Santa Barbara, Ca 93102

RE: Assembly Bill 52 and Senate Bill 18 Consultation for the Maulhardt-Stiles Sub-Neighborhood Plan Project. The Plan Area includes five parcels. Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625 within the City of Oxnard, Ventura County, California.

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November 7, 2024

Sam Cohen, Government & Legal Affairs Director
Santa Ynez Band of Chumash Indians
100 Via Juana Road
Santa Ynez, CA, 93460

RE: Assembly Bill 52 and Senate Bill 18 Consultation for the Maulhardt-Stiles Sub-Neighborhood Plan Project. The Plan Area includes five parcels. Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625 within the City of Oxnard, Ventura County, California.

Dear Sam Cohen, Government & Legal Affairs Director

The City of Oxnard (City) is preparing to kick off an Initial Study for the Maulhardt-Stiles Sub-Neighborhood Plan Project (project). The project is subject to the California Environmental Quality Act (CEQA) and the City of Oxnard is the lead agency under CEQA. Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

The Maulhardt/Stiles Property (Project Site) includes 107 acres bordered by Rose Avenue on the east, Cesar Chavez Drive on the north, and Camino del Sol on the south in the City of Oxnard Northeast Community Specific Plan (NECSP) Area. Existing residential development in the East Village Neighborhood borders the Project site on the east. The NECSP allows the preparation of Sub-Neighborhood Plans to create distinctive neighborhoods that are consistent with the goals and objectives of the NECSP. The Sub-Neighborhood Plan proposed for the Project Site defines public spaces, including a site for high school, parks and bicycle and pedestrian circulation facilities and allows a mixture of residential, institutional, and commercial uses. The NECSP Sub-Neighborhood Plan would establish three planning areas, Planning Area A, B and C, that total 107 acres. Planning Area B is approximately 51 acres and consists of the existing Del Sol High School. Planning Areas A and C totals approximately 56 acres and lie in the northern and southern portion of the Sub-Neighborhood Plan, respectively. Del Sol High School, opened by Oxnard Union High School District in July 2023, occupies the central 50.7 acres of the Project Site. OUHSD prepared and certified an EIR in November 2019 for this new high school. The proposed Sub-Neighborhood Plan would allow development of up to 950 residential units on the 44.5 acres located immediately north of the high school (Area A) and approximately 12 acres located on the northeast corner of the Rose Avenue and Camino Del Sol (Area C), 40,000 square-feet of commercial space throughout the site, parks, and associated circulation consisting of roads, bike lanes and sidewalks throughout both Areas A and C.

The result of the Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

Required Entitlements include the following at this time:

- General Plan Amendment
- Specific Plan Amendment
- Zone Change
- Tentative Tract Map

The project site is located at Northeastern Corner of Rose Ave and Camino Del Sol within the City of Oxnard, Ventura County (Assessor Parcel Numbers (APNs): 214-0-020-615, -625, and -635, 214-0-020-615, and 214-0-020-625) within the Park, Residential Low Medium, and General Commercial land use designations and Community Reserve (CR), Multiple Family Residential Planned Development (R-2-PD), General Commercial Planned Development (C-2-PD) zoning district.

The proposed project must comply with California Public Resources Code § 21080.3.1 (Assembly Bill [AB] 52 of 2014), which requires local governments to conduct meaningful consultation with California Native American tribes that have requested to be notified by CEQA lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

The proposed project includes an General Plan and Specific Plan Amendment and, therefore, must also comply with California Public Resources Code § 65352.3 – 65352.4 (Senate Bill [SB] 18), which requires local governments to conduct meaningful consultation with California Native American tribes on the contact list maintained by the Native American Heritage Commission prior to the adoption or amendment of a city or county general plan for the purpose of protecting cultural places on lands affected by the proposal.

Your tribe's input is important to the City's planning process. We request that you advise us as early as possible if you wish to consult on the proposed project. Under AB 52, you have 30 days and under the provisions of SB 18, have 90 days from the date of receipt of this notice to advise the City if you are interested in further consultation. If you require any additional information or have any questions, please contact me 805-385-8272 or via e-mail at Joe.Pearson@oxnard.org. Thank you for your assistance.

Very Respectfully,

Joe Pearson II, AICP |Planning and Environmental Services Manager
City of Oxnard

Enclosed: Project Location Map and Site Plan

Santa Ynez Band of Chumash Indians
Tribal Elders' Council
P.O. Box 517 ◆ Santa Ynez ◆ CA ◆ 93460
Phone: (805)688-7997 ◆ Fax: (805)688-9578 ◆

November 27, 2024

City of Oxnard
Community Development Department
Planning Division
214 South C Street
Oxnard, CA 93030

Att.: Joe Pearson II, Planning and Environmental Services Manager

Re: Maulhardt-Stiles Sub Neighborhood Plan Project

Dear Mr. Pearson:

Thank you for contacting the Tribal Elders' Council for the Santa Ynez Band of Chumash Indians.

At this time, the Elders' Council requests no further consultation on this project; however, we understand that as part of NHPA Section 106, we must be notified of the project.

Thank you for remembering that at one time our ancestors walked this sacred land.

Sincerely Yours,

Crystal Mendoza

Crystal Mendoza
Culture Department Office Manager & Administrative Assistant to the Elders Council

Santa Ynez Band of Chumash Indians | Tribal Hall
(805) 325-5537
cmendoza@chumash.gov

APPENDIX T

Alternative 2 Air Quality, Greenhouse Gas, and Energy Emissions

Attachment A

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Maulhardt Ranch - Area A (Alternative 2) Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Maulhardt Ranch - Area A (Alternative 2)
Construction Start Date	1/1/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.20000
Precipitation (days)	21.2000
Location	34.207526675912646, -119.15929784341952
County	Ventura
City	Oxnard
Air District	Ventura County APCD
Air Basin	South Central Coast
TAZ	3438
EDFZ	8
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.37

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Low Rise	87.0000	Dwelling Unit	14.5000	695,360	69,536.0	—	262.000	—
Strip Mall	55.5000	1000sqft	0.00000	55,500.0	3,700.00	—	—	—

City Park	30.0000	Acre	30.0000	0.00000	0.00000	0.00000	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	23.5648	23.5380	34.0957	30.5251	0.10723	1.13125	4.48728	5.61853	1.04781	1.52233	2.57014	—	13,490.7	13,490.7	0.43211	1.10359	14.4486	13,844.8
Mit.	23.5648	23.5380	13.2389	38.6472	0.10723	0.25021	4.48728	4.73749	0.24678	1.52233	1.76911	—	13,490.7	13,490.7	0.43211	1.10359	14.4486	13,844.8
% Reduced	—	—	61%	-27%	—	78%	—	16%	76%	—	31%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	24.3682	24.2142	34.3882	30.4554	0.10723	1.13125	4.48728	5.61853	1.04781	1.52233	2.57014	—	13,481.4	13,481.4	0.43255	1.10403	0.37493	13,821.6
Mit.	23.9934	23.9178	13.5315	38.5775	0.10723	0.25021	4.48728	4.73749	0.24678	1.52233	1.76911	—	13,481.4	13,481.4	0.43255	1.10403	0.37493	13,821.6
% Reduced	2%	1%	61%	-27%	—	78%	—	16%	76%	—	31%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	11.4859	11.4576	18.8827	18.5677	0.05764	0.62094	2.41057	3.03151	0.57380	0.79067	1.36447	—	7,360.14	7,360.14	0.23466	0.55964	3.47242	7,536.26
Mit.	11.4408	11.4220	7.44539	22.9171	0.05764	0.14484	2.41057	2.55541	0.14109	0.79067	0.93176	—	7,360.14	7,360.14	0.23466	0.55964	3.47242	7,536.26

% Reduced	< 0.5%	< 0.5%	61%	-23%	—	77%	—	16%	75%	—	32%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.09618	2.09102	3.44610	3.38860	0.01052	0.11332	0.43993	0.55325	0.10472	0.14430	0.24902	—	1,218.56	1,218.56	0.03885	0.09265	0.57490	1,247.71
Mit.	2.08794	2.08452	1.35878	4.18238	0.01052	0.02643	0.43993	0.46636	0.02575	0.14430	0.17005	—	1,218.56	1,218.56	0.03885	0.09265	0.57490	1,247.71
% Reduced	< 0.5%	< 0.5%	61%	-23%	—	77%	—	16%	75%	—	32%	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	25.0000	25.0000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	25.0000	25.0000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86933	3.13241	34.0957	30.5251	0.10723	1.13125	4.48728	5.61853	1.04781	1.52233	2.57014	—	13,490.7	13,490.7	0.43211	1.10359	14.4486	13,844.8
2028	1.52231	1.31033	9.81192	17.2841	0.02754	0.30438	1.20830	1.51268	0.28036	0.28982	0.57017	—	3,947.54	3,947.54	0.11663	0.13486	4.37014	3,995.01
2029	1.48023	1.27476	9.40146	16.9786	0.02753	0.27978	1.20830	1.48808	0.25773	0.28982	0.54754	—	3,914.51	3,914.51	0.11620	0.13486	3.91175	3,961.51

2030	1.43323	1.20476	9.18152	16.7285	0.02753	0.26425	1.20830	1.47256	0.24344	0.28982	0.53326	—	3,881.73	3,881.73	0.11620	0.13072	3.47335	3,927.06
2031	1.39284	1.17041	8.84744	16.4231	0.02753	0.24737	1.20830	1.45567	0.22791	0.28982	0.51773	—	3,849.43	3,849.43	0.11443	0.09793	3.07022	3,884.55
2032	23.5648	23.5380	0.81099	1.74163	0.00173	0.00813	0.21018	0.21831	0.00748	0.04927	0.05674	—	324.011	324.011	0.00754	0.00215	0.40796	325.247
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86007	3.12492	34.3882	30.4554	0.10723	1.13125	4.48728	5.61853	1.04781	1.52233	2.57014	—	13,481.4	13,481.4	0.43255	1.10403	0.37493	13,821.6
2028	1.51796	1.30597	9.87783	16.8785	0.02754	0.30438	1.20830	1.51268	0.28036	0.28982	0.57017	—	3,902.95	3,902.95	0.11977	0.13664	0.11322	3,946.78
2029	1.47765	1.23802	9.50016	16.5925	0.02753	0.27978	1.20830	1.48808	0.25773	0.28982	0.54754	—	3,870.80	3,870.80	0.11798	0.13663	0.10135	3,914.57
2030	1.43106	1.20041	9.24192	16.3632	0.02753	0.26425	1.20830	1.47256	0.24344	0.28982	0.53326	—	3,838.83	3,838.83	0.11798	0.13072	0.09024	3,880.83
2031	24.3682	24.2142	8.91043	16.1110	0.02753	0.24737	1.20830	1.45567	0.22791	0.28982	0.51773	—	3,807.29	3,807.29	0.11620	0.13072	0.07972	3,849.23
2032	24.3394	24.1893	6.84971	12.0844	0.01568	0.20682	0.40624	0.61307	0.19028	0.09522	0.28550	—	1,996.18	1,996.18	0.07149	0.02807	0.02048	2,006.35
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	2.22336	1.81212	18.8827	18.5677	0.05764	0.62094	2.41057	3.03151	0.57380	0.79067	1.36447	—	7,360.14	7,360.14	0.23466	0.55964	3.47242	7,536.26
2028	1.08752	0.93695	7.06919	12.0985	0.01972	0.21801	0.85390	1.07191	0.20080	0.20469	0.40550	—	2,800.41	2,800.41	0.08452	0.09659	1.35000	2,832.65
2029	1.05322	0.88177	6.75668	11.8653	0.01967	0.19984	0.85157	1.05141	0.18409	0.20414	0.38823	—	2,769.69	2,769.69	0.08427	0.09633	1.20527	2,801.71
2030	1.02023	0.85519	6.59861	11.7041	0.01967	0.18875	0.85157	1.04032	0.17389	0.20414	0.37802	—	2,746.77	2,746.77	0.08300	0.09337	1.07095	2,777.74
2031	2.25234	2.09603	6.25392	11.2890	0.01902	0.17515	0.80820	0.98335	0.16136	0.19362	0.35497	—	2,624.97	2,624.97	0.08055	0.08775	0.89638	2,654.03
2032	11.4859	11.4576	1.13680	2.09587	0.00255	0.02843	0.12405	0.15248	0.02615	0.02905	0.05520	—	360.551	360.551	0.01166	0.00660	0.10550	362.913
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.40576	0.33071	3.44610	3.38860	0.01052	0.11332	0.43993	0.55325	0.10472	0.14430	0.24902	—	1,218.56	1,218.56	0.03885	0.09265	0.57490	1,247.71
2028	0.19847	0.17099	1.29013	2.20798	0.00360	0.03979	0.15584	0.19562	0.03665	0.03736	0.07400	—	463.639	463.639	0.01399	0.01599	0.22351	468.978
2029	0.19221	0.16092	1.23309	2.16542	0.00359	0.03647	0.15541	0.19188	0.03360	0.03725	0.07085	—	458.554	458.554	0.01395	0.01595	0.19955	463.855
2030	0.18619	0.15607	1.20425	2.13599	0.00359	0.03445	0.15541	0.18986	0.03173	0.03725	0.06899	—	454.758	454.758	0.01374	0.01546	0.17731	459.886
2031	0.41105	0.38253	1.14134	2.06024	0.00347	0.03196	0.14750	0.17946	0.02945	0.03534	0.06478	—	434.593	434.593	0.01334	0.01453	0.14841	439.404
2032	2.09618	2.09102	0.20747	0.38250	0.00047	0.00519	0.02264	0.02783	0.00477	0.00530	0.01007	—	59.6933	59.6933	0.00193	0.00109	0.01747	60.0844

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.17700	0.96528	13.2389	38.6472	0.10723	0.25021	4.48728	4.73749	0.24678	1.52233	1.76911	—	13,490.7	13,490.7	0.43211	1.10359	14.4486	13,844.8
2028	0.83421	0.76367	3.92800	19.2918	0.02754	0.09791	1.20830	1.30622	0.09357	0.28982	0.38339	—	3,947.54	3,947.54	0.11663	0.13486	4.37014	3,995.01
2029	0.81405	0.74652	3.83727	19.0106	0.02753	0.09377	1.20830	1.30207	0.08976	0.28982	0.37957	—	3,914.51	3,914.51	0.11620	0.13486	3.91175	3,961.51
2030	0.78911	0.69505	3.79085	18.7693	0.02753	0.09062	1.20830	1.29892	0.08686	0.28982	0.37667	—	3,881.73	3,881.73	0.11620	0.13072	3.47335	3,927.06
2031	0.76920	0.67792	3.71685	18.4977	0.02753	0.08800	1.20830	1.29631	0.08445	0.28982	0.37427	—	3,849.43	3,849.43	0.11443	0.09793	3.07022	3,884.55
2032	23.5648	23.5380	0.81099	1.74163	0.00173	0.00813	0.21018	0.21831	0.00748	0.04927	0.05674	—	324.011	324.011	0.00754	0.00215	0.40796	325.247
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.16774	0.95779	13.5315	38.5775	0.10723	0.25021	4.48728	4.73749	0.24678	1.52233	1.76911	—	13,481.4	13,481.4	0.43255	1.10403	0.37493	13,821.6
2028	0.82985	0.75931	3.99390	18.8862	0.02754	0.09791	1.20830	1.30622	0.09357	0.28982	0.38339	—	3,902.95	3,902.95	0.11977	0.13664	0.11322	3,946.78
2029	0.81146	0.70978	3.93597	18.6245	0.02753	0.09377	1.20830	1.30207	0.08976	0.28982	0.37957	—	3,870.80	3,870.80	0.11798	0.13663	0.10135	3,914.57
2030	0.78693	0.69070	3.85125	18.4040	0.02753	0.09062	1.20830	1.29892	0.08686	0.28982	0.37667	—	3,838.83	3,838.83	0.11798	0.13072	0.09024	3,880.83
2031	23.9934	23.9178	3.77984	18.1856	0.02753	0.08800	1.20830	1.29631	0.08445	0.28982	0.37427	—	3,807.29	3,807.29	0.11620	0.13072	0.07972	3,849.23
2032	23.9732	23.9003	3.10426	12.7795	0.01568	0.08081	0.40624	0.48705	0.07621	0.09522	0.17143	—	1,996.18	1,996.18	0.07149	0.02807	0.02048	2,006.35
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.76885	0.64276	7.44539	22.9171	0.05764	0.14484	2.41057	2.55541	0.14109	0.79067	0.93176	—	7,360.14	7,360.14	0.23466	0.55964	3.47242	7,536.26
2028	0.59467	0.54541	2.85487	13.5365	0.01972	0.07013	0.85390	0.92403	0.06702	0.20469	0.27171	—	2,800.41	2,800.41	0.08452	0.09659	1.35000	2,832.65
2029	0.57738	0.50445	2.78226	13.3167	0.01967	0.06698	0.85157	0.91854	0.06411	0.20414	0.26825	—	2,769.69	2,769.69	0.08427	0.09633	1.20527	2,801.71
2030	0.56014	0.49111	2.74813	13.1618	0.01967	0.06473	0.85157	0.91629	0.06204	0.20414	0.26618	—	2,746.77	2,746.77	0.08300	0.09337	1.07095	2,777.74
2031	1.82051	1.75500	2.65894	12.6948	0.01902	0.06277	0.80820	0.87096	0.06015	0.19362	0.25377	—	2,624.97	2,624.97	0.08055	0.08775	0.89638	2,654.03
2032	11.4408	11.4220	0.67504	2.18157	0.00255	0.01289	0.12405	0.13694	0.01209	0.02905	0.04114	—	360.551	360.551	0.01166	0.00660	0.10550	362.913
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.14032	0.11730	1.35878	4.18238	0.01052	0.02643	0.43993	0.46636	0.02575	0.14430	0.17005	—	1,218.56	1,218.56	0.03885	0.09265	0.57490	1,247.71

2028	0.10853	0.09954	0.52101	2.47042	0.00360	0.01280	0.15584	0.16864	0.01223	0.03736	0.04959	—	463.639	463.639	0.01399	0.01599	0.22351	468.978
2029	0.10537	0.09206	0.50776	2.43030	0.00359	0.01222	0.15541	0.16763	0.01170	0.03725	0.04896	—	458.554	458.554	0.01395	0.01595	0.19955	463.855
2030	0.10223	0.08963	0.50153	2.40202	0.00359	0.01181	0.15541	0.16722	0.01132	0.03725	0.04858	—	454.758	454.758	0.01374	0.01546	0.17731	459.886
2031	0.33224	0.32029	0.48526	2.31679	0.00347	0.01145	0.14750	0.15895	0.01098	0.03534	0.04631	—	434.593	434.593	0.01334	0.01453	0.14841	439.404
2032	2.08794	2.08452	0.12319	0.39814	0.00047	0.00235	0.02264	0.02499	0.00221	0.00530	0.00751	—	59.6933	59.6933	0.00193	0.00109	0.01747	60.0844

3. Construction Emissions Details

3.1. Grading (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.50534	2.94546	25.5801	27.2816	0.06093	1.04307	—	1.04307	0.95962	—	0.95962	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72
Dust From Material Movement	—	—	—	—	—	—	2.41595	2.41595	—	0.95346	0.95346	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.50534	2.94546	25.5801	27.2816	0.06093	1.04307	—	1.04307	0.95962	—	0.95962	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72

Dust From Material Movement	—	—	—	—	—	—	2.41595	2.41595	—	0.95346	0.95346	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.67104	1.40414	12.1944	13.0055	0.02905	0.49724	—	0.49724	0.45746	—	0.45746	—	3,145.39	3,145.39	0.12759	0.02552	—	3,156.18
Dust From Material Movement	—	—	—	—	—	—	1.15171	1.15171	—	0.45453	0.45453	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30496	0.25626	2.22547	2.37350	0.00530	0.09075	—	0.09075	0.08349	—	0.08349	—	520.754	520.754	0.02112	0.00422	—	522.542
Dust From Material Movement	—	—	—	—	—	—	0.21019	0.21019	—	0.08295	0.08295	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08841	0.07893	0.07848	1.09834	0.00000	0.00000	0.26142	0.26142	0.00000	0.06128	0.06128	—	257.540	257.540	0.00353	0.00948	0.89235	261.345
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.27558	0.10803	8.43709	2.14510	0.04630	0.08818	1.80991	1.89809	0.08818	0.50759	0.59578	—	6,635.09	6,635.09	0.16094	1.04058	13.5562	6,962.76

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08796	0.07804	0.08885	0.99120	0.00000	0.00000	0.26142	0.26142	0.00000	0.06128	0.06128	—	246.165	246.165	0.00397	0.00992	0.02310	249.244
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.26676	0.10141	8.71928	2.18258	0.04630	0.08818	1.80991	1.89809	0.08818	0.50759	0.59578	—	6,637.21	6,637.21	0.16094	1.04058	0.35183	6,951.67
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04172	0.03699	0.04193	0.47388	0.00000	0.00000	0.12292	0.12292	0.00000	0.02879	0.02879	—	118.202	118.202	0.00189	0.00473	0.18350	119.842
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.13032	0.05045	4.18181	1.02995	0.02207	0.04204	0.85363	0.89567	0.04204	0.23968	0.28172	—	3,163.45	3,163.45	0.07672	0.49606	2.79237	3,315.99
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00761	0.00675	0.00765	0.08648	0.00000	0.00000	0.02243	0.02243	0.00000	0.00525	0.00525	—	19.5697	19.5697	0.00031	0.00078	0.03038	19.8413
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.02378	0.00921	0.76318	0.18797	0.00403	0.00767	0.15579	0.16346	0.00767	0.04374	0.05141	—	523.746	523.746	0.01270	0.08213	0.46231	549.000

3.2. Grading (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.81301	0.77833	4.72332	35.4037	0.06093	0.16202	—	0.16202	0.15860	—	0.15860	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72
Dust From Material Movement	—	—	—	—	—	—	2.41595	2.41595	—	0.95346	0.95346	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.81301	0.77833	4.72332	35.4037	0.06093	0.16202	—	0.16202	0.15860	—	0.15860	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72
Dust From Material Movement	—	—	—	—	—	—	2.41595	2.41595	—	0.95346	0.95346	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38757	0.37104	2.25167	16.8774	0.02905	0.07724	—	0.07724	0.07560	—	0.07560	—	3,145.39	3,145.39	0.12759	0.02552	—	3,156.18
Dust From Material Movement	—	—	—	—	—	—	1.15171	1.15171	—	0.45453	0.45453	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07073	0.06771	0.41093	3.08012	0.00530	0.01410	—	0.01410	0.01380	—	0.01380	—	520.754	520.754	0.02112	0.00422	—	522.542
Dust From Material Movement	—	—	—	—	—	—	0.21019	0.21019	—	0.08295	0.08295	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08841	0.07893	0.07848	1.09834	0.00000	0.00000	0.26142	0.26142	0.00000	0.06128	0.06128	—	257.540	257.540	0.00353	0.00948	0.89235	261.345
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.27558	0.10803	8.43709	2.14510	0.04630	0.08818	1.80991	1.89809	0.08818	0.50759	0.59578	—	6,635.09	6,635.09	0.16094	1.04058	13.5562	6,962.76
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08796	0.07804	0.08885	0.99120	0.00000	0.00000	0.26142	0.26142	0.00000	0.06128	0.06128	—	246.165	246.165	0.00397	0.00992	0.02310	249.244
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.26676	0.10141	8.71928	2.18258	0.04630	0.08818	1.80991	1.89809	0.08818	0.50759	0.59578	—	6,637.21	6,637.21	0.16094	1.04058	0.35183	6,951.67
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04172	0.03699	0.04193	0.47388	0.00000	0.00000	0.12292	0.12292	0.00000	0.02879	0.02879	—	118.202	118.202	0.00189	0.00473	0.18350	119.842
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.13032	0.05045	4.18181	1.02995	0.02207	0.04204	0.85363	0.89567	0.04204	0.23968	0.28172	—	3,163.45	3,163.45	0.07672	0.49606	2.79237	3,315.99
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00761	0.00675	0.00765	0.08648	0.00000	0.00000	0.02243	0.02243	0.00000	0.00525	0.00525	—	19.5697	19.5697	0.00031	0.00078	0.03038	19.8413
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.02378	0.00921	0.76318	0.18797	0.00403	0.00767	0.15579	0.16346	0.00767	0.04374	0.05141	—	523.746	523.746	0.01270	0.08213	0.46231	549.000

3.3. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	1.23076	1.02988	9.39093	12.9379	0.02340	0.33657	—	0.33657	0.30965	—	0.30965	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23076	1.02988	9.39093	12.9379	0.02340	0.33657	—	0.33657	0.30965	—	0.30965	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29143	0.24387	2.22368	3.06358	0.00554	0.07970	—	0.07970	0.07332	—	0.07332	—	567.605	567.605	0.02302	0.00460	—	569.553
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05319	0.04451	0.40582	0.55910	0.00101	0.01454	—	0.01454	0.01338	—	0.01338	—	93.9736	93.9736	0.00381	0.00076	—	94.2961
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.35539	0.31728	0.31551	4.41534	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	1,035.31	1,035.31	0.01418	0.03811	3.58723	1,050.61
Vendor	0.02377	0.01225	0.64041	0.20165	0.00414	0.00827	0.15740	0.16567	0.00414	0.04349	0.04762	—	546.677	546.677	0.00698	0.08144	1.27189	572.392
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.35362	0.31374	0.35716	3.98462	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	989.584	989.584	0.01595	0.03988	0.09285	1,001.96
Vendor	0.02296	0.01144	0.66426	0.20855	0.00414	0.00827	0.15740	0.16567	0.00414	0.04349	0.04762	—	546.933	546.933	0.00698	0.08144	0.03301	571.409
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08331	0.07387	0.08373	0.94625	0.00000	0.00000	0.24546	0.24546	0.00000	0.05748	0.05748	—	236.026	236.026	0.00378	0.00944	0.36642	239.301
Vendor	0.00553	0.00280	0.15721	0.04852	0.00098	0.00196	0.03684	0.03880	0.00098	0.01019	0.01117	—	129.473	129.473	0.00165	0.01928	0.13013	135.391
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01520	0.01348	0.01528	0.17269	0.00000	0.00000	0.04480	0.04480	0.00000	0.01049	0.01049	—	39.0768	39.0768	0.00063	0.00156	0.06066	39.6190
Vendor	0.00101	0.00051	0.02869	0.00885	0.00018	0.00036	0.00672	0.00708	0.00018	0.00186	0.00204	—	21.4357	21.4357	0.00027	0.00319	0.02155	22.4155
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4. Building Construction (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50842	0.45445	3.07878	14.9548	0.02340	0.09968	—	0.09968	0.09487	—	0.09487	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.50842	0.45445	3.07878	14.9548	0.02340	0.09968	—	0.09968	0.09487	—	0.09487	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12039	0.10761	0.72903	3.54115	0.00554	0.02360	—	0.02360	0.02246	—	0.02246	—	567.605	567.605	0.02302	0.00460	—	569.553
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02197	0.01964	0.13305	0.64626	0.00101	0.00431	—	0.00431	0.00410	—	0.00410	—	93.9736	93.9736	0.00381	0.00076	—	94.2961
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.35539	0.31728	0.31551	4.41534	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	1,035.31	1,035.31	0.01418	0.03811	3.58723	1,050.61
Vendor	0.02377	0.01225	0.64041	0.20165	0.00414	0.00827	0.15740	0.16567	0.00414	0.04349	0.04762	—	546.677	546.677	0.00698	0.08144	1.27189	572.392
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.35362	0.31374	0.35716	3.98462	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	989.584	989.584	0.01595	0.03988	0.09285	1,001.96
Vendor	0.02296	0.01144	0.66426	0.20855	0.00414	0.00827	0.15740	0.16567	0.00414	0.04349	0.04762	—	546.933	546.933	0.00698	0.08144	0.03301	571.409
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.08331	0.07387	0.08373	0.94625	0.00000	0.00000	0.24546	0.24546	0.00000	0.05748	0.05748	—	236.026	236.026	0.00378	0.00944	0.36642	239.301
Vendor	0.00553	0.00280	0.15721	0.04852	0.00098	0.00196	0.03684	0.03880	0.00098	0.01019	0.01117	—	129.473	129.473	0.00165	0.01928	0.13013	135.391
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01520	0.01348	0.01528	0.17269	0.00000	0.00000	0.04480	0.04480	0.00000	0.01049	0.01049	—	39.0768	39.0768	0.00063	0.00156	0.06066	39.6190
Vendor	0.00101	0.00051	0.02869	0.00885	0.00018	0.00036	0.00672	0.00708	0.00018	0.00186	0.00204	—	21.4357	21.4357	0.00027	0.00319	0.02155	22.4155
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18481	0.99143	8.92495	12.9352	0.02340	0.30024	—	0.30024	0.27622	—	0.27622	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18481	0.99143	8.92495	12.9352	0.02340	0.30024	—	0.30024	0.27622	—	0.27622	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.84861	0.71011	6.39243	9.26478	0.01676	0.21504	—	0.21504	0.19784	—	0.19784	—	1,717.16	1,717.16	0.06966	0.01393	—	1,723.05
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15487	0.12959	1.16662	1.69082	0.00306	0.03925	—	0.03925	0.03611	—	0.03611	—	284.296	284.296	0.01153	0.00231	—	285.271
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.31374	0.30665	0.27917	4.15212	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	1,016.54	1,016.54	0.01241	0.03811	3.24023	1,031.45
Vendor	0.02377	0.01225	0.60780	0.19671	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	533.538	533.538	0.00698	0.07730	1.12991	557.879
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.31019	0.30310	0.32083	3.74001	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	971.678	971.678	0.01595	0.03988	0.08394	984.045
Vendor	0.02296	0.01144	0.63205	0.20320	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	533.818	533.818	0.00657	0.07730	0.02928	557.048
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22217	0.21836	0.22725	2.69082	0.00000	0.00000	0.74245	0.74245	0.00000	0.17387	0.17387	—	701.017	701.017	0.01016	0.02730	1.00086	710.406
Vendor	0.01673	0.00848	0.44951	0.14292	0.00296	0.00296	0.11144	0.11441	0.00296	0.03082	0.03379	—	382.227	382.227	0.00471	0.05537	0.34914	399.194
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04055	0.03985	0.04147	0.49107	0.00000	0.00000	0.13550	0.13550	0.00000	0.03173	0.03173	—	116.061	116.061	0.00168	0.00452	0.16570	117.616
Vendor	0.00305	0.00155	0.08204	0.02608	0.00054	0.00054	0.02034	0.02088	0.00054	0.00563	0.00617	—	63.2821	63.2821	0.00078	0.00917	0.05780	66.0911

Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.6. Building Construction (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.49671	0.44477	3.04102	14.9430	0.02340	0.09378	—	0.09378	0.08943	—	0.08943	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.49671	0.44477	3.04102	14.9430	0.02340	0.09378	—	0.09378	0.08943	—	0.08943	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.35576	0.31856	2.17811	10.7028	0.01676	0.06717	—	0.06717	0.06406	—	0.06406	—	1,717.16	1,717.16	0.06966	0.01393	—	1,723.05
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.06493	0.05814	0.39751	1.95326	0.00306	0.01226	—	0.01226	0.01169	—	0.01169	—	284.296	284.296	0.01153	0.00231	—	285.271
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.31374	0.30665	0.27917	4.15212	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	1,016.54	1,016.54	0.01241	0.03811	3.24023	1,031.45
Vendor	0.02377	0.01225	0.60780	0.19671	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	533.538	533.538	0.00698	0.07730	1.12991	557.879
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.31019	0.30310	0.32083	3.74001	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	971.678	971.678	0.01595	0.03988	0.08394	984.045
Vendor	0.02296	0.01144	0.63205	0.20320	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	533.818	533.818	0.00657	0.07730	0.02928	557.048
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22217	0.21836	0.22725	2.69082	0.00000	0.00000	0.74245	0.74245	0.00000	0.17387	0.17387	—	701.017	701.017	0.01016	0.02730	1.00086	710.406
Vendor	0.01673	0.00848	0.44951	0.14292	0.00296	0.00296	0.11144	0.11441	0.00296	0.03082	0.03379	—	382.227	382.227	0.00471	0.05537	0.34914	399.194
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04055	0.03985	0.04147	0.49107	0.00000	0.00000	0.13550	0.13550	0.00000	0.03173	0.03173	—	116.061	116.061	0.00168	0.00452	0.16570	117.616
Vendor	0.00305	0.00155	0.08204	0.02608	0.00054	0.00054	0.02034	0.02088	0.00054	0.00563	0.00617	—	63.2821	63.2821	0.00078	0.00917	0.05780	66.0911
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.7. Building Construction (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.15336	0.96514	8.58166	12.9012	0.02340	0.27564	—	0.27564	0.25359	—	0.25359	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.15336	0.96514	8.58166	12.9012	0.02340	0.27564	—	0.27564	0.25359	—	0.25359	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.82383	0.68938	6.12975	9.21517	0.01671	0.19689	—	0.19689	0.18114	—	0.18114	—	1,712.02	1,712.02	0.06945	0.01389	—	1,717.90
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15035	0.12581	1.11868	1.68177	0.00305	0.03593	—	0.03593	0.03306	—	0.03306	—	283.445	283.445	0.01150	0.00230	—	284.418
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30310	0.29778	0.24461	3.88890	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	998.803	998.803	0.01241	0.03811	2.91199	1,013.38
Vendor	0.02377	0.01184	0.57519	0.18843	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	518.869	518.869	0.00657	0.07730	0.99977	543.070
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30133	0.26145	0.31905	3.49718	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	954.800	954.800	0.01418	0.03988	0.07550	967.114
Vendor	0.02296	0.01144	0.59945	0.19411	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	519.168	519.168	0.00657	0.07730	0.02585	542.394
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21270	0.18422	0.20194	2.51381	0.00000	0.00000	0.74043	0.74043	0.00000	0.17340	0.17340	—	686.959	686.959	0.01013	0.02722	0.89765	696.222
Vendor	0.01669	0.00817	0.42499	0.13633	0.00295	0.00295	0.11114	0.11409	0.00295	0.03074	0.03369	—	370.711	370.711	0.00469	0.05522	0.30762	387.590
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03882	0.03362	0.03685	0.45877	0.00000	0.00000	0.13513	0.13513	0.00000	0.03164	0.03164	—	113.734	113.734	0.00168	0.00451	0.14862	115.267
Vendor	0.00305	0.00149	0.07756	0.02488	0.00054	0.00054	0.02028	0.02082	0.00054	0.00561	0.00615	—	61.3754	61.3754	0.00078	0.00914	0.05093	64.1700
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.8. Building Construction (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.48718	0.43690	3.01747	14.9332	0.02340	0.08963	—	0.08963	0.08562	—	0.08562	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48718	0.43690	3.01747	14.9332	0.02340	0.08963	—	0.08963	0.08562	—	0.08562	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34799	0.31207	2.15534	10.6666	0.01671	0.06402	—	0.06402	0.06116	—	0.06116	—	1,712.02	1,712.02	0.06945	0.01389	—	1,717.90
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06351	0.05695	0.39335	1.94665	0.00305	0.01168	—	0.01168	0.01116	—	0.01116	—	283.445	283.445	0.01150	0.00230	—	284.418
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30310	0.29778	0.24461	3.88890	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	998.803	998.803	0.01241	0.03811	2.91199	1,013.38
Vendor	0.02377	0.01184	0.57519	0.18843	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	518.869	518.869	0.00657	0.07730	0.99977	543.070
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30133	0.26145	0.31905	3.49718	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	954.800	954.800	0.01418	0.03988	0.07550	967.114
Vendor	0.02296	0.01144	0.59945	0.19411	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	519.168	519.168	0.00657	0.07730	0.02585	542.394
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21270	0.18422	0.20194	2.51381	0.00000	0.00000	0.74043	0.74043	0.00000	0.17340	0.17340	—	686.959	686.959	0.01013	0.02722	0.89765	696.222
Vendor	0.01669	0.00817	0.42499	0.13633	0.00295	0.00295	0.11114	0.11409	0.00295	0.03074	0.03369	—	370.711	370.711	0.00469	0.05522	0.30762	387.590
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03882	0.03362	0.03685	0.45877	0.00000	0.00000	0.13513	0.13513	0.00000	0.03164	0.03164	—	113.734	113.734	0.00168	0.00451	0.14862	115.267
Vendor	0.00305	0.00149	0.07756	0.02488	0.00054	0.00054	0.02028	0.02082	0.00054	0.00561	0.00615	—	61.3754	61.3754	0.00078	0.00914	0.05093	64.1700
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.9. Building Construction (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.12372	0.94034	8.39196	12.8848	0.02340	0.26012	—	0.26012	0.23931	—	0.23931	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	1.12372	0.94034	8.39196	12.8848	0.02340	0.26012	—	0.26012	0.23931	—	0.23931	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.80266	0.67167	5.99426	9.20340	0.01671	0.18580	—	0.18580	0.17093	—	0.17093	—	1,712.02	1,712.02	0.06945	0.01389	—	1,717.90
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.14649	0.12258	1.09395	1.67962	0.00305	0.03391	—	0.03391	0.03120	—	0.03120	—	283.445	283.445	0.01150	0.00230	—	284.418
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29069	0.25258	0.24283	3.66025	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	982.023	982.023	0.01241	0.03811	2.59781	996.287
Vendor	0.01882	0.01184	0.54672	0.18348	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	502.869	502.869	0.00657	0.07317	0.87553	525.713
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28892	0.24904	0.28272	3.28890	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	938.816	938.816	0.01418	0.03811	0.06752	950.595
Vendor	0.01841	0.01103	0.56724	0.18957	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	503.186	503.186	0.00657	0.07317	0.02272	525.176
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.20384	0.17535	0.19941	2.36758	0.00000	0.00000	0.74043	0.74043	0.00000	0.17340	0.17340	—	675.455	675.455	0.00886	0.02722	0.80051	684.589
Vendor	0.01373	0.00817	0.40494	0.13309	0.00295	0.00295	0.11114	0.11409	0.00295	0.03074	0.03369	—	359.287	359.287	0.00469	0.05226	0.27044	375.249
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03720	0.03200	0.03639	0.43208	0.00000	0.00000	0.13513	0.13513	0.00000	0.03164	0.03164	—	111.829	111.829	0.00147	0.00451	0.13253	113.341
Vendor	0.00251	0.00149	0.07390	0.02429	0.00054	0.00054	0.02028	0.02082	0.00054	0.00561	0.00615	—	59.4841	59.4841	0.00078	0.00865	0.04477	62.1268
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.10. Building Construction (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47959	0.43063	3.00129	14.9256	0.02340	0.08648	—	0.08648	0.08272	—	0.08272	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47959	0.43063	3.00129	14.9256	0.02340	0.08648	—	0.08648	0.08272	—	0.08272	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.34257	0.30759	2.14378	10.6611	0.01671	0.06177	—	0.06177	0.05909	—	0.05909	—	1,712.02	1,712.02	0.06945	0.01389	—	1,717.90
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06252	0.05614	0.39124	1.94565	0.00305	0.01127	—	0.01127	0.01078	—	0.01078	—	283.445	283.445	0.01150	0.00230	—	284.418
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29069	0.25258	0.24283	3.66025	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	982.023	982.023	0.01241	0.03811	2.59781	996.287
Vendor	0.01882	0.01184	0.54672	0.18348	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	502.869	502.869	0.00657	0.07317	0.87553	525.713
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28892	0.24904	0.28272	3.28890	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	938.816	938.816	0.01418	0.03811	0.06752	950.595
Vendor	0.01841	0.01103	0.56724	0.18957	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	503.186	503.186	0.00657	0.07317	0.02272	525.176
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20384	0.17535	0.19941	2.36758	0.00000	0.00000	0.74043	0.74043	0.00000	0.17340	0.17340	—	675.455	675.455	0.00886	0.02722	0.80051	684.589
Vendor	0.01373	0.00817	0.40494	0.13309	0.00295	0.00295	0.11114	0.11409	0.00295	0.03074	0.03369	—	359.287	359.287	0.00469	0.05226	0.27044	375.249
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03720	0.03200	0.03639	0.43208	0.00000	0.00000	0.13513	0.13513	0.00000	0.03164	0.03164	—	111.829	111.829	0.00147	0.00451	0.13253	113.341
Vendor	0.00251	0.00149	0.07390	0.02429	0.00054	0.00054	0.02028	0.02082	0.00054	0.00561	0.00615	—	59.4841	59.4841	0.00078	0.00865	0.04477	62.1268

Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.11. Building Construction (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.09751	0.91839	8.11856	12.8454	0.02340	0.24323	—	0.24323	0.22377	—	0.22377	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.09751	0.91839	8.11856	12.8454	0.02340	0.24323	—	0.24323	0.22377	—	0.22377	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.72380	0.60567	5.35412	8.47142	0.01543	0.16041	—	0.16041	0.14758	—	0.14758	—	1,580.69	1,580.69	0.06412	0.01282	—	1,586.11
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.13209	0.11053	0.97713	1.54603	0.00282	0.02927	—	0.02927	0.02693	—	0.02693	—	261.701	261.701	0.01062	0.00212	—	262.599
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27651	0.24018	0.20650	3.39880	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	966.466	966.466	0.01064	0.00532	2.30708	970.624
Vendor	0.01882	0.01184	0.52239	0.17894	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	486.133	486.133	0.00657	0.07317	0.76313	508.864
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27651	0.23840	0.24815	3.08063	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	923.993	923.993	0.01241	0.03811	0.06002	935.719
Vendor	0.01801	0.01103	0.54372	0.18503	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	486.464	486.464	0.00657	0.07317	0.01970	508.452
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18119	0.15606	0.16132	2.03048	0.00000	0.00000	0.68363	0.68363	0.00000	0.16009	0.16009	—	613.781	613.781	0.00818	0.02513	0.65870	622.134
Vendor	0.01214	0.00754	0.35510	0.11988	0.00273	0.00273	0.10261	0.10534	0.00273	0.02838	0.03111	—	320.693	320.693	0.00433	0.04825	0.21653	335.397
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03307	0.02848	0.02944	0.37056	0.00000	0.00000	0.12476	0.12476	0.00000	0.02922	0.02922	—	101.618	101.618	0.00135	0.00416	0.10906	103.001
Vendor	0.00222	0.00138	0.06481	0.02188	0.00050	0.00050	0.01873	0.01922	0.00050	0.00518	0.00568	—	53.0943	53.0943	0.00072	0.00799	0.03585	55.5288
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.12. Building Construction (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47387	0.42590	2.98797	14.9199	0.02340	0.08387	—	0.08387	0.08032	—	0.08032	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47387	0.42590	2.98797	14.9199	0.02340	0.08387	—	0.08387	0.08032	—	0.08032	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31251	0.28088	1.97054	9.83956	0.01543	0.05531	—	0.05531	0.05297	—	0.05297	—	1,580.69	1,580.69	0.06412	0.01282	—	1,586.11
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05703	0.05126	0.35962	1.79572	0.00282	0.01009	—	0.01009	0.00967	—	0.00967	—	261.701	261.701	0.01062	0.00212	—	262.599
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27651	0.24018	0.20650	3.39880	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	966.466	966.466	0.01064	0.00532	2.30708	970.624
Vendor	0.01882	0.01184	0.52239	0.17894	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	486.133	486.133	0.00657	0.07317	0.76313	508.864
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27651	0.23840	0.24815	3.08063	0.00000	0.00000	1.05090	1.05090	0.00000	0.24633	0.24633	—	923.993	923.993	0.01241	0.03811	0.06002	935.719
Vendor	0.01801	0.01103	0.54372	0.18503	0.00414	0.00414	0.15740	0.16154	0.00414	0.04349	0.04762	—	486.464	486.464	0.00657	0.07317	0.01970	508.452
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18119	0.15606	0.16132	2.03048	0.00000	0.00000	0.68363	0.68363	0.00000	0.16009	0.16009	—	613.781	613.781	0.00818	0.02513	0.65870	622.134
Vendor	0.01214	0.00754	0.35510	0.11988	0.00273	0.00273	0.10261	0.10534	0.00273	0.02838	0.03111	—	320.693	320.693	0.00433	0.04825	0.21653	335.397
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03307	0.02848	0.02944	0.37056	0.00000	0.00000	0.12476	0.12476	0.00000	0.02922	0.02922	—	101.618	101.618	0.00135	0.00416	0.10906	103.001
Vendor	0.00222	0.00138	0.06481	0.02188	0.00050	0.00050	0.01873	0.01922	0.00050	0.00518	0.00568	—	53.0943	53.0943	0.00072	0.00799	0.03585	55.5288
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.13. Paving (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.74689	0.62759	6.12541	9.88333	0.01395	0.20981	—	0.20981	0.19303	—	0.19303	—	1,510.63	1,510.63	0.06128	0.01226	—	1,515.81
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04093	0.03439	0.33564	0.54155	0.00076	0.01150	—	0.01150	0.01058	—	0.01058	—	82.7742	82.7742	0.00336	0.00067	—	83.0583
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00747	0.00628	0.06125	0.09883	0.00014	0.00210	—	0.00210	0.00193	—	0.00193	—	13.7042	13.7042	0.00056	0.00011	—	13.7512
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05159	0.04448	0.04630	0.57475	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	172.387	172.387	0.00231	0.00711	0.01120	174.574

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00281	0.00242	0.00250	0.03147	0.00000	0.00000	0.01060	0.01060	0.00000	0.00248	0.00248	—	9.51430	9.51430	0.00013	0.00039	0.01021	9.64378
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00051	0.00044	0.00046	0.00574	0.00000	0.00000	0.00193	0.00193	0.00000	0.00045	0.00045	—	1.57520	1.57520	0.00002	0.00006	0.00169	1.59664
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.14. Paving (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.37204	0.33122	2.26724	10.5696	0.01395	0.07687	—	0.07687	0.07258	—	0.07258	—	1,510.63	1,510.63	0.06128	0.01226	—	1,515.81
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.02039	0.01815	0.12423	0.57916	0.00076	0.00421	—	0.00421	0.00398	—	0.00398	—	82.7742	82.7742	0.00336	0.00067	—	83.0583
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00372	0.00331	0.02267	0.10570	0.00014	0.00077	—	0.00077	0.00073	—	0.00073	—	13.7042	13.7042	0.00056	0.00011	—	13.7512
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05159	0.04448	0.04630	0.57475	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	172.387	172.387	0.00231	0.00711	0.01120	174.574
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00281	0.00242	0.00250	0.03147	0.00000	0.00000	0.01060	0.01060	0.00000	0.00248	0.00248	—	9.51430	9.51430	0.00013	0.00039	0.01021	9.64378
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00051	0.00044	0.00046	0.00574	0.00000	0.00000	0.00193	0.00193	0.00000	0.00045	0.00045	—	1.57520	1.57520	0.00002	0.00006	0.00169	1.59664
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.15. Paving (2032) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.72492	0.60914	5.99778	9.85925	0.01395	0.19870	—	0.19870	0.18280	—	0.18280	—	1,510.63	1,510.63	0.06128	0.01226	—	1,515.81
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08937	0.07510	0.73945	1.21552	0.00172	0.02450	—	0.02450	0.02254	—	0.02254	—	186.242	186.242	0.00755	0.00151	—	186.881
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01631	0.01371	0.13495	0.22183	0.00031	0.00447	—	0.00447	0.00411	—	0.00411	—	30.8345	30.8345	0.00125	0.00025	—	30.9403
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04960	0.04249	0.03952	0.54267	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	169.905	169.905	0.00231	0.00711	0.00989	172.092
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00612	0.00524	0.00483	0.06695	0.00000	0.00000	0.02384	0.02384	0.00000	0.00558	0.00558	—	21.0993	21.0993	0.00029	0.00088	0.02028	21.3879
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00112	0.00096	0.00088	0.01222	0.00000	0.00000	0.00435	0.00435	0.00000	0.00102	0.00102	—	3.49322	3.49322	0.00005	0.00015	0.00336	3.54101
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.16. Paving (2032) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.35880	0.32010	2.25234	10.5544	0.01395	0.07268	—	0.07268	0.06873	—	0.06873	—	1,510.63	1,510.63	0.06128	0.01226	—	1,515.81
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04424	0.03946	0.27769	1.30122	0.00172	0.00896	—	0.00896	0.00847	—	0.00847	—	186.242	186.242	0.00755	0.00151	—	186.881
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00807	0.00720	0.05068	0.23747	0.00031	0.00164	—	0.00164	0.00155	—	0.00155	—	30.8345	30.8345	0.00125	0.00025	—	30.9403
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04960	0.04249	0.03952	0.54267	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	169.905	169.905	0.00231	0.00711	0.00989	172.092
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00612	0.00524	0.00483	0.06695	0.00000	0.00000	0.02384	0.02384	0.00000	0.00558	0.00558	—	21.0993	21.0993	0.00029	0.00088	0.02028	21.3879
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00112	0.00096	0.00088	0.01222	0.00000	0.00000	0.00435	0.00435	0.00000	0.00102	0.00102	—	3.49322	3.49322	0.00005	0.00015	0.00336	3.54101
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.17. Architectural Coating (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11542	0.09539	0.77690	1.10346	0.00173	0.00943	—	0.00943	0.00867	—	0.00867	—	133.518	133.518	0.00542	0.00108	—	133.976
Architectural Coatings	23.3990	23.3990	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00632	0.00523	0.04257	0.06046	0.00009	0.00052	—	0.00052	0.00048	—	0.00048	—	7.31604	7.31604	0.00030	0.00006	—	7.34114

Architect Coatings	1.28214	1.28214	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00115	0.00095	0.00777	0.01103	0.00002	0.00009	—	0.00009	0.00009	—	0.00009	—	1.21125	1.21125	0.00005	0.00001	—	1.21541
Architectural Coatings	0.23399	0.23399	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05530	0.04768	0.04963	0.61613	0.00000	0.00000	0.21018	0.21018	0.00000	0.04927	0.04927	—	184.799	184.799	0.00248	0.00762	0.01200	187.144
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00301	0.00259	0.00268	0.03374	0.00000	0.00000	0.01136	0.01136	0.00000	0.00266	0.00266	—	10.1993	10.1993	0.00014	0.00042	0.01095	10.3381
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00055	0.00047	0.00049	0.00616	0.00000	0.00000	0.00207	0.00207	0.00000	0.00049	0.00049	—	1.68862	1.68862	0.00002	0.00007	0.00181	1.71160
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.18. Architectural Coating (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11542	0.09539	0.77690	1.10346	0.00173	0.00943	—	0.00943	0.00867	—	0.00867	—	133.518	133.518	0.00542	0.00108	—	133.976
Architectural Coatings	23.3990	23.3990	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00632	0.00523	0.04257	0.06046	0.00009	0.00052	—	0.00052	0.00048	—	0.00048	—	7.31604	7.31604	0.00030	0.00006	—	7.34114
Architectural Coatings	1.28214	1.28214	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.00115	0.00095	0.00777	0.01103	0.00002	0.00009	—	0.00009	0.00009	—	0.00009	—	1.21125	1.21125	0.00005	0.00001	—	1.21541
Architectural Coatings	0.23399	0.23399	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05530	0.04768	0.04963	0.61613	0.00000	0.00000	0.21018	0.21018	0.00000	0.04927	0.04927	—	184.799	184.799	0.00248	0.00762	0.01200	187.144
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00301	0.00259	0.00268	0.03374	0.00000	0.00000	0.01136	0.01136	0.00000	0.00266	0.00266	—	10.1993	10.1993	0.00014	0.00042	0.01095	10.3381
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00055	0.00047	0.00049	0.00616	0.00000	0.00000	0.00207	0.00207	0.00000	0.00049	0.00049	—	1.68862	1.68862	0.00002	0.00007	0.00181	1.71160
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.19. Architectural Coating (2032) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11264	0.09309	0.77005	1.10069	0.00173	0.00813	—	0.00813	0.00748	—	0.00748	—	133.504	133.504	0.00542	0.00108	—	133.962
Architectural Coatings	23.3990	23.3990	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11264	0.09309	0.77005	1.10069	0.00173	0.00813	—	0.00813	0.00748	—	0.00748	—	133.504	133.504	0.00542	0.00108	—	133.962
Architectural Coatings	23.3990	23.3990	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05444	0.04500	0.37221	0.53204	0.00083	0.00393	—	0.00393	0.00361	—	0.00361	—	64.5311	64.5311	0.00262	0.00052	—	64.7526
Architectural Coatings	11.3103	11.3103	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00994	0.00821	0.06793	0.09710	0.00015	0.00072	—	0.00072	0.00066	—	0.00066	—	10.6839	10.6839	0.00043	0.00009	—	10.7205
Architectural Coatings	2.06413	2.06413	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05318	0.04591	0.04095	0.64094	0.00000	0.00000	0.21018	0.21018	0.00000	0.04927	0.04927	—	190.507	190.507	0.00213	0.00106	0.40796	191.285
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05318	0.04555	0.04236	0.58174	0.00000	0.00000	0.21018	0.21018	0.00000	0.04927	0.04927	—	182.139	182.139	0.00248	0.00762	0.01060	184.483
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02570	0.02202	0.02031	0.28136	0.00000	0.00000	0.10021	0.10021	0.00000	0.02347	0.02347	—	88.6785	88.6785	0.00120	0.00368	0.08522	89.8916
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00469	0.00402	0.00371	0.05135	0.00000	0.00000	0.01829	0.01829	0.00000	0.00428	0.00428	—	14.6817	14.6817	0.00020	0.00061	0.01411	14.8826

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.20. Architectural Coating (2032) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11264	0.09309	0.77005	1.10069	0.00173	0.00813	—	0.00813	0.00748	—	0.00748	—	133.504	133.504	0.00542	0.00108	—	133.962
Architectural Coatings	23.3990	23.3990	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11264	0.09309	0.77005	1.10069	0.00173	0.00813	—	0.00813	0.00748	—	0.00748	—	133.504	133.504	0.00542	0.00108	—	133.962
Architectural Coatings	23.3990	23.3990	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.05444	0.04500	0.37221	0.53204	0.00083	0.00393	—	0.00393	0.00361	—	0.00361	—	64.5311	64.5311	0.00262	0.00052	—	64.7526
Architectural Coatings	11.3103	11.3103	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00994	0.00821	0.06793	0.09710	0.00015	0.00072	—	0.00072	0.00066	—	0.00066	—	10.6839	10.6839	0.00043	0.00009	—	10.7205
Architectural Coatings	2.06413	2.06413	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05318	0.04591	0.04095	0.64094	0.00000	0.00000	0.21018	0.21018	0.00000	0.04927	0.04927	—	190.507	190.507	0.00213	0.00106	0.40796	191.285
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05318	0.04555	0.04236	0.58174	0.00000	0.00000	0.21018	0.21018	0.00000	0.04927	0.04927	—	182.139	182.139	0.00248	0.00762	0.01060	184.483
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02570	0.02202	0.02031	0.28136	0.00000	0.00000	0.10021	0.10021	0.00000	0.02347	0.02347	—	88.6785	88.6785	0.00120	0.00368	0.08522	89.8916

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00469	0.00402	0.00371	0.05135	0.00000	0.00000	0.01829	0.01829	0.00000	0.00428	0.00428	—	14.6817	14.6817	0.00020	0.00061	0.01411	14.8826
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading	Grading	1/1/2027	9/1/2027	5.00000	174.000	—
Building Construction	Building Construction	9/2/2027	12/3/2031	5.00000	1,110.00	—

Paving	Paving	12/4/2031	3/3/2032	5.00000	65.0000	—
Architectural Coating	Architectural Coating	12/4/2031	9/3/2032	5.00000	197.000	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Excavators	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Grading	Graders	Diesel	Average	1.000000	8.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Average	1.000000	8.00000	367.000	0.40000
Grading	Scrapers	Diesel	Average	2.00000	8.00000	423.000	0.48000
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00000	8.00000	84.0000	0.37000
Building Construction	Cranes	Diesel	Average	1.000000	7.00000	367.000	0.29000
Building Construction	Forklifts	Diesel	Average	3.00000	8.00000	82.0000	0.20000
Building Construction	Generator Sets	Diesel	Average	1.000000	8.00000	14.0000	0.74000
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00000	7.00000	84.0000	0.37000
Building Construction	Welders	Diesel	Average	1.000000	8.00000	46.0000	0.45000
Paving	Pavers	Diesel	Average	2.00000	8.00000	81.0000	0.42000
Paving	Paving Equipment	Diesel	Average	2.00000	8.00000	89.0000	0.36000
Paving	Rollers	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Architectural Coating	Air Compressors	Diesel	Average	1.000000	6.00000	37.0000	0.48000

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Excavators	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Grading	Graders	Diesel	Tier 4 Final	1.000000	8.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.000000	8.00000	367.000	0.40000

Grading	Scrapers	Diesel	Tier 4 Final	2.00000	8.00000	423.000	0.48000
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.00000	8.00000	84.0000	0.37000
Building Construction	Cranes	Diesel	Tier 4 Final	1.000000	7.00000	367.000	0.29000
Building Construction	Forklifts	Diesel	Tier 4 Final	3.00000	8.00000	82.0000	0.20000
Building Construction	Generator Sets	Diesel	Average	1.000000	8.00000	14.0000	0.74000
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	3.00000	7.00000	84.0000	0.37000
Building Construction	Welders	Diesel	Average	1.000000	8.00000	46.0000	0.45000
Paving	Pavers	Diesel	Tier 4 Final	2.00000	8.00000	81.0000	0.42000
Paving	Paving Equipment	Diesel	Tier 4 Final	2.00000	8.00000	89.0000	0.36000
Paving	Rollers	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Architectural Coating	Air Compressors	Diesel	Average	1.000000	6.00000	37.0000	0.48000

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	Worker	20.0000	18.5000	LDA,LDT1,LDT2
Grading	Vendor	—	10.2000	HHDT,MHDT
Grading	Hauling	100.0000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	80.4000	18.5000	LDA,LDT1,LDT2
Building Construction	Vendor	18.3967	10.2000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	15.0000	18.5000	LDA,LDT1,LDT2
Paving	Vendor	—	10.2000	HHDT,MHDT
Paving	Hauling	0.00000	20.0000	HHDT

Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	16.0800	18.5000	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2000	HHDT,MHDT
Architectural Coating	Hauling	0.00000	20.0000	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	Worker	20.0000	18.5000	LDA,LDT1,LDT2
Grading	Vendor	—	10.2000	HHDT,MHDT
Grading	Hauling	100.0000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	80.4000	18.5000	LDA,LDT1,LDT2
Building Construction	Vendor	18.3967	10.2000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	15.0000	18.5000	LDA,LDT1,LDT2
Paving	Vendor	—	10.2000	HHDT,MHDT
Paving	Hauling	0.00000	20.0000	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	16.0800	18.5000	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2000	HHDT,MHDT
Architectural Coating	Hauling	0.00000	20.0000	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	1,408,104	469,368	83,250.0	27,750.0	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Grading	212,000	—	522.000	0.00000	0.00000
Paving	0.00000	0.00000	0.00000	0.00000	0.00000

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Phase Name	Land Use	Area Paved (acres)	% Asphalt
Paving	Apartments Low Rise	—	0%
Paving	Strip Mall	0.00000	0%

Paving	City Park	0.00000	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00000	531.983	0.03300	0.00400
2028	0.00000	531.983	0.03300	0.00400
2029	0.00000	531.983	0.03300	0.00400
2030	0.00000	531.983	0.03300	0.00400
2031	0.00000	531.983	0.03300	0.00400
2032	0.00000	531.983	0.03300	0.00400

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Alternative 2 includes an estimated total 126 residential units and 60,000 square feet of retail/commercial space, as well as open space/parks. Area A would include 87 residential units,55,500 square feet of commercial/retail uses, 30 acres of parks on 44.5 acres of land.
Construction: Construction Phases	No demolition is required as existing site is vacant an undeveloped. Grading is estimated to last approximately 8 months.
Construction: Trips and VMT	100 Haul truck trips per day during grading provided by applicant.

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	5.43750	14.5000
Building Area	sq. ft	92,220.0	695,360

Landscape Area	sq. ft	—	69,536.0
Lot Area	acre	1.27410	0.00000
Landscape Area	sq. ft	—	3,700.00

8.4. Construction

8.4.1. Construction Phases

Phase Type	Phase Name	Model Parameter	Default Value	New Value
Grading	Grading	Start Date	4/25/2027	1/1/2027
Grading	Grading	End Date	8/8/2027	9/1/2027
Grading	Grading	Work Days per Phase	75.0000	174.000
Building Construction	Building Construction	Start Date	8/9/2027	9/2/2027
Building Construction	Building Construction	End Date	6/10/2030	12/3/2031
Building Construction	Building Construction	Work Days per Phase	740.000	1,110.00
Paving	Paving	Start Date	6/11/2030	12/4/2031
Paving	Paving	End Date	8/27/2030	3/3/2032
Paving	Paving	Work Days per Phase	55.0000	65.0000
Architectural Coating	Architectural Coating	Start Date	8/28/2030	12/4/2031
Architectural Coating	Architectural Coating	End Date	11/13/2030	9/3/2032
Architectural Coating	Architectural Coating	Work Days per Phase	55.0000	197.000

8.4.6. Trips and VMT

Phase Name	Trip Type	Model Parameter	Default Value	New Value
Grading	Hauling	One-Way Trips per Day	152.299	100.0000

Maulhardt Ranch - Area C (Alternative 2) Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Maulhardt Ranch - Area C (Alternative 2)
Construction Start Date	1/1/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.20000
Precipitation (days)	21.2000
Location	34.207526675912646, -119.15929784341952
County	Ventura
City	Oxnard
Air District	Ventura County APCD
Air Basin	South Central Coast
TAZ	3438
EDFZ	8
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.37

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Low Rise	39.0000	Dwelling Unit	7.80000	41,340.0	31,164.0	—	117.000	—
Strip Mall	4.50000	1000sqft	0.00000	4,500.00	300.000	—	—	—

City Park	1.50000	Acre	4.00000	0.00000	0.00000	0.00000	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.13372	3.97909	9.67758	14.6129	0.02450	0.33878	0.42784	0.76662	0.31075	0.10204	0.41279	—	2,923.01	2,923.01	0.10430	0.05516	1.65633	2,943.71
Mit.	3.72220	3.65190	3.36543	16.6297	0.02450	0.10238	0.42784	0.52973	0.09606	0.10204	0.19801	—	2,923.01	2,923.01	0.10430	0.05516	1.65633	2,943.71
% Reduced	10%	8%	65%	-14%	—	70%	—	31%	69%	—	52%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.79338	3.09957	32.2084	29.9098	0.09565	1.10921	4.02312	5.13232	1.02576	1.39366	2.41942	—	11,822.1	11,822.1	0.39232	0.84389	0.28697	12,083.7
Mit.	1.10105	0.93244	11.3516	38.0318	0.09565	0.22816	4.02312	4.25128	0.22473	1.39366	1.61840	—	11,822.1	11,822.1	0.39232	0.84389	0.28697	12,083.7
% Reduced	71%	70%	65%	-27%	—	79%	—	17%	78%	—	33%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.25637	1.11155	9.46171	11.9118	0.02427	0.33271	0.65353	0.98624	0.30606	0.18751	0.49357	—	2,915.95	2,915.95	0.10232	0.11333	0.87592	2,953.16
Mit.	0.98110	0.95883	3.27236	13.7229	0.02427	0.08661	0.65353	0.74015	0.08249	0.18751	0.27001	—	2,915.95	2,915.95	0.10232	0.11333	0.87592	2,953.16

% Reduced	22%	14%	65%	-15%	—	74%	—	25%	73%	—	45%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.22929	0.20286	1.72676	2.17390	0.00443	0.06072	0.11927	0.17999	0.05586	0.03422	0.09008	—	482.769	482.769	0.01694	0.01876	0.14502	488.929
Mit.	0.17905	0.17499	0.59721	2.50443	0.00443	0.01581	0.11927	0.13508	0.01505	0.03422	0.04928	—	482.769	482.769	0.01694	0.01876	0.14502	488.929
% Reduced	22%	14%	65%	-15%	—	74%	—	25%	73%	—	45%	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	25.0000	25.0000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	25.0000	25.0000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.36758	1.14964	9.67758	14.6129	0.02450	0.33878	0.42784	0.76662	0.31075	0.10204	0.41279	—	2,923.01	2,923.01	0.10430	0.05516	1.65633	2,943.71
2028	4.13372	3.97909	9.18956	14.5122	0.02450	0.30134	0.42784	0.72918	0.27732	0.10204	0.37936	—	2,913.00	2,913.00	0.10367	0.05406	1.49106	2,933.19

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.79338	3.09957	32.2084	29.9098	0.09565	1.10921	4.02312	5.13232	1.02576	1.39366	2.41942	—	11,822.1	11,822.1	0.39232	0.84389	0.28697	12,083.7
2028	1.30483	1.10577	9.21132	14.3626	0.02450	0.30134	0.42784	0.72918	0.27732	0.10204	0.37936	—	2,896.60	2,896.60	0.10486	0.05471	0.03863	2,915.56
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.25637	1.04702	9.46171	11.9118	0.02427	0.33271	0.65353	0.98624	0.30606	0.18751	0.49357	—	2,915.95	2,915.95	0.10232	0.11333	0.87592	2,953.16
2028	1.17332	1.11155	2.84208	4.46795	0.00723	0.09209	0.13345	0.22554	0.08475	0.03168	0.11643	—	858.304	858.304	0.03079	0.01535	0.19815	863.846
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.22929	0.19108	1.72676	2.17390	0.00443	0.06072	0.11927	0.17999	0.05586	0.03422	0.09008	—	482.769	482.769	0.01694	0.01876	0.14502	488.929
2028	0.21413	0.20286	0.51868	0.81540	0.00132	0.01681	0.02435	0.04116	0.01547	0.00578	0.02125	—	142.102	142.102	0.00510	0.00254	0.03281	143.020

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.64524	0.57421	3.36543	16.6297	0.02450	0.10189	0.42784	0.52973	0.09597	0.10204	0.19801	—	2,923.01	2,923.01	0.10430	0.05516	1.65633	2,943.71
2028	3.72220	3.65190	3.30563	16.5200	0.02450	0.10238	0.42784	0.52272	0.09606	0.10204	0.19258	—	2,913.00	2,913.00	0.10367	0.05406	1.49106	2,933.19
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.10105	0.93244	11.3516	38.0318	0.09565	0.22816	4.02312	4.25128	0.22473	1.39366	1.61840	—	11,822.1	11,822.1	0.39232	0.84389	0.28697	12,083.7
2028	0.61672	0.55911	3.32740	16.3704	0.02450	0.09488	0.42784	0.52272	0.09054	0.10204	0.19258	—	2,896.60	2,896.60	0.10486	0.05471	0.03863	2,915.56
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.51282	0.45057	3.27236	13.7229	0.02427	0.08661	0.65353	0.74015	0.08249	0.18751	0.27001	—	2,915.95	2,915.95	0.10232	0.11333	0.87592	2,953.16
2028	0.98110	0.95883	1.15408	5.00041	0.00723	0.03195	0.13345	0.16540	0.03030	0.03168	0.06198	—	858.304	858.304	0.03079	0.01535	0.19815	863.846
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2027	0.09359	0.08223	0.59721	2.50443	0.00443	0.01581	0.11927	0.13508	0.01505	0.03422	0.04928	—	482.769	482.769	0.01694	0.01876	0.14502	488.929
2028	0.17905	0.17499	0.21062	0.91258	0.00132	0.00583	0.02435	0.03018	0.00553	0.00578	0.01131	—	142.102	142.102	0.00510	0.00254	0.03281	143.020

3. Construction Emissions Details

3.1. Demolition (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.63907	2.21478	19.9005	18.6307	0.03253	0.79594	—	0.79594	0.73226	—	0.73226	—	3,426.90	3,426.90	0.13901	0.02780	—	3,438.66
Demolition	—	—	—	—	—	—	0.92886	0.92886	—	0.14066	0.14066	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15184	0.12743	1.14496	1.07190	0.00187	0.04579	—	0.04579	0.04213	—	0.04213	—	197.164	197.164	0.00800	0.00160	—	197.841
Demolition	—	—	—	—	—	—	0.05344	0.05344	—	0.00809	0.00809	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.02771	0.02326	0.20896	0.19562	0.00034	0.00836	—	0.00836	0.00769	—	0.00769	—	32.6427	32.6427	0.00132	0.00026	—	32.7548
Demoliti on	—	—	—	—	—	—	0.00975	0.00975	—	0.00148	0.00148	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06597	0.05853	0.06663	0.74340	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	184.624	184.624	0.00298	0.00744	0.01732	186.933
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.04382	0.01666	1.43245	0.35857	0.00761	0.01449	0.29734	0.31183	0.01449	0.08339	0.09788	—	1,090.40	1,090.40	0.02644	0.17095	0.05780	1,142.06
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00378	0.00335	0.00380	0.04289	0.00000	0.00000	0.01113	0.01113	0.00000	0.00261	0.00261	—	10.6993	10.6993	0.00017	0.00043	0.01661	10.8478
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00258	0.00100	0.08292	0.02042	0.00044	0.00083	0.01693	0.01776	0.00083	0.00475	0.00559	—	62.7236	62.7236	0.00152	0.00984	0.05537	65.7480
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00069	0.00061	0.00069	0.00783	0.00000	0.00000	0.00203	0.00203	0.00000	0.00048	0.00048	—	1.77140	1.77140	0.00003	0.00007	0.00275	1.79598
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00047	0.00018	0.01513	0.00373	0.00008	0.00015	0.00309	0.00324	0.00015	0.00087	0.00102	—	10.3846	10.3846	0.00025	0.00163	0.00917	10.8853

3.2. Demolition (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.78500	0.69820	5.24057	18.3385	0.03253	0.14609	—	0.14609	0.13855	—	0.13855	—	3,426.90	3,426.90	0.13901	0.02780	—	3,438.66
Demolition	—	—	—	—	—	—	0.92886	0.92886	—	0.14066	0.14066	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04516	0.04017	0.30151	1.05509	0.00187	0.00841	—	0.00841	0.00797	—	0.00797	—	197.164	197.164	0.00800	0.00160	—	197.841
Demolition	—	—	—	—	—	—	0.05344	0.05344	—	0.00809	0.00809	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00824	0.00733	0.05503	0.19255	0.00034	0.00153	—	0.00153	0.00145	—	0.00145	—	32.6427	32.6427	0.00132	0.00026	—	32.7548
Demolition	—	—	—	—	—	—	0.00975	0.00975	—	0.00148	0.00148	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06597	0.05853	0.06663	0.74340	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	184.624	184.624	0.00298	0.00744	0.01732	186.933
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.04382	0.01666	1.43245	0.35857	0.00761	0.01449	0.29734	0.31183	0.01449	0.08339	0.09788	—	1,090.40	1,090.40	0.02644	0.17095	0.05780	1,142.06
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00378	0.00335	0.00380	0.04289	0.00000	0.00000	0.01113	0.01113	0.00000	0.00261	0.00261	—	10.6993	10.6993	0.00017	0.00043	0.01661	10.8478
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00258	0.00100	0.08292	0.02042	0.00044	0.00083	0.01693	0.01776	0.00083	0.00475	0.00559	—	62.7236	62.7236	0.00152	0.00984	0.05537	65.7480
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00069	0.00061	0.00069	0.00783	0.00000	0.00000	0.00203	0.00203	0.00000	0.00048	0.00048	—	1.77140	1.77140	0.00003	0.00007	0.00275	1.79598
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00047	0.00018	0.01513	0.00373	0.00008	0.00015	0.00309	0.00324	0.00015	0.00087	0.00102	—	10.3846	10.3846	0.00025	0.00163	0.00917	10.8853

3.3. Grading (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.50534	2.94546	25.5801	27.2816	0.06093	1.04307	—	1.04307	0.95962	—	0.95962	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72

Dust From Material Movement	—	—	—	—	—	—	2.40427	2.40427	—	0.95169	0.95169	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28811	0.24209	2.10247	2.24233	0.00501	0.08573	—	0.08573	0.07887	—	0.07887	—	542.308	542.308	0.02200	0.00440	—	544.169
Dust From Material Movement	—	—	—	—	—	—	0.19761	0.19761	—	0.07822	0.07822	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05258	0.04418	0.38370	0.40922	0.00091	0.01565	—	0.01565	0.01439	—	0.01439	—	89.7852	89.7852	0.00364	0.00073	—	90.0934
Dust From Material Movement	—	—	—	—	—	—	0.03606	0.03606	—	0.01428	0.01428	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08796	0.07804	0.08885	0.99120	0.00000	0.00000	0.26142	0.26142	0.00000	0.06128	0.06128	—	246.165	246.165	0.00397	0.00992	0.02310	249.244

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.20007	0.07606	6.53946	1.63693	0.03472	0.06614	1.35743	1.42357	0.06614	0.38069	0.44683	—	4,977.90	4,977.90	0.12070	0.78044	0.26387	5,213.76
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00719	0.00638	0.00723	0.08170	0.00000	0.00000	0.02119	0.02119	0.00000	0.00496	0.00496	—	20.3797	20.3797	0.00033	0.00082	0.03164	20.6625
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.01685	0.00652	0.54075	0.13318	0.00285	0.00544	0.11038	0.11582	0.00544	0.03099	0.03643	—	409.067	409.067	0.00992	0.06415	0.36108	428.792
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00131	0.00116	0.00132	0.01491	0.00000	0.00000	0.00387	0.00387	0.00000	0.00091	0.00091	—	3.37409	3.37409	0.00005	0.00014	0.00524	3.42091
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00308	0.00119	0.09869	0.02431	0.00052	0.00099	0.02015	0.02114	0.00099	0.00566	0.00665	—	67.7257	67.7257	0.00164	0.01062	0.05978	70.9913

3.4. Grading (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.81301	0.77833	4.72332	35.4037	0.06093	0.16202	—	0.16202	0.15860	—	0.15860	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72
Dust From Material Movement	—	—	—	—	—	—	2.40427	2.40427	—	0.95169	0.95169	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06682	0.06397	0.38822	2.90989	0.00501	0.01332	—	0.01332	0.01304	—	0.01304	—	542.308	542.308	0.02200	0.00440	—	544.169
Dust From Material Movement	—	—	—	—	—	—	0.19761	0.19761	—	0.07822	0.07822	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01220	0.01167	0.07085	0.53106	0.00091	0.00243	—	0.00243	0.00238	—	0.00238	—	89.7852	89.7852	0.00364	0.00073	—	90.0934
Dust From Material Movement	—	—	—	—	—	—	0.03606	0.03606	—	0.01428	0.01428	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08796	0.07804	0.08885	0.99120	0.00000	0.00000	0.26142	0.26142	0.00000	0.06128	0.06128	—	246.165	246.165	0.00397	0.00992	0.02310	249.244
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.20007	0.07606	6.53946	1.63693	0.03472	0.06614	1.35743	1.42357	0.06614	0.38069	0.44683	—	4,977.90	4,977.90	0.12070	0.78044	0.26387	5,213.76
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00719	0.00638	0.00723	0.08170	0.00000	0.00000	0.02119	0.02119	0.00000	0.00496	0.00496	—	20.3797	20.3797	0.00033	0.00082	0.03164	20.6625

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.01685	0.00652	0.54075	0.13318	0.00285	0.00544	0.11038	0.11582	0.00544	0.03099	0.03643	—	409.067	409.067	0.00992	0.06415	0.36108	428.792
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00131	0.00116	0.00132	0.01491	0.00000	0.00000	0.00387	0.00387	0.00000	0.00091	0.00091	—	3.37409	3.37409	0.00005	0.00014	0.00524	3.42091
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00308	0.00119	0.09869	0.02431	0.00052	0.00099	0.02015	0.02114	0.00099	0.00566	0.00665	—	67.7257	67.7257	0.00164	0.01062	0.05978	70.9913

3.5. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23076	1.02988	9.39093	12.9379	0.02340	0.33657	—	0.33657	0.30965	—	0.30965	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23076	1.02988	9.39093	12.9379	0.02340	0.33657	—	0.33657	0.30965	—	0.30965	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.70811	0.59253	5.40300	7.44375	0.01346	0.19365	—	0.19365	0.17815	—	0.17815	—	1,379.14	1,379.14	0.05594	0.01119	—	1,383.87
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12923	0.10814	0.98605	1.35848	0.00246	0.03534	—	0.03534	0.03251	—	0.03251	—	228.332	228.332	0.00926	0.00185	—	229.116
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13049	0.11649	0.11584	1.62115	0.00000	0.00000	0.38585	0.38585	0.00000	0.09044	0.09044	—	380.128	380.128	0.00521	0.01399	1.31710	385.745
Vendor	0.00634	0.00327	0.17081	0.05378	0.00110	0.00221	0.04198	0.04419	0.00110	0.01160	0.01270	—	145.806	145.806	0.00186	0.02172	0.33923	152.664
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12984	0.11519	0.13114	1.46301	0.00000	0.00000	0.38585	0.38585	0.00000	0.09044	0.09044	—	363.340	363.340	0.00586	0.01464	0.03409	367.884
Vendor	0.00612	0.00305	0.17717	0.05562	0.00110	0.00221	0.04198	0.04419	0.00110	0.01160	0.01270	—	145.874	145.874	0.00186	0.02172	0.00880	152.402
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07433	0.06590	0.07470	0.84416	0.00000	0.00000	0.21898	0.21898	0.00000	0.05128	0.05128	—	210.563	210.563	0.00337	0.00842	0.32689	213.485
Vendor	0.00358	0.00182	0.10188	0.03144	0.00063	0.00127	0.02388	0.02515	0.00063	0.00660	0.00724	—	83.9044	83.9044	0.00107	0.01250	0.08433	87.7396
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01356	0.01203	0.01363	0.15406	0.00000	0.00000	0.03996	0.03996	0.00000	0.00936	0.00936	—	34.8611	34.8611	0.00056	0.00139	0.05412	35.3448

Vendor	0.00065	0.00033	0.01859	0.00574	0.00012	0.00023	0.00436	0.00459	0.00012	0.00121	0.00132	—	13.8913	13.8913	0.00018	0.00207	0.01396	14.5263
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.6. Building Construction (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50842	0.45445	3.07878	14.9548	0.02340	0.09968	—	0.09968	0.09487	—	0.09487	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50842	0.45445	3.07878	14.9548	0.02340	0.09968	—	0.09968	0.09487	—	0.09487	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29251	0.26146	1.77136	8.60412	0.01346	0.05735	—	0.05735	0.05458	—	0.05458	—	1,379.14	1,379.14	0.05594	0.01119	—	1,383.87
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.05338	0.04772	0.32327	1.57025	0.00246	0.01047	—	0.01047	0.00996	—	0.00996	—	228.332	228.332	0.00926	0.00185	—	229.116
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13049	0.11649	0.11584	1.62115	0.00000	0.00000	0.38585	0.38585	0.00000	0.09044	0.09044	—	380.128	380.128	0.00521	0.01399	1.31710	385.745
Vendor	0.00634	0.00327	0.17081	0.05378	0.00110	0.00221	0.04198	0.04419	0.00110	0.01160	0.01270	—	145.806	145.806	0.00186	0.02172	0.33923	152.664
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12984	0.11519	0.13114	1.46301	0.00000	0.00000	0.38585	0.38585	0.00000	0.09044	0.09044	—	363.340	363.340	0.00586	0.01464	0.03409	367.884
Vendor	0.00612	0.00305	0.17717	0.05562	0.00110	0.00221	0.04198	0.04419	0.00110	0.01160	0.01270	—	145.874	145.874	0.00186	0.02172	0.00880	152.402
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07433	0.06590	0.07470	0.84416	0.00000	0.00000	0.21898	0.21898	0.00000	0.05128	0.05128	—	210.563	210.563	0.00337	0.00842	0.32689	213.485
Vendor	0.00358	0.00182	0.10188	0.03144	0.00063	0.00127	0.02388	0.02515	0.00063	0.00660	0.00724	—	83.9044	83.9044	0.00107	0.01250	0.08433	87.7396
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01356	0.01203	0.01363	0.15406	0.00000	0.00000	0.03996	0.03996	0.00000	0.00936	0.00936	—	34.8611	34.8611	0.00056	0.00139	0.05412	35.3448
Vendor	0.00065	0.00033	0.01859	0.00574	0.00012	0.00023	0.00436	0.00459	0.00012	0.00121	0.00132	—	13.8913	13.8913	0.00018	0.00207	0.01396	14.5263
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.7. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18481	0.99143	8.92495	12.9352	0.02340	0.30024	—	0.30024	0.27622	—	0.27622	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18481	0.99143	8.92495	12.9352	0.02340	0.30024	—	0.30024	0.27622	—	0.27622	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29215	0.24446	2.20067	3.18951	0.00577	0.07403	—	0.07403	0.06811	—	0.06811	—	591.154	591.154	0.02398	0.00480	—	593.182
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05332	0.04461	0.40162	0.58209	0.00105	0.01351	—	0.01351	0.01243	—	0.01243	—	97.8723	97.8723	0.00397	0.00079	—	98.2081
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.11519	0.11259	0.10250	1.52451	0.00000	0.00000	0.38585	0.38585	0.00000	0.09044	0.09044	—	373.238	373.238	0.00456	0.01399	1.18970	378.712
Vendor	0.00634	0.00327	0.16211	0.05246	0.00110	0.00110	0.04198	0.04308	0.00110	0.01160	0.01270	—	142.301	142.301	0.00186	0.02062	0.30136	148.793
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11389	0.11129	0.11780	1.37320	0.00000	0.00000	0.38585	0.38585	0.00000	0.09044	0.09044	—	356.765	356.765	0.00586	0.01464	0.03082	361.306
Vendor	0.00612	0.00305	0.16858	0.05419	0.00110	0.00110	0.04198	0.04308	0.00110	0.01160	0.01270	—	142.376	142.376	0.00175	0.02062	0.00781	148.572
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02808	0.02760	0.02872	0.34012	0.00000	0.00000	0.09385	0.09385	0.00000	0.02198	0.02198	—	88.6091	88.6091	0.00128	0.00345	0.12651	89.7959
Vendor	0.00154	0.00078	0.04127	0.01312	0.00027	0.00027	0.01023	0.01050	0.00027	0.00283	0.00310	—	35.0958	35.0958	0.00043	0.00508	0.03206	36.6536
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00513	0.00504	0.00524	0.06207	0.00000	0.00000	0.01713	0.01713	0.00000	0.00401	0.00401	—	14.6703	14.6703	0.00021	0.00057	0.02095	14.8667
Vendor	0.00028	0.00014	0.00753	0.00239	0.00005	0.00005	0.00187	0.00192	0.00005	0.00052	0.00057	—	5.81051	5.81051	0.00007	0.00084	0.00531	6.06843
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.8. Building Construction (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.49671	0.44477	3.04102	14.9430	0.02340	0.09378	—	0.09378	0.08943	—	0.08943	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.49671	0.44477	3.04102	14.9430	0.02340	0.09378	—	0.09378	0.08943	—	0.08943	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12248	0.10967	0.74984	3.68457	0.00577	0.02312	—	0.02312	0.02205	—	0.02205	—	591.154	591.154	0.02398	0.00480	—	593.182
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02235	0.02001	0.13685	0.67243	0.00105	0.00422	—	0.00422	0.00402	—	0.00402	—	97.8723	97.8723	0.00397	0.00079	—	98.2081
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11519	0.11259	0.10250	1.52451	0.00000	0.00000	0.38585	0.38585	0.00000	0.09044	0.09044	—	373.238	373.238	0.00456	0.01399	1.18970	378.712
Vendor	0.00634	0.00327	0.16211	0.05246	0.00110	0.00110	0.04198	0.04308	0.00110	0.01160	0.01270	—	142.301	142.301	0.00186	0.02062	0.30136	148.793
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.11389	0.11129	0.11780	1.37320	0.00000	0.00000	0.38585	0.38585	0.00000	0.09044	0.09044	—	356.765	356.765	0.00586	0.01464	0.03082	361.306
Vendor	0.00612	0.00305	0.16858	0.05419	0.00110	0.00110	0.04198	0.04308	0.00110	0.01160	0.01270	—	142.376	142.376	0.00175	0.02062	0.00781	148.572
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02808	0.02760	0.02872	0.34012	0.00000	0.00000	0.09385	0.09385	0.00000	0.02198	0.02198	—	88.6091	88.6091	0.00128	0.00345	0.12651	89.7959
Vendor	0.00154	0.00078	0.04127	0.01312	0.00027	0.00027	0.01023	0.01050	0.00027	0.00283	0.00310	—	35.0958	35.0958	0.00043	0.00508	0.03206	36.6536
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00513	0.00504	0.00524	0.06207	0.00000	0.00000	0.01713	0.01713	0.00000	0.00401	0.00401	—	14.6703	14.6703	0.00021	0.00057	0.02095	14.8667
Vendor	0.00028	0.00014	0.00753	0.00239	0.00005	0.00005	0.00187	0.00192	0.00005	0.00052	0.00057	—	5.81051	5.81051	0.00007	0.00084	0.00531	6.06843
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.9. Paving (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.81550	0.68524	6.62754	9.90989	0.01395	0.25554	—	0.25554	0.23510	—	0.23510	—	1,511.03	1,511.03	0.06129	0.01226	—	1,516.22
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.04468	0.03755	0.36315	0.54301	0.00076	0.01400	—	0.01400	0.01288	—	0.01288	—	82.7962	82.7962	0.00336	0.00067	—	83.0803
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.00815	0.00685	0.06628	0.09910	0.00014	0.00256	—	0.00256	0.00235	—	0.00235	—	13.7079	13.7079	0.00056	0.00011	—	13.7549
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05853	0.05721	0.05208	0.77465	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	189.654	189.654	0.00231	0.00711	0.60452	192.435
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00317	0.00312	0.00324	0.03841	0.00000	0.00000	0.01060	0.01060	0.00000	0.00248	0.00248	—	10.0055	10.0055	0.00014	0.00039	0.01429	10.1396
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00058	0.00057	0.00059	0.00701	0.00000	0.00000	0.00193	0.00193	0.00000	0.00045	0.00045	—	1.65653	1.65653	0.00002	0.00006	0.00237	1.67872
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.10. Paving (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.40397	0.35806	2.29914	10.5926	0.01395	0.08703	—	0.08703	0.08193	—	0.08193	—	1,511.03	1,511.03	0.06129	0.01226	—	1,516.22
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02214	0.01962	0.12598	0.58042	0.00076	0.00477	—	0.00477	0.00449	—	0.00449	—	82.7962	82.7962	0.00336	0.00067	—	83.0803
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00404	0.00358	0.02299	0.10593	0.00014	0.00087	—	0.00087	0.00082	—	0.00082	—	13.7079	13.7079	0.00056	0.00011	—	13.7549
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05853	0.05721	0.05208	0.77465	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	189.654	189.654	0.00231	0.00711	0.60452	192.435
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00317	0.00312	0.00324	0.03841	0.00000	0.00000	0.01060	0.01060	0.00000	0.00248	0.00248	—	10.0055	10.0055	0.00014	0.00039	0.01429	10.1396
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00058	0.00057	0.00059	0.00701	0.00000	0.00000	0.00193	0.00193	0.00000	0.00045	0.00045	—	1.65653	1.65653	0.00002	0.00006	0.00237	1.67872
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.11. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12985	0.10731	0.80814	1.11833	0.00173	0.01536	—	0.01536	0.01413	—	0.01413	—	133.517	133.517	0.00542	0.00108	—	133.975

Architectural	3.10681	3.10681	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03202	0.02646	0.19927	0.27575	0.00043	0.00379	—	0.00379	0.00348	—	0.00348	—	32.9220	32.9220	0.00134	0.00027	—	33.0350
Architectural Coatings	0.76606	0.76606	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00584	0.00483	0.03637	0.05032	0.00008	0.00069	—	0.00069	0.00064	—	0.00064	—	5.45061	5.45061	0.00022	0.00004	—	5.46932
Architectural Coatings	0.13981	0.13981	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02304	0.02252	0.02050	0.30490	0.00000	0.00000	0.07717	0.07717	0.00000	0.01809	0.01809	—	74.6477	74.6477	0.00091	0.00280	0.23794	75.7423
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00562	0.00552	0.00574	0.06802	0.00000	0.00000	0.01877	0.01877	0.00000	0.00440	0.00440	—	17.7218	17.7218	0.00026	0.00069	0.02530	17.9592
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00103	0.00101	0.00105	0.01241	0.00000	0.00000	0.00343	0.00343	0.00000	0.00080	0.00080	—	2.93405	2.93405	0.00004	0.00011	0.00419	2.97335
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.12. Architectural Coating (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12985	0.10731	0.80814	1.11833	0.00173	0.01536	—	0.01536	0.01413	—	0.01413	—	133.517	133.517	0.00542	0.00108	—	133.975
Architectural Coatings	3.10681	3.10681	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03202	0.02646	0.19927	0.27575	0.00043	0.00379	—	0.00379	0.00348	—	0.00348	—	32.9220	32.9220	0.00134	0.00027	—	33.0350
Architectural Coatings	0.76606	0.76606	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00584	0.00483	0.03637	0.05032	0.00008	0.00069	—	0.00069	0.00064	—	0.00064	—	5.45061	5.45061	0.00022	0.00004	—	5.46932
Architectural Coatings	0.13981	0.13981	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02304	0.02252	0.02050	0.30490	0.00000	0.00000	0.07717	0.07717	0.00000	0.01809	0.01809	—	74.6477	74.6477	0.00091	0.00280	0.23794	75.7423
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00562	0.00552	0.00574	0.06802	0.00000	0.00000	0.01877	0.01877	0.00000	0.00440	0.00440	—	17.7218	17.7218	0.00026	0.00069	0.02530	17.9592
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00103	0.00101	0.00105	0.01241	0.00000	0.00000	0.00343	0.00343	0.00000	0.00080	0.00080	—	2.93405	2.93405	0.00004	0.00011	0.00419	2.97335
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	1/1/2027	1/29/2027	5.00000	21.0000	—
Grading	Grading	1/30/2027	3/12/2027	5.00000	30.0000	—
Building Construction	Building Construction	3/13/2027	5/5/2028	5.00000	300.000	—
Paving	Paving	5/6/2028	6/2/2028	5.00000	20.0000	—
Architectural Coating	Architectural Coating	5/6/2028	9/8/2028	5.00000	90.0000	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.000000	8.00000	33.0000	0.73000
Demolition	Excavators	Diesel	Average	3.00000	8.00000	36.0000	0.38000
Demolition	Rubber Tired Dozers	Diesel	Average	2.00000	8.00000	367.000	0.40000
Grading	Excavators	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Grading	Graders	Diesel	Average	1.000000	8.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Average	1.000000	8.00000	367.000	0.40000
Grading	Scrapers	Diesel	Average	2.00000	8.00000	423.000	0.48000
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00000	8.00000	84.0000	0.37000
Building Construction	Cranes	Diesel	Average	1.000000	7.00000	367.000	0.29000
Building Construction	Forklifts	Diesel	Average	3.00000	8.00000	82.0000	0.20000
Building Construction	Generator Sets	Diesel	Average	1.000000	8.00000	14.0000	0.74000
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00000	7.00000	84.0000	0.37000
Building Construction	Welders	Diesel	Average	1.000000	8.00000	46.0000	0.45000
Paving	Pavers	Diesel	Average	2.00000	8.00000	81.0000	0.42000
Paving	Paving Equipment	Diesel	Average	2.00000	8.00000	89.0000	0.36000

Paving	Rollers	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Architectural Coating	Air Compressors	Diesel	Average	1.000000	6.00000	37.0000	0.48000

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.000000	8.00000	33.0000	0.73000
Demolition	Excavators	Diesel	Average	3.00000	8.00000	36.0000	0.38000
Demolition	Rubber Tired Dozers	Diesel	Tier 4 Final	2.00000	8.00000	367.000	0.40000
Grading	Excavators	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Grading	Graders	Diesel	Tier 4 Final	1.000000	8.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.000000	8.00000	367.000	0.40000
Grading	Scrapers	Diesel	Tier 4 Final	2.00000	8.00000	423.000	0.48000
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.00000	8.00000	84.0000	0.37000
Building Construction	Cranes	Diesel	Tier 4 Final	1.000000	7.00000	367.000	0.29000
Building Construction	Forklifts	Diesel	Tier 4 Final	3.00000	8.00000	82.0000	0.20000
Building Construction	Generator Sets	Diesel	Average	1.000000	8.00000	14.0000	0.74000
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	3.00000	7.00000	84.0000	0.37000
Building Construction	Welders	Diesel	Average	1.000000	8.00000	46.0000	0.45000
Paving	Pavers	Diesel	Tier 4 Final	2.00000	8.00000	81.0000	0.42000
Paving	Paving Equipment	Diesel	Tier 4 Final	2.00000	8.00000	89.0000	0.36000
Paving	Rollers	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Architectural Coating	Air Compressors	Diesel	Average	1.000000	6.00000	37.0000	0.48000

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	Worker	15.0000	18.5000	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2000	HHDT,MHDT
Demolition	Hauling	16.4286	20.0000	HHDT
Demolition	Onsite truck	—	—	HHDT
Grading	Worker	20.0000	18.5000	LDA,LDT1,LDT2
Grading	Vendor	—	10.2000	HHDT,MHDT
Grading	Hauling	75.0000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	29.5200	18.5000	LDA,LDT1,LDT2
Building Construction	Vendor	4.90665	10.2000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	15.0000	18.5000	LDA,LDT1,LDT2
Paving	Vendor	—	10.2000	HHDT,MHDT
Paving	Hauling	0.00000	20.0000	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	5.90400	18.5000	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2000	HHDT,MHDT
Architectural Coating	Hauling	0.00000	20.0000	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	Worker	15.0000	18.5000	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2000	HHDT,MHDT
Demolition	Hauling	16.4286	20.0000	HHDT
Demolition	Onsite truck	—	—	HHDT

Grading	Worker	20.0000	18.5000	LDA,LDT1,LDT2
Grading	Vendor	—	10.2000	HHDT,MHDT
Grading	Hauling	75.0000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	29.5200	18.5000	LDA,LDT1,LDT2
Building Construction	Vendor	4.90665	10.2000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	15.0000	18.5000	LDA,LDT1,LDT2
Paving	Vendor	—	10.2000	HHDT,MHDT
Paving	Hauling	0.00000	20.0000	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	5.90400	18.5000	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2000	HHDT,MHDT
Architectural Coating	Hauling	0.00000	20.0000	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

Architectural Coating	83,713.5	27,904.5	6,750.00	2,250.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00000	0.00000	0.00000	30,000.0	0.00000
Grading	—	18,000.0	90.0000	0.00000	0.00000
Paving	0.00000	0.00000	0.00000	0.00000	0.00000

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Phase Name	Land Use	Area Paved (acres)	% Asphalt
Paving	Apartments Low Rise	—	0%
Paving	Strip Mall	0.00000	0%
Paving	City Park	0.00000	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00000	531.983	0.03300	0.00400
2028	0.00000	531.983	0.03300	0.00400

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Alternative 2 includes an estimated total 126 residential units and 60,000 square feet of retail/commercial space, as well as open space/parks. Area C would include 39 residential units, 4,500 square feet of retail space, and 4 acres of open space/parks on 11.8 acres.
Construction: Construction Phases	Area C will include demolition of existing home, additional residential units and accessory buildings associated with the past agricultural use.

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	2.43750	7.80000
Landscape Area	sq. ft	—	31,164.0
Lot Area	acre	0.10331	0.00000
Landscape Area	sq. ft	—	300.000
Lot Area	acre	1.50000	4.00000
Landscape Area	sq. ft	—	0.00000

8.4. Construction

8.4.1. Construction Phases

Phase Type	Phase Name	Model Parameter	Default Value	New Value
Demolition	Demolition	Work Days per Phase	20.0000	21.0000
Grading	Grading	Start Date	2/14/2027	1/30/2027
Grading	Grading	End Date	3/28/2027	3/12/2027
Building Construction	Building Construction	Start Date	3/29/2027	3/13/2027

Building Construction	Building Construction	End Date	5/22/2028	5/5/2028
Paving	Paving	Start Date	5/23/2028	5/6/2028
Paving	Paving	End Date	6/20/2028	6/2/2028
Architectural Coating	Architectural Coating	Start Date	6/21/2028	5/6/2028
Architectural Coating	Architectural Coating	End Date	7/19/2028	9/8/2028
Architectural Coating	Architectural Coating	Work Days per Phase	20.0000	90.0000

Maulhardt Ranch - Operations (Alternative 2) Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Maulhardt Ranch - Operations (Alternative 2)
Operational Year	2033
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.20000
Precipitation (days)	21.2000
Location	34.21151126306846, -119.15663200064525
County	Ventura
City	Oxnard
Air District	Ventura County APCD
Air Basin	South Central Coast
TAZ	3438
EDFZ	8
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.37

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Low Rise	126.000	Dwelling Unit	43.4000	133,560	100,700	—	379.000	—
Strip Mall	60.0000	1000sqft	0.00000	60,000.0	4,000.00	—	—	—

City Park	30.0000	Acre	30.0000	0.00000	0.00000	0.00000	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.11573	6.92082	1.53582	18.1513	0.02543	0.07361	2.18433	2.25794	0.07095	0.55381	0.62475	103.192	4,664.98	4,768.17	10.6329	0.14877	5.00425	5,083.33
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.99177	5.86378	1.53997	8.43587	0.02426	0.06577	2.18433	2.25011	0.06503	0.55381	0.61883	103.192	4,563.68	4,666.87	10.6408	0.15503	1.42552	4,980.52
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.37791	6.22557	1.47516	12.2607	0.02254	0.06844	1.93396	2.00240	0.06682	0.49042	0.55725	103.192	4,379.69	4,482.88	10.6277	0.14348	2.75423	4,794.08
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.16397	1.13617	0.26922	2.23757	0.00411	0.01249	0.35295	0.36544	0.01220	0.08950	0.10170	17.0846	725.107	742.192	1.75954	0.02375	0.45599	793.715

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	1.47308	1.38787	0.77325	8.03304	0.02069	0.01170	2.18433	2.19604	0.01096	0.55381	0.56476	—	2,108.18	2,108.18	0.09300	0.09126	3.67400	2,141.37
Area	5.56440	5.49382	0.08811	9.79134	0.00047	0.00784	—	0.00784	0.00593	—	0.00593	0.00000	29.8434	29.8434	0.00125	0.00025	—	29.9493
Energy	0.07825	0.03913	0.67447	0.32695	0.00427	0.05406	—	0.05406	0.05406	—	0.05406	—	2,422.77	2,422.77	0.17275	0.01343	—	2,431.10
Water	—	—	—	—	—	—	—	—	—	—	—	17.6680	104.185	121.853	1.81812	0.04383	—	180.367
Waste	—	—	—	—	—	—	—	—	—	—	—	85.5240	0.00000	85.5240	8.54781	0.00000	—	299.219
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.33025	1.33025
Total	7.11573	6.92082	1.53582	18.1513	0.02543	0.07361	2.18433	2.25794	0.07095	0.55381	0.62475	103.192	4,664.98	4,768.17	10.6329	0.14877	5.00425	5,083.33
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.46609	1.37722	0.86550	8.10892	0.01999	0.01171	2.18433	2.19604	0.01096	0.55381	0.56477	—	2,036.72	2,036.72	0.10211	0.09777	0.09527	2,068.51
Area	4.44743	4.44743	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Energy	0.07825	0.03913	0.67447	0.32695	0.00427	0.05406	—	0.05406	0.05406	—	0.05406	—	2,422.77	2,422.77	0.17275	0.01343	—	2,431.10
Water	—	—	—	—	—	—	—	—	—	—	—	17.6680	104.185	121.853	1.81812	0.04383	—	180.367
Waste	—	—	—	—	—	—	—	—	—	—	—	85.5240	0.00000	85.5240	8.54781	0.00000	—	299.219
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.33025	1.33025
Total	5.99177	5.86378	1.53997	8.43587	0.02426	0.06577	2.18433	2.25011	0.06503	0.55381	0.61883	103.192	4,563.68	4,666.87	10.6408	0.15503	1.42552	4,980.52
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.30140	1.22298	0.75724	7.10510	0.01804	0.01051	1.93396	1.94447	0.00984	0.49042	0.50026	—	1,838.01	1,838.01	0.08843	0.08609	1.42398	1,867.30
Area	4.99826	4.96346	0.04345	4.82860	0.00023	0.00387	—	0.00387	0.00292	—	0.00292	0.00000	14.7173	14.7173	0.00062	0.00012	—	14.7695
Energy	0.07825	0.03913	0.67447	0.32695	0.00427	0.05406	—	0.05406	0.05406	—	0.05406	—	2,422.77	2,422.77	0.17275	0.01343	—	2,431.10
Water	—	—	—	—	—	—	—	—	—	—	—	17.6680	104.185	121.853	1.81812	0.04383	—	180.367
Waste	—	—	—	—	—	—	—	—	—	—	—	85.5240	0.00000	85.5240	8.54781	0.00000	—	299.219
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.33025	1.33025
Total	6.37791	6.22557	1.47516	12.2607	0.02254	0.06844	1.93396	2.00240	0.06682	0.49042	0.55725	103.192	4,379.69	4,482.88	10.6277	0.14348	2.75423	4,794.08
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.23751	0.22319	0.13820	1.29668	0.00329	0.00192	0.35295	0.35487	0.00179	0.08950	0.09130	—	304.304	304.304	0.01464	0.01425	0.23576	309.153
Area	0.91218	0.90583	0.00793	0.88122	0.00004	0.00071	—	0.00071	0.00053	—	0.00053	0.00000	2.43662	2.43662	0.00010	0.00002	—	2.44526

Energy	0.01428	0.00714	0.12309	0.05967	0.00078	0.00987	—	0.00987	0.00987	—	0.00987	—	401.118	401.118	0.02860	0.00222	—	402.496
Water	—	—	—	—	—	—	—	—	—	—	—	2.92515	17.2491	20.1742	0.30101	0.00726	—	29.8618
Waste	—	—	—	—	—	—	—	—	—	—	—	14.1595	0.00000	14.1595	1.41519	0.00000	—	49.5392
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.22024	0.22024
Total	1.16397	1.13617	0.26922	2.23757	0.00411	0.01249	0.35295	0.36544	0.01220	0.08950	0.10170	17.0846	725.107	742.192	1.75954	0.02375	0.45599	793.715

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.22272	0.21028	0.11364	1.17314	0.00298	0.00169	0.31373	0.31542	0.00159	0.07954	0.08113	—	303.458	303.458	0.01380	0.01337	0.52768	308.314
Strip Mall	1.25036	1.17759	0.65961	6.85990	0.01771	0.01001	1.87061	1.88061	0.00937	0.47427	0.48363	—	1,804.72	1,804.72	0.07920	0.07790	3.14632	1,833.06
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	1.47308	1.38787	0.77325	8.03304	0.02069	0.01170	2.18433	2.19604	0.01096	0.55381	0.56476	—	2,108.18	2,108.18	0.09300	0.09126	3.67400	2,141.37
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.22165	0.20864	0.12722	1.19040	0.00288	0.00170	0.31373	0.31542	0.00159	0.07954	0.08113	—	293.209	293.209	0.01520	0.01433	0.01368	297.872
Strip Mall	1.24444	1.16858	0.73828	6.91852	0.01711	0.01002	1.87061	1.88062	0.00938	0.47427	0.48364	—	1,743.51	1,743.51	0.08690	0.08344	0.08158	1,770.63

City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	1.46609	1.37722	0.86550	8.10892	0.01999	0.01171	2.18433	2.19604	0.01096	0.55381	0.56477	—	2,036.72	2,036.72	0.10211	0.09777	0.09527	2,068.51
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.03164	0.02979	0.01788	0.16735	0.00042	0.00024	0.04462	0.04487	0.00023	0.01132	0.01154	—	38.5613	38.5613	0.00192	0.00184	0.02981	39.1868
Strip Mall	0.20587	0.19340	0.12032	1.12933	0.00287	0.00167	0.30833	0.31000	0.00157	0.07819	0.07975	—	265.742	265.742	0.01272	0.01242	0.20595	269.966
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	0.23751	0.22319	0.13820	1.29668	0.00329	0.00192	0.35295	0.35487	0.00179	0.08950	0.09130	—	304.304	304.304	0.01464	0.01425	0.23576	309.153

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	719.583	719.583	0.04464	0.00541	—	722.312
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	854.406	854.406	0.05300	0.00642	—	857.645
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,573.99	1,573.99	0.09764	0.01183	—	1,579.96
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments	—	—	—	—	—	—	—	—	—	—	—	—	719.583	719.583	0.04464	0.00541	—	722.312
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	854.406	854.406	0.05300	0.00642	—	857.645
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,573.99	1,573.99	0.09764	0.01183	—	1,579.96
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	119.135	119.135	0.00739	0.00090	—	119.587
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	141.457	141.457	0.00877	0.00106	—	141.993
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	260.592	260.592	0.01617	0.00196	—	261.580

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.06765	0.03383	0.57810	0.24600	0.00369	0.04674	—	0.04674	0.04674	—	0.04674	—	733.798	733.798	0.06494	0.00138	—	735.833
Strip Mall	0.01060	0.00530	0.09637	0.08095	0.00058	0.00732	—	0.00732	0.00732	—	0.00732	—	114.986	114.986	0.01018	0.00022	—	115.305
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.07825	0.03913	0.67447	0.32695	0.00427	0.05406	—	0.05406	0.05406	—	0.05406	—	848.784	848.784	0.07512	0.00160	—	851.138

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.06765	0.03383	0.57810	0.24600	0.00369	0.04674	—	0.04674	0.04674	—	0.04674	—	733.798	733.798	0.06494	0.00138	—	735.833
Strip Mall	0.01060	0.00530	0.09637	0.08095	0.00058	0.00732	—	0.00732	0.00732	—	0.00732	—	114.986	114.986	0.01018	0.00022	—	115.305
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.07825	0.03913	0.67447	0.32695	0.00427	0.05406	—	0.05406	0.05406	—	0.05406	—	848.784	848.784	0.07512	0.00160	—	851.138
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.01235	0.00617	0.10550	0.04490	0.00067	0.00853	—	0.00853	0.00853	—	0.00853	—	121.489	121.489	0.01075	0.00023	—	121.826
Strip Mall	0.00193	0.00097	0.01759	0.01477	0.00011	0.00134	—	0.00134	0.00134	—	0.00134	—	19.0373	19.0373	0.00168	0.00004	—	19.0901
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.01428	0.00714	0.12309	0.05967	0.00078	0.00987	—	0.00987	0.00987	—	0.00987	—	140.526	140.526	0.01244	0.00026	—	140.916

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Consumer Products	4.14218	4.14218	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architect Coatings	0.30524	0.30524	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	1.11697	1.04639	0.08811	9.79134	0.00047	0.00784	—	0.00784	0.00593	—	0.00593	—	29.8434	29.8434	0.00125	0.00025	—	29.9493
Total	5.56440	5.49382	0.08811	9.79134	0.00047	0.00784	—	0.00784	0.00593	—	0.00593	0.00000	29.8434	29.8434	0.00125	0.00025	—	29.9493
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Consumer Products	4.14218	4.14218	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.30524	0.30524	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	4.44743	4.44743	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Consumer Products	0.75595	0.75595	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.05571	0.05571	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.10053	0.09418	0.00793	0.88122	0.00004	0.00071	—	0.00071	0.00053	—	0.00053	—	2.43662	2.43662	0.00010	0.00002	—	2.44526
Total	0.91218	0.90583	0.00793	0.88122	0.00004	0.00071	—	0.00071	0.00053	—	0.00053	0.00000	2.43662	2.43662	0.00010	0.00002	—	2.44526

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	9.15162	59.6903	68.8419	0.94210	0.02274	—	99.1722
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	8.51642	44.4950	53.0114	0.87602	0.02108	—	81.1947
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	17.6680	104.185	121.853	1.81812	0.04383	—	180.367
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	9.15162	59.6903	68.8419	0.94210	0.02274	—	99.1722
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	8.51642	44.4950	53.0114	0.87602	0.02108	—	81.1947
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	17.6680	104.185	121.853	1.81812	0.04383	—	180.367
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	1.51515	9.88240	11.3976	0.15597	0.00377	—	16.4191
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	1.40999	7.36666	8.77665	0.14504	0.00349	—	13.4427

City Park	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	2.92515	17.2491	20.1742	0.30101	0.00726	—	29.8618

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	50.1804	0.00000	50.1804	5.01535	0.00000	—	175.564
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	33.9531	0.00000	33.9531	3.39349	0.00000	—	118.791
City Park	—	—	—	—	—	—	—	—	—	—	—	1.39046	0.00000	1.39046	0.13897	0.00000	—	4.86475
Total	—	—	—	—	—	—	—	—	—	—	—	85.5240	0.00000	85.5240	8.54781	0.00000	—	299.219
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	50.1804	0.00000	50.1804	5.01535	0.00000	—	175.564
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	33.9531	0.00000	33.9531	3.39349	0.00000	—	118.791
City Park	—	—	—	—	—	—	—	—	—	—	—	1.39046	0.00000	1.39046	0.13897	0.00000	—	4.86475
Total	—	—	—	—	—	—	—	—	—	—	—	85.5240	0.00000	85.5240	8.54781	0.00000	—	299.219
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments	—	—	—	—	—	—	—	—	—	—	—	8.30793	0.00000	8.30793	0.83035	0.00000	—	29.0666
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	5.62133	0.00000	5.62133	0.56183	0.00000	—	19.6671
City Park	—	—	—	—	—	—	—	—	—	—	—	0.23021	0.00000	0.23021	0.02301	0.00000	—	0.80542
Total	—	—	—	—	—	—	—	—	—	—	—	14.1595	0.00000	14.1595	1.41519	0.00000	—	49.5392

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.95656	0.95656
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.37369	0.37369
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.33025	1.33025
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.95656	0.95656
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.37369	0.37369

City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.33025	1.33025
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.15837	0.15837
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.06187	0.06187
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.22024	0.22024

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Low Rise	64.3263	71.5323	2.46057	20,629.0	399.824	444.614	15.2938	128,221
Strip Mall	396.000	375.628	182.542	132,347	2,651.02	2,514.64	1,222.03	886,000
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

5.10. Operational Area Sources

5.10.1. Hearths

Land Use	Hearth Type	Unmitigated (number)	Mitigated (number)
Apartments Low Rise	Wood Fireplaces	0	0
Apartments Low Rise	Gas Fireplaces	0	0
Apartments Low Rise	Propane Fireplaces	0	0
Apartments Low Rise	Electric Fireplaces	0	0
Apartments Low Rise	No Fireplaces	126	126

Apartments Low Rise	Conventional Wood Stoves	0	0
Apartments Low Rise	Catalytic Wood Stoves	0	0
Apartments Low Rise	Non-Catalytic Wood Stoves	0	0
Apartments Low Rise	Pellet Wood Stoves	0	0
Strip Mall	Wood Fireplaces	0	0
Strip Mall	Gas Fireplaces	0	0
Strip Mall	Propane Fireplaces	0	0
Strip Mall	Electric Fireplaces	0	0
Strip Mall	No Fireplaces	0	0
Strip Mall	Conventional Wood Stoves	0	0
Strip Mall	Catalytic Wood Stoves	0	0
Strip Mall	Non-Catalytic Wood Stoves	0	0
Strip Mall	Pellet Wood Stoves	0	0
City Park	Wood Fireplaces	0	0
City Park	Gas Fireplaces	0	0
City Park	Propane Fireplaces	0	0
City Park	Electric Fireplaces	0	0
City Park	No Fireplaces	0	0
City Park	Conventional Wood Stoves	0	0
City Park	Catalytic Wood Stoves	0	0
City Park	Non-Catalytic Wood Stoves	0	0
City Park	Pellet Wood Stoves	0	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
270,459	90,153.0	90,000.0	30,000.0	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00000
Summer Days	day/yr	180.000

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Low Rise	493,715	531.983	0.0330	0.0040	2,289,646
Strip Mall	586,218	531.983	0.0330	0.0040	358,788
City Park	0.00000	531.983	0.0330	0.0040	0.00000

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Low Rise	4,775,832	1,591,094
Strip Mall	4,444,351	51,710.2
City Park	0.00000	0.00000

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Low Rise	93.1096	0.00000

Strip Mall	63.0000	0.00000
City Park	2.58000	0.00000

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088.00	0.00225	2.50000	2.50000	10.00000
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430.00	0.11538	0.60000	0.00000	1.000000
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088.00	0.00180	4.00000	4.00000	18.0000
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430.00	0.03750	1.000000	0.00000	1.000000
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922.00	0.00040	7.50000	7.50000	20.0000
City Park	Other commercial A/C and heat pumps	R-410A	2,088.00	0.00180	4.00000	4.00000	18.0000
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430.00	0.03750	1.000000	0.00000	1.000000

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Alternative 2 includes an estimated total 126 residential units and 60,000 square feet of retail/commercial space, as well as open space/parks.
Operations: Vehicle Data	Trip rates based on daily trip values provided by Fehr &Peers Traffic Analysis dated June 27, 2025.

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	7.87500	43.4000
Landscape Area	sq. ft	—	100,700
Lot Area	acre	1.37741	0.00000
Landscape Area	sq. ft	—	4,000.00

8.5. Operations

8.5.1. Mobile Sources

8.5.1.1. Vehicle Data

Land Use	Model Parameter	Units	Default Value	New Value
Apartments Low Rise	Weekday Trip Rate	size/day	7.32000	0.51053
Apartments Low Rise	Saturday Trip Rate	size/day	8.14000	0.56772
Apartments Low Rise	Sunday Trip Rate	size/day	6.28000	0.01953
Strip Mall	Weekday Trip Rate	size/day	44.3200	6.60000
Strip Mall	Saturday Trip Rate	size/day	42.0400	6.26047
Strip Mall	Sunday Trip Rate	size/day	20.4300	3.04237
City Park	Weekday Trip Rate	size/day	0.78000	0.00000
City Park	Saturday Trip Rate	size/day	1.96000	0.00000
City Park	Sunday Trip Rate	size/day	2.19000	0.00000

Attachment U

Alternative 2 - Energy Calculations

Construction Equipment Fuel Consumption								
Phase	**Number of Days**	**Offroad Equipment Type**	**Amount**	**Usage Hours**	**Horse Power**	**Load Factor**	**HP hrs/day**	**Estimated Fuel Consumption (gallons)**
Grading	174	Graders	1	8	148	0.41	485.44	4,223.33
	174	Excavators	2	8	36	0.38	218.88	952.13
	174	Tractors/Loaders/Backhoes	2	8	84	0.37	497.28	2,163.17
	174	Scrapers	2	8	423	0.48	3248.64	14,131.58
	174	Rubber tired dozers	1	8	367	0.4	1174.4	10,217.28
Building Construction	1110	Forklifts	3	8	82	0.2	393.6	7,281.60
	1110	Generator Sets	1	8	14	0.74	82.88	4,599.84
	1110	Cranes	1	7	367	0.29	745.01	41,348.06
	1110	Welders	1	8	46	0.45	165.6	9,190.80
	1110	Tractors/Loaders/Backhoes	3	7	84	0.37	652.68	12,074.58
Paving	65	Pavers	2	8	21	0.42	141.12	229.32
	65	Paving Equipment	2	8	89	0.36	512.64	833.04
	65	Rollers	2	8	36	0.38	218.88	355.68
Architectural Coating	197	Air Compressors	1	6	37	0.48	106.56	1,049.62
Total Construction Equipment Fuel Consumption (gallons of diesel fuel)								**108,650.02**

Notes :

Using Carl Moyer Guidelines Table D-21 Fuel consumption rate factors (bhp-hr/gal) for engines less than 750 hp.

Construction Worker Fuel Consumption						
Phase	**Number of Days**	**Worker Trips/Day**	**Trip Length (miles)**	**Vehicle Miles Traveled**	**Average Vehicle Fuel Economoy (mpg)**	**Estimated Fuel Consumption**
Grading	174	20	18.5	64380	26.02	2474.3
Building Construction	1110	80	18.5	1642800	26.02	63136.0
Paving	65	15	18.5	18037.5	26.02	693.2
Architectural Coating	197	16	18.5	58312	26.02	2241.0
Total Construction Worker Fuel Consumption (gallons of gasoline fuel)						**68544.6**

Notes :

Assumptions for the worker trip length and vehicle miles traveled are derived from CalEEMod defaults.

Construction Vendor Fuel Consumption						
Phase	**Number of Days**	**Vendor Trips/Day**	**Trip Length (miles)**	**Vehicle Miles Traveled**	**Average Vehicle Fuel Economy (mpg)**	**Estimated Fuel Consumption (gallons)**
Grading	174	0	10.2	0	6.9	0.0
Building Construction	1110	18	10.2	203796	6.9	29535.7
Paving	65	0	10.2	0	6.9	0.0
Archictectural Coating	197	0	10.2	0	6.9	0.0
Total Construction Vendor Fuel Consumption (gallons of diesel fuel)						**29535.7**

Notes :

Assumptions for the vendor trip length and vehicle miles traveled are derived from CalEEMod defaults.

Construction Hauling Fuel Consumption						
Phase	**Number of Days**	**Hauling Trips/Day**	**Trip Length (miles)**	**Vehicle Miles Traveled**	**Average Vehicle Fuel Economy (mpg)**	**Estimated Fuel Consumption (gallons)**
Grading	174	100	20	348000	6.05	57520.7
Building Construction	1110	0	20	0	6.05	0.0
Paving	65	0	20	0	6.05	0.0
Archictectural Coating	197	0	20	0	6.05	0.0
Total Construction Hauling Fuel Consumption (gallons of diesel fuel)						**57520.7**

Notes :

Assumptions for the haul trip length during grading based on haul route application. All other factors are derived from CalEEMod defaults.

Per CalEEMod User's Guide Appendix C, CalEEMod assumes hauling and onsite truck trips are made by a fleet consisting of 100 percent HHDT.

Electricity Demand During Construction From Water Usage to Control Fugutive Dust					
	Acres	Water Usage (acres/day)	Supply Water Electricity Intensity (kwh/gallons)	Total Gallons	Electricity (kWh)
Project Site	522	3,020	0.003044	1576440.0	4,799
Total					**4,799**

Notes:

Total acres graded based on CalEEMod output sheets.

Water usage rate based on Air & Waste Management Association, Air Pollution Engineering Manual, 1992 Edition

Supply Water Electricity Intensity based on CalEEMod User's Guide, Appendix G: Default Data Tables, Table G-32

Construction Equipment Fuel Consumption								
Phase	**Number of Days**	**Offroad Equipment Type**	**Amount**	**Usage Hours**	**Horse Power**	**Load Factor**	**HP hrs/day**	**Estimated Fuel Consumption (gallons)**
Demolition	21	Concrete/Indsutrial Saws	1	8	33	0.73	192.72	202.36
	21	Excavators	3	8	36	0.38	328.32	114.91
	21	Rubber tired dozers	2	8	367	0.4	2348.8	1,233.12
Grading	30	Graders	1	8	148	0.41	485.44	728.16
	30	Excavators	2	8	36	0.38	218.88	164.16
	30	Tractors/Loaders/Backhoes	2	8	84	0.37	497.28	372.96
	30	Scrapers	2	8	423	0.48	3248.64	2,436.48
	30	Rubber tired dozers	1	8	367	0.4	1174.4	1,761.60
Building Construction	300	Forklifts	3	8	82	0.2	393.6	1,968.00
	300	Generator Sets	1	8	14	0.74	82.88	1,243.20
	300	Cranes	1	7	367	0.29	745.01	11,175.15
	300	Welders	1	8	46	0.45	165.6	2,484.00
	300	Tractors/Loaders/Backhoes	3	7	84	0.37	652.68	3,263.40
Paving	20	Pavers	2	8	21	0.42	141.12	70.56
	20	Paving Equipment	2	8	89	0.36	512.64	256.32
	20	Rollers	2	8	36	0.38	218.88	109.44
Architectural Coating	90	Air Compressors	1	6	37	0.48	106.56	479.52
Total Construction Equipment Fuel Consumption (gallons of diesel fuel)								**26,512.95**

Notes :

Using Carl Moyer Guidelines Table D-21 Fuel consumption rate factors (bhp-hr/gal) for engines less than 750 hp.

Construction Worker Fuel Consumption						
Phase	**Number of Days**	**Worker Trips/Day**	**Trip Length (miles)**	**Vehicle Miles Traveled**	**Average Vehicle Fuel Economoy (mpg)**	**Estimated Fuel Consumption**
Demolition	21	15	18.5	5827.5	26.02	224.0
Grading	30	20	18.5	11100	26.02	426.6
Building Construction	300	30	18.5	166500	26.02	6398.9
Paving	20	15	18.5	5550	26.02	213.3
Architectural Coating	90	6	18.5	9990	26.02	383.9
Total Construction Worker Fuel Consumption (gallons of gasoline fuel)						**7646.7**

Notes :

Assumptions for the worker trip length and vehicle miles traveled are derived from CalEEMod defaults.

Construction Vendor Fuel Consumption						
Phase	**Number of Days**	**Vendor Trips/Day**	**Trip Length (miles)**	**Vehicle Miles Traveled**	**Average Vehicle Fuel Economy (mpg)**	**Estimated Fuel Consumption (gallons)**
Demolition	21	0	10.2	0	6.9	0.0
Grading	30	0	10.2	0	6.9	0.0
Building Construction	300	5	10.2	15300	6.9	2217.4
Paving	20	0	10.2	0	6.9	0.0
Archictectural Coating	90	0	10.2	0	6.9	0.0
Total Construction Vendor Fuel Consumption (gallons of diesel fuel)						**2217.4**

Notes :

Assumptions for the vendor trip length and vehicle miles traveled are derived from CalEEMod defaults.

Construction Hauling Fuel Consumption						
Phase	**Number of Days**	**Hauling Trips/Day**	**Trip Length (miles)**	**Vehicle Miles Traveled**	**Average Vehicle Fuel Economy (mpg)**	**Estimated Fuel Consumption (gallons)**
Demolition	21	16	20	6720	6.05	1110.7
Grading	30	75	20	45000	6.05	7438.0
Building Construction	300	0	20	0	6.05	0.0
Paving	20	0	20	0	6.05	0.0
Archictectural Coating	90	0	20	0	6.05	0.0
Total Construction Hauling Fuel Consumption (gallons of diesel fuel)						**8548.8**

Notes :

Assumptions for the haul trip length during grading based on haul route application. All other factors are derived from CalEEMod defaults.

Per CalEEMod User's Guide Appendix C, CalEEMod assumes hauling and onsite truck trips are made by a fleet consisting of 100 percent HHDT.

Electricity Demand During Construction From Water Usage to Control Fugutive Dust					
	Acres	Water Usage (acres/day)	Supply Water Electricity Intensity (kwh/gallons)	Total Gallons	Electricity (kWh)
Project site	90	3,020	0.003044	271800.0	827
Total					**827**

Notes:

Total acres graded based on CalEEMod output sheets.

Water usage rate based on Air & Waste Management Association, Air Pollution Engineering Manual, 1992 Edition

Supply Water Electricity Intensity based on CalEEMod User's Guide, Appendix G: Default Data Tables, Table G-32

Estimated Operational Fuel Consumption			
Land Use	**Annual VMT**	**Gasoline Usage (gallons)**	**Diesel Usage (gallons)**
Apartment Low Rise	128,221	3,619	611
Strip Map	886,000	25,009.5	4,219.0
City Park	-	-	-
High School	8,127,222	229,410.5	38,701.1
Total	**9,141,443**	**258,039.4**	**43,530.7**

Notes:

Based on the California Air Resources Board on-road vehicle emissions model, EMFAC 2021

(Modeling input: Ventura County; Fleet Aggregate; Year 2033 for proposed project).

For Year 2033, gasoline-fueld vehicles account for approximately 84.4% percent of the total VMT at 29.9 miles per gallon and diesel fueled-vehicles account for approximately 5.0% percent of thet total VMT at 10.5 miles per gallon

Annual Operational Electricity Demand					
		Water Usage			
Electricity Demand	kWh/year	Indoor (gal/yr)	Outdoor (gal/yr)	Water-Related Electricity Use (kWh/yr)	Total Annual Electricity Use (kWh)
Apartment Low Rise	493,715	4,775,832	151,094	33310.8	527,026
Strip Map	586,218	4,444,351	51,710	30527.1	616,745
City Park	0	0	0	0.0	0
High School	1,710,370	11,440,596	28,580,043	229521.8	1,939,892
Total	**2,790,303**	**20,660,779**	**28,782,847**	**293,359.7**	**3,083,663**

Annual Operational Natrual Gas Demand	
Natural Gas Demand	kBTU/year
Apartment Low Rise	2,289,646
Strip Map	358,788
City Park	-
High School	3,330,720
Total	**5,979,154**

Notes:

Taken from the CalEEMod annual output

Indoor water results in 0.006807 kWh/gallon of electricity usage per gallon from the supplying, treating, and distributing of water and the processing of resulting wastewater within South Coast.

Outdoor water results in 0.005306 kWh/gallon of electricity usage per gallon from supplying, treating, and distributing of water within South Coast.

APPENDIX U

Alternative 3 Air Quality, Greenhouse Gas, and Energy Emissions

Attachment A

Alternative 3- CalEEMod Output Emission Files

Maulhardt Ranch - Area A Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Maulhardt Ranch - Area A
Construction Start Date	1/1/2027
Operational Year	2033
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.20000
Precipitation (days)	21.2000
Location	34.207526675912646, -119.15929784341952
County	Ventura
City	Oxnard
Air District	Ventura County APCD
Air Basin	South Central Coast
TAZ	3438
EDFZ	8
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.37

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Low Rise	656.000	Dwelling Unit	33.1000	695,360	69,536.0	—	1,975.00	—

Strip Mall	37.0000	1000sqft	0.00000	37,000.0	3,700.00	—	—	—
City Park	11.4000	Acre	11.4000	0.00000	0.00000	0.00000	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	23.3965	23.3332	34.0957	40.3618	0.10723	1.13125	6.98031	7.35115	1.04781	1.66348	2.57014	—	13,490.7	13,490.7	0.43211	1.10359	26.8695	13,844.8
Mit.	23.3965	23.3332	13.2389	42.3786	0.10723	0.25021	6.98031	7.11426	0.24678	1.66348	1.77548	—	13,490.7	13,490.7	0.43211	1.10359	26.8695	13,844.8
% Reduced	—	—	61%	-5%	—	78%	—	3%	76%	—	31%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	24.2106	24.0182	34.3882	37.7966	0.10723	1.13125	6.98031	7.35115	1.04781	1.66348	2.57014	—	13,481.4	13,481.4	0.43255	1.10403	0.69582	13,821.6
Mit.	23.8357	23.7219	13.5315	39.8134	0.10723	0.25021	6.98031	7.11426	0.24678	1.66348	1.77548	—	13,481.4	13,481.4	0.43255	1.10403	0.69582	13,821.6
% Reduced	2%	1%	61%	-5%	—	78%	—	3%	76%	—	31%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	11.4046	11.3578	19.7971	26.0605	0.06071	0.62709	4.93253	5.15984	0.57688	1.17469	1.68823	—	8,952.18	8,952.18	0.25882	0.66765	7.47306	9,163.33

Mit.	11.3594	11.3221	8.35977	27.8215	0.06071	0.15100	4.93253	5.01197	0.14416	1.17469	1.25551	—	8,952.18	8,952.18	0.25882	0.66765	7.47306	9,163.33
% Reduced	< 0.5%	< 0.5%	58%	-7%	—	76%	—	3%	75%	—	26%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.08133	2.07279	3.61297	4.75604	0.01108	0.11444	0.90019	0.94167	0.10528	0.21438	0.30810	—	1,482.14	1,482.14	0.04285	0.11054	1.23725	1,517.09
Mit.	2.07309	2.06629	1.52566	5.07743	0.01108	0.02756	0.90019	0.91468	0.02631	0.21438	0.22913	—	1,482.14	1,482.14	0.04285	0.11054	1.23725	1,517.09
% Reduced	< 0.5%	< 0.5%	58%	-7%	—	76%	—	3%	75%	—	26%	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	25.0000	25.0000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	25.0000	25.0000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86933	3.13241	34.0957	40.3618	0.10723	1.13125	6.98031	7.35115	1.04781	1.66348	2.57014	—	13,490.7	13,490.7	0.43211	1.10359	26.8695	13,844.8
2028	3.17252	2.88874	13.1233	38.7535	0.04053	0.31737	6.98031	7.29768	0.29335	1.66348	1.95683	—	10,728.6	10,728.6	0.20086	0.56909	24.1919	10,927.4

2029	3.07703	2.80740	12.4368	37.1002	0.04053	0.29278	6.98031	7.27308	0.27072	1.66348	1.93420	—	10,560.4	10,560.4	0.19915	0.56909	21.6762	10,756.7
2030	2.95218	2.51042	12.1185	35.6863	0.04053	0.27725	6.98031	7.25756	0.25644	1.66348	1.91992	—	10,393.1	10,393.1	0.19915	0.55196	19.2698	10,581.8
2031	2.84057	2.41375	11.5255	34.0537	0.04053	0.26036	6.98031	7.24067	0.24091	1.66348	1.90438	—	10,230.1	10,230.1	0.18848	0.35449	17.0535	10,357.5
2032	23.3965	23.3332	1.01661	4.96037	0.00173	0.00813	1.26569	1.27381	0.00748	0.29667	0.30415	—	1,280.72	1,280.72	0.01822	0.00749	2.45669	1,285.86
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.86007	3.12492	34.3882	37.7966	0.10723	1.13125	6.98031	7.35115	1.04781	1.66348	2.57014	—	13,481.4	13,481.4	0.43255	1.10403	0.69582	13,821.6
2028	3.14782	2.86404	13.4746	36.2987	0.04053	0.31737	6.98031	7.29768	0.29335	1.66348	1.95683	—	10,459.6	10,459.6	0.22053	0.57977	0.62673	10,638.5
2029	3.06300	2.58691	12.9856	34.7648	0.04053	0.29278	6.98031	7.27308	0.27072	1.66348	1.93420	—	10,296.7	10,296.7	0.20983	0.57976	0.56170	10,475.3
2030	2.93983	2.48571	12.4437	33.4753	0.04053	0.27725	6.98031	7.25756	0.25644	1.66348	1.91992	—	10,134.2	10,134.2	0.20983	0.55196	0.50071	10,304.5
2031	24.2106	24.0182	11.8647	32.1629	0.04053	0.26036	6.98031	7.24067	0.24091	1.66348	1.90438	—	9,975.72	9,975.72	0.19915	0.55196	0.44303	10,145.6
2032	24.1710	23.9827	7.06245	15.0058	0.01568	0.20682	1.46175	1.66857	0.19028	0.34263	0.53291	—	2,910.86	2,910.86	0.08395	0.06635	0.07370	2,932.80
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	2.65913	2.19189	19.7971	23.4721	0.06071	0.62709	3.75897	4.38607	0.57688	1.11135	1.68823	—	8,952.18	8,952.18	0.25882	0.66765	5.72135	9,163.33
2028	2.25580	2.06019	9.62256	26.0605	0.02903	0.22731	4.93253	5.15984	0.21011	1.17469	1.38480	—	7,521.62	7,521.62	0.15031	0.40761	7.47306	7,654.31
2029	2.17381	1.83254	9.10592	24.9177	0.02895	0.20913	4.91905	5.12818	0.19337	1.17148	1.36485	—	7,384.13	7,384.13	0.14988	0.40649	6.67954	7,515.69
2030	2.08703	1.76146	8.87215	24.0119	0.02895	0.19804	4.91905	5.11709	0.18317	1.17148	1.35465	—	7,267.54	7,267.54	0.14225	0.39425	5.94061	7,394.52
2031	3.19166	2.89259	8.19306	22.0319	0.02759	0.18372	4.62071	4.80443	0.16993	1.10011	1.27004	—	6,766.00	6,766.00	0.13594	0.36764	4.93949	6,883.89
2032	11.4046	11.3578	1.23878	3.50885	0.00255	0.02843	0.62730	0.65573	0.02615	0.14690	0.17306	—	805.885	805.885	0.01768	0.02510	0.53349	814.339
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.48529	0.40002	3.61297	4.28365	0.01108	0.11444	0.68601	0.80046	0.10528	0.20282	0.30810	—	1,482.14	1,482.14	0.04285	0.11054	0.94724	1,517.09
2028	0.41168	0.37599	1.75612	4.75604	0.00530	0.04148	0.90019	0.94167	0.03835	0.21438	0.25273	—	1,245.29	1,245.29	0.02488	0.06748	1.23725	1,267.26
2029	0.39672	0.33444	1.66183	4.54747	0.00528	0.03817	0.89773	0.93589	0.03529	0.21379	0.24909	—	1,222.53	1,222.53	0.02481	0.06730	1.10587	1,244.31
2030	0.38088	0.32147	1.61917	4.38217	0.00528	0.03614	0.89773	0.93387	0.03343	0.21379	0.24722	—	1,203.22	1,203.22	0.02355	0.06527	0.98354	1,224.25
2031	0.58248	0.52790	1.49523	4.02083	0.00503	0.03353	0.84328	0.87681	0.03101	0.20077	0.23178	—	1,120.19	1,120.19	0.02251	0.06087	0.81779	1,139.71
2032	2.08133	2.07279	0.22608	0.64037	0.00047	0.00519	0.11448	0.11967	0.00477	0.02681	0.03158	—	133.423	133.423	0.00293	0.00416	0.08832	134.823

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	2.74696	2.41580	13.2389	42.3786	0.10723	0.25021	6.98031	7.11426	0.24678	1.66348	1.77548	—	13,490.7	13,490.7	0.43211	1.10359	26.8695	13,844.8
2028	2.48442	2.34208	7.23939	40.7613	0.04053	0.11091	6.98031	7.09122	0.10657	1.66348	1.77004	—	10,728.6	10,728.6	0.20086	0.56909	24.1919	10,927.4
2029	2.41085	2.27916	6.87264	39.1322	0.04053	0.10676	6.98031	7.08707	0.10275	1.66348	1.76623	—	10,560.4	10,560.4	0.19915	0.56909	21.6762	10,756.7
2030	2.30805	2.00071	6.72788	37.7271	0.04053	0.10361	6.98031	7.08392	0.09985	1.66348	1.76333	—	10,393.1	10,393.1	0.19915	0.55196	19.2698	10,581.8
2031	2.21694	1.92126	6.39496	36.1282	0.04053	0.10100	6.98031	7.08131	0.09745	1.66348	1.76093	—	10,230.1	10,230.1	0.18848	0.35449	17.0535	10,357.5
2032	23.3965	23.3332	1.01661	4.96037	0.00173	0.00813	1.26569	1.27381	0.00748	0.29667	0.30415	—	1,280.72	1,280.72	0.01822	0.00749	2.45669	1,285.86
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	2.73293	2.39110	13.5315	39.8134	0.10723	0.25021	6.98031	7.11426	0.24678	1.66348	1.77548	—	13,481.4	13,481.4	0.43255	1.10403	0.69582	13,821.6
2028	2.45971	2.31738	7.59067	38.3064	0.04053	0.11091	6.98031	7.09122	0.10657	1.66348	1.77004	—	10,459.6	10,459.6	0.22053	0.57977	0.62673	10,638.5
2029	2.39682	2.05867	7.42139	36.7967	0.04053	0.10676	6.98031	7.08707	0.10275	1.66348	1.76623	—	10,296.7	10,296.7	0.20983	0.57976	0.56170	10,475.3
2030	2.29570	1.97600	7.05303	35.5161	0.04053	0.10361	6.98031	7.08392	0.09985	1.66348	1.76333	—	10,134.2	10,134.2	0.20983	0.55196	0.50071	10,304.5
2031	23.8357	23.7219	6.73415	34.2374	0.04053	0.10100	6.98031	7.08131	0.09745	1.66348	1.76093	—	9,975.72	9,975.72	0.19915	0.55196	0.44303	10,145.6
2032	23.8049	23.6936	3.31701	15.7009	0.01568	0.08081	1.46175	1.54256	0.07621	0.34263	0.41884	—	2,910.86	2,910.86	0.08395	0.06635	0.07370	2,932.80
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.20462	1.02254	8.35977	27.8215	0.06071	0.15100	3.75897	3.90997	0.14416	1.11135	1.25551	—	8,952.18	8,952.18	0.25882	0.66765	5.72135	9,163.33
2028	1.76295	1.66865	5.40824	27.4985	0.02903	0.07944	4.93253	5.01197	0.07633	1.17469	1.25101	—	7,521.62	7,521.62	0.15031	0.40761	7.47306	7,654.31
2029	1.69796	1.45523	5.13150	26.3691	0.02895	0.07626	4.91905	4.99531	0.07339	1.17148	1.24487	—	7,384.13	7,384.13	0.14988	0.40649	6.67954	7,515.69
2030	1.62694	1.39738	5.02167	25.4696	0.02895	0.07401	4.91905	4.99306	0.07132	1.17148	1.24280	—	7,267.54	7,267.54	0.14225	0.39425	5.94061	7,394.52
2031	2.75984	2.55156	4.59808	23.4377	0.02759	0.07134	4.62071	4.69204	0.06872	1.10011	1.16883	—	6,766.00	6,766.00	0.13594	0.36764	4.93949	6,883.89
2032	11.3594	11.3221	0.77701	3.59455	0.00255	0.01289	0.62730	0.64019	0.01209	0.14690	0.15899	—	805.885	805.885	0.01768	0.02510	0.53349	814.339
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2027	0.21984	0.18661	1.52566	5.07743	0.01108	0.02756	0.68601	0.71357	0.02631	0.20282	0.22913	—	1,482.14	1,482.14	0.04285	0.11054	0.94724	1,517.09
2028	0.32174	0.30453	0.98700	5.01848	0.00530	0.01450	0.90019	0.91468	0.01393	0.21438	0.22831	—	1,245.29	1,245.29	0.02488	0.06748	1.23725	1,267.26
2029	0.30988	0.26558	0.93650	4.81236	0.00528	0.01392	0.89773	0.91164	0.01339	0.21379	0.22719	—	1,222.53	1,222.53	0.02481	0.06730	1.10587	1,244.31
2030	0.29692	0.25502	0.91646	4.64820	0.00528	0.01351	0.89773	0.91123	0.01302	0.21379	0.22681	—	1,203.22	1,203.22	0.02355	0.06527	0.98354	1,224.25
2031	0.50367	0.46566	0.83915	4.27738	0.00503	0.01302	0.84328	0.85630	0.01254	0.20077	0.21331	—	1,120.19	1,120.19	0.02251	0.06087	0.81779	1,139.71
2032	2.07309	2.06629	0.14180	0.65601	0.00047	0.00235	0.11448	0.11684	0.00221	0.02681	0.02902	—	133.423	133.423	0.00293	0.00416	0.08832	134.823

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	22.9625	22.4658	4.46713	51.1012	0.04883	0.28303	2.90485	3.18788	0.27727	0.73648	1.01376	335.858	11,360.1	11,695.9	34.4621	0.29388	10.0965	12,655.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	19.2705	18.9719	4.23337	12.2309	0.04618	0.26350	2.90485	3.16834	0.26250	0.73648	0.99898	335.858	11,159.0	11,494.9	34.4702	0.30177	5.33730	12,451.9
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	20.7256	20.3489	4.18617	29.3775	0.04259	0.27046	2.37586	2.64631	0.26728	0.60248	0.86976	335.858	10,760.2	11,096.0	34.4446	0.27766	6.95997	12,046.8
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.78242	3.71367	0.76398	5.36140	0.00777	0.04936	0.43359	0.48295	0.04878	0.10995	0.15873	55.6052	1,781.47	1,837.07	5.70270	0.04597	1.15230	1,994.49

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.00944	1.89521	1.03997	10.7705	0.02755	0.01562	2.90485	2.92047	0.01463	0.73648	0.75111	—	2,806.60	2,806.60	0.12568	0.12253	4.88589	2,851.14
Area	20.5943	20.3912	0.35794	39.0000	0.00171	0.01954	—	0.01954	0.01479	—	0.01479	0.00000	106.124	106.124	0.00444	0.00088	—	106.498
Energy	0.35875	0.17937	3.06922	1.33068	0.01957	0.24786	—	0.24786	0.24786	—	0.24786	—	8,164.60	8,164.60	0.60946	0.03946	—	8,191.60
Water	—	—	—	—	—	—	—	—	—	—	—	52.8983	282.757	335.655	5.44166	0.13100	—	510.735
Waste	—	—	—	—	—	—	—	—	—	—	—	282.960	0.00000	282.960	28.2808	0.00000	—	989.981
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21062	5.21062
Total	22.9625	22.4658	4.46713	51.1012	0.04883	0.28303	2.90485	3.18788	0.27727	0.73648	1.01376	335.858	11,360.1	11,695.9	34.4621	0.29388	10.0965	12,655.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.99987	1.88057	1.16415	10.9002	0.02661	0.01564	2.90485	2.92048	0.01464	0.73648	0.75112	—	2,711.63	2,711.63	0.13821	0.13131	0.12669	2,754.35
Area	16.9119	16.9119	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Energy	0.35875	0.17937	3.06922	1.33068	0.01957	0.24786	—	0.24786	0.24786	—	0.24786	—	8,164.60	8,164.60	0.60946	0.03946	—	8,191.60
Water	—	—	—	—	—	—	—	—	—	—	—	52.8983	282.757	335.655	5.44166	0.13100	—	510.735
Waste	—	—	—	—	—	—	—	—	—	—	—	282.960	0.00000	282.960	28.2808	0.00000	—	989.981
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21062	5.21062
Total	19.2705	18.9719	4.23337	12.2309	0.04618	0.26350	2.90485	3.16834	0.26250	0.73648	0.99898	335.858	11,159.0	11,494.9	34.4702	0.30177	5.33730	12,451.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.63894	1.54177	0.94043	8.81395	0.02218	0.01296	2.37586	2.38881	0.01213	0.60248	0.61461	—	2,260.47	2,260.47	0.11047	0.10676	1.74935	2,296.79
Area	18.7279	18.6277	0.17652	19.2329	0.00084	0.00964	—	0.00964	0.00729	—	0.00729	0.00000	52.3352	52.3352	0.00219	0.00044	—	52.5196
Energy	0.35875	0.17937	3.06922	1.33068	0.01957	0.24786	—	0.24786	0.24786	—	0.24786	—	8,164.60	8,164.60	0.60946	0.03946	—	8,191.60
Water	—	—	—	—	—	—	—	—	—	—	—	52.8983	282.757	335.655	5.44166	0.13100	—	510.735
Waste	—	—	—	—	—	—	—	—	—	—	—	282.960	0.00000	282.960	28.2808	0.00000	—	989.981
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21062	5.21062
Total	20.7256	20.3489	4.18617	29.3775	0.04259	0.27046	2.37586	2.64631	0.26728	0.60248	0.86976	335.858	10,760.2	11,096.0	34.4446	0.27766	6.95997	12,046.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	0.29911	0.28137	0.17163	1.60855	0.00405	0.00236	0.43359	0.43596	0.00221	0.10995	0.11217	—	374.246	374.246	0.01829	0.01768	0.28963	380.260
Area	3.41784	3.39956	0.03221	3.51000	0.00015	0.00176	—	0.00176	0.00133	—	0.00133	0.00000	8.66469	8.66469	0.00036	0.00007	—	8.69522
Energy	0.06547	0.03274	0.56013	0.24285	0.00357	0.04523	—	0.04523	0.04523	—	0.04523	—	1,351.74	1,351.74	0.10090	0.00653	—	1,356.21
Water	—	—	—	—	—	—	—	—	—	—	—	8.75792	46.8136	55.5715	0.90093	0.02169	—	84.5580
Waste	—	—	—	—	—	—	—	—	—	—	—	46.8473	0.00000	46.8473	4.68222	0.00000	—	163.903
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.86268	0.86268
Total	3.78242	3.71367	0.76398	5.36140	0.00777	0.04936	0.43359	0.48295	0.04878	0.10995	0.15873	55.6052	1,781.47	1,837.07	5.70270	0.04597	1.15230	1,994.49

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.00944	1.89521	1.03997	10.7705	0.02755	0.01562	2.90485	2.92047	0.01463	0.73648	0.75111	—	2,806.60	2,806.60	0.12568	0.12253	4.88589	2,851.14
Area	20.5943	20.3912	0.35794	39.0000	0.00171	0.01954	—	0.01954	0.01479	—	0.01479	0.00000	106.124	106.124	0.00444	0.00088	—	106.498
Energy	0.35875	0.17937	3.06922	1.33068	0.01957	0.24786	—	0.24786	0.24786	—	0.24786	—	8,164.60	8,164.60	0.60946	0.03946	—	8,191.60
Water	—	—	—	—	—	—	—	—	—	—	—	52.8983	282.757	335.655	5.44166	0.13100	—	510.735
Waste	—	—	—	—	—	—	—	—	—	—	—	282.960	0.00000	282.960	28.2808	0.00000	—	989.981
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21062	5.21062
Total	22.9625	22.4658	4.46713	51.1012	0.04883	0.28303	2.90485	3.18788	0.27727	0.73648	1.01376	335.858	11,360.1	11,695.9	34.4621	0.29388	10.0965	12,655.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.99987	1.88057	1.16415	10.9002	0.02661	0.01564	2.90485	2.92048	0.01464	0.73648	0.75112	—	2,711.63	2,711.63	0.13821	0.13131	0.12669	2,754.35
Area	16.9119	16.9119	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Energy	0.35875	0.17937	3.06922	1.33068	0.01957	0.24786	—	0.24786	0.24786	—	0.24786	—	8,164.60	8,164.60	0.60946	0.03946	—	8,191.60
Water	—	—	—	—	—	—	—	—	—	—	—	52.8983	282.757	335.655	5.44166	0.13100	—	510.735
Waste	—	—	—	—	—	—	—	—	—	—	—	282.960	0.00000	282.960	28.2808	0.00000	—	989.981

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21062	5.21062
Total	19.2705	18.9719	4.23337	12.2309	0.04618	0.26350	2.90485	3.16834	0.26250	0.73648	0.99898	335.858	11,159.0	11,494.9	34.4702	0.30177	5.33730	12,451.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.63894	1.54177	0.94043	8.81395	0.02218	0.01296	2.37586	2.38881	0.01213	0.60248	0.61461	—	2,260.47	2,260.47	0.11047	0.10676	1.74935	2,296.79
Area	18.7279	18.6277	0.17652	19.2329	0.00084	0.00964	—	0.00964	0.00729	—	0.00729	0.00000	52.3352	52.3352	0.00219	0.00044	—	52.5196
Energy	0.35875	0.17937	3.06922	1.33068	0.01957	0.24786	—	0.24786	0.24786	—	0.24786	—	8,164.60	8,164.60	0.60946	0.03946	—	8,191.60
Water	—	—	—	—	—	—	—	—	—	—	—	52.8983	282.757	335.655	5.44166	0.13100	—	510.735
Waste	—	—	—	—	—	—	—	—	—	—	—	282.960	0.00000	282.960	28.2808	0.00000	—	989.981
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21062	5.21062
Total	20.7256	20.3489	4.18617	29.3775	0.04259	0.27046	2.37586	2.64631	0.26728	0.60248	0.86976	335.858	10,760.2	11,096.0	34.4446	0.27766	6.95997	12,046.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.29911	0.28137	0.17163	1.60855	0.00405	0.00236	0.43359	0.43596	0.00221	0.10995	0.11217	—	374.246	374.246	0.01829	0.01768	0.28963	380.260
Area	3.41784	3.39956	0.03221	3.51000	0.00015	0.00176	—	0.00176	0.00133	—	0.00133	0.00000	8.66469	8.66469	0.00036	0.00007	—	8.69522
Energy	0.06547	0.03274	0.56013	0.24285	0.00357	0.04523	—	0.04523	0.04523	—	0.04523	—	1,351.74	1,351.74	0.10090	0.00653	—	1,356.21
Water	—	—	—	—	—	—	—	—	—	—	—	8.75792	46.8136	55.5715	0.90093	0.02169	—	84.5580
Waste	—	—	—	—	—	—	—	—	—	—	—	46.8473	0.00000	46.8473	4.68222	0.00000	—	163.903
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.86268	0.86268
Total	3.78242	3.71367	0.76398	5.36140	0.00777	0.04936	0.43359	0.48295	0.04878	0.10995	0.15873	55.6052	1,781.47	1,837.07	5.70270	0.04597	1.15230	1,994.49

3. Construction Emissions Details

3.1. Grading (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	3.50534	2.94546	25.5801	27.2816	0.06093	1.04307	—	1.04307	0.95962	—	0.95962	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72
Dust From Material Movement	—	—	—	—	—	—	2.41595	2.41595	—	0.95346	0.95346	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.50534	2.94546	25.5801	27.2816	0.06093	1.04307	—	1.04307	0.95962	—	0.95962	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72
Dust From Material Movement	—	—	—	—	—	—	2.41595	2.41595	—	0.95346	0.95346	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.67104	1.40414	12.1944	13.0055	0.02905	0.49724	—	0.49724	0.45746	—	0.45746	—	3,145.39	3,145.39	0.12759	0.02552	—	3,156.18
Dust From Material Movement	—	—	—	—	—	—	1.15171	1.15171	—	0.45453	0.45453	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.30496	0.25626	2.22547	2.37350	0.00530	0.09075	—	0.09075	0.08349	—	0.08349	—	520.754	520.754	0.02112	0.00422	—	522.542

Dust From Material Movement	—	—	—	—	—	—	0.21019	0.21019	—	0.08295	0.08295	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08841	0.07893	0.07848	1.09834	0.00000	0.00000	0.26142	0.26142	0.00000	0.06128	0.06128	—	257.540	257.540	0.00353	0.00948	0.89235	261.345
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.27558	0.10803	8.43709	2.14510	0.04630	0.08818	1.80991	1.89809	0.08818	0.50759	0.59578	—	6,635.09	6,635.09	0.16094	1.04058	13.5562	6,962.76
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08796	0.07804	0.08885	0.99120	0.00000	0.00000	0.26142	0.26142	0.00000	0.06128	0.06128	—	246.165	246.165	0.00397	0.00992	0.02310	249.244
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.26676	0.10141	8.71928	2.18258	0.04630	0.08818	1.80991	1.89809	0.08818	0.50759	0.59578	—	6,637.21	6,637.21	0.16094	1.04058	0.35183	6,951.67
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04172	0.03699	0.04193	0.47388	0.00000	0.00000	0.12292	0.12292	0.00000	0.02879	0.02879	—	118.202	118.202	0.00189	0.00473	0.18350	119.842
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.13032	0.05045	4.18181	1.02995	0.02207	0.04204	0.85363	0.89567	0.04204	0.23968	0.28172	—	3,163.45	3,163.45	0.07672	0.49606	2.79237	3,315.99
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00761	0.00675	0.00765	0.08648	0.00000	0.00000	0.02243	0.02243	0.00000	0.00525	0.00525	—	19.5697	19.5697	0.00031	0.00078	0.03038	19.8413
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.02378	0.00921	0.76318	0.18797	0.00403	0.00767	0.15579	0.16346	0.00767	0.04374	0.05141	—	523.746	523.746	0.01270	0.08213	0.46231	549.000

3.2. Grading (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.81301	0.77833	4.72332	35.4037	0.06093	0.16202	—	0.16202	0.15860	—	0.15860	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72
Dust From Material Movement	—	—	—	—	—	—	2.41595	2.41595	—	0.95346	0.95346	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.81301	0.77833	4.72332	35.4037	0.06093	0.16202	—	0.16202	0.15860	—	0.15860	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72
Dust From Material Movement	—	—	—	—	—	—	2.41595	2.41595	—	0.95346	0.95346	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38757	0.37104	2.25167	16.8774	0.02905	0.07724	—	0.07724	0.07560	—	0.07560	—	3,145.39	3,145.39	0.12759	0.02552	—	3,156.18
Dust From Material Movement	—	—	—	—	—	—	1.15171	1.15171	—	0.45453	0.45453	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07073	0.06771	0.41093	3.08012	0.00530	0.01410	—	0.01410	0.01380	—	0.01380	—	520.754	520.754	0.02112	0.00422	—	522.542
Dust From Material Movement	—	—	—	—	—	—	0.21019	0.21019	—	0.08295	0.08295	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08841	0.07893	0.07848	1.09834	0.00000	0.00000	0.26142	0.26142	0.00000	0.06128	0.06128	—	257.540	257.540	0.00353	0.00948	0.89235	261.345
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.27558	0.10803	8.43709	2.14510	0.04630	0.08818	1.80991	1.89809	0.08818	0.50759	0.59578	—	6,635.09	6,635.09	0.16094	1.04058	13.5562	6,962.76
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08796	0.07804	0.08885	0.99120	0.00000	0.00000	0.26142	0.26142	0.00000	0.06128	0.06128	—	246.165	246.165	0.00397	0.00992	0.02310	249.244
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.26676	0.10141	8.71928	2.18258	0.04630	0.08818	1.80991	1.89809	0.08818	0.50759	0.59578	—	6,637.21	6,637.21	0.16094	1.04058	0.35183	6,951.67
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04172	0.03699	0.04193	0.47388	0.00000	0.00000	0.12292	0.12292	0.00000	0.02879	0.02879	—	118.202	118.202	0.00189	0.00473	0.18350	119.842
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.13032	0.05045	4.18181	1.02995	0.02207	0.04204	0.85363	0.89567	0.04204	0.23968	0.28172	—	3,163.45	3,163.45	0.07672	0.49606	2.79237	3,315.99
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00761	0.00675	0.00765	0.08648	0.00000	0.00000	0.02243	0.02243	0.00000	0.00525	0.00525	—	19.5697	19.5697	0.00031	0.00078	0.03038	19.8413

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.02378	0.00921	0.76318	0.18797	0.00403	0.00767	0.15579	0.16346	0.00767	0.04374	0.05141	—	523.746	523.746	0.01270	0.08213	0.46231	549.000

3.3. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23076	1.02988	9.39093	12.9379	0.02340	0.33657	—	0.33657	0.30965	—	0.30965	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23076	1.02988	9.39093	12.9379	0.02340	0.33657	—	0.33657	0.30965	—	0.30965	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29143	0.24387	2.22368	3.06358	0.00554	0.07970	—	0.07970	0.07332	—	0.07332	—	567.605	567.605	0.02302	0.00460	—	569.553
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.05319	0.04451	0.40582	0.55910	0.00101	0.01454	—	0.01454	0.01338	—	0.01338	—	93.9736	93.9736	0.00381	0.00076	—	94.2961
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.14012	1.91063	1.89995	26.5887	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	6,234.52	6,234.52	0.08539	0.22949	21.6019	6,326.64
Vendor	0.09843	0.05073	2.65227	0.83516	0.01713	0.03427	0.65188	0.68615	0.01713	0.18010	0.19724	—	2,264.08	2,264.08	0.02889	0.33729	5.26758	2,370.58
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.12944	1.88928	2.15079	23.9949	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,959.17	5,959.17	0.09607	0.24016	0.55911	6,033.70
Vendor	0.09507	0.04737	2.75104	0.86371	0.01713	0.03427	0.65188	0.68615	0.01713	0.18010	0.19724	—	2,265.14	2,265.14	0.02889	0.33729	0.13671	2,366.51
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.50170	0.44484	0.50423	5.69820	0.00000	0.00000	1.47811	1.47811	0.00000	0.34615	0.34615	—	1,421.32	1,421.32	0.02275	0.05687	2.20653	1,441.04
Vendor	0.02291	0.01161	0.65110	0.20094	0.00406	0.00811	0.15259	0.16070	0.00406	0.04220	0.04626	—	536.216	536.216	0.00684	0.07987	0.53896	560.726
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09156	0.08118	0.09202	1.03992	0.00000	0.00000	0.26976	0.26976	0.00000	0.06317	0.06317	—	235.316	235.316	0.00377	0.00942	0.36532	238.581
Vendor	0.00418	0.00212	0.11883	0.03667	0.00074	0.00148	0.02785	0.02933	0.00074	0.00770	0.00844	—	88.7767	88.7767	0.00113	0.01322	0.08923	92.8346
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4. Building Construction (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50842	0.45445	3.07878	14.9548	0.02340	0.09968	—	0.09968	0.09487	—	0.09487	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50842	0.45445	3.07878	14.9548	0.02340	0.09968	—	0.09968	0.09487	—	0.09487	—	2,397.08	2,397.08	0.09724	0.01945	—	2,405.30
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12039	0.10761	0.72903	3.54115	0.00554	0.02360	—	0.02360	0.02246	—	0.02246	—	567.605	567.605	0.02302	0.00460	—	569.553
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02197	0.01964	0.13305	0.64626	0.00101	0.00431	—	0.00431	0.00410	—	0.00410	—	93.9736	93.9736	0.00381	0.00076	—	94.2961
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	2.14012	1.91063	1.89995	26.5887	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	6,234.52	6,234.52	0.08539	0.22949	21.6019	6,326.64
Vendor	0.09843	0.05073	2.65227	0.83516	0.01713	0.03427	0.65188	0.68615	0.01713	0.18010	0.19724	—	2,264.08	2,264.08	0.02889	0.33729	5.26758	2,370.58
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.12944	1.88928	2.15079	23.9949	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,959.17	5,959.17	0.09607	0.24016	0.55911	6,033.70
Vendor	0.09507	0.04737	2.75104	0.86371	0.01713	0.03427	0.65188	0.68615	0.01713	0.18010	0.19724	—	2,265.14	2,265.14	0.02889	0.33729	0.13671	2,366.51
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.50170	0.44484	0.50423	5.69820	0.00000	0.00000	1.47811	1.47811	0.00000	0.34615	0.34615	—	1,421.32	1,421.32	0.02275	0.05687	2.20653	1,441.04
Vendor	0.02291	0.01161	0.65110	0.20094	0.00406	0.00811	0.15259	0.16070	0.00406	0.04220	0.04626	—	536.216	536.216	0.00684	0.07987	0.53896	560.726
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09156	0.08118	0.09202	1.03992	0.00000	0.00000	0.26976	0.26976	0.00000	0.06317	0.06317	—	235.316	235.316	0.00377	0.00942	0.36532	238.581
Vendor	0.00418	0.00212	0.11883	0.03667	0.00074	0.00148	0.02785	0.02933	0.00074	0.00770	0.00844	—	88.7767	88.7767	0.00113	0.01322	0.08923	92.8346
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18481	0.99143	8.92495	12.9352	0.02340	0.30024	—	0.30024	0.27622	—	0.27622	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18481	0.99143	8.92495	12.9352	0.02340	0.30024	—	0.30024	0.27622	—	0.27622	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.84861	0.71011	6.39243	9.26478	0.01676	0.21504	—	0.21504	0.19784	—	0.19784	—	1,717.16	1,717.16	0.06966	0.01393	—	1,723.05
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15487	0.12959	1.16662	1.69082	0.00306	0.03925	—	0.03925	0.03611	—	0.03611	—	284.296	284.296	0.01153	0.00231	—	285.271
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.88928	1.84658	1.68114	25.0036	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	6,121.51	6,121.51	0.07472	0.22949	19.5123	6,211.28
Vendor	0.09843	0.05073	2.51722	0.81466	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,209.66	2,209.66	0.02889	0.32015	4.67957	2,310.47
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	1.86793	1.82524	1.93198	22.5219	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,851.34	5,851.34	0.09607	0.24016	0.50546	5,925.81
Vendor	0.09507	0.04737	2.61767	0.84154	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,210.82	2,210.82	0.02721	0.32015	0.12128	2,307.03
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.33789	1.31496	1.36847	16.2038	0.00000	0.00000	4.47098	4.47098	0.00000	1.04703	1.04703	—	4,221.45	4,221.45	0.06116	0.16437	6.02709	4,277.99
Vendor	0.06930	0.03513	1.86165	0.59192	0.01227	0.01227	0.46155	0.47382	0.01227	0.12766	0.13993	—	1,583.01	1,583.01	0.01949	0.22931	1.44597	1,653.27
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.24417	0.23998	0.24975	2.95719	0.00000	0.00000	0.81595	0.81595	0.00000	0.19108	0.19108	—	698.909	698.909	0.01013	0.02721	0.99785	708.270
Vendor	0.01265	0.00641	0.33975	0.10803	0.00224	0.00224	0.08423	0.08647	0.00224	0.02330	0.02554	—	262.085	262.085	0.00323	0.03796	0.23940	273.718
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.6. Building Construction (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.49671	0.44477	3.04102	14.9430	0.02340	0.09378	—	0.09378	0.08943	—	0.08943	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.49671	0.44477	3.04102	14.9430	0.02340	0.09378	—	0.09378	0.08943	—	0.08943	—	2,397.46	2,397.46	0.09725	0.01945	—	2,405.68
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.35576	0.31856	2.17811	10.7028	0.01676	0.06717	—	0.06717	0.06406	—	0.06406	—	1,717.16	1,717.16	0.06966	0.01393	—	1,723.05
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06493	0.05814	0.39751	1.95326	0.00306	0.01226	—	0.01226	0.01169	—	0.01169	—	284.296	284.296	0.01153	0.00231	—	285.271
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.88928	1.84658	1.68114	25.0036	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	6,121.51	6,121.51	0.07472	0.22949	19.5123	6,211.28
Vendor	0.09843	0.05073	2.51722	0.81466	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,209.66	2,209.66	0.02889	0.32015	4.67957	2,310.47
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.86793	1.82524	1.93198	22.5219	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,851.34	5,851.34	0.09607	0.24016	0.50546	5,925.81
Vendor	0.09507	0.04737	2.61767	0.84154	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,210.82	2,210.82	0.02721	0.32015	0.12128	2,307.03
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.33789	1.31496	1.36847	16.2038	0.00000	0.00000	4.47098	4.47098	0.00000	1.04703	1.04703	—	4,221.45	4,221.45	0.06116	0.16437	6.02709	4,277.99
Vendor	0.06930	0.03513	1.86165	0.59192	0.01227	0.01227	0.46155	0.47382	0.01227	0.12766	0.13993	—	1,583.01	1,583.01	0.01949	0.22931	1.44597	1,653.27
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.24417	0.23998	0.24975	2.95719	0.00000	0.00000	0.81595	0.81595	0.00000	0.19108	0.19108	—	698.909	698.909	0.01013	0.02721	0.99785	708.270
Vendor	0.01265	0.00641	0.33975	0.10803	0.00224	0.00224	0.08423	0.08647	0.00224	0.02330	0.02554	—	262.085	262.085	0.00323	0.03796	0.23940	273.718
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.7. Building Construction (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.15336	0.96514	8.58166	12.9012	0.02340	0.27564	—	0.27564	0.25359	—	0.25359	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.15336	0.96514	8.58166	12.9012	0.02340	0.27564	—	0.27564	0.25359	—	0.25359	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.82383	0.68938	6.12975	9.21517	0.01671	0.19689	—	0.19689	0.18114	—	0.18114	—	1,712.02	1,712.02	0.06945	0.01389	—	1,717.90
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15035	0.12581	1.11868	1.68177	0.00305	0.03593	—	0.03593	0.03306	—	0.03306	—	283.445	283.445	0.01150	0.00230	—	284.418
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.82524	1.79322	1.47300	23.4185	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	6,014.68	6,014.68	0.07472	0.22949	17.5357	6,102.48
Vendor	0.09843	0.04905	2.38218	0.78040	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,148.91	2,148.91	0.02721	0.32015	4.14056	2,249.14
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.81456	1.57440	1.92130	21.0596	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,749.70	5,749.70	0.08539	0.24016	0.45463	5,823.86
Vendor	0.09507	0.04737	2.48262	0.80391	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,150.15	2,150.15	0.02721	0.32015	0.10707	2,246.34
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.28087	1.10932	1.21606	15.1379	0.00000	0.00000	4.45876	4.45876	0.00000	1.04417	1.04417	—	4,136.79	4,136.79	0.06099	0.16392	5.40552	4,192.57
Vendor	0.06911	0.03383	1.76010	0.56463	0.01224	0.01224	0.46029	0.47253	0.01224	0.12731	0.13955	—	1,535.31	1,535.31	0.01944	0.22868	1.27402	1,605.22
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.23376	0.20245	0.22193	2.76266	0.00000	0.00000	0.81372	0.81372	0.00000	0.19056	0.19056	—	684.893	684.893	0.01010	0.02714	0.89495	694.128
Vendor	0.01261	0.00617	0.32122	0.10304	0.00223	0.00223	0.08400	0.08624	0.00223	0.02323	0.02547	—	254.188	254.188	0.00322	0.03786	0.21093	265.762
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.8. Building Construction (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48718	0.43690	3.01747	14.9332	0.02340	0.08963	—	0.08963	0.08562	—	0.08562	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48718	0.43690	3.01747	14.9332	0.02340	0.08963	—	0.08963	0.08562	—	0.08562	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34799	0.31207	2.15534	10.6666	0.01671	0.06402	—	0.06402	0.06116	—	0.06116	—	1,712.02	1,712.02	0.06945	0.01389	—	1,717.90
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06351	0.05695	0.39335	1.94665	0.00305	0.01168	—	0.01168	0.01116	—	0.01116	—	283.445	283.445	0.01150	0.00230	—	284.418
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.82524	1.79322	1.47300	23.4185	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	6,014.68	6,014.68	0.07472	0.22949	17.5357	6,102.48
Vendor	0.09843	0.04905	2.38218	0.78040	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,148.91	2,148.91	0.02721	0.32015	4.14056	2,249.14
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.81456	1.57440	1.92130	21.0596	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,749.70	5,749.70	0.08539	0.24016	0.45463	5,823.86
Vendor	0.09507	0.04737	2.48262	0.80391	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,150.15	2,150.15	0.02721	0.32015	0.10707	2,246.34
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.28087	1.10932	1.21606	15.1379	0.00000	0.00000	4.45876	4.45876	0.00000	1.04417	1.04417	—	4,136.79	4,136.79	0.06099	0.16392	5.40552	4,192.57
Vendor	0.06911	0.03383	1.76010	0.56463	0.01224	0.01224	0.46029	0.47253	0.01224	0.12731	0.13955	—	1,535.31	1,535.31	0.01944	0.22868	1.27402	1,605.22
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.23376	0.20245	0.22193	2.76266	0.00000	0.00000	0.81372	0.81372	0.00000	0.19056	0.19056	—	684.893	684.893	0.01010	0.02714	0.89495	694.128
Vendor	0.01261	0.00617	0.32122	0.10304	0.00223	0.00223	0.08400	0.08624	0.00223	0.02323	0.02547	—	254.188	254.188	0.00322	0.03786	0.21093	265.762
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.9. Building Construction (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.12372	0.94034	8.39196	12.8848	0.02340	0.26012	—	0.26012	0.23931	—	0.23931	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.12372	0.94034	8.39196	12.8848	0.02340	0.26012	—	0.26012	0.23931	—	0.23931	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80266	0.67167	5.99426	9.20340	0.01671	0.18580	—	0.18580	0.17093	—	0.17093	—	1,712.02	1,712.02	0.06945	0.01389	—	1,717.90
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14649	0.12258	1.09395	1.67962	0.00305	0.03391	—	0.03391	0.03120	—	0.03120	—	283.445	283.445	0.01150	0.00230	—	284.418
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.75052	1.52103	1.46232	22.0416	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,913.63	5,913.63	0.07472	0.22949	15.6437	5,999.53
Vendor	0.07794	0.04905	2.26426	0.75990	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,082.65	2,082.65	0.02721	0.30302	3.62605	2,177.25
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.73985	1.49968	1.70249	19.8054	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,653.45	5,653.45	0.08539	0.22949	0.40662	5,724.38
Vendor	0.07626	0.04569	2.34925	0.78510	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,083.96	2,083.96	0.02721	0.30302	0.09408	2,175.03
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.22750	1.05595	1.20081	14.2573	0.00000	0.00000	4.45876	4.45876	0.00000	1.04417	1.04417	—	4,067.51	4,067.51	0.05337	0.16392	4.82060	4,122.52
Vendor	0.05687	0.03383	1.67708	0.55119	0.01224	0.01224	0.46029	0.47253	0.01224	0.12731	0.13955	—	1,488.00	1,488.00	0.01944	0.21644	1.12002	1,554.11
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22402	0.19271	0.21915	2.60195	0.00000	0.00000	0.81372	0.81372	0.00000	0.19056	0.19056	—	673.423	673.423	0.00884	0.02714	0.79810	682.530
Vendor	0.01038	0.00617	0.30607	0.10059	0.00223	0.00223	0.08400	0.08624	0.00223	0.02323	0.02547	—	246.355	246.355	0.00322	0.03583	0.18543	257.300
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.10. Building Construction (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.47959	0.43063	3.00129	14.9256	0.02340	0.08648	—	0.08648	0.08272	—	0.08272	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47959	0.43063	3.00129	14.9256	0.02340	0.08648	—	0.08648	0.08272	—	0.08272	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34257	0.30759	2.14378	10.6611	0.01671	0.06177	—	0.06177	0.05909	—	0.05909	—	1,712.02	1,712.02	0.06945	0.01389	—	1,717.90
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06252	0.05614	0.39124	1.94565	0.00305	0.01127	—	0.01127	0.01078	—	0.01078	—	283.445	283.445	0.01150	0.00230	—	284.418
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.75052	1.52103	1.46232	22.0416	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,913.63	5,913.63	0.07472	0.22949	15.6437	5,999.53
Vendor	0.07794	0.04905	2.26426	0.75990	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,082.65	2,082.65	0.02721	0.30302	3.62605	2,177.25
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.73985	1.49968	1.70249	19.8054	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,653.45	5,653.45	0.08539	0.22949	0.40662	5,724.38
Vendor	0.07626	0.04569	2.34925	0.78510	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,083.96	2,083.96	0.02721	0.30302	0.09408	2,175.03
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.22750	1.05595	1.20081	14.2573	0.00000	0.00000	4.45876	4.45876	0.00000	1.04417	1.04417	—	4,067.51	4,067.51	0.05337	0.16392	4.82060	4,122.52
Vendor	0.05687	0.03383	1.67708	0.55119	0.01224	0.01224	0.46029	0.47253	0.01224	0.12731	0.13955	—	1,488.00	1,488.00	0.01944	0.21644	1.12002	1,554.11
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22402	0.19271	0.21915	2.60195	0.00000	0.00000	0.81372	0.81372	0.00000	0.19056	0.19056	—	673.423	673.423	0.00884	0.02714	0.79810	682.530
Vendor	0.01038	0.00617	0.30607	0.10059	0.00223	0.00223	0.08400	0.08624	0.00223	0.02323	0.02547	—	246.355	246.355	0.00322	0.03583	0.18543	257.300
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.11. Building Construction (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.09751	0.91839	8.11856	12.8454	0.02340	0.24323	—	0.24323	0.22377	—	0.22377	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	1.09751	0.91839	8.11856	12.8454	0.02340	0.24323	—	0.24323	0.22377	—	0.22377	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.72380	0.60567	5.35412	8.47142	0.01543	0.16041	—	0.16041	0.14758	—	0.14758	—	1,580.69	1,580.69	0.06412	0.01282	—	1,586.11
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13209	0.11053	0.97713	1.54603	0.00282	0.02927	—	0.02927	0.02693	—	0.02693	—	261.701	261.701	0.01062	0.00212	—	262.599
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.66513	1.44631	1.24351	20.4672	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,819.95	5,819.95	0.06404	0.03202	13.8930	5,844.99
Vendor	0.07794	0.04905	2.16348	0.74109	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,013.34	2,013.34	0.02721	0.30302	3.16055	2,107.48
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.66513	1.43564	1.49435	18.5512	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,564.18	5,564.18	0.07472	0.22949	0.36144	5,634.80
Vendor	0.07458	0.04569	2.25183	0.76629	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,014.71	2,014.71	0.02721	0.30302	0.08159	2,105.77
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	1.09110	0.93975	0.97143	12.2273	0.00000	0.00000	4.11672	4.11672	0.00000	0.96407	0.96407	—	3,696.12	3,696.12	0.04928	0.15135	3.96661	3,746.42
Vendor	0.05029	0.03124	1.47066	0.49650	0.01130	0.01130	0.42498	0.43628	0.01130	0.11754	0.12884	—	1,328.16	1,328.16	0.01795	0.19984	0.89676	1,389.06
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19913	0.17150	0.17729	2.23149	0.00000	0.00000	0.75130	0.75130	0.00000	0.17594	0.17594	—	611.935	611.935	0.00816	0.02506	0.65672	620.263
Vendor	0.00918	0.00570	0.26840	0.09061	0.00206	0.00206	0.07756	0.07962	0.00206	0.02145	0.02351	—	219.892	219.892	0.00297	0.03309	0.14847	229.974
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.12. Building Construction (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47387	0.42590	2.98797	14.9199	0.02340	0.08387	—	0.08387	0.08032	—	0.08032	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47387	0.42590	2.98797	14.9199	0.02340	0.08387	—	0.08387	0.08032	—	0.08032	—	2,396.83	2,396.83	0.09723	0.01945	—	2,405.06
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.31251	0.28088	1.97054	9.83956	0.01543	0.05531	—	0.05531	0.05297	—	0.05297	—	1,580.69	1,580.69	0.06412	0.01282	—	1,586.11
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05703	0.05126	0.35962	1.79572	0.00282	0.01009	—	0.01009	0.00967	—	0.00967	—	261.701	261.701	0.01062	0.00212	—	262.599
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.66513	1.44631	1.24351	20.4672	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,819.95	5,819.95	0.06404	0.03202	13.8930	5,844.99
Vendor	0.07794	0.04905	2.16348	0.74109	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,013.34	2,013.34	0.02721	0.30302	3.16055	2,107.48
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.66513	1.43564	1.49435	18.5512	0.00000	0.00000	6.32843	6.32843	0.00000	1.48337	1.48337	—	5,564.18	5,564.18	0.07472	0.22949	0.36144	5,634.80
Vendor	0.07458	0.04569	2.25183	0.76629	0.01713	0.01713	0.65188	0.66901	0.01713	0.18010	0.19724	—	2,014.71	2,014.71	0.02721	0.30302	0.08159	2,105.77
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.09110	0.93975	0.97143	12.2273	0.00000	0.00000	4.11672	4.11672	0.00000	0.96407	0.96407	—	3,696.12	3,696.12	0.04928	0.15135	3.96661	3,746.42
Vendor	0.05029	0.03124	1.47066	0.49650	0.01130	0.01130	0.42498	0.43628	0.01130	0.11754	0.12884	—	1,328.16	1,328.16	0.01795	0.19984	0.89676	1,389.06
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19913	0.17150	0.17729	2.23149	0.00000	0.00000	0.75130	0.75130	0.00000	0.17594	0.17594	—	611.935	611.935	0.00816	0.02506	0.65672	620.263
Vendor	0.00918	0.00570	0.26840	0.09061	0.00206	0.00206	0.07756	0.07962	0.00206	0.02145	0.02351	—	219.892	219.892	0.00297	0.03309	0.14847	229.974

Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.13. Paving (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.74689	0.62759	6.12541	9.88333	0.01395	0.20981	—	0.20981	0.19303	—	0.19303	—	1,510.63	1,510.63	0.06128	0.01226	—	1,515.81
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04093	0.03439	0.33564	0.54155	0.00076	0.01150	—	0.01150	0.01058	—	0.01058	—	82.7742	82.7742	0.00336	0.00067	—	83.0583
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00747	0.00628	0.06125	0.09883	0.00014	0.00210	—	0.00210	0.00193	—	0.00193	—	13.7042	13.7042	0.00056	0.00011	—	13.7512
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05159	0.04448	0.04630	0.57475	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	172.387	172.387	0.00231	0.00711	0.01120	174.574
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00281	0.00242	0.00250	0.03147	0.00000	0.00000	0.01060	0.01060	0.00000	0.00248	0.00248	—	9.51430	9.51430	0.00013	0.00039	0.01021	9.64378
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00051	0.00044	0.00046	0.00574	0.00000	0.00000	0.00193	0.00193	0.00000	0.00045	0.00045	—	1.57520	1.57520	0.00002	0.00006	0.00169	1.59664
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.14. Paving (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.37204	0.33122	2.26724	10.5696	0.01395	0.07687	—	0.07687	0.07258	—	0.07258	—	1,510.63	1,510.63	0.06128	0.01226	—	1,515.81
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02039	0.01815	0.12423	0.57916	0.00076	0.00421	—	0.00421	0.00398	—	0.00398	—	82.7742	82.7742	0.00336	0.00067	—	83.0583
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00372	0.00331	0.02267	0.10570	0.00014	0.00077	—	0.00077	0.00073	—	0.00073	—	13.7042	13.7042	0.00056	0.00011	—	13.7512
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05159	0.04448	0.04630	0.57475	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	172.387	172.387	0.00231	0.00711	0.01120	174.574
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00281	0.00242	0.00250	0.03147	0.00000	0.00000	0.01060	0.01060	0.00000	0.00248	0.00248	—	9.51430	9.51430	0.00013	0.00039	0.01021	9.64378
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00051	0.00044	0.00046	0.00574	0.00000	0.00000	0.00193	0.00193	0.00000	0.00045	0.00045	—	1.57520	1.57520	0.00002	0.00006	0.00169	1.59664
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.15. Paving (2032) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.72492	0.60914	5.99778	9.85925	0.01395	0.19870	—	0.19870	0.18280	—	0.18280	—	1,510.63	1,510.63	0.06128	0.01226	—	1,515.81
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08937	0.07510	0.73945	1.21552	0.00172	0.02450	—	0.02450	0.02254	—	0.02254	—	186.242	186.242	0.00755	0.00151	—	186.881
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01631	0.01371	0.13495	0.22183	0.00031	0.00447	—	0.00447	0.00411	—	0.00411	—	30.8345	30.8345	0.00125	0.00025	—	30.9403
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04960	0.04249	0.03952	0.54267	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	169.905	169.905	0.00231	0.00711	0.00989	172.092
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00612	0.00524	0.00483	0.06695	0.00000	0.00000	0.02384	0.02384	0.00000	0.00558	0.00558	—	21.0993	21.0993	0.00029	0.00088	0.02028	21.3879
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00112	0.00096	0.00088	0.01222	0.00000	0.00000	0.00435	0.00435	0.00000	0.00102	0.00102	—	3.49322	3.49322	0.00005	0.00015	0.00336	3.54101
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.16. Paving (2032) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.35880	0.32010	2.25234	10.5544	0.01395	0.07268	—	0.07268	0.06873	—	0.06873	—	1,510.63	1,510.63	0.06128	0.01226	—	1,515.81
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04424	0.03946	0.27769	1.30122	0.00172	0.00896	—	0.00896	0.00847	—	0.00847	—	186.242	186.242	0.00755	0.00151	—	186.881
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00807	0.00720	0.05068	0.23747	0.00031	0.00164	—	0.00164	0.00155	—	0.00155	—	30.8345	30.8345	0.00125	0.00025	—	30.9403
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04960	0.04249	0.03952	0.54267	0.00000	0.00000	0.19606	0.19606	0.00000	0.04596	0.04596	—	169.905	169.905	0.00231	0.00711	0.00989	172.092
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00612	0.00524	0.00483	0.06695	0.00000	0.00000	0.02384	0.02384	0.00000	0.00558	0.00558	—	21.0993	21.0993	0.00029	0.00088	0.02028	21.3879
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00112	0.00096	0.00088	0.01222	0.00000	0.00000	0.00435	0.00435	0.00000	0.00102	0.00102	—	3.49322	3.49322	0.00005	0.00015	0.00336	3.54101
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.17. Architectural Coating (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.11542	0.09539	0.77690	1.10346	0.00173	0.00943	—	0.00943	0.00867	—	0.00867	—	133.518	133.518	0.00542	0.00108	—	133.976
Architectural Coatings	22.9636	22.9636	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00632	0.00523	0.04257	0.06046	0.00009	0.00052	—	0.00052	0.00048	—	0.00048	—	7.31604	7.31604	0.00030	0.00006	—	7.34114
Architectural Coatings	1.25828	1.25828	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00115	0.00095	0.00777	0.01103	0.00002	0.00009	—	0.00009	0.00009	—	0.00009	—	1.21125	1.21125	0.00005	0.00001	—	1.21541
Architectural Coatings	0.22964	0.22964	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.33303	0.28713	0.29887	3.71025	0.00000	0.00000	1.26569	1.26569	0.00000	0.29667	0.29667	—	1,112.84	1,112.84	0.01494	0.04590	0.07229	1,126.96
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01813	0.01562	0.01614	0.20318	0.00000	0.00000	0.06841	0.06841	0.00000	0.01602	0.01602	—	61.4193	61.4193	0.00082	0.00251	0.06591	62.2551
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00331	0.00285	0.00295	0.03708	0.00000	0.00000	0.01248	0.01248	0.00000	0.00292	0.00292	—	10.1687	10.1687	0.00014	0.00042	0.01091	10.3070
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.18. Architectural Coating (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11542	0.09539	0.77690	1.10346	0.00173	0.00943	—	0.00943	0.00867	—	0.00867	—	133.518	133.518	0.00542	0.00108	—	133.976

Architectural Coating	22.9636	22.9636	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00632	0.00523	0.04257	0.06046	0.00009	0.00052	—	0.00052	0.00048	—	0.00048	—	7.31604	7.31604	0.00030	0.00006	—	7.34114
Architectural Coatings	1.25828	1.25828	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00115	0.00095	0.00777	0.01103	0.00002	0.00009	—	0.00009	0.00009	—	0.00009	—	1.21125	1.21125	0.00005	0.00001	—	1.21541
Architectural Coatings	0.22964	0.22964	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.33303	0.28713	0.29887	3.71025	0.00000	0.00000	1.26569	1.26569	0.00000	0.29667	0.29667	—	1,112.84	1,112.84	0.01494	0.04590	0.07229	1,126.96
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01813	0.01562	0.01614	0.20318	0.00000	0.00000	0.06841	0.06841	0.00000	0.01602	0.01602	—	61.4193	61.4193	0.00082	0.00251	0.06591	62.2551
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00331	0.00285	0.00295	0.03708	0.00000	0.00000	0.01248	0.01248	0.00000	0.00292	0.00292	—	10.1687	10.1687	0.00014	0.00042	0.01091	10.3070
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.19. Architectural Coating (2032) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11264	0.09309	0.77005	1.10069	0.00173	0.00813	—	0.00813	0.00748	—	0.00748	—	133.504	133.504	0.00542	0.00108	—	133.962
Architectural Coatings	22.9636	22.9636	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.11264	0.09309	0.77005	1.10069	0.00173	0.00813	—	0.00813	0.00748	—	0.00748	—	133.504	133.504	0.00542	0.00108	—	133.962
Architectural Coatings	22.9636	22.9636	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05444	0.04500	0.37221	0.53204	0.00083	0.00393	—	0.00393	0.00361	—	0.00361	—	64.5311	64.5311	0.00262	0.00052	—	64.7526
Architectural Coatings	11.0998	11.0998	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00994	0.00821	0.06793	0.09710	0.00015	0.00072	—	0.00072	0.00066	—	0.00066	—	10.6839	10.6839	0.00043	0.00009	—	10.7205
Architectural Coatings	2.02572	2.02572	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32022	0.27645	0.24657	3.85968	0.00000	0.00000	1.26569	1.26569	0.00000	0.29667	0.29667	—	1,147.21	1,147.21	0.01281	0.00640	2.45669	1,151.90

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32022	0.27432	0.25511	3.50317	0.00000	0.00000	1.26569	1.26569	0.00000	0.29667	0.29667	—	1,096.82	1,096.82	0.01494	0.04590	0.06382	1,110.93
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15478	0.13260	0.12228	1.69435	0.00000	0.00000	0.60346	0.60346	0.00000	0.14132	0.14132	—	534.012	534.012	0.00722	0.02219	0.51321	541.317
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02825	0.02420	0.02232	0.30922	0.00000	0.00000	0.11013	0.11013	0.00000	0.02579	0.02579	—	88.4118	88.4118	0.00120	0.00367	0.08497	89.6213
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.20. Architectural Coating (2032) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11264	0.09309	0.77005	1.10069	0.00173	0.00813	—	0.00813	0.00748	—	0.00748	—	133.504	133.504	0.00542	0.00108	—	133.962

Architectural Coatings	22.9636	22.9636	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11264	0.09309	0.77005	1.10069	0.00173	0.00813	—	0.00813	0.00748	—	0.00748	—	133.504	133.504	0.00542	0.00108	—	133.962
Architectural Coatings	22.9636	22.9636	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05444	0.04500	0.37221	0.53204	0.00083	0.00393	—	0.00393	0.00361	—	0.00361	—	64.5311	64.5311	0.00262	0.00052	—	64.7526
Architectural Coatings	11.0998	11.0998	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00994	0.00821	0.06793	0.09710	0.00015	0.00072	—	0.00072	0.00066	—	0.00066	—	10.6839	10.6839	0.00043	0.00009	—	10.7205

Architectural Coating	2.02572	2.02572	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32022	0.27645	0.24657	3.85968	0.00000	0.00000	1.26569	1.26569	0.00000	0.29667	0.29667	—	1,147.21	1,147.21	0.01281	0.00640	2.45669	1,151.90
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32022	0.27432	0.25511	3.50317	0.00000	0.00000	1.26569	1.26569	0.00000	0.29667	0.29667	—	1,096.82	1,096.82	0.01494	0.04590	0.06382	1,110.93
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15478	0.13260	0.12228	1.69435	0.00000	0.00000	0.60346	0.60346	0.00000	0.14132	0.14132	—	534.012	534.012	0.00722	0.02219	0.51321	541.317
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02825	0.02420	0.02232	0.30922	0.00000	0.00000	0.11013	0.11013	0.00000	0.02579	0.02579	—	88.4118	88.4118	0.00120	0.00367	0.08497	89.6213
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	1.15956	1.09479	0.59162	6.10775	0.01551	0.00882	1.63337	1.64219	0.00826	0.41412	0.42238	—	1,579.91	1,579.91	0.07185	0.06959	2.74730	1,605.19
Strip Mall	0.77105	0.72618	0.40676	4.23027	0.01092	0.00617	1.15354	1.15971	0.00578	0.29246	0.29824	—	1,112.91	1,112.91	0.04884	0.04804	1.94023	1,130.39
City Park	0.07883	0.07424	0.04159	0.43249	0.00112	0.00063	0.11793	0.11856	0.00059	0.02990	0.03049	—	113.779	113.779	0.00499	0.00491	0.19836	115.566
Total	2.00944	1.89521	1.03997	10.7705	0.02755	0.01562	2.90485	2.92047	0.01463	0.73648	0.75111	—	2,806.60	2,806.60	0.12568	0.12253	4.88589	2,851.14
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	1.15401	1.08627	0.66234	6.19764	0.01498	0.00883	1.63337	1.64220	0.00826	0.41412	0.42238	—	1,526.55	1,526.55	0.07914	0.07459	0.07124	1,550.82
Strip Mall	0.76740	0.72062	0.45527	4.26642	0.01055	0.00618	1.15354	1.15972	0.00578	0.29246	0.29825	—	1,075.17	1,075.17	0.05359	0.05146	0.05031	1,091.89
City Park	0.07846	0.07367	0.04655	0.43618	0.00108	0.00063	0.11793	0.11856	0.00059	0.02990	0.03049	—	109.921	109.921	0.00548	0.00526	0.00514	111.630
Total	1.99987	1.88057	1.16415	10.9002	0.02661	0.01564	2.90485	2.92048	0.01464	0.73648	0.75112	—	2,711.63	2,711.63	0.13821	0.13131	0.12669	2,754.35
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.16471	0.15512	0.09308	0.87129	0.00217	0.00127	0.23231	0.23358	0.00119	0.05891	0.06010	—	200.763	200.763	0.00998	0.00957	0.15518	204.020
Strip Mall	0.12695	0.11926	0.07420	0.69642	0.00177	0.00103	0.19014	0.19117	0.00097	0.04822	0.04918	—	163.874	163.874	0.00785	0.00766	0.12700	166.479
City Park	0.00744	0.00699	0.00435	0.04083	0.00010	0.00006	0.01115	0.01121	0.00006	0.00283	0.00288	—	9.60817	9.60817	0.00046	0.00045	0.00745	9.76088

Total	0.29911	0.28137	0.17163	1.60855	0.00405	0.00236	0.43359	0.43596	0.00221	0.10995	0.11217	—	374.246	374.246	0.01829	0.01768	0.28963	380.260

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	1.15956	1.09479	0.59162	6.10775	0.01551	0.00882	1.63337	1.64219	0.00826	0.41412	0.42238	—	1,579.91	1,579.91	0.07185	0.06959	2.74730	1,605.19
Strip Mall	0.77105	0.72618	0.40676	4.23027	0.01092	0.00617	1.15354	1.15971	0.00578	0.29246	0.29824	—	1,112.91	1,112.91	0.04884	0.04804	1.94023	1,130.39
City Park	0.07883	0.07424	0.04159	0.43249	0.00112	0.00063	0.11793	0.11856	0.00059	0.02990	0.03049	—	113.779	113.779	0.00499	0.00491	0.19836	115.566
Total	2.00944	1.89521	1.03997	10.7705	0.02755	0.01562	2.90485	2.92047	0.01463	0.73648	0.75111	—	2,806.60	2,806.60	0.12568	0.12253	4.88589	2,851.14
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	1.15401	1.08627	0.66234	6.19764	0.01498	0.00883	1.63337	1.64220	0.00826	0.41412	0.42238	—	1,526.55	1,526.55	0.07914	0.07459	0.07124	1,550.82
Strip Mall	0.76740	0.72062	0.45527	4.26642	0.01055	0.00618	1.15354	1.15972	0.00578	0.29246	0.29825	—	1,075.17	1,075.17	0.05359	0.05146	0.05031	1,091.89
City Park	0.07846	0.07367	0.04655	0.43618	0.00108	0.00063	0.11793	0.11856	0.00059	0.02990	0.03049	—	109.921	109.921	0.00548	0.00526	0.00514	111.630
Total	1.99987	1.88057	1.16415	10.9002	0.02661	0.01564	2.90485	2.92048	0.01464	0.73648	0.75112	—	2,711.63	2,711.63	0.13821	0.13131	0.12669	2,754.35
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.16471	0.15512	0.09308	0.87129	0.00217	0.00127	0.23231	0.23358	0.00119	0.05891	0.06010	—	200.763	200.763	0.00998	0.00957	0.15518	204.020
Strip Mall	0.12695	0.11926	0.07420	0.69642	0.00177	0.00103	0.19014	0.19117	0.00097	0.04822	0.04918	—	163.874	163.874	0.00785	0.00766	0.12700	166.479

City Park	0.00744	0.00699	0.00435	0.04083	0.00010	0.00006	0.01115	0.01121	0.00006	0.00283	0.00288	—	9.60817	9.60817	0.00046	0.00045	0.00745	9.76088
Total	0.29911	0.28137	0.17163	1.60855	0.00405	0.00236	0.43359	0.43596	0.00221	0.10995	0.11217	—	374.246	374.246	0.01829	0.01768	0.28963	380.260

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	3,746.40	3,746.40	0.23240	0.02817	—	3,760.61
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	526.884	526.884	0.03268	0.00396	—	528.881
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,273.29	4,273.29	0.26508	0.03213	—	4,289.49
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	3,746.40	3,746.40	0.23240	0.02817	—	3,760.61
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	526.884	526.884	0.03268	0.00396	—	528.881
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,273.29	4,273.29	0.26508	0.03213	—	4,289.49
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments	—	—	—	—	—	—	—	—	—	—	—	—	620.260	620.260	0.03848	0.00466	—	622.611
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	87.2316	87.2316	0.00541	0.00066	—	87.5623
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	707.491	707.491	0.04389	0.00532	—	710.174

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	3,746.40	3,746.40	0.23240	0.02817	—	3,760.61
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	526.884	526.884	0.03268	0.00396	—	528.881
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,273.29	4,273.29	0.26508	0.03213	—	4,289.49
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	3,746.40	3,746.40	0.23240	0.02817	—	3,760.61
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	526.884	526.884	0.03268	0.00396	—	528.881
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,273.29	4,273.29	0.26508	0.03213	—	4,289.49

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	620.260	620.260	0.03848	0.00466	—	622.611
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	87.2316	87.2316	0.00541	0.00066	—	87.5623
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	707.491	707.491	0.04389	0.00532	—	710.174

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.35221	0.17610	3.00979	1.28076	0.01921	0.24334	—	0.24334	0.24334	—	0.24334	—	3,820.41	3,820.41	0.33810	0.00719	—	3,831.00
Strip Mall	0.00654	0.00327	0.05943	0.04992	0.00036	0.00452	—	0.00452	0.00452	—	0.00452	—	70.9082	70.9082	0.00628	0.00013	—	71.1049
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.35875	0.17937	3.06922	1.33068	0.01957	0.24786	—	0.24786	0.24786	—	0.24786	—	3,891.32	3,891.32	0.34438	0.00733	—	3,902.11
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.35221	0.17610	3.00979	1.28076	0.01921	0.24334	—	0.24334	0.24334	—	0.24334	—	3,820.41	3,820.41	0.33810	0.00719	—	3,831.00
Strip Mall	0.00654	0.00327	0.05943	0.04992	0.00036	0.00452	—	0.00452	0.00452	—	0.00452	—	70.9082	70.9082	0.00628	0.00013	—	71.1049

City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.35875	0.17937	3.06922	1.33068	0.01957	0.24786	—	0.24786	0.24786	—	0.24786	—	3,891.32	3,891.32	0.34438	0.00733	—	3,902.11
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.06428	0.03214	0.54929	0.23374	0.00351	0.04441	—	0.04441	0.04441	—	0.04441	—	632.512	632.512	0.05598	0.00119	—	634.267
Strip Mall	0.00119	0.00060	0.01085	0.00911	0.00007	0.00082	—	0.00082	0.00082	—	0.00082	—	11.7397	11.7397	0.00104	0.00002	—	11.7722
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.06547	0.03274	0.56013	0.24285	0.00357	0.04523	—	0.04523	0.04523	—	0.04523	—	644.252	644.252	0.05702	0.00121	—	646.039

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.35221	0.17610	3.00979	1.28076	0.01921	0.24334	—	0.24334	0.24334	—	0.24334	—	3,820.41	3,820.41	0.33810	0.00719	—	3,831.00
Strip Mall	0.00654	0.00327	0.05943	0.04992	0.00036	0.00452	—	0.00452	0.00452	—	0.00452	—	70.9082	70.9082	0.00628	0.00013	—	71.1049
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.35875	0.17937	3.06922	1.33068	0.01957	0.24786	—	0.24786	0.24786	—	0.24786	—	3,891.32	3,891.32	0.34438	0.00733	—	3,902.11
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.35221	0.17610	3.00979	1.28076	0.01921	0.24334	—	0.24334	0.24334	—	0.24334	—	3,820.41	3,820.41	0.33810	0.00719	—	3,831.00

Strip Mall	0.00654	0.00327	0.05943	0.04992	0.00036	0.00452	—	0.00452	0.00452	—	0.00452	—	70.9082	70.9082	0.00628	0.00013	—	71.1049
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.35875	0.17937	3.06922	1.33068	0.01957	0.24786	—	0.24786	0.24786	—	0.24786	—	3,891.32	3,891.32	0.34438	0.00733	—	3,902.11
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.06428	0.03214	0.54929	0.23374	0.00351	0.04441	—	0.04441	0.04441	—	0.04441	—	632.512	632.512	0.05598	0.00119	—	634.267
Strip Mall	0.00119	0.00060	0.01085	0.00911	0.00007	0.00082	—	0.00082	0.00082	—	0.00082	—	11.7397	11.7397	0.00104	0.00002	—	11.7722
City Park	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	—	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	0.06547	0.03274	0.56013	0.24285	0.00357	0.04523	—	0.04523	0.04523	—	0.04523	—	644.252	644.252	0.05702	0.00121	—	646.039

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Consumer Products	15.6725	15.6725	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.23941	1.23941	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscape Equipm	3.68239	3.47934	0.35794	39.0000	0.00171	0.01954	—	0.01954	0.01479	—	0.01479	—	106.124	106.124	0.00444	0.00088	—	106.498
Total	20.5943	20.3912	0.35794	39.0000	0.00171	0.01954	—	0.01954	0.01479	—	0.01479	0.00000	106.124	106.124	0.00444	0.00088	—	106.498
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Consumer Products	15.6725	15.6725	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.23941	1.23941	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	16.9119	16.9119	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Consumer Products	2.86023	2.86023	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.22619	0.22619	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.33141	0.31314	0.03221	3.51000	0.00015	0.00176	—	0.00176	0.00133	—	0.00133	—	8.66469	8.66469	0.00036	0.00007	—	8.69522
Total	3.41784	3.39956	0.03221	3.51000	0.00015	0.00176	—	0.00176	0.00133	—	0.00133	0.00000	8.66469	8.66469	0.00036	0.00007	—	8.69522

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Consumer Products	15.6725	15.6725	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.23941	1.23941	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	3.68239	3.47934	0.35794	39.0000	0.00171	0.01954	—	0.01954	0.01479	—	0.01479	—	106.124	106.124	0.00444	0.00088	—	106.498
Total	20.5943	20.3912	0.35794	39.0000	0.00171	0.01954	—	0.01954	0.01479	—	0.01479	0.00000	106.124	106.124	0.00444	0.00088	—	106.498
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Consumer Products	15.6725	15.6725	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.23941	1.23941	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	16.9119	16.9119	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000

Consumer Products	2.86023	2.86023	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.22619	0.22619	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.33141	0.31314	0.03221	3.51000	0.00015	0.00176	—	0.00176	0.00133	—	0.00133	—	8.66469	8.66469	0.00036	0.00007	—	8.69522
Total	3.41784	3.39956	0.03221	3.51000	0.00015	0.00176	—	0.00176	0.00133	—	0.00133	0.00000	8.66469	8.66469	0.00036	0.00007	—	8.69522

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	47.6465	255.195	302.841	4.90144	0.11800	—	460.541
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	5.25179	27.5619	32.8137	0.54022	0.01300	—	50.1939
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	52.8983	282.757	335.655	5.44166	0.13100	—	510.735
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments	—	—	—	—	—	—	—	—	—	—	—	47.6465	255.195	302.841	4.90144	0.11800	—	460.541
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	5.25179	27.5619	32.8137	0.54022	0.01300	—	50.1939
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	52.8983	282.757	335.655	5.44166	0.13100	—	510.735
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	7.88843	42.2504	50.1388	0.81149	0.01954	—	76.2478
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	0.86949	4.56319	5.43268	0.08944	0.00215	—	8.31017
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	8.75792	46.8136	55.5715	0.90093	0.02169	—	84.5580

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	47.6465	255.195	302.841	4.90144	0.11800	—	460.541
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	5.25179	27.5619	32.8137	0.54022	0.01300	—	50.1939
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	52.8983	282.757	335.655	5.44166	0.13100	—	510.735

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	47.6465	255.195	302.841	4.90144	0.11800	—	460.541
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	5.25179	27.5619	32.8137	0.54022	0.01300	—	50.1939
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	52.8983	282.757	335.655	5.44166	0.13100	—	510.735
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	7.88843	42.2504	50.1388	0.81149	0.01954	—	76.2478
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	0.86949	4.56319	5.43268	0.08944	0.00215	—	8.31017
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	8.75792	46.8136	55.5715	0.90093	0.02169	—	84.5580

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	261.494	0.00000	261.494	26.1354	0.00000	—	914.879

Strip Mall	—	—	—	—	—	—	—	—	—	—	—	20.9378	0.00000	20.9378	2.09266	0.00000	—	73.2542
City Park	—	—	—	—	—	—	—	—	—	—	—	0.52838	0.00000	0.52838	0.05281	0.00000	—	1.84861
Total	—	—	—	—	—	—	—	—	—	—	—	282.960	0.00000	282.960	28.2808	0.00000	—	989.981
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	261.494	0.00000	261.494	26.1354	0.00000	—	914.879
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	20.9378	0.00000	20.9378	2.09266	0.00000	—	73.2542
City Park	—	—	—	—	—	—	—	—	—	—	—	0.52838	0.00000	0.52838	0.05281	0.00000	—	1.84861
Total	—	—	—	—	—	—	—	—	—	—	—	282.960	0.00000	282.960	28.2808	0.00000	—	989.981
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	43.2933	0.00000	43.2933	4.32701	0.00000	—	151.469
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	3.46649	0.00000	3.46649	0.34646	0.00000	—	12.1281
City Park	—	—	—	—	—	—	—	—	—	—	—	0.08748	0.00000	0.08748	0.00874	0.00000	—	0.30606
Total	—	—	—	—	—	—	—	—	—	—	—	46.8473	0.00000	46.8473	4.68222	0.00000	—	163.903

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments	—	—	—	—	—	—	—	—	—	—	—	261.494	0.00000	261.494	26.1354	0.00000	—	914.879
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	20.9378	0.00000	20.9378	2.09266	0.00000	—	73.2542
City Park	—	—	—	—	—	—	—	—	—	—	—	0.52838	0.00000	0.52838	0.05281	0.00000	—	1.84861
Total	—	—	—	—	—	—	—	—	—	—	—	282.960	0.00000	282.960	28.2808	0.00000	—	989.981
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	261.494	0.00000	261.494	26.1354	0.00000	—	914.879
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	20.9378	0.00000	20.9378	2.09266	0.00000	—	73.2542
City Park	—	—	—	—	—	—	—	—	—	—	—	0.52838	0.00000	0.52838	0.05281	0.00000	—	1.84861
Total	—	—	—	—	—	—	—	—	—	—	—	282.960	0.00000	282.960	28.2808	0.00000	—	989.981
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	43.2933	0.00000	43.2933	4.32701	0.00000	—	151.469
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	3.46649	0.00000	3.46649	0.34646	0.00000	—	12.1281
City Park	—	—	—	—	—	—	—	—	—	—	—	0.08748	0.00000	0.08748	0.00874	0.00000	—	0.30606
Total	—	—	—	—	—	—	—	—	—	—	—	46.8473	0.00000	46.8473	4.68222	0.00000	—	163.903

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.98017	4.98017
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.23044	0.23044
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21062	5.21062
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.98017	4.98017
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.23044	0.23044
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21062	5.21062
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.82452	0.82452
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.03815	0.03815
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.86268	0.86268

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.98017	4.98017
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.23044	0.23044
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21062	5.21062
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.98017	4.98017
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.23044	0.23044
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.21062	5.21062
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.82452	0.82452
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.03815	0.03815
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00000	0.00000
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.86268	0.86268

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading	Grading	1/1/2027	9/1/2027	5.00000	174.000	—
Building Construction	Building Construction	9/2/2027	12/3/2031	5.00000	1,110.00	—
Paving	Paving	12/4/2031	3/3/2032	5.00000	65.0000	—
Architectural Coating	Architectural Coating	12/4/2031	9/3/2032	5.00000	197.000	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Excavators	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Grading	Graders	Diesel	Average	1.000000	8.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Average	1.000000	8.00000	367.000	0.40000
Grading	Scrapers	Diesel	Average	2.00000	8.00000	423.000	0.48000
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00000	8.00000	84.0000	0.37000
Building Construction	Cranes	Diesel	Average	1.000000	7.00000	367.000	0.29000
Building Construction	Forklifts	Diesel	Average	3.00000	8.00000	82.0000	0.20000
Building Construction	Generator Sets	Diesel	Average	1.000000	8.00000	14.0000	0.74000
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00000	7.00000	84.0000	0.37000
Building Construction	Welders	Diesel	Average	1.000000	8.00000	46.0000	0.45000
Paving	Pavers	Diesel	Average	2.00000	8.00000	81.0000	0.42000
Paving	Paving Equipment	Diesel	Average	2.00000	8.00000	89.0000	0.36000
Paving	Rollers	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Architectural Coating	Air Compressors	Diesel	Average	1.000000	6.00000	37.0000	0.48000

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Excavators	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Grading	Graders	Diesel	Tier 4 Final	1.000000	8.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.000000	8.00000	367.000	0.40000
Grading	Scrapers	Diesel	Tier 4 Final	2.00000	8.00000	423.000	0.48000
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.00000	8.00000	84.0000	0.37000
Building Construction	Cranes	Diesel	Tier 4 Final	1.000000	7.00000	367.000	0.29000

Building Construction	Forklifts	Diesel	Tier 4 Final	3.00000	8.00000	82.0000	0.20000
Building Construction	Generator Sets	Diesel	Average	1.000000	8.00000	14.0000	0.74000
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	3.00000	7.00000	84.0000	0.37000
Building Construction	Welders	Diesel	Average	1.000000	8.00000	46.0000	0.45000
Paving	Pavers	Diesel	Tier 4 Final	2.00000	8.00000	81.0000	0.42000
Paving	Paving Equipment	Diesel	Tier 4 Final	2.00000	8.00000	89.0000	0.36000
Paving	Rollers	Diesel	Average	2.00000	8.00000	36.0000	0.38000
Architectural Coating	Air Compressors	Diesel	Average	1.000000	6.00000	37.0000	0.48000

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	Worker	20.0000	18.5000	LDA,LDT1,LDT2
Grading	Vendor	—	10.2000	HHDT,MHDT
Grading	Hauling	100.0000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	484.160	18.5000	LDA,LDT1,LDT2
Building Construction	Vendor	76.1907	10.2000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	15.0000	18.5000	LDA,LDT1,LDT2
Paving	Vendor	—	10.2000	HHDT,MHDT
Paving	Hauling	0.00000	20.0000	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	96.8320	18.5000	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2000	HHDT,MHDT
Architectural Coating	Hauling	0.00000	20.0000	HHDT

Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	Worker	20.0000	18.5000	LDA,LDT1,LDT2
Grading	Vendor	—	10.2000	HHDT,MHDT
Grading	Hauling	100.0000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	484.160	18.5000	LDA,LDT1,LDT2
Building Construction	Vendor	76.1907	10.2000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	15.0000	18.5000	LDA,LDT1,LDT2
Paving	Vendor	—	10.2000	HHDT,MHDT
Paving	Hauling	0.00000	20.0000	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	Worker	96.8320	18.5000	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2000	HHDT,MHDT
Architectural Coating	Hauling	0.00000	20.0000	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	1,408,104	469,368	55,500.0	18,500.0	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Grading	212,000	—	522.000	0.00000	0.00000
Paving	0.00000	0.00000	0.00000	0.00000	0.00000

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Phase Name	Land Use	Area Paved (acres)	% Asphalt
Paving	Apartments Low Rise	—	0%
Paving	Strip Mall	0.00000	0%
Paving	City Park	0.00000	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O

2027	0.00000	531.983	0.03300	0.00400
2028	0.00000	531.983	0.03300	0.00400
2029	0.00000	531.983	0.03300	0.00400
2030	0.00000	531.983	0.03300	0.00400
2031	0.00000	531.983	0.03300	0.00400
2032	0.00000	531.983	0.03300	0.00400

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Low Rise	334.905	372.422	12.8106	107,402	2,081.63	2,314.81	79.6249	667,562
Strip Mall	244.200	231.637	112.568	81,614.3	1,634.80	1,550.70	753.585	546,366
City Park	8.89200	22.3440	24.9660	4,785.15	59.5275	149.582	167.135	32,034.2

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Low Rise	334.905	372.422	12.8106	107,402	2,081.63	2,314.81	79.6249	667,562
Strip Mall	244.200	231.637	112.568	81,614.3	1,634.80	1,550.70	753.585	546,366
City Park	8.89200	22.3440	24.9660	4,785.15	59.5275	149.582	167.135	32,034.2

5.10. Operational Area Sources

5.10.1. Hearths

Land Use	Hearth Type	Unmitigated (number)	Mitigated (number)
Apartments Low Rise	Wood Fireplaces	0	0

Apartments Low Rise	Gas Fireplaces	0	0
Apartments Low Rise	Propane Fireplaces	0	0
Apartments Low Rise	Electric Fireplaces	0	0
Apartments Low Rise	No Fireplaces	656	656
Apartments Low Rise	Conventional Wood Stoves	0	0
Apartments Low Rise	Catalytic Wood Stoves	0	0
Apartments Low Rise	Non-Catalytic Wood Stoves	0	0
Apartments Low Rise	Pellet Wood Stoves	0	0
Strip Mall	Wood Fireplaces	0	0
Strip Mall	Gas Fireplaces	0	0
Strip Mall	Propane Fireplaces	0	0
Strip Mall	Electric Fireplaces	0	0
Strip Mall	No Fireplaces	0	0
Strip Mall	Conventional Wood Stoves	0	0
Strip Mall	Catalytic Wood Stoves	0	0
Strip Mall	Non-Catalytic Wood Stoves	0	0
Strip Mall	Pellet Wood Stoves	0	0
City Park	Wood Fireplaces	0	0
City Park	Gas Fireplaces	0	0
City Park	Propane Fireplaces	0	0
City Park	Electric Fireplaces	0	0
City Park	No Fireplaces	0	0
City Park	Conventional Wood Stoves	0	0
City Park	Catalytic Wood Stoves	0	0
City Park	Non-Catalytic Wood Stoves	0	0
City Park	Pellet Wood Stoves	0	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
1,408,104	469,368	55,500.0	18,500.0	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00000
Summer Days	day/yr	180.000

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00000
Summer Days	day/yr	180.000

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Low Rise	2,570,452	531.983	0.0330	0.0040	11,920,698
Strip Mall	361,501	531.983	0.0330	0.0040	221,253
City Park	0.00000	531.983	0.0330	0.0040	0.00000

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Low Rise	2,570,452	531.983	0.0330	0.0040	11,920,698
Strip Mall	361,501	531.983	0.0330	0.0040	221,253

City Park	0.00000	531.983	0.0330	0.0040	0.00000

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Low Rise	24,864,647	1,098,692
Strip Mall	2,740,683	47,831.9
City Park	0.00000	0.00000

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Low Rise	24,864,647	1,098,692
Strip Mall	2,740,683	47,831.9
City Park	0.00000	0.00000

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Low Rise	485.202	0.00000
Strip Mall	38.8500	0.00000
City Park	0.98040	0.00000

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Low Rise	485.202	0.00000

Strip Mall	38.8500	0.00000
City Park	0.98040	0.00000

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088.00	0.00225	2.50000	2.50000	10.00000
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430.00	0.11538	0.60000	0.00000	1.000000
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088.00	0.00180	4.00000	4.00000	18.0000
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430.00	0.03750	1.000000	0.00000	1.000000
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922.00	0.00040	7.50000	7.50000	20.0000
City Park	Other commercial A/C and heat pumps	R-410A	2,088.00	0.00180	4.00000	4.00000	18.0000
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430.00	0.03750	1.000000	0.00000	1.000000

5.14.2. Mitigated

Land Use	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088.00	0.00225	2.50000	2.50000	10.00000

Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430.00	0.11538	0.60000	0.00000	1.000000
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088.00	0.00180	4.00000	4.00000	18.0000
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430.00	0.03750	1.000000	0.00000	1.000000
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922.00	0.00040	7.50000	7.50000	20.0000
City Park	Other commercial A/C and heat pumps	R-410A	2,088.00	0.00180	4.00000	4.00000	18.0000
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430.00	0.03750	1.000000	0.00000	1.000000

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.15.2. Mitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

8.1. Justifications

Screen	Justification

Land Use	Proposed Project includes an estimated total 950 residential units and 40,000 square feet of retail/commercial space, as well as open space/parks. Area A includes 656 residential units, 37,000 square feet of commercial/retail uses, 11.4 acres of parks on 44.5 acres of land.
Construction: Construction Phases	No demolition is required as existing site is vacant an undeveloped. Grading is estimated to last approximately 8 months.
Construction: Trips and VMT	100 Haul truck trips per day during grading provided by applicant.
Operations: Vehicle Data	Trip rates based on daily trip values provided by Fehr &Peers Traffic Analysis dated June 27, 2025.

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	41.0000	33.1000
Landscape Area	sq. ft	—	69,536.0
Lot Area	acre	0.84940	0.00000
Landscape Area	sq. ft	—	3,700.00

8.4. Construction

8.4.1. Construction Phases

Phase Type	Phase Name	Model Parameter	Default Value	New Value
Grading	Grading	Start Date	4/25/2027	1/1/2027
Grading	Grading	End Date	8/8/2027	9/1/2027
Grading	Grading	Work Days per Phase	75.0000	174.000
Building Construction	Building Construction	Start Date	8/9/2027	9/2/2027
Building Construction	Building Construction	End Date	6/10/2030	12/3/2031
Building Construction	Building Construction	Work Days per Phase	740.000	1,110.00
Paving	Paving	Start Date	6/11/2030	12/4/2031
Paving	Paving	End Date	8/27/2030	3/3/2032
Paving	Paving	Work Days per Phase	55.0000	65.0000

Architectural Coating	Architectural Coating	Start Date	8/28/2030	12/4/2031
Architectural Coating	Architectural Coating	End Date	11/13/2030	9/3/2032
Architectural Coating	Architectural Coating	Work Days per Phase	55.0000	197.000

8.4.6. Trips and VMT

Phase Name	Trip Type	Model Parameter	Default Value	New Value
Grading	Hauling	One-Way Trips per Day	152.299	100.0000

8.5. Operations

8.5.1. Mobile Sources

8.5.1.1. Vehicle Data

Land Use	Model Parameter	Units	Default Value	New Value
Apartments Low Rise	Weekday Trip Rate	size/day	7.32000	0.51053
Apartments Low Rise	Saturday Trip Rate	size/day	8.14000	0.56772
Apartments Low Rise	Sunday Trip Rate	size/day	6.28000	0.01953
Strip Mall	Weekday Trip Rate	size/day	44.3200	6.60000
Strip Mall	Saturday Trip Rate	size/day	42.0400	6.26047
Strip Mall	Sunday Trip Rate	size/day	20.4300	3.04237

Attachment B

Alternative 3 - Energy Calculations

Estimated Operational Fuel Consumption			
Land Use	**Annual VMT**	**Gasoline Usage (gallons)**	**Diesel Usage (gallons)**
Apartment Low Rise	667,562	18,844	3,179
Strip Map	546,366	15,422.5	2,601.7
City Park	-	-	-
High School	8,127,222	229,410.5	38,701.1
Total	**9,341,150**	**263,676.6**	**44,481.7**

Notes:

Based on the California Air Resources Board on-road vehicle emissions model, EMFAC 2021

(Modeling input: Ventura County; Fleet Aggregate; Year 2033 for proposed project).

For Year 2033, gasoline-fueld vehicles account for approximately 84.4% percent of the total VMT at 29.9 miles per gallon and diesel fueled-vehicles account for approximately 5.0% percent of thet total VMT at 10.5 miles per gallon

Annual Operational Electricity Demand					
		Water Usage			
Electricity Demand	kWh/year	Indoor (gal/yr)	Outdoor (gal/yr)	Water-Related Electricity Use (kWh/yr)	Total Annual Electricity Use (kWh)
Apartment Low Rise	2,570,452	24,864,647	1,098,692	175083.3	2,745,535
Strip Map	361,501	2,740,683	47,862	18909.8	380,411
City Park	0	0	0	0.0	0
High School	1,710,370	11,440,596	28,580,043	229521.8	1,939,892
Total	**4,642,323**	**39,045,926**	**29,726,597**	**423,514.9**	**5,065,838**

Annual Operational Natrual Gas Demand	
Natural Gas Demand	kBTU/year
Apartment Low Rise	11,920,698
Strip Map	221,253
City Park	-
High School	3,330,720
Total	**15,472,671**

Notes:

Taken from the CalEEMod annual output

Indoor water results in 0.006807 kWh/gallon of electricity usage per gallon from the supplying, treating, and distributing of water and the processing of resulting wastewater within South Coast.

Outdoor water results in 0.005306 kWh/gallon of electricity usage per gallon from supplying, treating, and distributing of water within South Coast.