DRAFT INITIAL STUDY MITIGATED NEGATIVE DECLARATION FOR THE NORTH RANCH RESIDENTIAL PROJECT MOORPARK, CA

Prepared for:

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TABLE OF CONTENTS

Page

SECTION 1.0 – PROJECT DESCRIPTION AND ENVIRONMENTAL SETTING 1
1.1 PROJECT PURPOSE AND BACKGROUND INFORMATION 1
1.2 PROJECT LOCATION AND SITE CHARACTERISTICS 1
1.2.1 Location 1
1.2.2 Site Characteristics 1
1.2.3 Site Access and Circulation 1
1.2.4 General Plan Designation/Zoning 4
1.3 PROJECT DESCRIPTION 4
1.3.1 Construction 6
1.3.2 Site Development and Construction Measures 7
1.3.3 Operations and Maintenance 10
1.4 PERMITS AND AGREEMENTS 10

SECTION 2.0 – ENVIRONMENTAL DETERMINATION 13
2.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: 13
2.2 DETERMINATION 13

SECTION 3.0 – EVALUATION OF ENVIRONMENTAL IMPACTS 14

SECTION 4.0 – CHECKLIST OF ENVIRONMENTAL ISSUES 16
4.1 AESTHETICS 16
4.1.1 Impact Analysis 16
4.2 AGRICULTURE & FORESTRY RESOURCES 17
4.2.1 Impact Analysis 18
4.3 AIR QUALITY 19
4.3.1 Environmental Analysis 19
4.3.2 Impact Analysis 21
4.4 BIOLOGICAL RESOURCES 26
4.4.1 Environmental Setting 27
4.4.2 Impact Analysis 27
4.5 CULTURAL RESOURCES 36
4.5.1 Environmental Setting 36
4.5.2 Impact Analysis 36
4.6 ENERGY 38
4.6.1 Environmental Setting 38
4.6.2 Impact Analysis 39
4.7 GEOLOGY AND SOILS 41
4.7.1 Environmental Setting 42
4.7.2 Impact Analysis 42

4.8 GREENHOUSE GAS EMISSIONS 46
4.8.1 Environmental Setting 46
4.8.2 Impact Analysis 46
4.9 HAZARDS AND HAZARDOUS MATERIALS 48
4.9.1 Impact Analysis 48
4.10 HYDROLOGY AND WATER QUALITY 51
4.10.1 Environmental Setting 52
4.10.2 Impact Analysis 52
4.11 LAND USE AND PLANNING 56
4.11.1 Impact Analysis 56
4.12 MINERAL RESOURCES 57
4.12.1 Impact Analysis 58
4.13 NOISE 58
4.13.1 Environmental Setting 58
4.13.2 Impact Analysis 59
4.14 POPULATION AND HOUSING 60
4.14.1 Impact Analysis 60
4.15 PUBLIC SERVICES 62
4.15.1 Impact Analysis 62
4.16 RECREATION 65
4.16.1 Impact Analysis 65
4.17 TRANSPORTATION 66
4.17.1 Environmental Setting 66
4.17.2 Impact Analysis 66
4.18 TRIBAL CULTURAL RESOURCES 69
4.18.1 Impact Analysis 69
4.19 UTILITIES AND SERVICE SYSTEMS 71
4.19.1 Impact Analysis 71
4.20 WILDFIRE 74
4.20.1 Impact Analysis 74
4.21 MANDATORY FINDINGS OF SIGNIFICANCE 76
4.21.1 Impact Analysis 76

SECTION 5.0 – REFERENCES 79

APPENDICES

APPENDIX A – Air Quality and Greenhouse Gas Study
APPENDIX B – Biological Studies
APPENDIX C – Tree Report
APPENDIX D – Jurisdictional Delineation
APPENDIX E – Focused Coastal California Gnatcatcher Survey
APPENDIX F – Cultural Resources Phase I Assessment Report
APPENDIX G – Geotechnical Investigation Report
APPENDIX H – Drainage Report
APPENDIX I – Traffic Impact Analysis
APPENDIX J – Noise Study
APPENDIX K – VMT Analysis
APPENDIX L – Sewer Area Study
APPENDIX M – Mitigation Monitoring and Reporting Program

LIST OF TABLES

Page

Table 1: General Plan / Zoning/ Existing Land Use 4

Table 2: Project Phasing 10

Table 3: VCAPCD Attainment Designations 21

Table 4: Construction-Related Maximum Daily Criteria Pollutant Emissions 22

Table 5: Operations-Related Maximum Daily Criteria Pollutant Emissions 24

Table 6: Annual Greenhouse Gas Emissions from the Proposed Project 46

Table 7: Levels of Service in the Project Vicinity AM and PM Peak Hours 57

LIST OF FIGURES

Page

Figure 1 – Project Vicinity Map 3

Figure 2 – Site Plan 8

Figure 3 – Landscape Plan 9

Figure 4 – Existing Land Use and Zoning 11

Figure 5 – Proposed Land Use and Zoning 12

SECTION 1.0 – PROJECT DESCRIPTION AND ENVIRONMENTAL SETTING

1.1 PROJECT PURPOSE AND BACKGROUND INFORMATION

West Point Homes (Applicant) proposes to provide 134 single-family homes and five future single family homes on estate lots in a new residential planned development (Project) that includes new streets, landscaping, trails, and related on- and off-site improvements on an approximately 68-acre property consisting of two lots (APNs 5110190285 & 5110190305) located at 5979 Gabbert Road (Figure 1). The purpose of the development is to provide the City of Moorpark (City) a new planned residential development with single-family homes (Figure 2). Through the negotiated development agreement, 15% of the units would be reserved as affordable

The City Is the lead agency for the Proposed Project. This Initial Study has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] §21000 et seq.) and the State CEQA Guidelines (Title 14, California Code of Regulations [CCR], §15000 et seq.) and has determined that preparation of a Mitigated Negative Declaration would be appropriate under CEQA.

1.2 PROJECT LOCATION AND SITE CHARACTERISTICS

1.2.1 Location

The Project site is located at 5979 Gabbert Road in the northwestern portion of the City and is bounded by Gabbert Road to the east and residential uses to the north. The Project site is north of the Union Pacific railroad tracks and west of the intersection of Gabbert Road and Elwin Lane. The Project site includes two different parcels for a combined acreage of approximately 68 acres (Assessor Parcel Numbers [APNs] 5110-190-285 and 5110-190-305). Lands to the west and south are undeveloped. The Project site is surrounded by vacant land and rural residential properties to the north and east, vacant land and railroad tracks to the south, and agricultural lands to the west. The Project site is located approximately 2,000 feet south of the Moorpark Golf Course and an unnamed residential neighborhood, and approximately 2,000 feet north of the Southern California Edison (SCE) Moorpark Substation. The Project site is approximately 21 miles east of the Pacific Ocean.

1.2.2 Site Characteristics

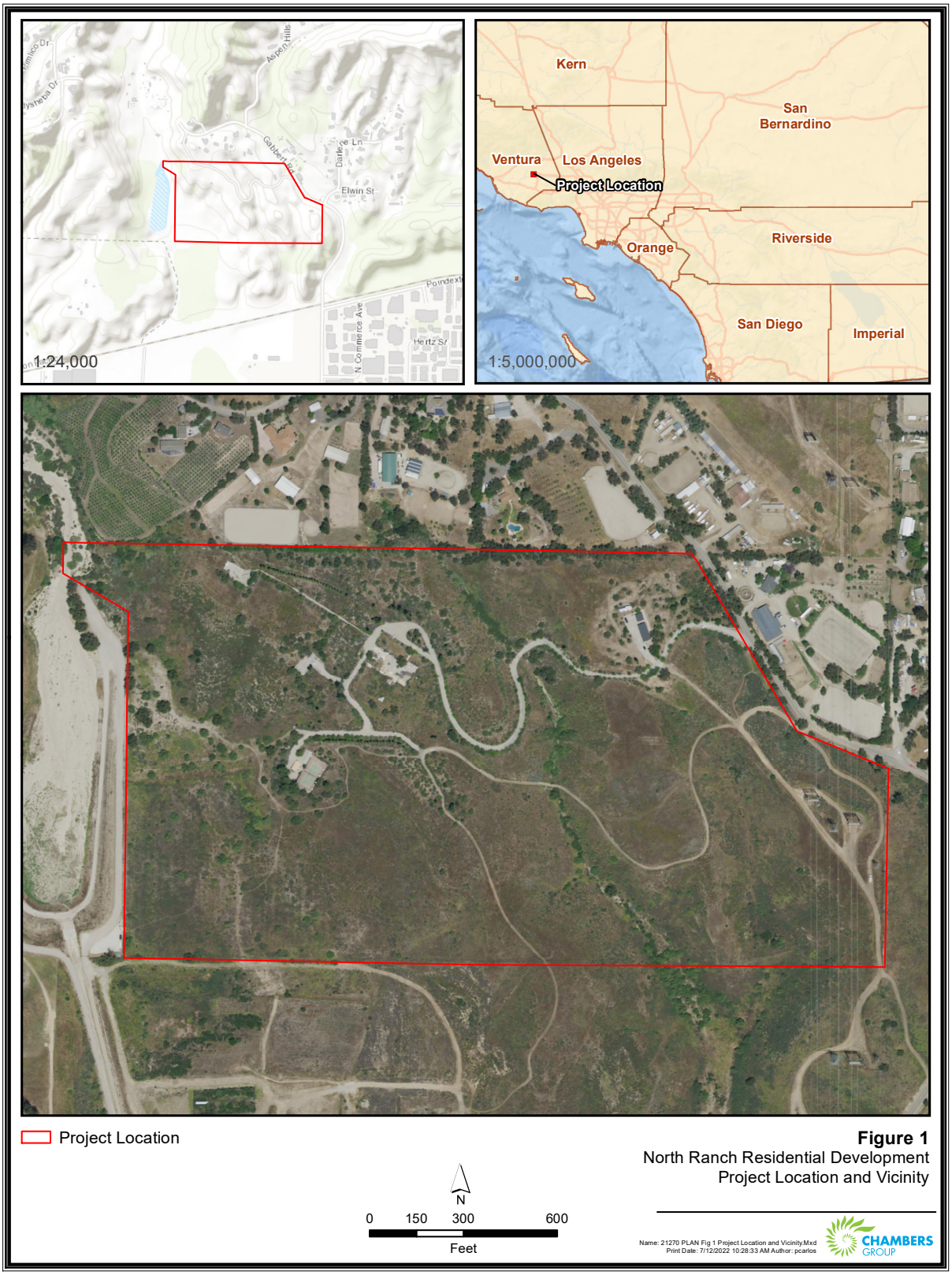
The Project site comprises approximately 68 acres with a portion of the site that includes several structures that are still present onsite: a trailer/mobile home current used as an office, a garage in the northeast corner, and a large storage shed in the northwest section. Two concrete foundations, gardens, a tennis court, , and concrete driveway, along with an access road and undeveloped land are also found on the site. The Project site consists of different types of grasslands, landscaped areas, and developed areas within the foothills of the City. The topography of the project site is defined by three rolling, broad-topped ridges that trend from northwest to southeast, the basins in between, and a relatively flat area in the southwest corner. There are coastal sage scrub, ruderal grassland, and landscaping elements that occur together in various degrees.

1.2.3 Site Access and Circulation

During construction, access to the site will be via an existing paved driveway off Gabbert Road. After the development is completed, new access will be provided via construction of North Hills Parkway along the southerly property boundary to Gabbert Road. North Hills Parkway will terminate as a cul-de-sac towards

the middle of the site, along the southern property line. A separate fire lane access would extend from northwest Thoroughbred Drive down to Los Angeles Drive. A separate 30-foot-wide fire access road to the planned development will occur from the eastern side of the development from Gabbert Road.

Figure 1 – Project Vicinity Map



1.2.4 General Plan Designation/Zoning

The City's General Plan designates the Project site as Rural Low Density Residential (RL), which allows for one dwelling unit per 5 acres. The RL designation is intended to allow limited development of residential estate lots on minimum 5-acre lots, or using clustering techniques for areas characterized by significant site constraints (e.g., rugged topography, steep slopes, lack of services, limited access), or areas of important visual or natural resources. The surrounding General Plan designations are Rural High Density Residential (RH) and Hitch Ranch Specific Plan (SP-1) to the east; RL to the west and north; and SP-1, Medium Industrial (I-2), and Agricultural (AG-1) to the south. Table 1 below provides a summary of the General Plan designations, zoning, and existing land uses of the Project site and surrounding properties.

The Project site is zoned Agricultural Exclusive (AE); the purpose of this zone is to provide for and maintain a rural setting where a wide range of agricultural uses are permitted while surrounding residential land uses are protected. The zoning of the surrounding properties includes Rural Exclusive (RE-1AC) and AE to the east and west, RE-1AC to the north, and Limited Industrial (M-2) and AE to the south.

Table 1: General Plan / Zoning/ Existing Land Use

Direction	General Plan	Zoning	Existing Land Use
Project Site	Rural Low Density Residential (RL)	Agricultural Exclusive (AE)	Mostly vacant except for roads, gardens, four concrete foundations, a tennis court, and an existing single-family home
North	Rural Low Density Residential (RL)	Rural Exclusive (RE-1AC)/(RE-5AC)	Religious facility/camp, rural residences, and agricultural
South	Hitch Ranch Specific Plan (SP-1) Medium Industrial (I-2) Agricultural (AG-1)	Agricultural Exclusive (AE) Limited Industrial (M-2)	Railroad tracks and SCE Moorpark Substation
East	Hitch Ranch Specific Plan (SP-1)	Rural Exclusive (RE-1AC), Hitch Ranch Open Space/Basins (O-S)	Single-family residences
West	Rural Low Density Residential (RL)	Agricultural Exclusive (AE)	Agricultural

1.3 PROJECT DESCRIPTION

The Proposed Project includes the development of 134 single-family homes (single- and two-story) and five future single family homes on estate lots on 68 acres of mostly vacant land in the northwestern portion of the City. The single-family homes would range from 1,506 to 3,206 square feet in total living area, and each would have an attached two-car garage. The five estate lots would not be developed at this time but would provide large lots for future development and access driveways to those estate lots. However, since the five estate lots would be provided for future development, the future development of these homes is analyzed in this document.

The Project will require rough grading, as well as sewer, water, storm drain, and detention basin improvements. Approximately 15 percent of the initial 134 single-family homes will be available as

affordable housing. The Project entails demolishing the existing remaining structures onsite and grading the land for the building of the single-family housing development.

Improved Access

The Project will include construction of North Hills Parkway with two lanes of traffic and a center median between the two lanes across the southerly property boundary to Gabbert Road. The proposed North Hills Parkway will terminate as a cul-de-sac around the middle of the south property line. The new intersection at North Hills Parkway and Gabbert Road will be controlled by a stop sign on North Hills Parkway.

The Applicant will complete the construction of North Village Drive from North Hills Parkway to A Street (Thoroughbred Drive). North Hills Parkway would terminate in a cul-de-sac at the middle portion of the site with separate emergency fire lane road access to Los Angeles Avenue. All community streets are planned to be public streets and will be dedicated to the City with the record map.

Circulation and access will occur on the planned residential development through various community streets. Thoroughbred Drive will provide east and west access through the northern portion of the site, Tennessee Walker Drive will stretch east and west through the southern portion of the site. Other community streets such as Quarter Horse Way, Thoroughbred Drive, North Ranch Drive, Morgan Way, Appaloosa Way, and Shetland Way will provide additional access through the planned residential development.

Recreation and Landscaping

The community landscaping/recreation improvements will include sloped landscape, railed fencing, and a multi-use trail system along North Hills Parkway (Figure 3). Landscaping, such as shrubs and trees, will be provided along slopes, within medians, and along the border of the residential development. The landscaping will be irrigated with an automatic drip irrigation system that complies with Assembly Bill (AB) 1881 and the City standards. The community landscaping will be maintained by the Homeowners Association (HOA). Landscaping associated with the Proposed Project would comply with the City Landscaping Manual and include a fuel modification plan and defensible space as required by Public Resources Code Section 4291(a) and (b). All plants included in the landscaping would be drought tolerant in order to comply with landscaping requirements for Very Fire Hazard Severity Zones.

The residential community will provide one community park, two dog parks located on Lot 4 and Lot D, with a decomposed granite, multi-use trail along North Hills Parkway for community members to use. The parks would be provided for public use and will be maintained by the HOA.

General Plan Amendment/Zone Change

The General Plan designation of the Project Site is RL and zoning is AE. In addition to the development of the residential community, the Project includes an amendment to the General Plan designation from RL to H, RL, and OS. and an a zoning amendment from AE to RE-5AC, Residential Planned Development (RPD), and OS (Figures 4 and 5). The City's General Plan designates the Project site as Rural Low Density Residential (RL), which allows for one dwelling unit per 5 acres. The RL designation is intended to allow limited development of residential estate lots on minimum 5-acre lots, or using clustering techniques for areas characterized by significant site constraints (e.g., rugged topography, steep slopes, lack of services, limited access), or areas of important visual or natural resources. The conversion from RL to H (High

Density Residential) allows for up to 7 dwelling units per acre. The Open Space (OS) designation allows for up to 1 dwelling unit per 10-40 acres.

The Project site is zoned Agricultural Exclusive (AE); the purpose of this zone is to provide for and maintain a rural setting where a wide range of agricultural uses are permitted while surrounding residential land uses are protected. The zone change to RE-5AC would allow for rural residential in conjunction with horticultural activities, and to provide for a limited range of service and institutional uses which are compatible with and complementary to rural residential communities with a maximum of 5 dwelling units per acre. Additionally, the Residential Planned Development provides areas for communities which will be developed utilizing modern land planning and unified design techniques; this zone provides a flexible regulatory procedure in order to encourage consistent design, efficient use of land, preservation of natural features, variety in housing unit options, energy efficient living environments. The open space zoning provides for the conservation of renewable and nonrenewable natural resources of open land area. This allows future land use options that are reasonable and compatible uses on open lands in the city.

Utilities

Water: The water line serving the Project is proposed as a looped system and will be connected to the existing 12-inch asbestos concrete pipe (ACP) line in Gabbert Road in two locations. The first connection will be at North Hills Parkway Intersection and the second connection will be north of the first connection and the northern limits of the tract. The water line will be looped throughout the development and connect to the proposed water line extension in North Hills Parkway via an easement through Lot 101.

Sewer: The sewer main serving the Project is proposed to be extended from Gabbert Road and Poindexter Avenue where the existing main is 8 inches in diameter. The proposed sewer will run up Gabbert Road then westward on North Hills Parkway to the western end of the Project where it will connect with the on-site sewer system. All on-site sewers will drain in a northwestern direction and connect into this proposed main line.

Storm Drain: Stormwater will be collected onsite, treated, detained, then conveyed via storm drain pipe to the southwestern corner of the site where the pipe will tie into the existing Ventura County Gabbert Channel Drain.

Electrical, Gas and Telecommunications: Electrical, Gas and Telecommunications utilities will be serviced through primary and/or secondary entrances from North Hills Parkway. Transformers will be located throughout the Project. Gas services will be looped through the Project.

1.3.1 Construction

Construction activities occurring onsite will include the demolition of the existing building pads and ancillary structures, grading, excavation, and recompaction throughout the Project site. In addition to contractor vehicles and heavy equipment anticipated to be used onsite, the Project will include the use of excavators, backhoes, bulldozers, graders, compactors, and dump trucks. All equipment will be staged within the Project site. SCE would maintain an easement onsite under existing powerlines that connect to the Moorpark Substation.

Construction of the Project is expected to begin in Spring 2023 and continue until Fall 2024. Construction activities of the Proposed Project will be scheduled in compliance with the City's Municipal Code Title 17

for the provisions of operating and permitting the use of tools and equipment during construction, drilling, repair, or alterations.

Earthwork associated with the Project construction is anticipated to include approximately 746,520 cubic yards of cut and approximately 759,521 cubic yards of fill, with a net fill of approximately 13,000 cubic yards.

1.3.2 Site Development and Construction Measures

Based on a review of the geotechnical and subsurface conditions for the Project site, the following measures will be taken during site development and construction to ensure that the Project design is feasible:

Best Management Practices

The Proposed Project will incorporate infiltration basins and biofiltration Best Management Practices (BMPs) to treat onsite and offsite flows. Proprietary biofiltration BMPs will be implemented to meet the performance standards of the hydraulic calculations of the Proposed Project. Infiltration basins will be located at the entrance of the Project for stormwater treatment.

Figure 2 – Site Plan

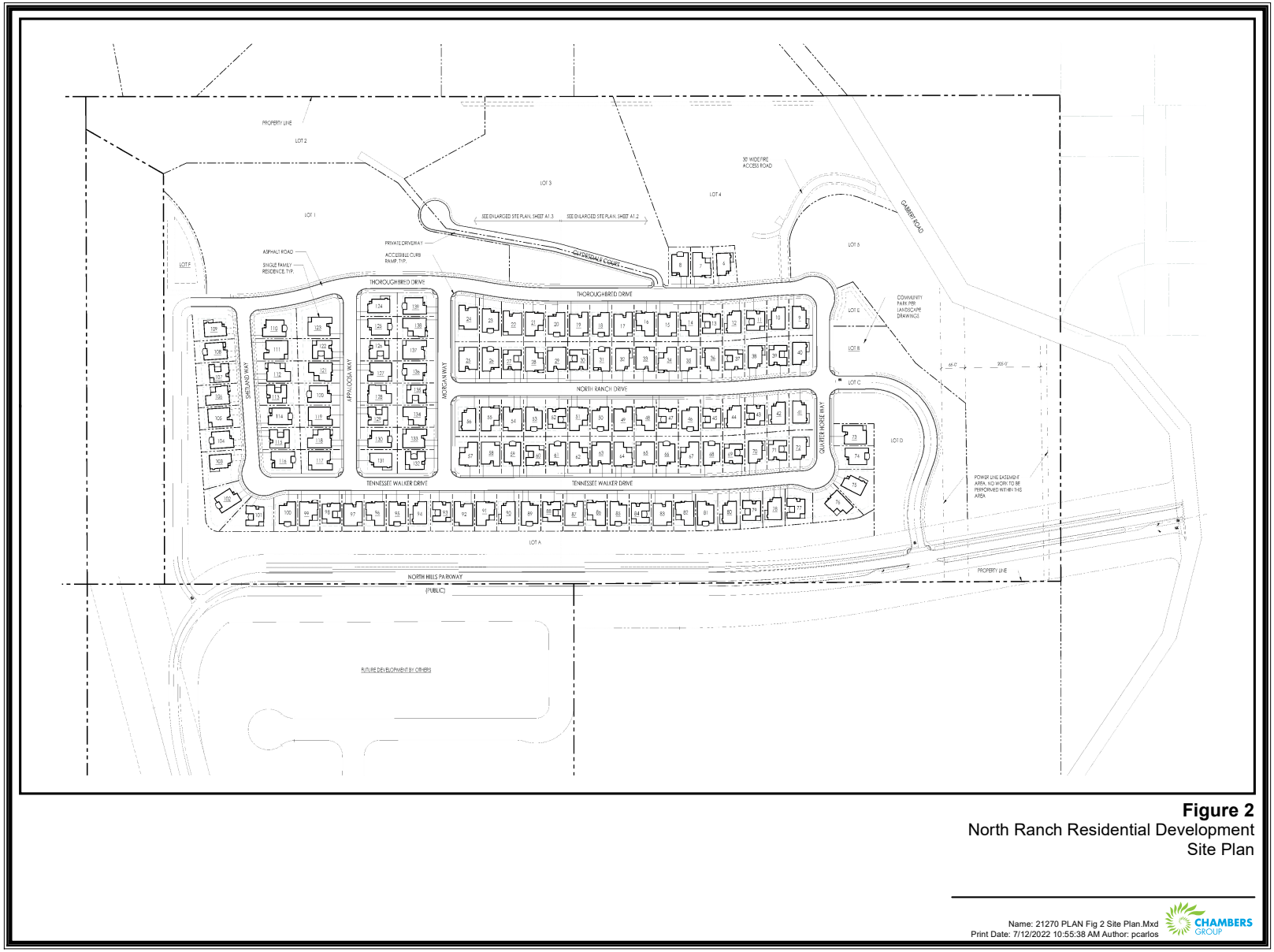


Figure 2
North Ranch Residential Development
Site Plan

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Figure 3 – Landscape Plan

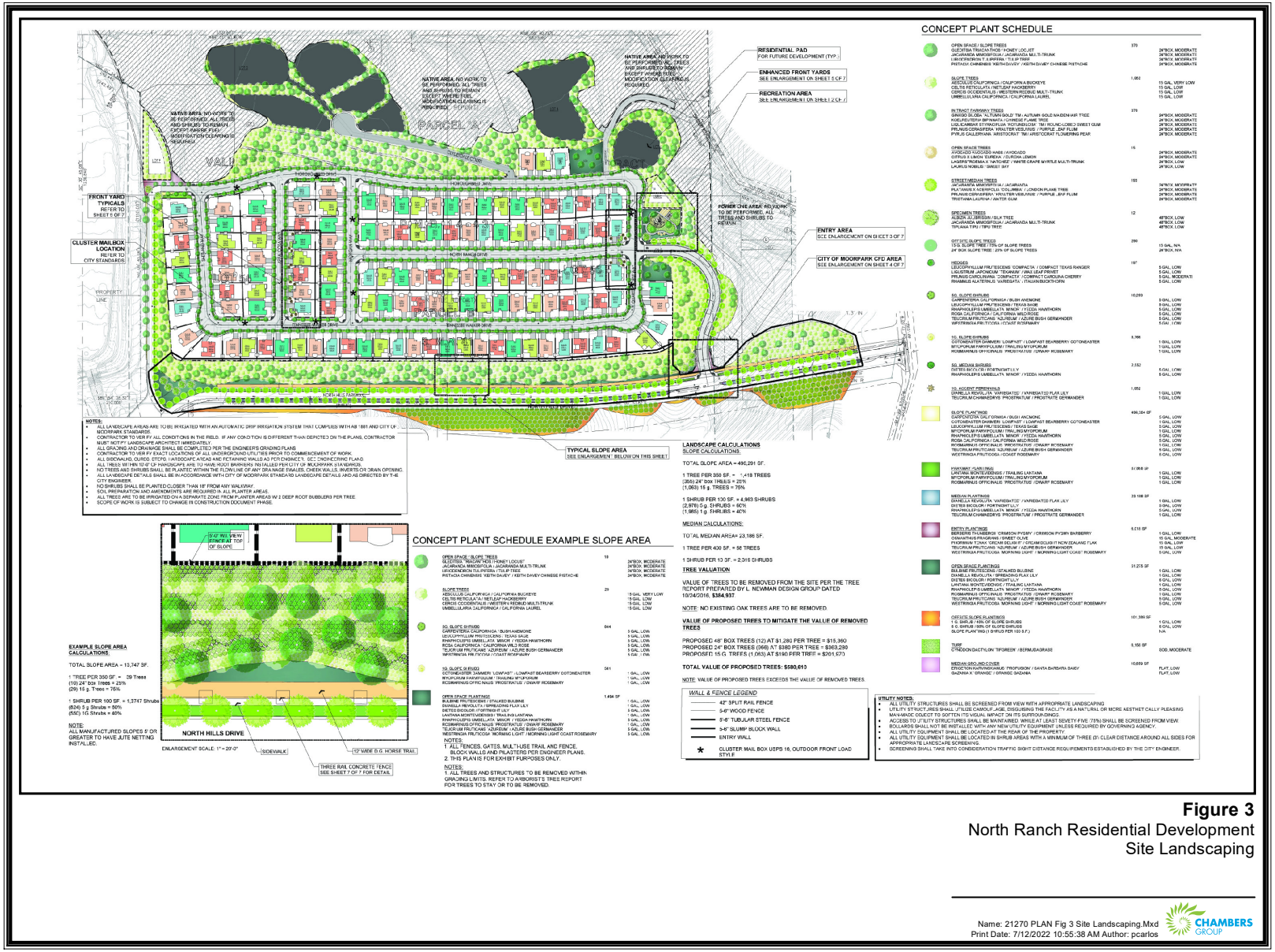


Figure 3
North Ranch Residential Development
Site Landscaping

1.3.3 Operations and Maintenance

The Project is anticipated to be completed phases as shown below in Table 2.

Table 2: Project Phasing

Phase #	Description	Lot #
1	Grading, Streets, and Underground Utilities	–
2	Construction of Models	77-79
3	Building Phase 1	6-17
4	Building Phase 2	18-24, 135-139
5	Building Phase 3	33-48
6	Building Phase 4	25-32, 49-56
7	Building Phase 5	57-60, 89-95, 132-134
8	Building Phase 6	117-131
9	Building Phase 7	96-104, 115-116
10	Building Phase 8	105-114
11	Building Phase 9	61-66, 83-88
12	Building Phase 10	67-76, 80-82
To Be Decided	Estate Lots	1-5

Maintenance within the community will be coordinated by the HOA and will include ongoing landscaping, as well as improvements to public spaces, park, and trails.

1.4 PERMITS AND AGREEMENTS

As required by CEQA Guidelines, this section provides, to the extent the information is known, a list of permits and other approvals required to implement the Project.

The following approvals and permits may be required for the Project:

- Residential Planned Development RPD 2016-02
- General Plan Amendment (GPA) GPA 2016-02
- Zone Change (ZC) ZC 2016-02
- Development Agreement DA 2016-02
- Tentative Map TTM 5847
- City Grading and Building Permits
- Ventura County Fire Department Approval
- Ventura County Waterworks District (VCWWD) No. 1 Approval

Figure 4 – Existing Land Use and Zoning

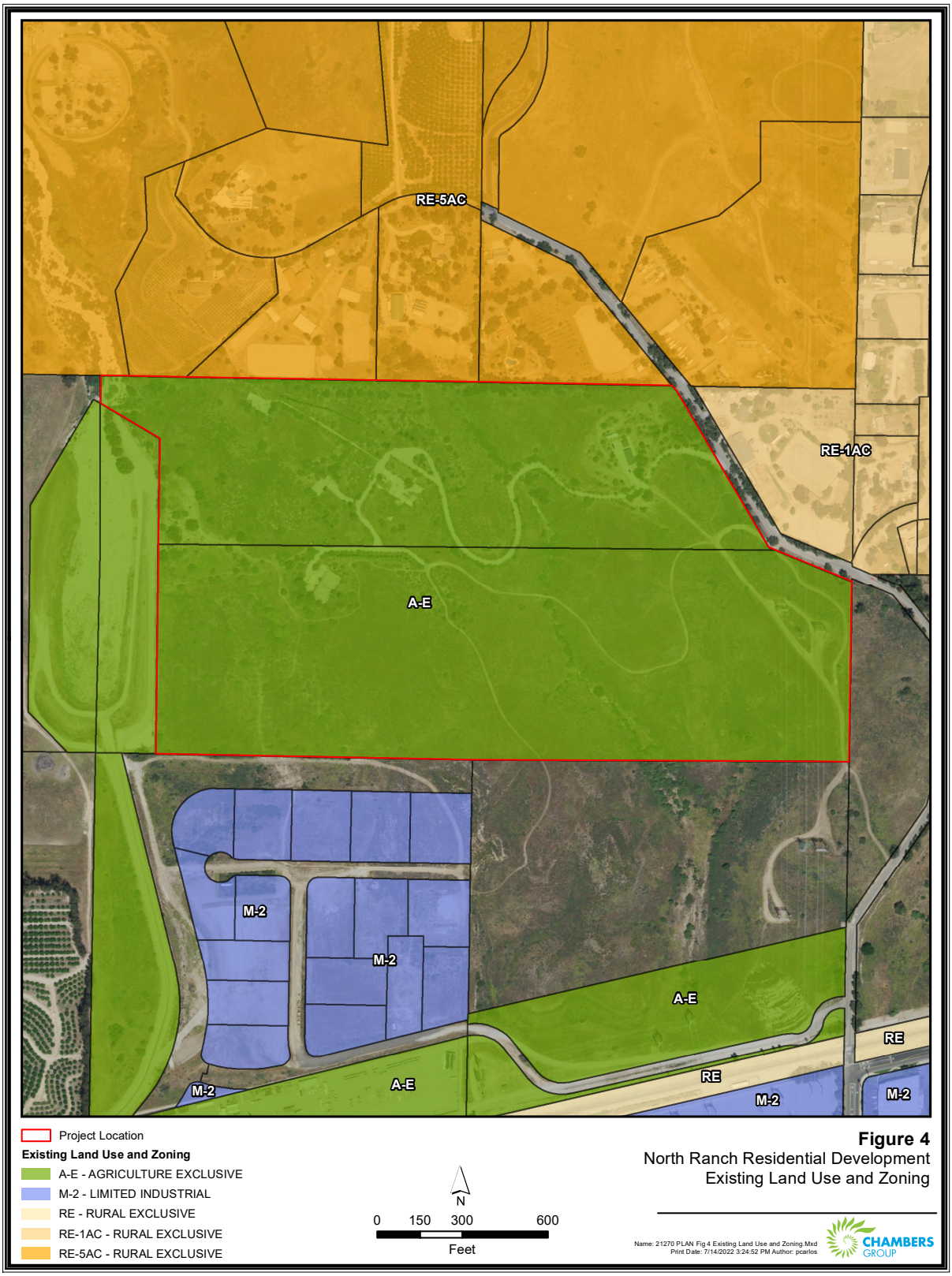
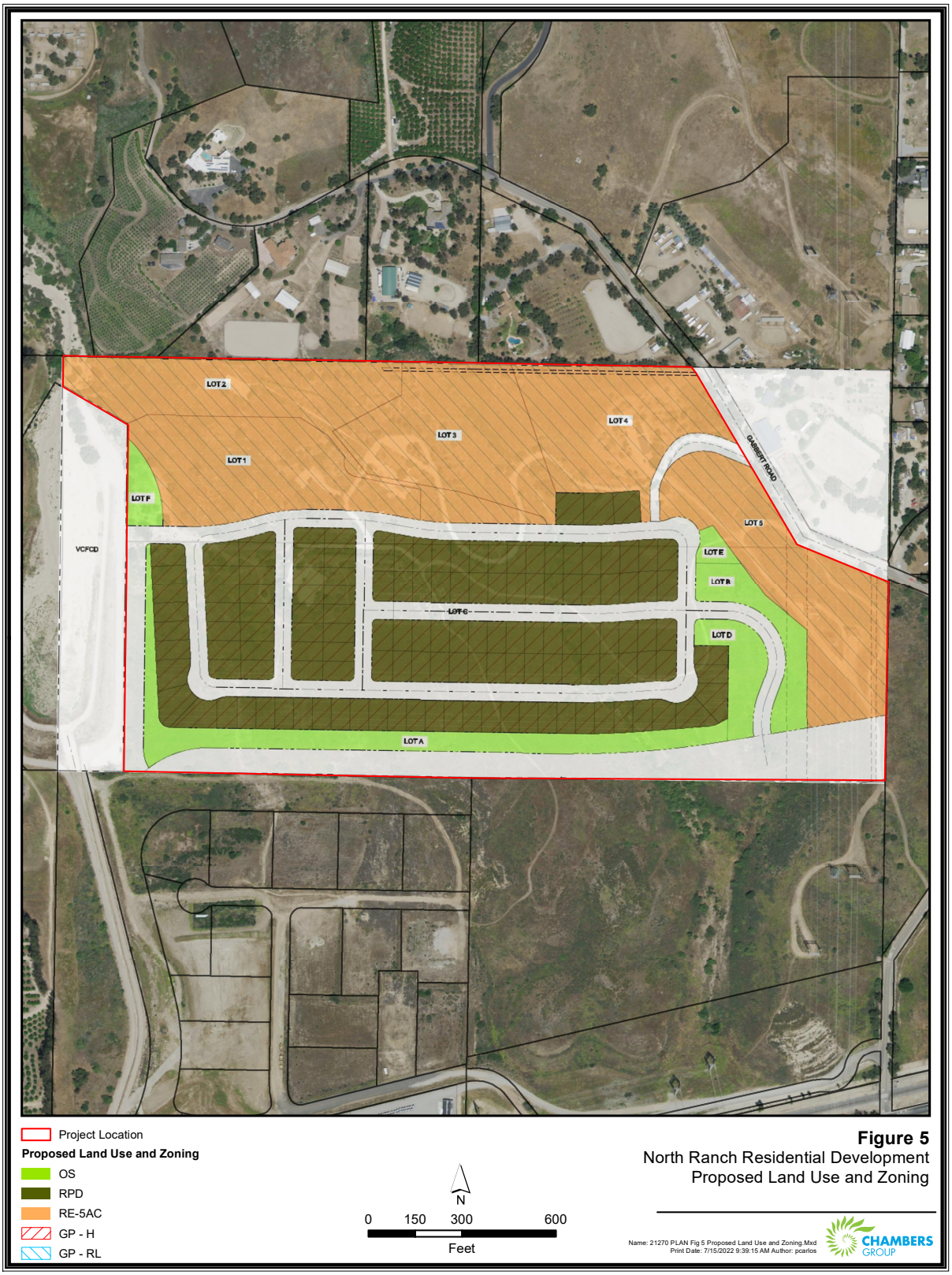


Figure 5 – Proposed Land Use and Zoning



SECTION 2.0 – ENVIRONMENTAL DETERMINATION

2.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

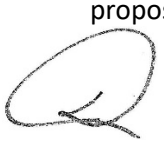
The environmental factors checked below would potentially be affected by this project, involving at least one impact that is a "Potentially Significant Impact," as indicated by the checklists on the following pages. For each of the potentially affected factors, mitigation measures are recommended that would reduce the impacts to less than significant levels.

☐ *Aesthetics*	☐ *Agriculture and Forestry Resources*	☒ *Air Quality*
☒ *Biological Resources*	☒ *Cultural Resources*	☐ *Energy*
☒ *Geology /Soils*	☐ *Greenhouse Gas Emissions*	☐ *Hazards & Hazardous Materials*
☐ *Hydrology /Water Quality*	☐ *Land Use / Planning*	☐ *Mineral Resources*
☐ *Noise*	☐ *Population / Housing*	☐ *Public Services*
☐ *Recreation*	☒ *Transportation*	☐ *Tribal Cultural Resources*
☐ *Utilities /Service Systems*	☐ *Wildfire*	☐ *Mandatory Findings of Significance*

2.2 DETERMINATION

On the basis of this initial evaluation:

1. I find that the project **could not** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared. ☐
2. I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared. ☒
3. I find the proposed project **may have a significant effect** on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required. ☐
4. I find that the proposed project **may have a "potentially significant impact" or "potentially significant unless mitigated impact"** on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed. ☐
5. I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or Negative Declaration pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or Negative Declaration, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required. ☐



September 20, 2022

Signature — Date

Douglas Spondello, AICP — Deputy Community Development Director

Name — Title

SECTION 3.0 – EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if substantial evidence exists that an effect may be significant. If one or more "Potentially Significant Impact" entries are marked when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level (mitigation measures from earlier analyses may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a. Earlier Analysis Used. Identify and state where they are available for review.

    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. The explanation of each issue should identify:

    a. the significance criteria or threshold, if any, used to evaluate each question; and

    b. the mitigation measure identified, if any, to reduce the impact to less than significant.

    *Note: Instructions may be omitted from final document.

SECTION 4.0 – CHECKLIST OF ENVIRONMENTAL ISSUES

4.1 AESTHETICS

1.	AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
(b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
(c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
(d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

4.1.1 Impact Analysis

a) Would the project have a substantial adverse effect on a scenic vista?

No Impact. The Project site is not located within any of the City-designated scenic corridors. The designated scenic corridors include portions of the Arroyo Simi, Los Angeles Avenue, Tierra Rejada Road, and State Route (SR) 23 (Moorpark Freeway; City 1986). The designated Tierra Rejada Road and Los Angeles Avenue scenic vistas are approximately 0.65 mile southwest and 2.1 miles east of the Project, respectively. SR 23 and Arroyo Simi Creek are approximately 2.4 miles east and one-mile south of the Project site, respectively (Google 2022). The Project site is surrounded by residential and rural land uses. Additionally, none of the nearby parks or trail systems have designated scenic viewpoints overlooking the Project site, and the Project site is not located within any of the scenic viewsheds designated in the City's General Plan (City 1986). Therefore, the Project construction and operation would not have an adverse effect on a scenic vista and impacts would be less than significant.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. The Project is not located within a State scenic highway. No officially designated State scenic highways are in the vicinity of the Project site. SR 118, which is an eligible State scenic highway, is located more than 2 miles east of the Project site (California Department of Transportation 2019). Further, construction of the Project would not damage rock outcroppings or historic buildings because none are present at the Project site. Trees that will be removed are not within a State scenic highway. No impacts to scenic resources within a State scenic highway would occur.

c) *Would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*

Less than Significant Impact. The Project site is located within a non-urbanized area of the City with industrial uses to the south and residential uses to the north, east, and west of the Project site. The Project site is located within an existing, non-urbanized area and north of Arroyo Simi, but not within any scenic corridors. No scenic viewpoints are overlooking the Project site and due to the varied terrain, views from publicly accessible areas would be limited. The Project will be designed to comply with the City's Landscape Design Standards and Guidelines (City 2012) to be compatible with the City's development standards. Landscaping associated with the Proposed Project would also include a fuel modification plan and defensible space as required by Public Resources Code Section 4291(a) and (b). All plants included in the landscaping would be drought tolerant in order to comply with landscaping requirements for Very Fire Hazard Severity Zones. The inclusion of landscaping will ensure that public views and the visual character are maintained. Impacts would be less than significant.

d) *Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

Less than Significant Impact. The Project would construct 139 new single-family homes which would include lighting as part of the design features. All lighting would be constructed in compliance with the lighting regulations set forth in the City's Zoning Code, including using shielded lamps directed away from adjacent properties and streets; not exceeding seven foot-candles on 95 percent or more of the grid points, light poles not exceeding 25 feet in height, and curbed planters around all light poles (Moorpark Municipal Code 17.30.065). Compliance with these regulations would ensure that impacts associated with the Project's lighting would be less than significant.

4.2 AGRICULTURE & FORESTRY RESOURCES

2.	**AGRICULTURE & FOREST RESOURCES. (In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**

(a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
(b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
(c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
(d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
(e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or the conversion of forest land to non-forest use?	☐	☐	☐	☒

4.2.1 Impact Analysis

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The Project site is currently zoned AE and designated by the General Plan as RL; therefore, it has been designated for rural low density residential uses by the City (City 2020a, 2020b). Based on mapping data provided by the California Department of Conservation's Important Farmland Finder, the Project site does not encompass any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (California Department of Conservation [DOC] 2018). Classification provided by the DOC lists the land as grazing land and Farmland of Local Importance. No impact would occur.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The Project site is zoned AE and designated by the General Plan as RL (City 2020a, 2020b). Although the site is zoned for agriculture, no agricultural uses exist onsite and the site has previously been used for rural housing. Additionally, a map of agricultural preserves produced for the County of Ventura's (County) 2040 General Plan Update shows no lands under Williamson Act contracts are within the Project site (County 2020). No impact would occur.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. The Project site is zoned AE and designated by the General Plan as RL; no land is designated as forest land or timberland within the Project site (City 2022a, 2022b). No impact would occur.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The Project site is zoned AE and designated by the General Plan as RL; no land is designated as forest land or timberland within the Project site (City 2022a, 2022b). No impact would occur.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or the conversion of forest land to non-forest use?

No Impact. The land is currently zoned AE and designated by the General Plan as RL and has therefore been designated for rural low density uses by the City (City 2022a, 2022b). The Project site does not encompass Prime Farmland, Unique Farmland, or Farmland of Statewide Importance and does not contain land currently under a Williamson Act contract (DOC 2022a; County 2020). Further, no designated forest land is within the Project site. No impacts would occur.

4.3 AIR QUALITY

3.	AIR QUALITY. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
(b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
(c)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
(d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

4.3.1 Environmental Analysis

An Air Quality and Greenhouse Gas (GHG) Study was produced by Rincon Consultants, Inc. in January 2022 to determine the air quality and GHG emissions impacts associated with the Project (Appendix A). The criteria air pollution impacts created by the Project were analyzed through use of California Emissions Estimator Model (CalEEMod) Version 2020.4.0, a computer model published for estimating air pollutant emissions. Results from this analysis have been summarized and incorporated below. For more details regarding methods and results, see Appendix A.

Atmospheric Setting

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographical features. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with physical features of the landscape to determine their movement and dispersal and, consequently, their effect on air quality.

The regional climate within the Air Basin is dominated by the intensity and location of the semi-permanent Pacific high pressure zone, which, from spring to fall, induces regional subsidence and temperature inversion layers. The region is characterized by warm summers, mild winters, infrequent seasonal rainfall, and moderate humidity, with the predominate wind patterns follow a diurnal land/sea breeze cycle, with typical daytime winds from the west. The diurnal land/sea breeze pattern is a common occurrence in the Air Basin, and it recirculates air contaminants. Air pollutants are pushed toward the ocean during the early morning by the land breeze and toward the east during the afternoon by the sea breeze. This creates a "sloshing" effect, causing pollutants to remain in the area for several days. This pollutant "sloshing" effect happens most predominately from May through October, which is the "smog" season for the Air Basin.

The City is located within southeastern Ventura County, which is part of the inland portion of the Oxnard Plain Airshed, approximately 18 miles from the coast of the Pacific Ocean. The City experiences a mild Mediterranean climate, typical of Southern California. Average temperatures for the Thousand Oaks 1 SW Monitoring Station (WRCC 2016), which is the nearest monitoring station with historical data, range from an average low of 43 degrees Fahrenheit (°F) in January to an average high of 86 °F in July. Rainfall averages approximately 10.49 inches a year.

Regulatory Setting

National Ambient Air Quality Standards and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), inhalable particulate matter with diameters 10 micrometers and smaller (PM_{10}), fine particulate matter with diameters 2.5 micrometers and smaller ($PM_{2.5}$), and lead. The CAAQS also set standards for sulfates, hydrogen sulfide, and visibility.

Both the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB) utilize ambient air quality monitoring to designate areas according to their attainment status for criteria air pollutants. The three basic designation categories are nonattainment, attainment, and unclassified. A "nonattainment" designation signifies that the measured pollutant concentrations exceeded the established standards. An "attainment" designation signifies that pollutant concentration did not exceed the established standard. Finally, an "unclassified" designation indicates that insufficient data exists to determine attainment or nonattainment; however, "unclassified" is usually assumed to be "attainment," since if preliminary data found a potential for an exceedance to occur, more data would have been collected in order to determine if the pollutant meets the "nonattainment" designation.

As shown in Table 3, the Ventura County Air Pollution Control District (VCAPCD) has been designated by EPA for the national standards as a nonattainment area for O_3. Currently, the VCAPCD is in attainment with the national ambient air quality standards for PM_{10}, $PM_{2.5}$, CO, SO_2, and NO_2. The VCAPCD has been designated by CARB as a nonattainment area for O_3 and PM_{10} because the CAAQS are more stringent than the national ambient air quality standards. The VCAPCD is required to adopt plans on a triennial basis that show progress toward meeting the State O_3 and PM_{10} standards. The County is considered to be in attainment or unclassified under State standards for all other pollutants.

Table 3: VCAPCD Attainment Designations

Pollutant	Federal Designations	State Designation
Ozone (O_3)	Nonattainment	Nonattainment
Inhalable Particulate Matter (PM_{10})	Unclassified/Attainment	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Unclassified/Attainment	Unclassified
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO_2)	Unclassified/Attainment	Attainment
Sulfur Dioxide (SO_2)	Unclassified/Attainment	Attainment
Lead	Attainment	Attainment
Particulate Sulfate	–[1]	Unclassified
Hydrogen Sulfide	–[1]	Unclassified
Visibility Reducing Particles	–[1]	Unclassified

[1] No Federal Standard

Source: http://www.vcapcd.org/air_quality_standards.htm

4.3.2 Impact Analysis

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The Proposed Project would not conflict with or obstruct implementation of the Ventura County Air Quality Management Plan (AQMP). The *Ventura County Air Quality Assessment Guidelines* (VCAPCD 2003) provides procedures for determining a project's consistency with the AQMP. Figure 4-1 of the VCAPCD Guidelines shows that the Project site is located in Growth Area 06, which covers the City. For growth areas, the VCAPCD Guidelines detail that if the population growth created by the project is within the growth forecasts and conforms to the applicable General Plan designation, the project is determined to be consistent with the AQMP.

The Ventura County 2020 population was estimated at 886,359 in the 2016 AQMP, with an estimated population of 905,574 by 2025 (Project buildout). This represents an approximate 2 percent growth from 2020 and an 8.4 percent increase from 2012 (baseline for AQMP of 835,400) (Appendix A). The Project involves the development of 139 single-family residential units. Using an average household size of 3.23 persons, the Project would add approximately 449 residents to the City of Moorpark. The addition of 449 new residents would increase Ventura County's population to 906,023 residents, which falls within the population growth forecast for the County. The Project would account for approximately 2.34 percent of Ventura County's forecast population growth through 2025. Therefore, the Project would not generate growth that would exceed the VCAPCD's projected population growth forecast and would be consistent with the growth assumptions in the VCAPCD AQMP.

Based on the discussion above, the Proposed Project will not result in an inconsistency with the AQMP. Accordingly, the Proposed Project would not conflict with or obstruct implementation of the applicable air quality plan.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant With Mitigation Incorporated. The Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in nonattainment under an applicable federal or State ambient air quality standard. As shown above in Table 3, the Proposed Project area is designated as a federal and/or State nonattainment area for O_3 and PM_{10}. To estimate if the Proposed Project may adversely affect the air quality in the region, the VCAPCD has prepared the VCAPCD Guidelines, which details that a proposed project's criteria pollutant emissions would be considered significant if it would generate daily operational emissions exceeding 25 pounds of reactive organic gas (ROG) or nitrogen oxide (NOx) . These thresholds are not intended to be applied to construction emissions because such emissions are temporary.

The VCAPCD has not established quantitative thresholds for particulate matter for either operation or construction. However, the VCAPCD indicates that a project that may generate fugitive dust emissions in such quantities as to cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or which may endanger the comfort, repose, health, or safety of any such person, or which may cause or have a natural tendency to cause injury or damage to business or property would have a significant air quality impact. This threshold is particularly applicable to the generation of fugitive dust during construction grading operations. To determine whether a regional air quality impact would occur, the project-generated emissions are compared to the VCAPCD's recommended thresholds for operational emissions.

Construction Emissions

Construction of the Proposed Project would create air emissions primarily from equipment exhaust and fugitive dust. The air emissions from the Proposed Project were analyzed using CalEEMod (Appendix A). Construction activities for the Proposed Project are expected to begin in Spring 2023 and continue until Fall 2024. The construction activities would include site preparation and grading of the Project site, building construction, paving, and application of architectural coatings.

Table 4 shows the maximum daily emissions that would be created from construction of the Proposed Project based on the default construction equipment assumptions provided by CalEEMod.

Table 4: Construction-Related Maximum Daily Criteria Pollutant Emissions

Construction Season	Pollutant Emissions (Pounds/Day)		
	ROG	NOx	PM_{10}
Unmitigated Construction Emissions			
2022 Maximum	13	124	6
2023 Maximum	38	26	1
2023 Maximum	38	25	1
Maximum Emissions	**38**	**124**	**6**
VCAPCD Thresholds	25	25	N/A

Construction Season	Pollutant Emissions (Pounds/Day)		
	ROG	NOx	PM_{10}
Threshold Exceeded	**Yes**	**Yes**	**No**
Mitigated Construction Emissions			
2022 Maximum	3	12	14
2023 Maximum	19	5	1
2023 Maximum	19	5	1
Maximum Emissions	**19**	**12**	**14**
VCAPCD Thresholds	25	25	N/A
Threshold Exceeded	**No**	**No**	**No**

Source: CalEEMod Version 2020.4.0.

As detailed in the VCAPCD Guidelines, the VCAPCD has not established quantitative thresholds for particulate matter (PM_{10} and $PM_{2.5}$); and the 25 pounds per day thresholds for ROG and NOx do not apply to construction emissions because the emissions are temporary. The VCAPCD indicates, however, that a project that may generate fugitive dust emissions in such quantities as to cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or which may endanger the comfort, repose, health, or safety of any such person, or which may cause or have a natural tendency to cause injury or damage to business or property would have a significant air quality impact.

In order to reduce air quality impacts from construction activities, the VCAPCD requires that all projects minimize construction emissions through adherence to the VCAPCD Rule 55 fugitive dust control measures and minimize ROG through adherence to the VCAPCD Rule 74.2 architectural coating volatile organic compound (VOC) content limits. Compliance with VCAPCD Rules 55 and 74.2 would ensure that construction emissions would not be generated in such quantities as to cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or that may endanger the comfort, repose, health, or safety of any such person or the public. As shown in Table 4, the Project would exceed ROG and NOx emissions while complying with VCAPCD regulations; therefore, Mitigation Measures (MM)-AQ-1 and MM-AQ-2 would reduce impacts to a less than significant level. Therefore, with mitigation, a less than significant air quality impact would occur from construction of the Proposed Project.

MM-AQ-1 The developer shall ensure that all onsite vehicles and equipment with horsepower greater than 50 shall meet, at a minimum, EPA Tier IV final engine certification requirements. If Tier IV final equipment is not available, the contractor may apply other technologies available for construction equipment such that it would achieve a reduction in NOx and particulate matter emissions comparable to that of Tier IV final construction equipment. Where alternatives to EPA Tier IV are utilized, the contractor shall be required to provide evidence that these alternative technologies would achieve comparable emissions reductions. Certifications or alternative reduction strategies shall be required prior to receiving a construction permit.

MM-AQ-2 The developer shall ensure that the architectural coating activities shall be phased such that they extend for a minimum of 150 days over the duration of the Project construction.

Operational Emissions

The Proposed Project consists of the development and operation of a residential development that may generate air emissions from mobile sources that are created from vehicular emissions, area sources, and energy usage. Table 5 shows the estimated worst-case summer or winter daily emissions from operation of the Proposed Project.

Table 5: Operations-Related Maximum Daily Criteria Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Area Sources[1]	7	<1	12	<1	<1
Energy Usage[2]	<1	1	<1	<1	<1
Mobile Sources[3]	4	4	36	8	2
Total Worst-Case Project Emissions[4]	**11**	**5**	**48**	**8**	**2**
VCAPCD Thresholds	**25**	**25**	**N/A[4]**	**N/A[4]**	**N/A[4]**
Exceed Thresholds?	No	No	**N/A**	**N/A**	**N/A**

Notes:
[1] Area sources consist of emissions from consumer products, architectural coatings, and landscape equipment.
[2] Energy usage consists of emissions from onsite natural gas usage.
[3] Mobile sources consist of emissions from vehicles and road dust.
[4] Based on worst-case between summer and winter mobile source emissions.
Source: CalEEMod Version 2020.4.0.

As shown in Table 5, operations-related emissions would not exceed the VCAPCD threshold for ROG or NOx. Therefore, a less than significant air quality impact would occur from operation of the Proposed Project. Accordingly, the Proposed Project would not result in a cumulative considerable net increase of any criteria pollutant.

c) *Would the project expose sensitive receptors to substantial pollutant concentrations?*

Less than Significant Impact. The Proposed Project has the potential to expose nearby sensitive receptors to criteria pollutants, including fugitive dust, toxic air contaminants (TACs), and San Joaquin Valley Fever. The nearest sensitive receptors are single-family homes adjacent to the northern and eastern sides of the Project site.

Fugitive Dust Emissions

Construction activities are a source of fugitive dust (i.e., PM_{10} and $PM_{2.5}$) emissions that may have a substantial, although temporary, impact on local air quality. In addition, fugitive dust may be a nuisance to those living and working in the immediate vicinity of the proposed construction activities. Fugitive dust emissions from the Proposed Project would be created during onsite earth-moving activities. The anticipated onsite worst-case PM_{10} emissions for each phase of construction have been provided above in Table 4. However, it should be noted that fugitive dust emissions vary substantially from day to day, depending on the level and type of activity and weather conditions. Additionally, most PM_{10} emissions from onsite construction activities are from inert silicates rather than complex organic particles released from combustion sources, which are more harmful to health.

Construction activities associated with the Proposed Project would be required to implement emissions control measures detailed in VCAPCD Rule 55 fugitive dust control measures. With implementation of VCAPCD's Rule 55, the Proposed Project would not exceed the VCAPCD standards for fugitive dust. Fugitive dust emissions would be less than significant for construction activities; no fugitive dust emissions are anticipated to occur from operational activities.

Construction-Related TAC Emissions

Construction of the Proposed Project would generate TAC emissions from the onsite operation of diesel-powered equipment in the form of diesel particulate matter. Given the relatively limited number of heavy-duty construction equipment, the varying distances to the nearby sensitive receptors that construction equipment would operate, and the short-term construction schedule, the Proposed Project would not result in a long-term (i.e., 70 years) substantial source of TAC emissions and corresponding individual cancer risk. In addition, CCR Title 13, Article 4.8, Chapter 9, Section 2449 regulates emissions from off-road diesel equipment in California. This regulation limits idling of equipment to no longer than five minutes and requires equipment operators to label each piece of equipment and provide annual reports to CARB of their fleet's usage and emissions. This regulation also requires systematic upgrading of the emission tier level of each fleet; currently, no commercial operator is allowed to purchase Tier 0 or Tier 1 equipment; by January 2023, no commercial operator is allowed to purchase Tier 2 equipment. In addition to the purchase restrictions, equipment operators need to meet fleet average emissions targets that become more stringent each year between years 2014 and 2023. Therefore, less than significant, short-term TAC impacts would occur during construction of the Proposed Project.

Operations-Related TAC Emissions

The Proposed Project consists of a residential development. Due to the nominal number of diesel truck trips anticipated to be generated by the ongoing operation of the Proposed Project, a less-than-significant TAC impact would occur during the ongoing operations of the Proposed Project; no mitigation would be required.

In addition, the Proposed Project would not site sensitive receptors within 500 feet of a freeway or an urban road with 100,000 vehicles/day or rural roads with 50,000 vehicles/day, and the Proposed Project would not create a human health hazard by exposing sensitive receptors to substantial

pollutant concentrations (Appendix A). Implementation of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than Significant Impact. According to the SCAQMD CEQA Air Quality Handbook, land uses typically producing objectionable odors include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The Proposed Project includes residential uses, which are not listed by the SCAQMD as a land use that produces objectionable odors. Other odors, including the smells of oil or diesel fuels, would be limited to Project construction. All off-road construction equipment would be covered by the CARB anti-idling rule (SS2449(d)(2)), which limits idling to five minutes. Project construction would be temporary and would not produce odors long-term. Therefore, a less-than-significant odor impact would occur; no mitigation would be required.

4.4 BIOLOGICAL RESOURCES

4.	BIOLOGICAL RESOURCES. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
(b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
(c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
(d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
(e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
(f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

4.4.1 Environmental Setting

Multiple biological resource surveys were conducted by both LDC Environmental and Envicom at the Project site; the first survey was conducted in 2009 and the subsequent surveys were conducted in June and July 2021 (Appendix B). The surveys were performed by slowly walking transects across the Study Area and investigating particular areas that support the habitat requirements specific to these species. Additionally, a Tree Report was prepared by L. Newman Design Group and is provided as Appendix C. A Jurisdictional Delineation Report was also prepared for the Project by Envicom Corporation in August 2021, to determine areas under jurisdiction of the Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW), and Army Corps of Engineers (Appendix D). A focused Coastal California Gnatcatcher survey was conducted by TW Biological Services in June 2022 to detect the absence or presence of the gnatcatcher onsite (Appendix E).

4.4.2 Impact Analysis

a) *Would the project have a substantial adverse effect, either directly or through habitat modification, on any species identified as candidate, sensitive or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

Less Than Significant With Mitigation Incorporated. Database searches resulted in a list of nine federally and/or State-listed threatened, endangered, or otherwise special status plant species documented to historically occur within the vicinity of the Project site. Three species, White rabbit-tobacco, Ojai Navarretia, and Gerry's curly-leaved monardella, listed as Rare, Threatened, or Endangered by the State or Federal Governments were found to potentially occur within the Project site. White rabbit-tobacco is growing in the northwestern corner of the Study Area, approximately 300 feet outside the anticipated development footprint. No other special-status plant species were found within the Study Area. As previously discussed in the potential for occurrence analysis for special-status plant species, many of the special-status species known to occur in the region are presumed to be absent from the site due to lack of suitable habitat or confirmation via appropriately timed springtime rare plant surveys.

Database searches resulted in a list of 10 federally and/or State-listed threatened, endangered, California State Species of Special Concern (SSC), or otherwise special status wildlife species that have the potential to occur within the Project site (Appendix B). These wildlife species include:

- Western spadefoot
- California glossy snake
- Coast horned lizard
- Coast patch-nosed snake
- Coastal whiptail
- Coastal California Gnatcatcher
- Golden eagle
- White-tailed kite
- Pallid bat

- Western mastiff bat

These species may occur on the Project site as transients that venture onto the property to forage. The site contains potentially suitable habitat for the coastal California Gnatcatcher, and the California Natural Diversity Database (CNDDB) reports several observations within close proximity of the study area which consists of the Project boundary and areas outside the property where grading activities will occur. A focused survey for coastal whiptail and coast horned lizard was performed on July 14, 2021. Also, due to the presence of suitable habitat, the focused survey was expanded to include the California glossy snake and the coast patch-nosed snake. This survey focused on recording the presence and absence of these species as determined by visual observation and potential burrows as well as the availability of the food and microhabitat requirements of these four special-status species. During the survey, habitat and food resources required by these species were documented; however, none of the special-status species were observed.

A focused Coastal California Gnatcatcher survey was conducted between April 3 and May 23, 2022. The survey consisted of six presence/absence surveys within suitable habitat on the property. Areas of coastal sage scrub vegetation were visited during each survey, and a tape of recorded vocalizations was used, as necessary, to elicit responses from the species. No Coastal California Gnatcatchers were detected onsite (Appendix E).

Many of the special-status wildlife species that may potentially occur at the site (e.g., non-nesting birds and foraging bats) are capable of escaping harm during Project development, while others are vulnerable to direct impacts, including injury and mortality. Special-status species that could be directly impacted include potentially occurring terrestrial animals, including the California glossy snake (*Arizona elegans occidentalis*; SSC), coast horned lizard (*Phrynosoma blainvillii*; SSC), coast patch-nosed snake (*Salvadora hexalepis virgultea*; SSC), coastal whiptail (*Aspidoscelis tigris stejnegeri*; SSC), burrowing western spadefoot (*Spea hammondii*; SSC) species, and the two bat species, pallid bat (*Antrozous pallidus*; SSC), and western mastiff bat (*Eumops perotis californicus*; SSC), which could roost in trees at the site. Although there is potential for several individuals of these species to be impacted, if present, the habitat loss associated with the Project would not significantly impact a population of these species, given the acreage of habitat that would be affected and the amount of remaining suitable habitat in the surrounding area.

To minimize potential impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA), construction activities should take place outside nesting season (i.e., February 1 to August 31) to the greatest extent practicable. MM-BIO-1 would reduce impacts to nesting birds to a less-than-significant level. In addition, to avoid impacts to general wildlife and their associated habitats, MM BIO-2 through MM BIO-6 would be implemented to reduce impacts to a less than significant level.

MM-BIO-1 If it is feasible, the clearing of vegetation and construction activities will be conducted between August 31st and February 1st, which is outside of the typical breeding/fledging season for the sensitive bird species and migratory birds that may nest on or in the immediate vicinity of the Project site.

If clearing of vegetation and construction activities within the selected projects are planned between February 1st and August 31st, then breeding bird surveys will be conducted by qualified biologists at a maximum of two (2) weeks prior to

the commencement of activities. Nests and birds exhibiting breeding behavior will be identified within 500 feet of the area to be impacted and efforts will be made (including the creation of appropriate buffers around the nests and areas used by breeding birds, rerouting vehicular traffic, limiting the number of vehicles, the use of non-mechanized tools, etc.) to limit disturbances to the nests. A qualified biologist will monitor the identified nests and birds exhibiting breeding behavior during the duration of the work or until successful fledging occurs, whichever comes first. If the monitor notes that identified birds and nests are being negatively affected by the construction activity, then the buffers will be increased to an appropriate distance to ensure fledging is successful. After the completion of the construction activities or the completion of onsite breeding activities, a letter report summarizing the work and its effect on the breeding birds will be produced and submitted to the CDFW.

MM-BIO-2 Prior to the commencement of ground disturbance or vegetation removal activities, including but not limited to grubbing, grading, and fuel modification, two preconstruction surveys for special-status wildlife species, including coast horned lizard, coastal western whiptail, California glossy snake (Arizona elegans occidentalis), Coast patch-nosed snake, and western spadefoot, by a qualified biologist(s) to determine presence/absence of these species at the site. The first survey shall be conducted within 14 days and the second survey shall be conducted within three days of commencement of ground or vegetation disturbing activities. These surveys should coincide with weather conditions that are conducive for each species; sunny late-spring or summer days with above-average temperatures for, coast horned lizard, coastal western whiptail California glossy snake and the Coast patchnosed snake spadefoot. If the any of the four species are found to occur onsite during the additional surveys, then Mitigation Measure BIO-3 shall be instituted.

MM-BIO-3 If any individual of the four species are found during the survey, then a salvage program will be initiated for the site. The salvage program will consist of the capture of individuals from the area to be impacted by the Project implementation and their relocation to a predetermined offsite location, which has CDFW's approval, with appropriate habitat that will not be impacted by the Project activities or other construction activities in the vicinity. Time allowed for the salvage program will be determined by the size of the Project site and the abundance of the species that are found onsite. The salvage program will continue with the monitoring of the initial ground disturbance construction activities. The salvage program will conclude when all of the ground within the grading limits has been affected by construction activities. After the completion of the salvage program a letter report summarizing the surveys and salvage opportunities will be prepared and submitted to the CDFW.

MM-BIO-4 Prior to the initiation of any grading and during initial grubbing and topsoil salvage, biologists shall attempt to capture and relocate all reptiles within the impact area. Other ground dwelling wildlife, i.e. amphibians and mammals, shall be relocated if the opportunity presents itself. Wildlife shall be relocated to

preserved areas of the site when appropriate or to nearby (in the same watershed) permanent open space areas. It is assumed that a two-person team can adequately salvage the reptiles on the entire site in half a day.

MM-BIO-5 To reduce impacts resulting from construction vehicle traffic, routes and trips shall be restricted to a minimum number. Earth-moving equipment shall be confined to the narrowest possible corridor during construction. Earth-moving and other construction equipment shall be confined to the Project footprint and shall not operate or maneuver in areas outside the Project footprint. The entire edge of grading shall be fenced with brightly colored "snow fence" or similar material. This shall serve to alert equipment operators of the grading limits. All vehicle access shall be via areas within the impact zone. No temporary access roads shall be made through portions of the site that shall be preserved as natural open space.

MM-BIO-6 The construction of litter barriers (i.e.: walls or small mesh-chain link fence) around the Project site shall be accomplished in order to limit the progression of litter into the open spaces of the Project area or surrounding areas. Continuous deflective separation units shall be installed in the storm drain inlets to remove gross pollutants from storm water.

b) *Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

Less Than Significant With Mitigation Incorporated. Coastal Sage Scrub (CSS) is found on 5.6 acres of the Project site, and 2.11 acres would be impacted through Project development. Mule fat scrub is present on 0.15 acre of the Project with within the northern and southern portion of the channelized drainage, and all 0.15 acre would be impacted. Southern alluvial fan scrub is present on 0.26 acres of the Project site, confined to the northwest corner of the wash in the unnamed blueline stream; however, none of this habitat would be impacted. Grading for the Proposed Project would result in the removal of approximately 0.71 acre of California Brittle Bush Scrub Alliance, which is considered a sensitive natural community by CDFW. Also, fuel modification for the Proposed Project would potentially impact approximately 0.03 acre of the California Brittle Bush Scrub Alliance, depending on site-specific fuel modification requirements, which are to the discretion of the Ventura County Fire Department (VCFD). Grading of the California Brittle Bush Scrub Alliance would be a significant, but mitigable impact. With implementation of MM BIO-7 through MM BIO-11, impacts to riparian habitat or sensitive natural communities would occur.

MM-BIO-7 In order for any remaining unmodified natural open space within or adjacent to the Project site to continue to function as a natural part of the regional ecosystem to the greatest extent possible, the applicant shall develop a management plan for the protection and maintenance of remaining onsite open space areas. The plan shall be incorporated into the CC & R's for the tract and shall contain at least the following elements:

- Goals and Objectives
- Permitted and Prohibited Uses

- Exotic Plant and Animal Management
- Litter Management
- Responsible Parties
- Funding
- Enforcement and Penalties
- Trespass Remediation
- Contingencies

The Project's Homeowners Association is expected to be the long-term owner of the remaining unmodified natural open space and would be responsible for any necessary maintenance.

MM-BIO-8 To reduce coastal sage scrub loss resulting from fuel modification, a fuel modification zone shall be developed to restrict brush clearance to the minimum distance specified by the Ventura County Fire Department. Clearance distances shall take into account the presence of any block walls used between developable areas and the adjacent native habitat areas.

MM-BIO-9 Any coastal sage scrub that is remaining after full Project development will be preserved and enhanced. Any natural open space areas (excluding areas of mule fat scrub and southern alluvial fan scrub) and not affected by fuel modification requirements will be used for the creation of coastal sage scrub. Details of the proposed restoration and creation efforts and success criteria shall be described in a Mitigation and Monitoring Plan that is to be approved by CDFW prior to implementation.

MM-BIO-10 Grading and fuel modification impacts to the California brittle bush scrub plant community shall be compensated by restoration of in-kind habitat in an area(s) to be preserved as permanent open space. To the extent possible, this shall be accomplished by the on-site restoration of disturbed habitats (e.g., non-native grassland) in-kind habitats. Restoration should be implemented only where suitable conditions exist to support viable in-kind habitats. If on-site restoration is not possible, compensation for the loss or modification of the California brittle bush scrub communities may be accomplished by off-site restoration of in-kind habitat or by a contribution to an in-lieu fee program approved by the City of Moorpark.

A Mitigation and Monitoring Plan shall be developed by a qualified biologist, restoration ecologist, or resource specialist, and approved by the City of Moorpark prior to issuance of the grading permit for the Project. In broad terms, the plan shall at a minimum include:

- Description of the project/impact and mitigation sites
- Specific objectives
- Success criteria

- Plant palettes
- Implementation plan
- Maintenance activities
- Monitoring plan

Contingency measures/adaptive management Success criteria shall at a minimum be evaluated based on percent cover of planted native species, as well as control of invasive plant species within the restoration area. The performance standards for the Mitigation and Monitoring Plan shall be at a minimum the following:

- Within five years after introducing the native plants to the mitigation site, the acreage of restored California brittle bush scrub shall be no less than the acreage lost to project construction.
- Within five years after introducing the native plants to the mitigation site, the absolute cover of native species shall be no less than 80% within the restoration area.
- Non-native species in the treated area shall be less than 15% relative cover by the end of the third year of treatment and less than 5% relative cover by the end of the fifth year of treatment; and,
- Restoration will be considered successful after the success criteria have been met for a period of at least 2 years without any maintenance or remediation activities other than invasive species control.

The restoration project shall be initiated prior to development of the Project, and shall be implemented over a five-year period. The restoration project shall incorporate an iterative process of annual monitoring and evaluation of progress, and allow for adjustments to the restoration plan, as necessary, to achieve desired outcomes and meet success criteria. Annual reports discussing the implementation, monitoring, and management of the restoration project shall be submitted to the City of Moorpark. Five years after Project start, a final report shall be submitted to the City, which shall at a minimum discuss the implementation, monitoring, and management of the restoration project over the five-year period, and indicate whether the restoration project has been successful based on established success criteria. The annual reports and the final report shall include as-built plans submitted as an appendix to the report. The project shall be extended if success criteria have not been met at the end of the five-year period to the satisfaction of the City.

If impacts to the California brittle bush scrub are to be mitigated by a contribution of an in-lieu fee, the applicant shall provide evidence of payment of the in-lieu fee prior to issuance of the grading permit. The fee shall be based on the cost per

acre to restore or create in-kind habitat and the acreage of the plant community impacted. In-lieu fees shall be used for the restoration of in-kind habitat.

MM-BIO-11 To eliminate potential unapproved or offsite grading incidents earth-moving equipment shall be confined to within the approved limits of grading during construction. The limits of grading shall be fenced so that construction equipment does not impact areas outside the approved limits of grading.

c) *Would the project have a substantial adverse effect on state or federally protected wetlands (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

Less Than Significant With Mitigation Incorporated. Jurisdictional features are found in the northwest corner of the site, along with a creek running north to south in the middle of the site. These jurisdictional features are located within CDFW and RWQCB boundaries; however, no impacts are anticipated to occur at the northwestern area. The limits of grading are inclusive of all proposed ground and vegetation disturbance areas associated with development of the Project, as well as the fuel modification impacts that are anticipated to remain within the proposed grading footprint. A map of impacts to jurisdictional features are provided in Appendix D.

Approximately 0.24 acre of the 0.28 acre of Mulefat scrub comprising the RWQCB Waters of the State/CDFW Streambed within the ephemeral drainage are proposed to be permanently impacted by development. The 0.24 acre of RWQCB Waters of the State/CDFW Streambed that would be removed by Project development is located within the ephemeral drainage and primarily comprises Mulefat scrub. Potential fuel modification clearing activities will occur within the limits of grading; therefore, no additional impacts to jurisdictional habitat from fuel modification activities are anticipated. The proposed limits of grading and anticipated fuel modification activities based on the standard Ventura County requirements of at least 100 feet from structures are shown overlaid in the report (Appendix D). To reduce impacts on wetlands, MM-BIO-12 and MM-BIO-13 would be implemented in order to reduce impacts to a level less than significant.

MM-BIO-12 Prior to issuance of the grading permit, the Applicant shall prepare and submit a Streambed Alteration Notification package to the CDFW for alterations to CDFW jurisdictional streambed and habitat. A Streambed Alteration Agreement shall be entered into with the CDFW under Section 1602 of the California Fish and Game Code, and the Applicant shall comply with the associated conditions. Prior to issuance of the grading permit, the Applicant shall also consult with RWQCB and United States Army Corps of Engineers (USACE) to determine if permits are required from those agencies. If required, the appropriate permits shall be obtained from the RWQCB and/or USACE, and the Applicant shall comply the permit conditions. The Applicant shall provide evidence to City of Moorpark Planning Division that the required permits have been obtained prior to issuance of a grading permit. Mitigation for unavoidable impacts to jurisdictional waters and habitat shall be provided through implementation of the Habitat Mitigation and Monitoring Plan as required by MM-BIO-13.

MM-BIO-13 A habitat mitigation and monitoring plan shall be developed prior to issuance of any building or grading permit. The plan shall mitigate for permanent grading impacts to 0.24 acre (1,155 linear feet) of RWQCB waters of the State/CDFW streambed at a 2:1 ratio. The Habitat Mitigation and Monitoring Plan shall mitigate for the permanent impacts to jurisdictional areas via an acceptable mitigation approach that involves one or a combination of the onsite or offsite enhancement of degraded in- kind habitats subject to the approval of the City of Moorpark, CDFW, and RWQCB (if applicable). The preferred mitigation approach is enhancement of on-site or off-site habitats within the ephemeral drainage, including plantings of appropriate native species and weed removals. The final Habitat Mitigation and Monitoring Plan shall be developed by a qualified biologist, restoration ecologist or resource specialist and submitted to and approved by the City of Moorpark, CDFW, and RWQCB prior to issuance of a grading permit for the Project. In broad terms, this Program shall at a minimum include:

- Description of the Project/impact and mitigation sites;
- Specific objectives;
- Success criteria;
- Plant palette;
- Implementation plan;
- Maintenance activities;
- Monitoring plan; and
- Contingency measures.

Success criteria shall at a minimum be evaluated based on appropriate survival rates and percent cover of planted native species, which shall be determined by examining reference sites, as well as eradication and control of invasive species within the restoration or enhancement area.

The target species and native plant palette, as well as the specific methods for evaluating whether the Project has been successful at meeting the above-mentioned success criteria shall be determined by the qualified biologist, restoration ecologist, or resource specialist and included in the mitigation plan.

The mitigation project shall be initiated prior to development of the Project. The mitigation project shall be implemented over a five-year period and shall incorporate an iterative process of annual monitoring and evaluation of progress and allow for adjustments to the program, as necessary, to achieve desired outcomes and meet success criteria. Annual reports discussing the implementation, monitoring, and management of the mitigation project shall be submitted to the City of Moorpark, RWQCB, and CDFW. Five years after Project start, a final report shall be submitted to the City of Moorpark, RWQCB, and CDFW, which shall at a minimum discuss the implementation, monitoring, and management of the mitigation project over the five-year period and indicate

whether the mitigation project has been successful based on established success criteria. The annual reports and the final report shall include as-built plans submitted as an appendix to the report. Restoration or enhancement will be considered successful after the success criteria have been met for a period of at least 2 years without any maintenance or remediation activities other than invasive species control. The mitigation project shall be extended if success criteria have not been met at the end of the five-year period to the satisfaction of the City of Moorpark, RWQCB, and CDFW.

d) *Would the project Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Less Than Significant With Mitigation Incorporated. The Proposed Project area has been drastically altered due to the establishment of agricultural businesses and residential communities that have fragmented the landscape. This has created a disjunction between the undeveloped portions of Oak Ridge in the north and the Las Posas Hills in the south; the largest remaining open spaces in the immediate area. The wash of the unnamed blueline stream that runs through the northwest corner of the Project site could potentially be used by wildlife, but the stream's southern terminus (where it flows into a concrete channel) is just south of the site and does not connect to an open space area (Appendix B). The Project site is not located within the Ventura County's Habitat Connectivity and Wildlife Corridors overlay zones (County 2019). While there are no designated wildlife corridors or wildlife nursery sites located within the vicinity of the Project site, given the rural nature of the area, there may be potential impacts to wildlife, such as nesting birds protected under the MBTA. Therefore, the Proposed Project will implement MM-BIO-1 to address impacts should construction activities take place during the nesting season. Impacts would be less than significant with mitigation incorporated.

e) *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

Less than Significant Impact. According to the City's Municipal Code Chapter 12.12 Historic Trees, Native Oak Trees, and Mature Trees, tree removal permits are required to remove, cut down, or destroy a native oak tree, historic tree, or other mature tree. Prior to issuance of a tree removal permit, a site inspection and tree appraisal must be performed (City 2022). In June 2021, Certified Arborist John Oblinger of L. Newman Design Group produced a Tree Report that details the trees on and around the Project site, appraises the value of trees on site, and offers recommendations to limit Project-related impacts (Appendix C).

A total of 188 mature trees are found onsite, with 142 trees being proposed for removal. The site includes 200 to 300 young multiple-trunk trees, with most trees on site showing damage from a fire within the past 10 years. Three oak trees were found on the site, and only one is proposed to be removed. Species proposed for removal include: Carrotwood, Blue Gum, Ash tree, Silk Oak, Canary Island Pine, Aleppo Pine, Stone Pine, Coast Live Oak, Elderberry, Peruvian Pepper Tree, Queen Palm, and Mexican Fan Palm. The total appraised values of all trees recorded in the updated tree inventory and proposed to be removed during construction are provided in Appendix C. As part of the City's

condition of approval, the City will require that the value of the trees to be removed will be used to upsize and increase landscaping at the Project site.

Through obtaining tree removal permits required from the City, the Project will comply with Chapter 12.12 of the City's Municipal Code – Impacts to Historic Trees, Native Oak Trees, and Mature Trees. The City has no other local policies or ordinances protecting biological resources. With compliance with the City's Municipal Code, including the replacement of trees onsite, impacts would be less than significant.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservancy Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The Project site is not located in an area subject to an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved conservation plans. Therefore, no impact would occur.

4.5 CULTURAL RESOURCES

5.	CULTURAL RESOURCES. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☒	☐
(b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
(c)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

4.5.1 Environmental Setting

A Cultural Resources Phase I Assessment Report was prepared by Envicom Corporation in July 2021; an addendum was prepared in February 2022. This investigation covered 67.96 acres on APNs 5110-190-285 and 5110-190-305. This report included the results of the records search conducted by the South Coast Central Information Center for archaeological resources, and Natural History Museum of Los Angeles County for paleontological resources. The complete report and addendum are provided as Appendix F.

4.5.2 Impact Analysis

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Less than Significant Impact. As a result of the records search review and archival research, no previously recorded resources or any other listed or potentially significant properties are located within the Project site (Appendix F). No historic resources, points of historical interest, historical landmarks, or listings on the California Register of Historical Resources or National Register of Historic

Places were identified within the Project site or within a 0.5-mile radius of the Project site. Three foundations from previous modern buildings are located onsite, along with a tennis court. These foundations are not considered culturally significant. Impacts would be less than significant in relation to historic resources.

b) *Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?*

Less Than Significant With Mitigation Incorporated. The records search review and archival research found that no previously recorded resources or any other listed or potentially significant properties are located within the Project site. However, there is potential for discovery of unidentified resources during grading or construction activities. Work would cease in the area of the find until a qualified archaeologist has evaluated the find in accordance with federal, State, and local guidelines, including those set forth in PRC Section 21083.2. The required compliance would ensure any found deposits are treated in accordance with federal, State, and local guidelines, including those set forth in PRC Section 21083.2. From the records search conducted, a previously identified site within a half mile discovered prehistoric lithic scatter was recorded as part of the excavation work onsite. It is recommended from the Geotechnical Report that alluvial sediments are removed up to 70 feet below the ground surface, and during this removal there is a chance of discovery for these alluvial deposits. In the event of discovery disruption of the site could result in significant impacts without mitigation. With implementation of MM- CUL-1, impacts would be less than significant.

MM-CUL-1 A qualified archaeological monitor will periodically spot-check monitor Project ground disturbance activities to ensure that sensitive archaeological artifacts, features, or deposits are not being encountered. Spot-check monitoring will take place three (3) times a week for the duration of the Project grading and subsurface disturbance within native soils. Daily monitoring reports will be generated and submitted to the City at the end of ground disturbance as proof of compliance. If prehistoric or older historic (pre-1950s) archaeological material or features are discovered, either by the archaeological monitor or by the construction team when the monitor is not present, then a project "discovery" protocol will be followed. The discovery of material will also trigger the increasing of monitoring to full-time until no more cultural material is being encountered by the construction team, at which point spot-check monitoring will resume.

In addition, the applicant would comply with City established standard condition of approval (CA) under its police power and land use authority to address any inadvertent discovery of archaeological resources, which would be imposed on the Project as part of its land use approvals. The standard condition of approval reads:

> *CA 1: If any archeological or historical finds are uncovered during grading or excavation operations, all grading or excavation shall immediately cease in the immediate area and the find must be left untouched. The applicant, in consultation with the project paleontologist or archeologist, shall assure the preservation of the site and immediately contact the Community Development Director by phone, in writing by email or hand delivered correspondence informing the Director of the find. In the absence of the Director, ·the applicant shall so inform the City Manager. The*

applicant shall be required to obtain the services of a qualified paleontologist or archeologist, whichever is appropriate to recommend disposition of the site. The paleontologist or archeologist selected must be approved in writing by the Community Development Director. The applicant shall pay for all costs associated with the investigation and disposition of the find.

With implementation of the City condition of approval and mitigation measure noted above, less-than-significant impacts would occur to archaeological resources.

c) Would the project disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact. According to the Cultural Resources Phase I Assessment, no traditional burial sites have been previously recorded on or within 0.5 mile of the Project site (Appendix F). Thus, the disturbance of human remains is not expected in conjunction with Project grading and excavation activities. While no formal cemeteries, other places of human internment, or burial grounds sites are known to occur within the immediate Project site area, human remains could possibly be encountered during construction. Should human remains be encountered unexpectedly during grading or construction activities, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to the origin and disposition pursuant to PRC Section 5097.98. No further excavation or disturbance of the Project site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined, within two working days of notification of the discovery, if the remains are human. In the event human remains are discovered, a less-than-significant impact would occur.

4.6 ENERGY

6.	ENERGY Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
(b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

4.6.1 Environmental Setting

Energy conservation management in the State was initiated by the 1974 Warren-Alquist State Energy Resources Conservation and Development Act that created the California Energy Resource Conservation and Development Commission (currently named California Energy Commission [CEC]), which was originally tasked with certifying new electric generating plants based on the need for the plant and the suitability of the site of the plant. In 1976 the Warren-Alquist Act was expanded to include new restrictions on nuclear generating plants that effectively resulted in a moratorium of any new nuclear generating plants in the State. The following lists specific regulations adopted by the State in order to reduce the consumption of energy.

- CCR Title 20 – Regulations for appliance efficiency standards
- CCR Title 24 Part 6 – Energy efficiency standards for residential and nonresidential buildings
- CCR Title 24 Part 11 – California Green Building Standards Code (CalGreen)
- Senate Bill (SB) 100 – Regulations for retail sales of electricity
- Executive Order N-79-20 – Requires all new passenger vehicles and trucks to be zero-emission by the year 2035
- AB 1109 – Requires the use of high-efficiency lighting in new structures

4.6.2 Impact Analysis

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than Significant Impact.

Construction Energy

The Project would consume energy resources during construction in three general forms:

1. Petroleum-based fuels used to power off-road construction vehicles and equipment on the Project site, construction worker travel to and from the Project site, as well as delivery and haul truck trips (e.g., hauling demolition material to offsite reuse and disposal facilities)

2. Electricity associated with the conveyance of water that would be used during Project construction for dust control (supply and conveyance) and electricity to power any necessary lighting during construction, electronic equipment, or other construction activities necessitating electrical power

3. Energy used in the production of construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass

Electricity, a consumptive utility, is a human-made resource. The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources, into energy. The delivery of electricity involves a number of system components, including substations and transformers that lower transmission line power (voltage) to a level appropriate for onsite distribution and use. The electricity generated is distributed through a network of transmission and distribution lines commonly called a power grid. Conveyance of electricity through transmission lines is typically responsive to market demands. In 2020, SCE, which provides electricity to the Project vicinity, provided 83,533 gigawatt-hours per year of electricity (CEC 2020).

Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas consumed in California is obtained from naturally occurring reservoirs, mainly located outside the State, and delivered through high-pressure transmission pipelines. The natural gas transportation system is a nationwide network; and, therefore, resource availability is typically not an issue. Natural gas satisfies almost one-third of the State's total energy

requirements and is used in electricity generation, space heating, cooking, water heating, industrial processes, and as a transportation fuel. Natural gas is measured in terms of cubic feet. In 2020, Ventura County consumed 180.18 Million Therms of natural gas.

Petroleum-based fuels currently account for a majority of the California's transportation energy sources and primarily consist of diesel and gasoline types of fuels. However, the State has been working on developing strategies to reduce petroleum use. Over the last decade California has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHG emissions from the transportation sector, and reduce Vehicle Miles Traveled (VMT). Accordingly, petroleum-based fuel consumption in California has declined. According to the CEC, in 2017, 338 million gallons of gasoline and 36 million gallons of diesel was sold in Ventura County (CEC 2018).

Development of the Project would not result in the need to manufacture construction materials or create new building material facilities specifically to supply the Project. It is difficult to measure the energy used in the production of construction materials such as asphalt, steel, and concrete because it will be provided by the contractors; therefore, it is reasonable to assume that the production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest of minimizing the cost of doing business. Substantial reductions in energy usage may also be accomplished by selecting building materials composed of recycled materials that require less energy to produce.

Construction activities associated with the Project would be required to adhere to all State and County regulations for off-road equipment and on-road trucks, which provide minimum fuel efficiency standards. As such, construction activities for the Proposed Project would not result in the wasteful, inefficient, and unnecessary consumption of energy resources. Impacts regarding construction energy would be less than significant.

Operational Energy

The ongoing operation of the Project would require the use of energy resources for multiple purposes including, but not limited to, heating, ventilation, and air conditioning (HVAC), refrigeration, lighting, appliances, and electronics. Energy would also be consumed during operations related to water usage, solid waste disposal, landscape equipment, and vehicle trips.

The Project will be required to meet the 2019 Title 24, Part 6 building energy efficiency standards that have been developed to meet the State's goal of zero-net-energy use for new homes. The zero net energy use will be achieved through a variety of measures to make new homes more energy efficient and by also requiring installation of photovoltaic (PV) systems of adequate size to generate enough electricity to meet the zero-net energy use standard. According to the Project applicant, the Project will include 12 PV panels that are each rated at 300 watts and would result in a 3.6 Kilowatts system. It is anticipated the Project will be designed and built to meet the required energy efficiency standards and requirements, as noted in the 2019 Residential Compliance Manual under Title 24, and existing and planned energy capacity and suppliers will be sufficient to support the Project's energy demand. Thus, impacts with regard to the operational use of the Project would be less than significant; no mitigation measures would be required.

b) Would the project Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Less than Significant Impact. The Proposed Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. The applicable plan for the Proposed Project is the *City of Moorpark General Plan Open Space, Conservation and Recreation Elements,* adopted August 4, 1986, which provides policies that promote renewable energy and energy efficiency. The Proposed Project would be required to meet the Title 24, Part 6 building energy efficiency requirements that require incorporation of several energy efficiency measures into the design of the proposed structures, including installation of rooftop PV systems, use of light-emitting diode (LED) lighting, enhanced insulation and windows, and high-efficiency ventilation and appliances. In addition, the Proposed Project would be required to meet the Part 11 of CalGreen, which provides minimum requirements for bicycle parking, carpool/vanpool/electric vehicle (EV) parking spaces, use of water-efficient plumbing and landscaping fixtures, recycling, and use of recycled materials in building products. Specific CalGreen requirements that are applicable to the Proposed Project include requiring that a minimum of 65 percent of construction waste be diverted from landfills, providing bicycle parking spaces, and providing EV charging stations. Through implementation of the above programs, regulations, and policies, the Proposed Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Impacts would be less than significant.

4.7 GEOLOGY AND SOILS

7.	GEOLOGY AND SOILS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
	ii) Strong seismic ground shaking?	☐	☐	☒	☐
	iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
	iv) Landslides?	☐	☐	☒	☐
(b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
(c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☒	☐	☐
(d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☒	☐	☐

7.	GEOLOGY AND SOILS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
(f)	Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☒	☐	☐

4.7.1 Environmental Setting

In June 2016, RMA GeoScience prepared a Geotechnical Investigation to investigate geologic and geotechnical conditions onsite. Additional updates based on peer review of the Geotechnical Investigation were provided in January 2021 (Appendix G).

4.7.2 Impact Analysis

a) *i) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*

Less Than Significant Impact. The City is located in a region with several active faults and, therefore, is subject to the risk and hazards associated with earthquakes. Local faults are found to the north and south of the Project site. The Project site is not located within an Alquist-Priolo Fault Zone but is approximately 2.5 miles southeast of the San Gorgonio Pass fault (Appendix G). The Project would conform to current seismic safety standards, and ground disturbance required for the Project would not reach depths that could exacerbate the risk of rupturing a known earthquake fault. Therefore, impacts would be less than significant

ii)Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

Less Than Significant Impact. The Project site is subject to potential ground shaking due to faults in the region, however, local faults near the Project site were found to pose no ground rupture hazard (Appendix G). Construction activities occurring on site will include demolition of existing foundations, tree removal and preservation, grading, and excavation throughout the site; however, ground disturbance required for the Project would not reach depths that could exacerbate the risk of ground shaking. Additionally, the Project would be designed and constructed in accordance with State and local building codes to reduce the potential for exposure of people or structures to seismic risks to the maximum extent possible. The Project would be required to comply with the seismic safety requirements in the International Building Code, the California Building Code, and the City's Municipal Code. Compliance with such requirements would reduce seismic ground shaking impacts to the

maximum extent practicable with current engineering practices. Therefore, implementation of the Project would result in a less-than-significant impact associated with strong seismic ground shaking.

iii)Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Less Than Significant With Mitigation Incorporated. The potential for liquefaction is dependent upon the occurrence of a significant earthquake; sufficient groundwater to cause high pore pressures; and on the grain, size, relative density, and confining pressures of the soil at a given site. As part of the Geotechnical Report, RMA GeoScience investigated liquefaction potential at the Project site. Results showed that the materials below the assumed design groundwater elevation have very low risk of potential to liquefy during a design-level earthquake. The potential settlement due to an earthquake on site is anticipated to be around 1.75 inches (Appendix G). To address the possible impacts of liquefaction, MM-GEO-1 will be implemented as recommended in the Geotechnical Report. The mitigation measure recommends an update of the seismic settlement analysis once a 40-scale grading plan is available.

MM-GEO-1: Fill soils shall be compacted to a minimum of 90 percent relative compaction. In area of fill exceeding 40 feet in vertical thickness, all tests achieve a minimum relative compaction of 95 percent. An updated seismic settlement analyses shall be completed once the 40-scale grading plan is available. Removal of the upper 10 feet of Alluvium shall occur prior to placement or fill regardless if any overlying artificial fill is planned within areas of planned structures.

iv)Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

Less Than Significant Impact. The site is not located in a seismic hazard zone of required investigation for earthquake-induced landslides. No potential for landslides were encountered during the field investigation and no evidence of landslides were seen on historic aerial photographs (Appendix G). The closest area prone to landslide is the Simi Valley West landslide zone approximately 0.5 mile north of the Project site (DOC 2022b). The majority of the site is generally not susceptible to landslides due its low gradient. Soils along and adjacent to some drainage courses have been eroded by water and there have been some failures of channel banks. The California Division of Mines and Geology 2000 Seismic Hazard Zones Map does show two relatively small potential Earthquake – Induced Landslide Areas on site within the center narrow most drainage area along the steeper sides of the drainage. These areas are slated to be graded such that the drainage side walls will be removed by cut and the drainage area filled creating a relatively flat surface eliminating the existing steep east- and west-facing slopes. Required grading would remove a portion of the existing channels and would not exacerbate risk of landslide at the Project site. Impacts would be less than significant.

b) *Would the project result in substantial soil erosion or the loss of topsoil?*

Less Than Significant Impact. Construction activities associated with the Project include demolition, grading, and excavation throughout the site. Considering the Project related soil disturbance, and the development would introduce new impervious surface to the Project site in excess of 1 acre, a Stormwater Pollution Prevention Plan (SWPPP) will be written and implemented. The SWPPP will

identify BMPs to further reduce soil erosion during construction. Any BMPs employed at the Project site would be consistent with the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures (County 2011). The identification and implementation of construction BMPs would include but are not limited to watering soil, covering soil in inactive areas, and placing gravel bags and fiber rolls to minimize the potential impacts. Therefore, implementation of the Project would result in less than significant impacts associated with soil erosion or the loss of topsoil.

c) *Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*

Less Than Significant With Mitigation Incorporated. The Project site is not within an active fault zone. According to the Geotechnical Investigation (Appendix G), liquefaction could occur onsite. To mitigate potential impacts from geologic instability on site, the Project would implement MM-GEO-1 to minimize impacts related to liquefaction. With implementation of these mitigation measures, impacts would be less than significant.

d) *Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?*

Less Than Significant With Mitigation Incorporated. Expansive soils are certain types of clay soils that expand when saturated and shrink when dried. The Project site is underlain by alluvium, Saugus formation Bedrock, and undocumented artificial fill. Alluvium consists of predominantly fine- to coarse-grained silty sand with infrequent lenses and strata of gravelly sand, clayey sand, silt, and clay. Saugus formation bedrock contains gravelly sand to sandy silt with minor clay in various levels. The undocumented artificial fill encompasses most of the site and consists of tan to brown sand in a dry and medium dense condition. Further expansion index tests were conducted, with results showing the majority of the materials having medium expansion potential (Appendix G). The medium expansion potential does have the potential to create significant impacts, however with incorporation of MM-GEO-1, impacts would be less than significant.

e) *Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*

No Impact. The Project would connect to the City's existing sewer infrastructure in Gabbert Road; therefore, the Project would not require the installation of new septic tanks or alternative wastewater disposal systems. No impact would occur.

f) *Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?*

Less Than Significant With Mitigation Incorporated. Results from the records search with the Natural History Museum were provided on June 3, 2021 and confirmed the Project is located near areas considered to be sensitive for paleontological resources. Due to the sensitivity of the Project site and the surrounding area to produce paleontological resources during ground-disturbing activities, mitigation measures that are in line with standards set by the City will be implemented to reduce potential impacts associated with ground disturbance. In addition, following the County of Ventura's

goals pertaining to paleontological resources outlined in Sections 1.8.1 & 1.8.2 of the Resources element of the County of Ventura General Plan, these mitigation measures will be implemented to ensure that the Guidelines of the Society of Vertebrate Paleontology and the Guidelines of the State Office of Historic Preservation are fulfilled and will be performed in consultation with professional archaeologists and paleontologists. The following mitigation measures will reduce potential impacts to paleontological resources to a less than significant level.

MM-PALEO-1 Prior to issuance of a Zoning Clearance for a grading permit, the applicant shall be required to obtain the services of a qualified project paleontologist to remain on-call for the duration of the proposed ground disturbing construction activity. The paleontologist selected must be approved in writing by the Community Development Director. Upon approval or request by the Community Development Director, a paleontological mitigation plan (PMP) outlining procedures for paleontological data recovery shall be prepared for the Proposed Project and submitted to the Community Development Director for review and approval. The development and implementation of the PMP shall include consultations with the Applicant's engineering geologist as well as a requirement that the curation of all specimens recovered under any scenario shall be through the Los Angeles County Museum of Natural History. All specimens become the property of the City of Moorpark unless the City chooses otherwise. If the City accepts ownership, the curation location may be revised. The PMP shall include developing a multilevel ranking system, or Potential Fossil Yield Classification (PFYC), as a tool to demonstrate the potential yield of fossils within a given stratigraphic unit. The PMP shall outline the monitoring and salvage protocols to address paleontological resources encountered during ground disturbing activities. As well as the appropriate recording, collection, and processing protocols to appropriately address any resources discovered. The cost of data recovery is limited to the discovery of a reasonable sample of available material. The interpretation of reasonableness rests with the Community Development Director.

MM-PALEO-2 At the completion of all ground-disturbing activities, the project paleontologist shall prepare a final paleontological mitigation report summarizing all monitoring efforts and observations, as performed in line with the PMP, and all paleontological resources encountered, if any. As well as providing follow-up reports of any specific discovery, if necessary.

4.8 GREENHOUSE GAS EMISSIONS

8.	GREENHOUSE GAS EMISSIONS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
(b)	Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

4.8.1 Environmental Setting

An Air Quality and GHG Study was completed for the Project by Rincon Consultants in January 2022. This study provided an analysis of air quality and greenhouse gas impacts associated with the Project for both daily and annual emission. The Study is provided as Appendix A.

4.8.2 Impact Analysis

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than Significant Impact. The CalEEMod model used above to calculate the criteria pollutant emissions was also utilized to calculate the GHG emissions associated with construction and operation of the Proposed Project (see Appendix A). The CalEEMod model calculated GHG emissions generated from both construction and operation of the Proposed Project. Per the analysis methodology presented in the South Coast Air Quality Management District (SCAQMD) Working Group meetings, the construction emissions were amortized over 30 years. Table 6 shows the estimated GHG emissions that would be predicted from development of the Proposed Project.

Table 6: Annual Greenhouse Gas Emissions from the Proposed Project

Sector	Greenhouse Gas Emissions ($MtCO_2e$ per year)
Area Sources	2
Energy Uses	385
Mobile Sources	1,210
Solid Waste	96
Water and Wastewater	41
Construction[1]	38
Total GHG Emissions	**1,772**
Threshold of Significance	**3,000**

Sector	Greenhouse Gas Emissions ($MtCO_2e$ per year)
Exceed Threshold?	No

Notes:
[1] Construction emissions amortized over 30 years as recommended in the SCAQMD GHG Working Group on November 19, 2009.
Source: CalEEMod Version 2020.4.0 (see Appendix A).

As shown in Table 6, the Proposed Project would generate 1,772 metric tons of carbon dioxide equivalent ($MtCO_2e$) per year, which is within the 3,000 $MtCO_2e$ per year threshold that is described above. It should also be noted that the proposed structures will be required to meet the 2019 Title 24 Part 6 building standards that require all new structures to install solar PV systems and enhanced insulation as well as energy-efficient lighting and appliances. The County also requires all new developments to institute the water conservation measures that are detailed in the California Green Building Code. For these reasons, a less than significant generation of greenhouse gas emissions would occur from construction and operation of the Proposed Project.

b) *Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

Less than Significant Impact. The Proposed Project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions. Neither the City nor the VCAPCD has adopted a Climate Action Plan or other qualified GHG reduction plan. SCAG has incorporated a sustainable community strategy into its 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) plan, which is designed to help the region achieve it SB 375 GHG emissions reduction targets. The SCAG's 2016-2040 RTP/SCS demonstrates that the SCAG region would achieve its regional emissions reduction targets for the 2020 and 2035 target years. The Proposed Project would not alter the basic population projections used in the plan and would be consistent with the City's General Plan land use designation for the Project site.

The Proposed Project would be required to comply with existing State regulations for reducing GHG emissions, which include Title 24 Part 6 and Part 11 energy efficiency requirements. As such, since there are no applicable local GHG reduction plans and the Proposed Project would comply with all regional (SCAG) and State regulations intended to reduce GHG emissions, the Proposed Project would be consistent with the applicable plans and programs designed to reduce GHG emissions. Impacts would be less than significant.

4.9 HAZARDS AND HAZARDOUS MATERIALS

9.	HAZARDS AND HAZARDOUS MATERIALS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
(b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
(c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
(d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
(e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
(f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
(g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

4.9.1 Impact Analysis

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact. The Project would involve the construction of a 134-unit detached single family development and the future construction of five additional single-family detached units on the estate lots. Construction activities include excavation and grading operations, utility work, surface paving operations, and landscaping. Operational activities on site will be residential in nature. Potentially hazardous materials, including, but not limited to, gasoline, oil, solvents, cleaners, paint, pesticides, and fertilizer may be used during construction and operation of the Project. Nonetheless, all construction and operational activities would be required to adhere to local standards set forth by the City, as well as State and federal health and safety requirements that are intended to minimize risk to the public from hazardous materials, such as California Division of Occupational Safety and Health (Cal/OSHA) requirements, the Hazardous Waste Control Act, the California Accidental Release Prevention (CalARP) Program, and the California Health and Safety Code.

As a result, the Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Therefore, construction and operational impacts for these issues would be less than significant.

b) *Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

Less Than Significant Impact. The Project would involve the construction of a 134-unit detached single family development and the future construction of five additional single-family detached units on the estate lots. Construction requires excavation and grading, demolition, utility work, surface paving operations, and landscaping. Due to the lack of structures onsite but remaining foundations, there is the chance the existing foundations onsite contain asbestos-containing materials (ACM) and lead-based paint (LBP). Construction activities associated with the Proposed Project would require compliance with federal and State law that regulate construction activities which might involve interaction with ACM or LBP. Regulations require that, prior to demolition, alteration, or renovation, (1) proper notification is given to the VCAPCD (who regulates airborne pollutants) and the local Cal/OSHA office; (2) the Construction Contractor will certify that ACM's have been removed or mitigated by a licensed asbestos abatement contractor certified by the State of California Contractors Licensing Board; and (3) the Construction Contractor will institute an operations and maintenance (O&M) program so that ACM that are not damaged or LBP that will remain in place are properly managed to prevent exposure to hazardous materials. These permitting requirements automatically apply to all development associated with the Proposed Project and are considered standard conditions for approval of the Proposed Project.

Operations on site will be residential in nature and will not involve the routine transport, use, or disposal of hazardous materials. Potentially hazardous materials, including, but not limited to, gasoline, oil, solvents, cleaners, paint, pesticides, and fertilizer may be used during construction and operation of the Project. Nonetheless, all construction and operational activities would be required to adhere to local standards set forth by the City, as well as State and federal health and safety requirements that are intended to minimize risk to the public from hazardous materials, such as Cal/OSHA requirements, the Hazardous Waste Control Act, the CalARP Program, and the California Health and Safety Code.

As a result, the Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. Therefore, construction and operational impacts for these issues would be less than significant.

c) *Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

Less Than Significant Impact. Project construction would involve the use of heavy equipment and other gas- or diesel-powered equipment that would generate emissions associated with internal combustion engines (i.e., diesel and gasoline). As described in impacts 4.9.1 a) and b) above, construction would also require temporary transport of potentially hazardous commercial materials, including, but not limited to, gasoline, oil, solvents, cleaners, paint, pesticides, and fertilizer.

Considering the Project is a 139-unit detached single family development, operations on site will be residential in nature and will not involve the routine transport, use, or disposal of hazardous materials.

The Project site is not within 0.25 mile of an existing or proposed school. Heavy equipment and vehicles which may be transporting or emitting hazardous materials during Project construction would travel along Los Angeles Avenue. Main construction access to the Project site would also be from Los Angeles Avenue, as this route provides access from SR 118. Furthermore, Project operations would be consistent with local regulations and standards set forth by the City, State, and federal governments. Therefore, construction and operational impacts for these issues would be less than significant.

d) *Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

Less Than Significant Impact. A review of federal and State standard and supplemental databases indicated that the Project site is not located within an identified hazardous material site pursuant to Government Code Section 65962.5. The closest hazardous material clean-up site is Prudential Overall Supply on Gabbert Road, which is closed, and is located approximately 0.5 mile northwest of the Project site. Nonetheless, the site has been deemed closed since July 30, 2002 (State Water Resources Control Board 2022; Department of Toxic Substances Control 2022). Considering the absence of active hazard cases in the vicinity of the Project site, impacts would be less than significant.

e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?*

No Impact. The Project site is located approximately 9.7 miles southeast of Santa Paula Airport and 11.5 miles northeast of Camarillo Airport (Google 2022). The Project site is not within the Airport Influence Area for either of these airports (Ventura County Airport Land Use Commission 2000). No impact would occur.

f) *Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

Less Than Significant Impact. According to the Safety Element of the City's General Plan, the City has developed an Emergency Services Program to maintain a responsible level of emergency preparedness. This program includes City staff receiving training in emergency preparedness, management, and mitigation; the City maintaining the Emergency Operations Center (EOC); the City organizing and training a Disaster Assistant Response Team composed of volunteers; and the City promoting emergency planning, training, public awareness, and education (City 2001). The EOC is the focal point for coordination of the City's emergency planning, training, response, and recovery efforts for emergencies and major disasters (County 2020).

Additionally, the County's Multi-Hazard Mitigation Plan (MHMP) includes an overview of the risk assessment process and identifies hazards present in the jurisdiction, hazard profiles, and vulnerability assessments. The plan identifies goals, objectives, and actions for each jurisdiction in the

County, including participating cities (such as Moorpark) and the County unincorporated areas (City 2015). The Project would not interfere with the City's Emergency Services Program or the MHMP because it would not prohibit subsequent programs or plans from being established or prevent the goals and objectives of existing plans from being carried out. The Project site is located in the vicinity of a Critical Facility for emergency response, Moorpark High School, which is approximately 1.3 miles south of the Project site (County 2015). However, the Project would not prevent access to this Critical Facility during an emergency.

After the development is completed, new access will be provided via construction of North Hills Parkway along the southerly property boundary to Gabbert Road. North Hills Parkway will terminate as a cul-de-sac around the middle of the southern property line. A separate fire lane access would extend from northwest Thoroughbred Drive down to Los Angeles Drive. A separate 30-foot-wide fire access road to the planned development will occur from the eastern side of the development from Gabbert Road. In addition, CA-2 will ensure that landscaping introduced to the Project site will not increase hazards associated with wildland fires:

CA 2: Landscaping shall be in compliance with fire landscaping requirements in Very High Fire Hazard Severity Zone, and shall also consist of drought tolerant landscaping.

Thus, impacts would be less than significant.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less Than Significant Impact. While the Project is located within a Very High Fire Severity Zone (VHFSZ) within the Local Responsibility Area (LRA), the Project would comply with the City's Building Code Section 15.08.060 Fire Hazard Zone Requirements and the County's Fire Protection Ordinance. Operations on site would be residential in nature and would not exacerbate the risk of wildland fire. Further, no roads would be permanently closed as a result of the construction or operation of the Project, and no structures would be developed that could potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. In addition, the Ventura County Fire Department would review the Project to ensure adequate emergency accesses are present. Impacts would be less than significant.

4.10 HYDROLOGY AND WATER QUALITY

10.	HYDROLOGY AND WATER QUALITY. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
(b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐

10.	HYDROLOGY AND WATER QUALITY. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
	i) Result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
	ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flood on- or off-site;	☐	☐	☒	☐
	iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
	iv) Impede or redirect flood flows?	☐	☐	☒	☐
(d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
(e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

4.10.1 Environmental Setting

A Drainage report was prepared by Delane Engineering in October 2015 for the Project site (Appendix H). The existing site can be divided into four drainage subareas: the eastern side of the site where it abuts Gabbert Road and labeled as sub-area A1 (7.65 acres) is mostly grassy hillside terrain, is the location where the only occupied existing residence exists and the location of the towers for the existing High Voltage Transmission Lines; Sub-areas B1 and B2 drains towards Walnut Canyon Drain via natural valleys; Sub-Area C1 drains via natural valleys and Gabbert Drain which begins at the southwest corner of the site and is the discharge line to the Gabbert Road Debris Basin.

4.10.2 Impact Analysis

a) Would the project violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact. Project construction would require temporary disturbance of surface soils and removal of vegetative cover through grading and excavation for the proposed residential development and associated structures. Grading activities therefore could potentially result in erosion and sedimentation on site, which may alter the existing drainage pattern. As discussed above, there are four distinct subareas within the Project site that would be altered from Project-related activities.

The Project would be required to obtain coverage under a Construction General Permit to comply with Clean Water Act National Pollutant Discharge Elimination System (NPDES) requirements. Compliance with the Construction General Permit would require the development and implementation of a SWPPP and associated BMPs. The BMPs would include measures that would be

implemented to prevent discharge of eroded soils from the construction site and sedimentation of surface waters off site. With implementation of the required SWPPP, construction of the Project would not violate any water quality standards or waste discharge requirements.

The Project would include infiltration basins and biofiltration BMPs to treat flows from the Project site, including those from landscaping associated with the Project. The proposed biofiltration BMPs would be located near the inlets at North Hills Parkway and North Village Drive. The site and shall treat all stormwater within each subarea prior to leaving the site via the infiltration basin located at the entrance of the Project site. With implementation of these design features, Project operations would not substantially degrade surface or groundwater quality. Impacts would be less than significant.

b) *Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

Less Than Significant Impact. VCWWD provides domestic water to the City and will be the water purveyor to the Project site. VCWWD receives its water from three sources. Approximately 71 percent of its supply is imported potable water from the Metropolitan Water District (MWD) of Southern California through Calleguas Municipal Water District (CMWD), a local wholesaler. The imported water is primarily State Water Project water from the Sacramento-San Joaquin River Delta in Northern California that has been treated at MWD's Joseph Jensen Filtration Plant. The second largest supply (approximately 20 percent) comes from local groundwater production. Groundwater is pumped from the East Las Posas Subbasin via the four active wells owned and operated by the District. The East Las Posas Subbasin is managed and protected by Fox Canyon Groundwater Management Agency (FCGMA). Finally, reclaimed water brings in approximately 9 percent of all supply through the Moorpark Water Reclamation Facility (MWRF), which is owned and operated by VCWWD and has been in operation since 2003 (County 2020).

During the 2020 Fiscal Year, VCWWD was allocated 2,195 acre-feet (AF) of groundwater from the Las Posas Basin by FCGMA. Using the City's average number of persons per household and target gallons per capita per day, calculations determined that the Project would require approximately 97.57 AF per year (AFY) for residential operations. Using an average household size of 3.23 persons, the Project would add approximately 449 residents to the City of Moorpark (City 2020c). Thus, for 139 units, the number of persons anticipated to be living at the Project site during operations would be 449 people. According to the Ventura County Urban Water Management Plan (UWMP), the County's target per capita water usage for 2020 was 194 gallons per capita per day. For the Project's predicted residents, this results in 87,106 gallons per day, or approximately 97.57 AFY. Thus, in the highly unlikely scenario that the Project would be served using solely the City's available groundwater supply, the Project would require a nominal 4.44 percent of the groundwater allocated in 2020.

In addition, the Project would be required to comply with the permanent water conservation measures contained in Part 1 – Section L of the Districts' Rules and Regulations for District Nos. 1, 16, 17, 19, and 38. These measures include installing water-saving devices and limiting landscape irrigation (VCWWD 2021). The Project proposes landscaping throughout the site; nonetheless, compliance with the District's rules and all provisions of the City's water efficient landscape ordinance would ensure minimal impacts to the City's groundwater availability. In addition, the Project will be

required to comply with the California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO). The MWELO is also referenced by Title 24, Part 11, Chapters 4 and 5 Cal Green Building Code. The MWELO purpose is not only to increase water efficiency but also to improve environmental conditions. All plants included in the landscaping would be drought tolerant in order to comply with landscaping requirements. Thus, Project operations are not anticipated to decrease groundwater supplies.

As discussed in Section 4.7, Geology and Soils, although the Project proposes grading activities, grading would not require excavation of 65 feet or more of soil where groundwater could be impacted. Therefore, the Project would have a less-than-significant impact related to the depletion of groundwater supplies and groundwater recharge.

c) *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*

i) *result in substantial erosion or siltation on- or off-site;*

Less Than Significant Impact. Project construction would require temporary disturbance of surface soils and removal of vegetative cover through grading and excavation. Grading activities could potentially result in erosion and sedimentation. Compliance with the Construction General Permit would require the development and implementation of a SWPPP and associated BMPs, reducing erosion and sedimentation during construction. The Project would also include a storm drain system with catch basin filters to remove trash, oils, pollutants and then into an underground capture and infiltration system to release the flows back into the ground and groundwater. With implementation of BMPs and design features, Project construction and operations would not result in substantial erosion siltation, flooding, runoff, or polluted runoff, therefore impacts would be less than significant.

ii) *substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;*

Less Than Significant Impact. Landscaping of the Project site would help reduce offsite flows and reduce runoff volumes and rates. Furthermore, a catch basin will be installed at the site; and a storm drain system will convey runoff to one of the underground infiltration systems and on grade detention basin. The function of the underground infiltration system is to return the stormwater to the groundwater and the detention basin reduces the volume and velocity of stormwater runoff so that the completed Project will not increase the runoff from the current existing conditions. With implementation of BMPs and design features, project construction and operations would not result in substantial erosion siltation, flooding, runoff, or polluted runoff, therefore impacts would be less than significant.

iii) *create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources or polluted runoff; or*

Less Than Significant Impact. Operation of the Project would increase the amount of runoff on site, with total of 17 acres of impervious surfaces, which would result in an increase of 7 acres of impervious surfaces from the existing condition. Landscaping of the Project site would help

reduce offsite flows and reduce runoff volumes and rates. Furthermore, a catch basin will be installed at the site; and a storm drain system will convey runoff to an underground infiltration system and on grade detention basin (Appendix H). With implementation of BMPs and design features, project construction and operations would not result in substantial erosion siltation, flooding, runoff, or polluted runoff. Impacts would be less than significant.

iv) impede or redirect flood flows?

Less Than Significant Impact. Per the Federal Emergency Management Agency (FEMA) Map No. 06111C0816E and No. 06111C0817E, the Project site is within a flood Zone X. Zone X signifies areas of minimal flood hazard. Thus, the Project site is not located within the 100-year and would not impede or redirect flood flows, resulting in less-than-significant impacts.

d) Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less Than Significant Impact. As previously mentioned, the Project is not located within the FEMA 100-year floodplain (Appendix H). The Project is also over 22 miles east of the Pacific Ocean and is not in the vicinity of any waterbodies that have potential to produce a seiche (Google 2022). Impacts would be less than significant

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less Than Significant Impact. The Project site is located within the Los Angeles Coastal Watershed and subject to the Los Angeles Regional Water Quality Control Board (LARWQCB) Basin Plan. The LARWQCB Basin Plan contains the Region's water quality regulations and programs to implement the regulations (LARWQCB 2014). The Project site is also located within the boundaries of FCGMA's Groundwater Sustainability Plan (GSP) for the Las Posas Valley Basin. The Las Posas Valley Basin Groundwater Sustainability Plan (FCGMA 2022) sets a long-term horizon for groundwater sustainability agencies to achieve their basin's sustainability goals. The sustainability goal for the Basin is "to maintain a sufficient volume of groundwater in storage in each management area so that there is no significant and unreasonable net decline is groundwater elevation or storage over wet and dry climatic cycles." The GSP projects future water demands based on historic water availability and demand, as well as buildout of the General Plan.

The Project would apply for a NPDES permit and prepare a SWPPP. Implementation of the SWPPP would reduce polluted stormwater runoff from the Project site and ensure compliance with the LARWQCB Basin Plan. Since the Project includes a request for a GPA from the City to change the Land Use Designation to allow for higher density uses, the Project would increase the intensity of use on site and could affect projected groundwater demands in the GSP. However, as discussed in Section 4.10 b), the Project's 449 predicted residents would require approximately 97.57 AFY of water. In the highly unlikely scenario that the Project would be served using solely groundwater, the Project would require a nominal 4.47 percent of the City's 2020 allocated groundwater supply (VCWWD 2021). Therefore, the Project would not conflict with or obstruct the LARWQCB's Basin Plan or Las Posas Valley Basin GSP; and impacts would be less than significant.

4.11 LAND USE AND PLANNING

11.	LAND USE/PLANNING Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Physically divide an established community?	☐	☐	☐	☒
(b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

4.11.1 Impact Analysis

a) Would the project physically divide an established community?

No Impact. The Project would redevelop existing parcels west of Gabbert Road to create 139 new dwelling units. Construction and site development would require grading and demolition of existing foundations. During construction, temporary road blockages may occur due to heavy equipment use and material deliveries to the Project site. However, no long-term road blockages or changes to the surrounding traffic patterns are proposed. The Project includes a request for GPA, ZC, and RPD for the construction of 139 single-family detached residences. Additionally, the Project does not include features that would preclude mobility across the Project site. Construction and Operation of the Project would not physically divide an established community. No impact would occur.

b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less than Significant Impact. The Project is located in the western portion of the City, north of Los Angeles Avenue, along Gabbert Road. The Project site's General Plan designation is Rural Low Density Residential (L) which allows the development of one DUAC. To allow higher density uses, the Project includes submittal of a GPA and ZC which would result in the Project to be consistent with the City's land use policies.

To analyze the Project's compliance with the City General Plan Circulation Element, K2 Traffic Engineering Inc. (KTE) prepared a Traffic Impact Analysis (TIA; Appendix I) that covers the high density changes and implemented the Intersection Capacity Utilization method to determine volume-to-capacity ratios and corresponding Levels of Service (LOS) at five study intersections (determined in consultation with City staff). LOS varies from LOS A (free flow) to LOS F (jammed condition). According to Policy 2.1 of the Circulation Element, LOS of C is the performance objective for traffic volumes on the City's circulation system. For facilities already operating at LOS C, the system performance objective is to maintain or improve the current LOS. The City's "Guidelines for Preparing Traffic and Circulation Studies" states that if a LOS degradation of one LOS or greater is attributable to a project, it will be considered significant enough to require mitigation measures.

As depicted in below, both study intersections are presently operating at LOS C or better during the morning (AM) and evening (PM) peak hours. In order to determine the operating conditions of the

street system with implementation of the Project, traffic generated by the Project was added to the existing traffic conditions.

Based on the modeling from Appendix I, Project-related traffic is not expected to exceed the traffic operations criteria at any of the six study intersections. Project-related traffic is not expected to exceed the traffic operations criteria since the LOS does not degrade by one level or greater from existing conditions (Table 7).

Table 7: Levels of Service in the Project Vicinity AM and PM Peak Hours

No.	Intersection	Peak Hour	2021 Existing	Opening Year Plus Project	Significant Impact
1	Gabbert Road at Poindexter Avenue	AM	A	A	No
		PM	A	A	No
2	Gabbert Road/Tierra Rejada Road at Los Angeles Avenue	AM	C	D	No
		PM	B	C	No
3	Moorpark Avenue at High Street	AM	A	B	No
		PM	A	C	No
4	Moorpark Avenue at Poindexter Avenue /First Street	AM	B	D	No
		PM	B	D	No
5	Moorpark Avenue at Los Angeles Avenue	AM	B	D	No
		PM	B	D	No
6	Gabbert Road at North Hills Parkway	AM	-	A	No
		PM	-	A	No

Source: Appendix I

LOS delays at the six intersections would not increase by more than 0.10, this increase would not result in a significant delay at any of the listed intersections (Appendix I). Additionally, the Applicant would pay all applicable fees required by the City's Municipal Code, including the traffic systems management fee, the citywide traffic fee, and the county traffic impact mitigation fee. Thus, implementation of the Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system; and impacts would be less than significant.

4.12 MINERAL RESOURCES

12.	MINERAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

(b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

4.12.1 Impact Analysis

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. According to the City's General Plan, no known mineral resources of statewide significance are within the City's limits. West and northwest of the City there are mineral resource zones designated Mineral Resource Zone 2, which refers to areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists (City 1986), although these areas are outside the City limits and therefore do not encompass the Project site. Moreover, two active open-pit sand and gravel mines are approximately 4 miles north of the Project site, but no mines are reported within the Project site (DOC 2022c). No impact would occur.

b) Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. The City's General Plan does not designate any locally important mineral resource recovery sites within the City boundaries (City 1986). Two active open-pit sand and gravel mines are approximately 3.5 miles north of the Project site, but no mines are reported within the Project site (DOC 2022c). No impact would occur.

4.13 NOISE

13.	NOISE Would the project result in:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	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 local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
(b)	Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
(c)	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

4.13.1 Environmental Setting

A Noise Study was produced for the Project by Rincon Consultants, Inc. in January 2022 to determine the noise impacts associated with the Project (Appendix J). The criteria noise impacts created by the Project

were analyzed through use of Road Construction Noise Model, which is a computer model published for estimating noise levels. Results from this analysis have been summarized and incorporated below. Refer to Appendix J for methods and model data.

4.13.2 Impact Analysis

a) Would the project 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 local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. The Noise Element of the City's General Plan implements goals and policies to maintain acceptable environmental noise levels to protect City residents from excessive noise. The Noise Element establishes noise standards for single-family and multiple-family residential land uses as 65 Community Noise Equivalent Level (CNEL) for the exterior environment, 55 CNEL for the interior environment with windows open, and 45 CNEL for the interior environment with windows closed (City 1998).

Background noise, or ambient noise, is the noise level of normal and existing noise levels of a given area. In the City, the four major sources of noise are traffic on SR 118 and SR 23; traffic on arterials and local collector roadways; rail traffic on the east/west rail line bisecting the City; and commercial, industrial, and recreational activities adjacent to residential locations (City 1998). The Project is located within an underdeveloped portion of the City. The existing immediate sources of ambient noise come from Gabbert Road and the rail line. PM Peak hour trips on Gabbert Road were determined to be 473 trips (Appendix J). The Project's addition of 143 PM peak hour trips would increase noise levels by 30 percent, which would result in an approximate noise increase of 1 dBA. This would not exceed the significance threshold of a greater than 3 dBA increase over existing noise levels. The proposed improvements on the Project site include two new roadways. North Hills Parkway, along the southern boundary of the site, would align east/west and give access to the Project site from Gabbert Road. North Village Drive, along the western boundary of the site, would align north/south, and connect to North Hills Parkway at the southwestern corner of the Project site. The nearest Project residences would be located approximately 100 feet from North Hills Parkway, 200 feet from North Village Drive, and 300 feet from Gabbert Road. the closest Project residences to each roadway would be exposed to noise levels of 55 CNEL, 52 CNEL, and 61 CNEL, respectively. Therefore, noise levels at exterior use areas of the Project would not exceed the City's 65 CNEL normally acceptable exterior noise standard for residential uses and would not conflict with the City General Plan. The Project would introduce a new ambient noise source that would result in a permanent increase in ambient noise levels, however the increase would be within the standards set by the City; therefore, a less-than-significant impact would occur.

Section 17.53.070.F of the City Municipal Code prohibits the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work so as to violate the noise standards between weekday (Saturdays and legal holidays observed by the City included) hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays. During operations, Section 17.53.070.E of the Municipal Code prohibits the loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10:00 p.m. and 7:00 a.m. any day of the week in such a manner as to cause a noise disturbance across a residential property line or at any time to violate the provisions of Section 17.53.050.

Construction of the Project would result in a temporary increase of construction noises. Modeled noise levels will reach up to 67 dBA at the closest sensitive receptor location, to the east of the Project boundary (Appendix J). Proposed construction activities would be limited to the hours of 7:00 a.m. to 7:00 p.m. Monday through Saturday to avoid violation of noise standards set by the City Municipal Code. HVAC units that would be installed as part of the housing units would have a sound power of 72 dBA and have a noise level of 31 dBA at a distance of 150 feet, which is lower than ambient noise levels in the area (54.7 dBA) (Appendix J). Impacts would be less than significant.

b) *Would the project result in generation of excessive groundborne vibration or groundborne noise levels?*

Less Than Significant Impact. The greatest anticipated source of vibration during general Project construction activities would be from a vibratory roller during paving, which may be used within 150 feet of the nearest off-site residence. A vibratory roller creates approximately 0.210 inches per second peak particle velocity (PPV) at a distance of 25 feet (Appendix J). This would attenuate to a vibration level of 0.029 inches per second PPV at a distance of 150 feet. This vibration level is lower than the human annoyance threshold of 0.24 inches per second PPV. Therefore, vibration impacts associated with construction would be less than significant.

c) *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public us airport, would the project expose people residing or working in the project area to excessive noise levels?*

No Impact. The closest public and public use airports to the Project site are the Santa Paula Airport, which is approximately 9.7 miles northwest of the Project site, and the Camarillo Airport, which is approximately 11.4 miles southwest of the Project site. The Project site is not located within an airport influence area or an airport runway protection zone. There are no nearby private airstrips within the vicinity of the Project site. Therefore, no impact related to airport and airstrip noise would occur.

4.14 POPULATION AND HOUSING

14.	POPULATION AND HOUSING. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
(b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

4.14.1 Impact Analysis

a) *Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

Less than Significant Impact. The Project would not introduce substantial unplanned population growth, as the Project would create 139 housing units. As part of the Project, an amendment to the General Plan and ZC are proposed for a General Plan designation as H and a zoning of RPD. Therefore, the Project would fulfill an existing need for housing in the City. The construction of the Project would help the City achieve housing goals in support of the Housing Element of the General Plan (City 2014). Therefore, the Project would fulfill an existing need for housing in the City and would not induce unplanned population growth. The City's adopted Housing Element 2014-2021 estimated a 10.9 percent growth in the population between 2014 and 2021, with a total housing growth of 1,164 units (City 2014). The 2019 SCAG Local Profile Report for the City identified the City's population in 2020 at 36,278 with an annual growth rate of 0.7 percent, which is below the estimated growth. With the average household size in the City at 3.3, the Proposed Project can expect the population to increase by 459 persons (SCAG 2019).

The City is in the process of adopting its updated Housing Element, which anticipates an 11 percent increase in population between 2020 and 2030 with the continued residential development for the remaining vacant lots and underperforming nonresidential areas and in specific plan areas. The Proposed Project's increase of 139 units for single-family homes would not result in a significant and substantial population growth because the population increases have been accounted in the SCAG Local Profile and General Plan Housing Element. In addition, the Proposed Project will be meeting an existing housing need which has been identified in the General Plan Housing Element. Impacts would be less than significant.

Construction of the Project would also result in the generation of temporary construction jobs and a limited number of permanent jobs. Nonetheless, the additional jobs are expected to be filled by nearby residents. Therefore, jobs resulting from the Project would not lead to relocation of any population. The Project would not directly or indirectly induce substantial population growth during construction or operation; thus, impacts would be less than significant.

b) *Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

No Impact. The Project site is underdeveloped and vacant with building foundations from a previous development. The Project would add 139 new housing units for local residents. The Project would not displace existing people or housing that require construction of replacement housing elsewhere. No impacts would occur.

4.15 PUBLIC SERVICES

15.	PUBLIC SERVICES.	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
	i) Fire Protection?	☐	☐	☒	☐
	ii) Police Protection?	☐	☐	☒	☐
	iii) Schools?	☐	☐	☒	☐
	iv) Parks?	☐	☐	☒	☐
	v) Other public facilities?	☐	☐	☒	☐

4.15.1 Impact Analysis

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?

Less than Significant Impact. The Project consists of 139 dwelling units and an estimated 449 residents within the development, along with an open space/recreational portion allowing for greenspace as part of the development. Ventura County Fire Station 42 is located approximately 1.45 miles south or approximately a 5-minute drive of the Project site (Google 2022). Construction activities would increase traffic adjacent to the Project site during working hours because commuting construction workers, trucks, and other large construction vehicles would temporarily be added to normal traffic. Construction traffic delays along local roadways may reduce optimal traffic flows on these roadways and could delay emergency vehicles or contribute to a vehicle accident. Nonetheless, potential fire protection impacts would be minimal due to the temporary nature of construction traffic.

During the Project's operational phase, the frequency of emergency calls may incrementally increase because residential uses would be introduced to the partially vacant site. For a residential project, the majority of calls are likely to be emergency medical and rescue. The Project would be required to conform to the California Fire Code and follow requirements in the Moorpark Municipal Code, which requires integration of fire safety features such as fire sprinklers, fire hydrants, and water service infrastructure capable of delivering the required fire flows rates. Furthermore, given the proximity of the fire station, and implementation of fire safety features, the Project is not expected to significantly delay response times.

The Project would fulfill an existing need for housing in the City. Therefore, the housing and job opportunities generated by the Project are expected to be filled by residents who currently live in the area. Considering the Project would not induce unplanned population growth, the Project is not expected to increase the demand for fire protection or require new facilities. Impacts to fire services would be less than significant.

b) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection?*

Less than Significant Impact. The Ventura County Sheriff's Department is approximately 1.65 miles southeast of the Project site or approximately a six-minute drive (Google 2022). Construction activity would increase traffic adjacent to the Project site during working hours because commuting construction workers, trucks, and other large construction vehicles would temporarily be added to normal traffic. Slow-moving construction traffic along local roadways may reduce optimal traffic flows on these roadways and could delay emergency vehicles or contribute to a vehicle accident. Nonetheless, potential impacts would be minimal due to the temporary nature of construction traffic.

During the Project's operational phase, the frequency of emergency calls may incrementally increase because residential uses would be introduced to the currently vacant site. However, the Project would fulfill an existing need for housing in the City. The City's Housing Element anticipates that the City will be experiencing a population growth via development in undeveloped and underutilized lots in the City. Therefore, the population increase has been accounted in the General Plan. Considering the Project would not induce unplanned population growth, The Proposed Project is not expected to create a significant increase in the demand for police protection or require new facilities. Impacts to police services would be less than significant.

c) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools?*

Less than Significant Impact. The Project site is located near five schools in the City, including: Moorpark High School 1.2 miles south of the Project site; Chaparral Middle School 1 mile southeast of the Project site; Mountain Meadows School 1.5 miles southeast of the Project site; Walnut Canyon School and Union High School 1 mile east of the Project site; Flory Academy of Sciences and Technology and the ACCESS School 1.4 miles east of the Project site. The Project would fulfill an existing need for housing in the City. Therefore, the housing and job opportunities generated by the Project are expected to be filled by residents who currently live in the area. The Proposed Project may result in a population increase. However, as discussed, the Proposed Project would fill an existing need for housing.

Moorpark Unified School District (District) prepared a Residential and Commercial/Industrial Development School Fee Justification Study on June 2, 2022, to determine the projected student enrollment growth and future facility needs and fees necessary to maintain and provide schooling to existing and future students (Cooperative Strategies 2022).

The student enrollment growth, based on anticipated increase in single and multi-family units, is projected to be 921 students. The existing capacity for elementary, middle, and high school levels are 7,426 students. Current enrollment is at 5,845 students as of the 2021/2022 estimates, thereby having an excess of 1,581 seats.

With the projected increase in residents to the area (an estimated 449 persons), it is not expected for all 449 persons to be of schooling age. As a result, the Proposed Project will not result in significant deterioration of service of public schools as a result of the Proposed Project.

The City's Housing Element includes a residential development fee burden within the City and includes school impact fees for residential units based on square footage and development type. Impacts to schools would be less than significant.

d) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks?*

Less Than Significant Impact. As mentioned above, the Project would fulfill an existing need for housing in the City and would not induce unplanned population growth. Additional jobs generated by the Project are expected to be filled by residents who currently live in the area and would not result in the relocation of any population. In addition, the development includes open space/recreational areas thereby providing outdoor use for the residents. Thus, the Project is not expected to increase the demand for parks or require new facilities. The Project would create additional open space and recreational facilities. In addition, the Development Agreement includes fees to offset additional projected demand at community parks. Thus, the Project would not increase the use of the existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would be accelerated. Impacts to parks would be less than significant.

e) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for other public facilities?*

Less than Significant Impact. The Project consists of 139 dwellings, along with an open space/recreational portion allowing for greenspace as part of the development. The Project would not induce growth requiring the extension of existing or creation of other public facilities. The Project would not increase the demand for other public facilities. Impacts would be less than significant.

4.16 RECREATION

16.	RECREATION. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
(b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

4.16.1 Impact Analysis

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less than Significant Impact. The City offers 19 miniature, neighborhood, and community parks designed to meet the varied needs of residents. Two parks are within a 1-mile radius of the Project site. Glenwood Park is located 0.87 mile southeast of the Project site and Moorpark Skate Park is located 0.9 mile southeast of the Project site (Google 2022). Open space and recreation areas within the City occupy 2,240 acres and account for 28 percent of the City's land. Of this open space area, the City has a total of 188 acres of developed park land within the City, and an estimated 5.1 acres of existing park land per 1,000 people (City 2020c).

The Project proposes construction of a 134-unit detached single family development and the future construction of five additional single-family detached units on the estate lots; however, the Project would fulfill an existing need for housing in the City and would not induce unplanned population growth. The Proposed Project provides a community park and multi-use trail system.

The Project would create additional open space and recreational facilities. In addition, the Development Agreement includes fees to offset additional projected demand at community parks. Thus, the Project would not increase the use of the existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would be accelerated. Impacts to recreational facilities would be less than significant.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less Than Significant Impact. The Proposed Project will provide one community park (open space) with decomposed granite and a multi-use trail along North Hills Parkway. The additional recreation area will provide open space access for public use and will be maintained by the HOA. The park and multi-use trail will be an addition to the community. These additions will not interfere with any nearby recreational areas because the Project site is currently undeveloped**.** The Project does not involve

construction or expansion of offsite, public recreational facilities which might have an adverse physical effect on the environment. Additionally, Park and Recreation Fees will be paid by the Applicant in compliance with the City's Municipal Code to offset any impacts associated with the proposed development. Therefore, impacts would be less than significant.

4.17 TRANSPORTATION

17.	TRANSPORTATION. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities?	☐	☒	☐	☐
(b)	Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☒	☐	☐
I	Substantially increase hazards due to a geometric design feature (e. g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
(d)	Result in inadequate emergency access?	☐	☐	☒	☐

4.17.1 Environmental Setting

A TIA was prepared for the Project by KTE on December 17, 2021 (Appendix I). A Trip Generation and VMT Analysis was prepared by Associated Transportation Engineers on May 20, 2022 and peer reviewed by Linscott Law & Greenspan Engineers on June 22, 2022 (Appendix K).

The TIA and VMT Analysis follows the City's current traffic study guidelines, "Guidelines for Preparing Traffic and Circulation Studies" prepared in 1993. However, in September 2013, the Governor's Office signed SB 743, starting a process that fundamentally changes the way transportation impact analysis is conducted under CEQA. Within the State's CEQA Guidelines, these changes include the elimination of auto delay, LOS, and similar measurements of vehicular roadway capacity and traffic congestion as the basis for determining significant traffic impacts. SB 743 identifies VMT as the most appropriate CEQA transportation metric. The City is in the process of developing new traffic study guidelines to identify VMT as the primary metric for evaluating a project's transportation impacts. Until City-specific thresholds are developed, the VMT analysis was developed using the VMT data presented in the recently updated Ventura County Transportation Commission (VCTC) traffic model for Ventura County and the guidance provided in the Technical Advisory published by the Governor's Office of Planning and Research in December 2018 for purposes of evaluating the potential VMT impacts of development projects, which evaluates based on a 15 percent reduction target.

4.17.2 Impact Analysis

a) *Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities?*

Less Than Significant With Mitigation Incorporated. The VCTC traffic model provided home based VMT per capita data for the City as well as the various Traffic Analysis Zones (TAZs) within the City, including the TAZ that encompasses the Project site. Traffic model data was used to establish the home-based VMT per capita thresholds for the City and to estimate the home-based VMT per capita for the Project. Based on the trip generation analysis including consideration of the effects of telework on the Project VMT and post-pandemic levels of telework in the Southern California region, the Proposed Project's VMT is measured at 21.07 VMT per capita which is above the City's significance threshold of 18.33 VMT per capita. Therefore, the Proposed Project requires a reduction of approximately 13 percent to be below the threshold. The implementation of affordable and below market rate housing would provide approximately 4.29 percent VMT reduction based on supporting literature. The estimated amount of affordable or below market rate housing units is 15 percent of the total units, which is 20.1 out of 134 initial units. The Proposed Project is proposing to set aside 20 units of affordable housing to meet the VMT reduction requirements.

Additional measures to be included as part of the Proposed Project to reduce the Project's VMT include providing EV charging stations for each unit (MM-TRA-1), providing bicycle storage lockers at the Metrolink station (MM-TRA-2), and install on-site sidewalks and provide connection to the existing/future off-site pedestrian network (MM-TRA-3). Implementation of these mitigation measures would result in less-than-significant impacts with regards to VMT by the Proposed Project.

MM-TRA-1: Electric Vehicle Charging/Parking Spaces: The Project would install electric vehicle charging and parking stations in each garage for the initial 134 units.

MM-TRA-2: Metrolink Incentives: The Project shall provide incentives for the Project residents and other potential users of the station to utilize the public transit system. The Proposed Project shall include enhanced features at the Metrolink station such as bicycle storage lockers to supplement the existing bike racks at the station.

MM-TRA-3: Pedestrian Connectivity. The Project shall install on-site sidewalks and provide connections to the existing/future off-site pedestrian network.

When taken together, the provision of affordable housing as well as the mitigation measures are calculated to result in a reduction in the adjacent Project VMT by approximately 15.43 percent. Therefore, impacts would be less than significant with mitigation incorporated.

b) Would the project Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Less Than Significant With Mitigation Incorporated. Section 15064.3(b) of the CEQA Guidelines describes criteria for analyzing transportation impacts. Depending on the type of project, different thresholds of significance are applicable. Section 15064.3(b)(1) applies to land use projects, including the Project:

> "Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less

than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact."

The Proposed Project is approximately 1.6 miles from the nearest transit station by walking path (i.e., not by direct-line or radius). Further, the Metrolink Ventura Line does not provide service with less than 15-minute headways.

As discussed in 4.17.2 a), the daily VMT per capita for the Project was determined to be above the City's threshold by 13 percent. The addition of affordable housing units of 15 percent, and implementation of MM- TRA-1, MM-TRA-2 and MM-TRA-3 would result in a measurable decrease of the VMT per capita resulting in meeting the City's threshold. Therefore, impacts would be less than significant with mitigation measures MM TRA-1, MM TRA-2, and MM TRA-3 incorporated.

c) *Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

Less Than Significant Impact. The Project does not propose any hazardous design features such as sharp curves or dangerous intersections. The site design will include new driveways and pedestrian facilities; however, they would be consistent with typical residential driveway designs. The Project is compatible with surrounding uses. Impacts would be less than significant.

d) *Would the project result in inadequate emergency access?*

Less Than Significant Impact. The Project's circulation system will be reviewed by the City's emergency response personnel and the City's Public Works Department to ensure that ingress and egress widths are sufficient and that the proposed circulation system would not interfere with an emergency response access route. Level of Service at study intersections would maintain acceptable levels of service including during opening year and cumulative conditions. After the development is completed, new access will be provided via construction of North Hills Parkway along the southerly property boundary to Gabbert Road. North Hills Parkway will terminate as a cul-de-sac around the middle of the southern property line. A separate fire lane access would extend from northwest Thoroughbred Drive down to Los Angeles Drive. A separate 30-foot-wide fire access road to the planned development will occur from the eastern side of the development from Gabbert Road. Impacts would be less than significant.

4.18 TRIBAL CULTURAL RESOURCES

18.	**TRIBAL CULTURAL RESOURCES. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:**	**Potentially Significant Impact**	**Less than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
(a)	Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☒	☐
(b)	A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

4.18.1 Impact Analysis

a) *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?*

b) *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?*

Less Than Significant Impact. The City submitted a request to the Native American Heritage Commission (NAHC) in April 2022 to conduct a search of its Sacred Lands file to determine if cultural resources significant to Native Americans have been recorded in the Proposed Project footprint and/or buffer area. As discussed in Section 4.5 of this document, and based on the response received from the NAHC, the record search resulted in no previously recorded resources or other listed or potentially significant properties located within the Project site.

AB 52 mandates early tribal circulation prior to and during CEQA review with a requirement to formally conclude consultation. AB 52 established a new category of tribal cultural resources for which only tribes are experts. The mandate requires CEQA documents to incorporate findings, not just in terms of mitigation measures, but also in terms of which type of CEQA document is appropriate. SB 18, signed into law in 2004, requires notification and consult with Native American Tribes on proposed land use decisions for the purpose of protecting potential tribal cultural sites.

AB 52 and SB 18 consultation letters were sent on (April 7, 2022), to tribal parties on the list provided by the City and the NAHC. These tribal parties were the Barbareno/Ventureno Band of Mission Indians, Chumash Council of Bakersfield, Coastal Band of the Chumash Nation, Gabrieleno/Tongva San Gabriel Band of Mission Indians, Gabrielino /Tongva Nation, Gabrielino-Tongva Tribe, Northern Chumash Tribal Council, San Luis Obispo County, Chumash Council, and the Santa Ynez Band of Chumash Indians. To date, no responses have been received from any of the above tribes.

Although tribal consultation did not result in formal comments the location of the Project in the vicinity of land previously occupied by native tribes may require that additional caution be considered to ensure that if unknown buried resources are discovered during grading activities, impacts to such resources would be limited. A Condition of Approval (COA) would be implemented for Project work as noted below.

COA TCR-1 In the event that Project site excavation and construction activities expose tribal cultural resources (i.e., sites, features, or artifacts) encountered during construction activities for the Project, the temporary halting of construction activities near the encounter and notification of the City and any Native American tribes traditionally and culturally affiliated with the geographic area of the Project would be required. If the City determines that the potential resource appears to be a tribal cultural resource (as defined by PRC Section 21074), the City will provide any affected tribe a reasonable period of time to conduct a site visit and make recommendations regarding the monitoring of future ground disturbance activities, as well as the treatment and disposition of any discovered tribal cultural resources. The Applicant will then implement the tribe's recommendations if a qualified archaeologist reasonably concludes that the tribe's recommendations are reasonable and feasible. The recommendations would then be incorporated into a tribal cultural resource monitoring plan; and, once the plan is approved by the City, ground disturbance activities could resume. In accordance with this mitigation which shall become a condition of approval, all activities would be conducted in accordance with regulatory requirements.

4.19 UTILITIES AND SERVICE SYSTEMS

19.	UTILITIES/SERVICE SYSTEMS. Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
(b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
(c)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
(d)	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
(e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid wastes?	☐	☐	☒	☐

4.19.1 Impact Analysis

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or expansion of which could cause significant environmental effects?

Less Than Significant Impact. VCWWD provides domestic water services to the City and wastewater services via the MWRF. Electricity is provided to the City by SCE, and natural gas service is provided by SoCalGas. Telecommunications services in the City are provided by Time Warner Cable and Spectrum. The existing sewer main is proposed to be extended from Gabbert Road and Poindexter Avenue and will run up Gabbert Road, west on North Hills Parkway, and to the western end of the Project to connect to the existing onsite sewer system. Gas, electricity, and telecommunication services will connect to existing service areas off North Hills Parkway. While the Project site is vacant, there are existing developments surrounding the Project site. The Project would not result in significant environmental effects due to relocation or construction of new utility connections because it is proposed to connect to existing service areas.

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal dry and multiple dry years?

Less Than Significant Impact. VCWWD receives its water from three sources. Approximately 71 percent of its supply is imported potable water from the MWD of Southern California through

CMWD, a local wholesaler. The imported water is primarily State Water Project water from the Sacramento-San Joaquin River Delta in Northern California that has been treated at MWD's Joseph Jensen Filtration Plant. The second largest supply (approximately 20 percent) comes from local groundwater production. Groundwater is pumped from the East Las Posas Subbasin via the four active wells owned and operated by the District. The East Las Posas Subbasin is managed and protected by FCGMA. Finally, reclaimed water brings in approximately 9 percent of all supply through the MWRF, which is owned and operated by VCWWD and has been in operation since 2003 (County 2020).

Every urban water supplier must include, as part of its UWMP, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. The District's UWMP predicts that water supplies during normal, single dry year, and five consecutive dry year scenarios between 2025 and 2045 would meet all projected demands. In fact, the UWMP predicts a surplus of water available during all years under the single dry year and five dry year scenarios (VCWWD 2021). To help meet future potable water demands, VCWWD is also planning two projects. The Stockton Reservoir Project will increase water storage capacity by constructing an additional reservoir along with infrastructure. The Moorpark Desalter Project aims to lower the dependence on imported water through a groundwater production and treatment system that is estimated to provide up to 5,000 AFY of potable water for customers in the District's water service area. Further, VCWWD is planning to increase (non-potable) recycled water use to 2,200 AFY by 2040 but will need to update the current permit (VCWWD 2021).

Using the City's average number of persons per household and target gallons per capita per day, calculations determined that the Project would require approximately 97.57 AFY for residential operations. This analysis accounts for the initial 134 single family units as well as the future development of the five single-family units on the estate lots. The UWMP predicts that by the year 2025, VCWWD will have 11,102 AFY of available water supply under normal conditions; 13,367 AFY with a single dry year; and 13,535 AFY following five consecutive dry years (VCWWD 2021). The Project therefore requires 0.88 percent and 0.72 percent of the projected water available under these conditions, respectively. Further, the Project would be required to comply with the permanent water conservation measures contained in Part 1 – Section L of the Districts' Rules and Regulations for District Nos. 1, 16, 17, 19, and 38. These measures include installing water-saving devices and limiting landscape irrigation (VCWWD 2021). The Project would also be required to comply with all provisions of the City's water efficient landscape ordinance (Moorpark Municipal Code 15.23.010). Compliance with VCWWD rules and Moorpark Municipal Code would ensure irrigation required for the Project's landscaping would have minimal impact on water availability. The Project would have sufficient water supplies available during normal, dry, and multiple dry years; and impacts would be less than significant.

c) *Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*

Less Than Significant Impact. The Ventura County Water and Sanitation Department operates and maintains water and wastewater infrastructure for the City, which is located in VCWWD No. 1. The MWRF, located along SR 118 just west of the City, serves the Project site. The MWRF currently receives an average of 2.0 million gallons per day (MGD), or 2,206 AFY, and is designed to treat up to 5 MGD

(VCWWD 2021). Therefore, the MWRF has an available surplus capacity of approximately 3 MGD , or 3,360 AFY.

Based off information provided in the Sewer Area Study (Appendix L), there is an existing 8-inch sewer main within Gabbert Road at the eastern side of the Proposed Project from VCWWD No. 1. The existing sewer system in Gabbert Road consists of 8-inch pipe with gravity flow at 0.075 percent slope and connects to 27-inch sewer main located in Arroyo Simi Flood control channel. Peak flows within the 8-inch pipe, showed a maximum of 0.14 MGD. The Project's residential operations would generate approximately 31.7 AFY of wastewater or a nominal 0.5 percent of the MWRF's available capacity; thus, the MWRF has sufficient capacity to support the Project; and impacts would be less than significant.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant Impact. The Project proposes to construct a 139-unit detached single family development on currently undeveloped land with some foundations from previous buildings; therefore, only limited demolition is required. In accordance with Moorpark Municipal Code Section 8.36, the Project would prepare a construction and demolition materials management plan that details how the Project will divert or recycle at least 65 percent of construction materials. Construction waste generated by the Project would be taken to a facility approved by the City for the diversion of construction and demolition materials within the County.

Solid waste resulting from the Project would be taken to the Simi Valley Landfill & Recycling Center (SVLRC) by a licensed contractor. According to the California Department of Resources Recycling and Recovery (CalRecycle), SVLRC has a permitted daily throughput of 9,244 tons per day and a remaining capacity of 82,954,873 cubic yards (CalRecycle 2022). This is sufficient capacity for solid waste generated by the Project. Thus, impacts would be less than significant.

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less Than Significant Impact. The Project consists of some minimal demolition of existing foundations onsite, addition of utilities within the area, and construction of 139 new single family detached dwelling units. In accordance with Moorpark Municipal Code Section 8.36, the Project would prepare a construction and demolition materials management plan that details how the Project will divert or recycle at least 65 percent of construction and demolition material. Construction and demolition waste generated by the Project would be taken to a facility approved by the City for the diversion of construction and demolition materials within the County. Compliance with this Section of the Municipal Code would align the Project with goals set forth in AB 939 and AB 341, which state the City must divert at least 50 percent of its annual waste and set a 75-percent recycling goal for California by 2020. Solid waste resulting from the Project would be taken to SVLRC. This is sufficient capacity for solid waste generated by the Project. Impacts would be less than significant.

4.20 WILDFIRE

20.	WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
(b)	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
(c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
(d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

4.20.1 Impact Analysis

a) Would the project impair an adopted emergency response plan or emergency evacuation plan?

Less than Significant Impact. The Project is located within the LRA VHFSZ (California Department of Forestry and Fire Protection 2022). As mentioned in Section 4.9 above, the City has developed an Emergency Services Program that includes City staff receiving training in emergency preparedness, management, and mitigation; the City maintaining the EOC; the City organizing and training a Disaster Assistant Response Team composed of volunteers; and the City promoting emergency planning, training, public awareness, and education (City 2001). Additionally, the County's MHMP includes an overview of the risk assessment process and identifies hazards present in the jurisdiction, hazard profiles, and vulnerability assessments. The plan also identifies goals, objectives, and actions for each jurisdiction in the County, including participating cities (such as Moorpark) and the County unincorporated areas (County 2015).

No roads would be permanently closed as a result of the construction or operation of the Project, and no structures would be developed that could potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. The Proposed Project would be accessed via North Hills Parkway as well as an access road that would provide access to Gabbert Road. The proposed roadways and access road would provide sufficient ingress/egress for the Project site. The Project would not prohibit subsequent programs or plans from being established or prevent the goals and objectives of existing plans from being carried out. In addition, the Project will require review and approval by the Ventura County Fire Department to ensure that the Project site will have adequate access to emergency services.

The Project would not interfere with the City's Emergency Services Program or the MHMP because it would not prohibit subsequent programs or plans from being established or prevent the goals and objectives of existing plans from being carried out. The Project is located more than 1 mile north from the closest Critical Facility for emergency response, Moorpark High School (City 2001).

After the development is completed, new access will be provided via construction of North Hills Parkway along the southerly property boundary to Gabbert Road. North Hills Parkway will terminate as a cul-de-sac around the middle of the southern property line. A separate fire lane access would extend from northwest Thoroughbred Drive down to Los Angeles Drive. A separate 30-foot-wide fire access road to the planned development will occur from the eastern side of the development from Gabbert Road. The Project operations would not prevent access to this Critical Facility during an emergency. Thus, impacts would be less than significant.

b) *Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?*

Less than Significant Impact. Although the Project site is within the LRA VHFSZ, the Project is in an area with elevation changes and gradual slopes. Santa Ana Wind Events tend to occur in the months of August, September, and October; but typically winds in the area are relatively low (National Oceanic and Atmospheric Administration 1998). The Project site contains dry vegetation that would be prone to spread files during fire events. However, building code fire safety requirements, as well General Plan policies, and approval by the Ventura County Fire Department would require the provision of fire suppression and payment of fire protection facility fees, which would aid in preventing the spread of wildfires. Landscaping associated with the Proposed Project would comply with the City Landscaping Manual and include a fuel modification plan and defensible space as required by Public Resources Code Section 4291(a) and (b).As noted in CA 2, in Section 4.9 above, all plants included in the landscaping would be drought tolerant in order to comply with landscaping requirements for Very Fire Hazard Severity Zones. Therefore, compliance with these policies would result in less-than-significant impacts.

c) *Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?*

Less than Significant Impact. Although the Project is located within the LRA VHFSZ, the Project is located within a non-urbanized area and would involve the development of the majority of the Project site with structures. Fuel breaks and brush clearance are expected to be required as part of the Project. Construction BMPs, such as ensuring equipment has spark arresters installed, would ensure temporary construction does not exacerbate fire risks in the area. This impact would be less than significant.

d) *Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability or drainage changes?*

Less Than Significant Impact. The Project is located within the LRA VHFSZ and would introduce new residents into the area. As discussed in Section 4.10, Hydrology and Water Quality, development of

the Project would introduce more impervious surfaces, which would increase the volume of stormwater runoff from the site. This increase in runoff volume could also increase the rate of surface runoff and flooding on or off site. However, landscaping of the Project area would help reduce offsite flows and reduce runoff volumes and rates. Furthermore, the Project would comply with all NPDES requirements, Ventura County's Municipal Separate Storm Sewer System Permit, and the City's runoff requirements and would therefore not significantly increase the rate of surface runoff and flooding on or off site. The Project site is varied but does not contain any slopes that pose a risk of landslide or slope instability. The Project site is located gently sloped hills in the north of the City; therefore, post-fire slope instability resulting in landslides or flooding would not be likely to result in impacts to development on the Project site. The Project site does not face a risk of flooding from upstream flooding or landslides; the Project is located in Zone X by FEMA and has minimal risk of flooding. Risk of downslope or downstream flooding at the Project site is low. Impacts would be less than significant.

4.21 MANDATORY FINDINGS OF SIGNIFICANCE

21.	MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(a)	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
(b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects?)	☐	☒	☐	☐
(c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

4.21.1 Impact Analysis

a) *Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

Less Than Significant With Mitigation Incorporated. This Initial Study has analyzed the impacts to biological and cultural resources in the previous sections and have noted the potential direct and

indirect impacts, from no impact to less than significant with mitigation incorporated, from the Proposed Project.

Biological surveys were conducted on the Project site and determined that due to the lack of suitable habitat and lack in presence of special status wildlife species, impacts will be less than significant for native resident or migratory fish or wildlife species and impacts will be less than significant with mitigation incorporated for impacts to nesting birds (MM-BIO-1). Jurisdictional features were found in the northwest corner of the site and were within the CDFW and RWQCB boundaries. Mulefat scrub within the ephemeral drainage were proposed to be impacted by the development of the Project. Impacts to protected wetlands would result in less-than-significant impacts with implementation of MM-BIO-2 and MM-BIO-3.

A record search was conducted for the Project. Based on the results of the record search, no previously recorded resources or any other listed or potentially significant properties were located within the Project site. As with most development activities requiring excavation, there is potential for discovery of unidentified resources. Implementation of MM-CUL-1, MM-PALEO-1, MM-PALEO-2, in addition to the standard condition of approval for archaeological or historical finds, would result in impacts to be less than significant.

b) *Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects?)*

Less Than Significant With Mitigation Incorporated. The Project would result in less than significant, or less than significant impact with mitigation incorporated with respect to cumulatively considerable impacts. The Project is located in an area that is designated as rural residential low density under the General Plan and zoned as agricultural. Submittal of the GPA and ZC would permit the Project site for higher density occupancy, thereby being consistent with the City's land use policies.

The cumulative effects of a full build out have been previously analyzed in the City's General Plan. Furthermore, the City is currently updating their General Plan and Housing Element to account for future population growth. The Project would not exceed significance thresholds for air quality and greenhouse gas impacts during construction and operation of the Project. Standard conditions and MM-AQ-1 and MM-AQ-2 have been implemented to ensure impacts would be less than significant.

Cumulative projects were also analyzed in the TIA and the results indicate that the Project will not require mitigation measures as there is no significant degradation to the study intersections. The Project will also be subjected to its fair share of development impact fees to be paid by the Project Applicant. Impacts therefore would be less than significant.

c) *Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

Less Than Significant With Mitigation Incorporated. Environmental effects that may cause substantial adverse effects on humans typically result from impacts to air quality and greenhouse gas, noise, hazardous materials, ground shaking, hazardous design features regarding transportation and

roadway designs and wildfire. The analysis of this document indicates that impacts would be less than significant to the environmental areas mentioned above. In addition, incorporation of mitigation measures to address impacts related to air quality, VOCs, and seismic settlement (MM-AQ-1, MM-AQ-2, MM-GEO-1) would result in less-than-significant impacts and, therefore, would not cause substantial adverse impacts to human beings.

SECTION 5.0 – REFERENCES

The following is a list of references used in the preparation of this document.

California Department of Forestry and Fire Protection

2022 Fire Hazard Severity Zone. Accessed January 25, 2022 at: https://egis.fire.ca.gov/FHSZ/

California Department of Conservation (DOC)

2022a Important Farmland Finder. Accessed March 24, 2022 at: https://maps.conservation.ca.gov/DLRP/CIFF/

2022b Earthquake Zones. Accessed March 24, 2022 at: https://maps.conservation.ca.gov/cgs/EQZApp/

2022c Mines Online. Accessed March 24, 2022 at: https://maps.conservation.ca.gov/mol/index.html.

California Department of Resources Recycling and Recovery (CalRecycle)

2022 SWIS Facility/Site Activity Details: Simi Valley Landfill & Recycling Center (56-AA-0007). Accessed March 24, 2022 at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/608?siteID=3954.

California Energy Commission (CEC)

2018 California Retail Fuel Outlet Annual Reporting Results. Available online at: https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting.

2020 Energy Consumption by Entity. Available online at: http://www.ecdms.energy.ca.gov/elecbyutil.aspx

California Department of Transportation

2019 California State Scenic Highway System Map. Accessed March 24, 2022 at: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa

City of Moorpark (City)

1986 General Plan: Open Space, Conservation & Recreation Element. Accessed March 24, 2022 at: https://moorparkca.gov/DocumentCenter/View/172/OSCAR-Element?bidId=

1998 General Plan: Noise Element. Accessed March 24, 2022 at: https://moorparkca.gov/DocumentCenter/View/171/Noise-Element?bidId=

2001 General Plan: Safety Element. Accessed January 25, 2022 at: https://moorparkca.gov/DocumentCenter/View/173/Safety-Element?bidId=

2012 Landscape Design Standards and Guidelines. Accessed March 24, 2022 at: https://moorparkca.gov/DocumentCenter/View/46/Landscape-Standards-and-Guidelines?bidId=.

2014 Housing Element. Accessed March 23, 2022 at: https://moorparkca.gov/DocumentCenter/View/169/Housing-Element?bidId=

2015 Ventura County Multi-Hazard Mitigation Plan. Available online at: https://s29710.pcdn.co/wp-content/uploads/2018/05/ventura-hmp_main-body_september-2015.pdf. September 2015.

2020a Zoning Map. Accessed March 24, 2022 at: https://www.moorparkca.gov/215/Zoning-Map

2020b General Plan Map. Accessed March 24, 2022 at: https://moorparkca.gov/212/General-Plan

2020c An Examination of the City's Existing Conditions. December 2020. Available online at: https://www.moorparkca.gov/DocumentCenter/View/11380/GPU-Existing-Conditions-Report?bidId=.

2022 Municipal Code. Accessed March 24, 2022. Available online at: https://qcode.us/codes/moorpark/.

Cooperative Strategies

2022 Residential and Commercial/Industrial Development School Fee Justification Study. Moorpark Unified School District. June 2, 2022.

County of Ventura (County)

2011 Technical Guidance Manual for Stormwater Quality Measures. Accessed January 26, 2022 at: https://www.vcstormwater.org/publications/manuals/tech-guide-manual

2015 Ventura County Multi-Hazard Mitigation Plan. Accessed March 24, 2022 at: https://moorparkca.gov/DocumentCenter/View/7344/Multi-Hazard-Mitigation-Plan-RES-CC-2016-3556-2016-1116?bidId=.

2019 Habitat Connectivity and Wildlife Corridors Map. Accessed July 15, 2022 at: https://docs.vcrma.org/images/pdf/planning/HCWC/HCWC_map.pdf

2020 Ventura County 2040 General Plan Update: Background Report. Accessed March 24, 2022 at: https://vc2040.org/images/Draft_Background_Report_-_Jan._2020/PRDBR-AllChapters_Jan2020_compressed_VCGPUweb.pdf.

Department of Toxic Substances Control

2022 Envirostor Database. Accessed April 19, 2022 at: https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=moorpark%2C+ca

Fox Canyon Groundwater Management Agency (FCGMA)

2022 Las Posas Valley Basin Groundwater Sustainability Plan. January 2022.

Google

2022 Google Earth Pro. Accessed March 24, 2022 at: https://earth.google.com/web/

Los Angeles Regional Water Quality Control Board (LARWQCB)

2014 LARWQCB Basin Plan. Available online at: https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/.

National Oceanic and Atmospheric Administration

1998 Annual Global Climate Report. National Centers for Environmental Information. Accessed January 25, 2022 at: https://www.ncdc.noaa.gov/sotc/global/199813

Southern California Association of Governments (SCAG)

2019 Local Profiles Report. Available online at https://scag.ca.gov/sites/main/files/file-attachments/moorpark_localprofile.pdf?1606015228

2020 Demographics and Growth Forecast. Available at: https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf?1606001579

State Water Resources Control Board

2022 Geotracker database. Accessed April 19, 2022 at: https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=moorpark%2C+ca

Ventura County Air Pollution Control District (VCAPCD)

2003 Ventura County Air Quality Assessment Guidelines. Available at: http://www.vcapcd.org/pubs/Planning/VCAQGuidelines.pdf

Ventura County Airport Land Use Commission

2000 Airport Comprehensive Land Use Plan Update for Ventura County. Accessed April 19, 2022 at: https://www.goventura.org/wp-content/uploads/2018/03/2000-airport-land-use-for-ventura-county.pdf

Ventura County Waterworks District (VCWWD) No. 1

2021 2020 Urban Water Management Plan. Accessed March 24, 2022 at: https://wuedata.water.ca.gov/public/uwmp_attachments/9460813224/VCWWD1_%20UWMP_Final_2020.pdf

Western Regional Climate Center (WRCC)

2016 Period of Monthly Climate Summary for Thousand Oaks 1 SW, California (048904). Available online at: ttps://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca8904

APPENDIX A
Air Quality and Greenhouse Gas Study



North Ranch Residential Development

Air Quality and Greenhouse Gas Study

prepared for

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26500 West Agoura Road #652
Calabasas, California 91302

prepared by

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January 2022

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Table of Contents

1 Introduction 1

2 Project Description 2

3 Air Quality Background 3
- 3.1 Local Climate and Meteorology 3
- 3.2 Air Quality Regulation 3
- 3.3 Current Air Quality 5
- 3.4 Air Quality Management Plan 6
- 3.5 Sensitive Receptors 7

4 Greenhouse Gas Emissions Background 8
- 4.1 Greenhouse Gas Emissions Inventory 9
- 4.2 Potential Effects of Climate Change 9
- 4.3 Local Regulations and CEQA Requirements 12

5 Significance Thresholds and Methodology 15
- 5.1 Air Quality Thresholds 15
- 5.2 Greenhouse Gas Emissions Thresholds 16
- 5.3 Air Quality Analysis Methodology 17
- 5.4 Greenhouse Gas Emissions Analysis Methodology 17

6 Impact Analysis 20
- 6.1 Air Quality Impacts 20
- 6.2 Greenhouse Gas Emissions Impacts 23

7 References 26

Tables

Table 1 Federal and State Ambient Air Quality Standards 4

Table 2 Ambient Air Quality at the Simi Valley Monitoring Station 6

Table 3 Construction Maximum Daily Air Pollutant Emissions (lbs/day) 21

Table 4 Maximum Daily Operational Emissions (lbs/day) 22

Table 5 Estimated Construction Emissions of Greenhouse Gases 23

Table 6 Long-Term Annual Emissions of Greenhouse Gases 24

Appendix

Appendix A – Assumptions

Appendix B - Calculations

Appendix C - CalEEMod Output

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1 Introduction

This study is an analysis of the potential air quality and greenhouse gas (GHG) emissions impacts of the proposed North Ranch Residential Development (the project) in Moorpark, California. The study has been prepared by Rincon Consultants, Inc. under contract to West Pointe Homes, Inc., and at the request of the City of Moorpark, for use in support of environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to evaluate the project's criteria air pollutant and GHG emissions and the associated impacts to regional air quality and climate change. The analysis herein is based partially on the Traffic Impact Analysis prepared by K2 Traffic Engineering, Inc. (2021).

2 Project Description

The project site is a 68-acre property in the City of Moorpark and is bounded by Gabbert Road to the east and residential uses to the north. Lands to the east and south are undeveloped. The project site is primarily undeveloped, but is occupied by two residential homes, paved driveways, and a tennis court.

The project would involve the construction of a residential development with 139 dwelling units and 5 estate lots in the northern portion of the project site. In addition, the project involves the construction of North Hill Parkway along the southern boundary of the site and a portion of North Village Road along the western boundary of the site. The remaining portions of North Village Drive, south of the intersection with North Hill Parkway and north of the northern project site boundary, would be constructed by developers of other parcels in the project site vicinity.

3 Air Quality Background

3.1 Local Climate and Meteorology

The project site is located in the South Central Coast Air Basin (SCCAB) and is under the jurisdiction of the Ventura County Air Pollution Control District (VCAPCD). Air quality in SCCAB is affected by the emission sources located in the region, as well as by three natural factors:

- A natural terrain barrier to emission dispersion north and east of the metropolitan Los Angeles area.
- A dominant onshore flow transports and disperses air pollution by driving air pollution originating in industrial areas along the coast toward the natural terrain barrier, limiting horizontal dispersion. The effect of this onshore flow is a gradual degradation of air quality from coastal to inland areas. The greatest impacts can be seen in the San Gabriel Valley and near Riverside at the foot of the San Gabriel Mountains.
- Atmospheric inversions limit dispersion of air pollution on a vertical scale. Temperature typically decreases with altitude. However, under inversion conditions, temperature begins to increase at some height above the ground. The temperature increase continues through an unspecified layer after which the temperature change with height returns to standard conditions. The inversion layer is typically very stable and acts as a cap to the vertical dispersions of pollutants.

3.2 Air Quality Regulation

Federal and State governments have established ambient air quality standards for the protection of public health. The United State Environmental Protection Agency (U.S. EPA) is the federal agency designated to administer air quality regulation, while the California Air Resources Board (CARB) is the State equivalent in the California EPA. County-level Air Pollution Control Districts (APCDs) provide local management of air quality. CARB has established air quality standards and is responsible for the control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. CARB has established 14 air basins statewide.

The U.S. EPA has set primary national ambient air quality standards (NAAQS) for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead (Pb). Primary standards are those levels of air quality deemed necessary, with an adequate margin of safety, to protect public health. In addition, the State of California has established health-based ambient air quality standards for these and other pollutants, some of which are more stringent than the federal standards. Table 1 lists the current federal and State standards for regulated pollutants.

Table 1 Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Primary Standards	Federal Attainment Status	California Standard	State Attainment Status
Ozone	1-Hour	---	Non-Attainment	0.09 ppm	Non-Attainment
	8-Hour	0.070 ppm		0.070 ppm	
Carbon Monoxide	8-Hour	9.0 ppm	Unclassified/ Attainment	9.0 ppm	Attainment
	1-Hour	35.0 ppm		20.0 ppm	
Nitrogen Dioxide	Annual	0.053 ppm	Unclassified/ Attainment	0.030 ppm	Attainment
	1-Hour	0.10 ppm		0.18 ppm	
Sulfur Dioxide	Annual	---	Unclassified/ Attainment	---	Attainment
	24-Hour	0.14 ppm		0.04 ppm	
	1-Hour	0.075 ppm		0.25 ppm	
PM_{10}	Annual	---	Unclassified	20 µg/m^3	Non-Attainment
	24-Hour	150 µg/m^3		50 µg/m^3	
$PM_{2.5}$	Annual	12 µg/m^3	Unclassified/ Attainment	12 µg/m^3	Attainment
	24-Hour	35 µg/m^3		---	
Lead	30-Day Average	---	Unclassified/ Attainment	1.5 µg/m^3	Attainment
	3-Month Average	0.15 µg/m^3		---	

ppm = parts per million
µg/m^3 = micrograms per cubic meter
Source: CARB 2016 CARB 2021.

The VCAPCD is the local air quality management agency. The local air quality management agency is required to monitor air pollutant levels to ensure that applicable air quality standards are met and, if they are not met, to develop strategies to meet the standards.

Depending on whether or not the standards are met or exceeded, the air basin is classified as being in “attainment” or “non-attainment.” The part of SCCAB within which the project site is located is in non-attainment for both the federal and State standards for ozone and State standards for particulate matter (PM_{10}) (CARB 2021). Thus, SCCAB currently exceeds several State and federal ambient air quality standards and VCAPCD is required to implement strategies to reduce the pollutant levels to recognized acceptable standards. Characteristics of ozone and suspended particulates are described below.

Ozone

Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NOx) and reactive organic gases (ROG). NOx is formed during the combustion of fuels, while reactive organic gases are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in substantial concentrations between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans, including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Suspended Particulates

Atmospheric particulate matter is comprised of finely divided solids and liquids such as dust, soot, aerosols, fumes, and mists. The particulates that are of particular concern are PM_{10} (which measures no more than 10 microns in diameter) and $PM_{2.5}$ (a fine particulate measuring no more than 2.5 microns in diameter). The characteristics, sources, and potential health effects associated with PM_{10} and $PM_{2.5}$ can be different. Major man-made sources of PM_{10} are agricultural operations, industrial processes, combustion of fossil fuels, construction, demolition operations, and entrainment of road dust into the atmosphere. Natural sources include windblown dust, wildfire smoke, and sea spray salt. The finer, $PM_{2.5}$particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. $PM_{2.5}$is more likely to penetrate deeply into the lungs and poses a serious health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there, which can cause permanent lung damage. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

3.3 Current Air Quality

California's weather is heavily influenced by a semi-permanent high-pressure system west of the Pacific coast. The Mediterranean climate of the region and the coastal influence produce moderate temperatures year round, with rainfall concentrated in the winter months. The sea breeze, which is the predominant wind, is a primary factor in creating this climate and typically flows from the west-southwest in a day-night cycle with speeds generally ranging from 5 to 15 miles per hour.

Data on existing air quality in the Ventura County portion of the SCCAB are available for ozone and particulate matter emissions within the CARB's 2021 Annual Network Plan. The 2021 Annual Network Plan contains data for five monitoring locations throughout Ventura County. The monitoring station located closest to Moorpark and most representative of air quality at the project site is the Thousand Oaks-Moorpark Road station on the Thousand Oaks High School campus at 2323 Moorpark Road in Thousand Oaks approximately 5.6 miles southeast of the project site. However, the Thousand Oaks-Moorpark Road station does not record N_2O, CO, SO_2, or PM_{10}. The next closest location that does record N_2O, and PM_{10} data is the Simi Valley-Cochran Street station. Therefore, data from that station has been used as the best available local data for these pollutants. CO and SO_2 are no longer monitored in Ventura County and therefore are not reported. Table 2 summarizes the annual air quality data from 2018 – 2020 in the local airshed for the criteria pollutants of greatest concern in Ventura County.

Table 2 Ambient Air Quality at the Simi Valley Monitoring Station

Pollutant	2018	2019	2020
Ozone[1], ppm – Worst Hour	0.080	0.082	0.097
Number of days State exceedances (>0.09 ppm)	0	0	1
Ozone[1], ppm – Worst 8 Hours	0.073	0.074	0.084
Number of days of State exceedances (>0.07 ppm)	1	2	7
Number of days Federal exceedances (>0.075 ppm)	1	1	7
Nitrogen Dioxide[2], ppm – Worst Hour	43.0	45.0	42.0
Number of days of State exceedances (>0.18 ppm)	0	0	0
Particulate Matter[2] > 10 microns, ug/m^3 Worst 24 Hours	110.5	127.9	90.5
Estimated Number of Days of State exceedances (>50 μg/m^3)	6	4	6
Estimated Number of Days of Federal exceedances (>150 μg/m^3)	0	0	0
Particulate Matter[2] <2.5 microns, μg/m^3 Worst 24 Hours*	41.5	24.5	36.3
Estimated Number of Days of Federal exceedances (>35 μg/m^3)	1	0	1

N/A = not measured

Source: CARB 2018, 2019, 2020 Annual Air Quality Data Summaries available at http://www.arb.ca.gov/adam/topfour/topfour1.php

[1] Thousand Oaks-Moorpark Road station

[2] Simi Valley-Cochran Street station

Note: California standards for ozone, carbon monoxide, and particulate matter are not to be exceeded. Federal standard for CO not to be exceeded more than once per year. Federal ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

As shown in Table 2, the ozone concentrations at the Thousand Oaks-Moorpark Road monitoring station exceeded the one-hour State standard once in 2020 and exceeded the eight hour standard ten times between 2018 and 2020, and exceeded the federal eight hour standard nine times between 2018 and 2020. The PM_{10} concentrations did not exceed the federal standards from 2018 to 2020. However, the PM_{10} concentration exceeded State standards on a total of sixteen days from 2018 to 2020. $PM_{2.5}$concentrations exceeded State standards twice between 2018 and 2020. Information regarding CO and SO_2 concentrations is not available from any of the monitoring stations in the County. Monitoring ceased throughout Ventura County in 2004 because of the low levels of CO recorded (VCAPCD, 2007).

3.4 Air Quality Management Plan

Under State law, the VCAPCD is required to prepare a plan for air quality improvement for pollutants for which the District is in non-attainment. In 2016, VCAPCD adopted an Air Quality Management Plan (AQMP) that provides a strategy for the attainment of State and federal air quality standards. As noted previously, Ventura County is not in attainment for the 2008 federal eight-hour ozone standard. The plan for Ventura County to meet the 2008 federal ozone standard, which has a deadline of 2020, is currently in development. While the 2016 AQMP contains some

additional local control measures, most of the emissions reductions that Ventura County needs to attain the federal eight hour ozone standard and continue progress to the State ozone standard will come from CARB's State Strategies. These strategies focus on reducing emissions from mobile sources, consumer products, and pesticides to substantially improve air quality.

3.5 Sensitive Receptors

Ambient air quality standards represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under age 14, the elderly over age 65, persons engaged in strenuous work or exercise, and people with cardiovascular and chronic respiratory diseases. Sensitive receptors that could potentially be affected by air quality impacts associated with project construction include the residential uses located to the north and east of the project site, approximately 150 feet from the project site boundary. In addition, Chaparral Middle School is located approximately 0.8 miles southwest of the project site. Because the project doesn't involve substantial new point sources of emissions on-site, air pollutant emissions associated with long-term use of the site would not be location-specific, but rather would be a contribution to the regional airshed.

4 Greenhouse Gas Emissions Background

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC 2014), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20th century (IPCC 2014).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are usually by-products of fossil fuel combustion, and CH_4 results from off-gassing associated with agricultural practices and landfills. Human-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and SF_6 (United States Environmental Protection Agency [U.S. EPA] 2020).

Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), which is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 30, meaning its global warming effect is 30 times greater than CO_2 on a molecule per molecule basis (Intergovernmental Panel on Climate Change [IPCC] 2021).[1]

The accumulation of GHGs in the atmosphere regulates Earth's temperature. Without the natural heat-trapping effect of GHGs, Earth's surface would be about 33 degrees Celsius (°C) cooler (World Meteorological Organization 2021). GHG emissions from human activities, particularly the

[1] The Intergovernmental Panel on Climate Change's (2021) *Sixth Assessment Report* determined that methane has a GWP of 30. However, the 2017 Climate Change Scoping Plan published by the California Air Resources Board uses a GWP of 25 for methane, consistent with the Intergovernmental Panel on Climate Change's (2007) *Fourth Assessment Report*. Therefore, this analysis utilizes a GWP of 25.

consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of concentrations that occur naturally.

4.1 Greenhouse Gas Emissions Inventory

Worldwide anthropogenic emissions of GHGs were approximately 46,000 million metric tons (MMT, or gigatonne) CO_2e in 2010 (IPCC, 2014). CO_2 emissions from fossil fuel combustion and industrial processes contributed about 65 percent of total emissions in 2010. Of anthropogenic GHGs, carbon dioxide was the most abundant accounting for 76 percent of total 2010 emissions. Methane emissions accounted for 16 percent of the 2010 total, while nitrous oxide and fluorinated gases account for 6 and 2 percent respectively (IPCC, 2014).

Total United States (U.S.) GHG emissions were 6,676.6 MMT CO_2e in 2018. Emissions increased by 2.9 percent from 2017 to 2018, and since 1990, total U.S. emissions have increased by an average annual rate of 0.13 percent for a total increase of 3.7 percent between 1990 and 2018. The increase from 2017 to 2018 was primarily driven by increased fossil fuel combustion because of multiple factors, including increased energy usage from greater heating and cooling needs due to a colder winter and hotter summer in 2018 as compared to 2017. In 2018, the transportation and industrial end-use sectors accounted for 36 percent and 26 percent, respectively, of nationwide GHG emissions while the residential and commercial end-use sectors accounted for 20 percent and 17 percent of nationwide GHG emissions, respectively, with electricity emissions distributed among the various sectors (U.S. EPA 2020).

Based on CARB's California Greenhouse Gas Inventory for 2000-2019, California produced 418.2 MMT CO_2e in 2019. The major source of GHG emissions in California is the transportation sector, which comprises 40 percent of the state's total GHG emissions. The industrial sector is the second largest source, comprising 21 percent of the state's GHG emissions, while electric power accounts for approximately 14 percent (CARB 2021). The magnitude of California's total GHG emissions is due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions as compared to other states is its relatively mild climate. In 2016, the State of California achieved its 2020 GHG emission reduction target of reducing emissions to 1990 levels as emissions fell below 431 MMT CO_2e (CARB 2021). The annual 2030 statewide target emissions level is 260 MMT CO_2e (CARB 2017).

4.2 Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past four decades has been warmer than all the previous decades in the instrumental record, and the decade from 2011 through 2020 has been the warmest. The observed global mean surface temperature for the decade from 2011 to 2020 was approximately 1.09°C (0.95°C to 1.20°C) higher than the global mean surface temperature over the period from 1850 to 1900 (IPCC 2021). Furthermore, several independently analyzed data records of global and regional Land-Surface Air Temperature obtained from station observations jointly indicate that Land-Surface Air Temperature and sea surface temperatures have increased. Due to

past and current activities, anthropogenic GHG emissions are increasing global mean surface temperature at a rate of 0.2°C per decade. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past three decades (IPCC 2014, 2018, and 2021).

Potential impacts of climate change in California may include reduced water supply from snowpack, sea level rise, more extreme heat days per year, more large forest fires, and more drought years (State of California 2018). In addition to statewide projections, *California's Fourth Climate Change Assessment* includes regional reports that summarize climate impacts and adaptation solutions for nine regions of the state and regionally specific climate change case studies (State of California 2018). However, while there is growing scientific consensus about the possible effects of climate change at a global and statewide level, current scientific modeling tools are unable to predict what local impacts may occur with a similar degree of accuracy. Below is a summary of some of the potential effects that could be experienced in California because of climate change.

Air Quality

Scientists project that the annual average maximum daily temperatures in California could rise by 2.4 to 3.2°C in the next 50 years and by 3.1 to 4.9°C in the next century (State of California 2018). Higher temperatures are conducive to air pollution formation, and rising temperatures could therefore result in worsened air quality in California. As a result, climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. In addition, as temperatures have increased in recent years, the area burned by wildfires throughout the state has increased, and wildfires have occurred at higher elevations in the Sierra Nevada Mountains (State of California 2018). If higher temperatures continue to be accompanied by an increase in the incidence and extent of large wildfires, air quality could worsen. Severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains could tend to temporarily clear the air of particulate pollution, which would effectively reduce the number of large wildfires and thereby ameliorate the pollution associated with them (California Natural Resources Agency 2009).

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and western U.S., including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future precipitation trends and water supplies in California. Year-to-year variability in statewide precipitation levels has increased since 1980, meaning that wet and dry precipitation extremes have become more common (California Department of Water Resources 2018). This uncertainty regarding future precipitation trends complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The average early spring snowpack in the western U.S., including the Sierra Nevada Mountains, decreased by about 10 percent during the last century. During the same period, sea level rose over 0.15 meter along the central and southern California coasts (State of California 2018). The Sierra snowpack provides the majority of California's water supply as snow that accumulates during wet winters is released slowly during the dry months of spring and summer. A warmer climate is predicted to reduce the fraction of precipitation that falls

as snow and the amount of snowfall at lower elevations, thereby reducing the total snowpack (State of California 2018). Projections indicate that average spring snowpack in the Sierra Nevada and other mountain catchments in central and northern California will decline by approximately 66 percent from its historical average by 2050 (State of California 2018).

Hydrology and Sea Level Rise

As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snowpack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for saltwater intrusion. According to California Coastal Commission (CCC 2019), climate change has the potential to induce a sea level rise of up to 66 inches by 2100. The rising sea level increases the likelihood and risk of flooding. The rate of rising global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization [WMO], 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO, 2013; CCC 2019). Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent IPCC report (2021) predicts a mean sea–level rise of 11-40 inches by 2100. This prediction is more than 50 percent higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to saltwater intrusion. In addition, increased CO_2 emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has an over $50 billion annual agricultural industry that produces over a third of the country's vegetables and two-thirds of the country's fruits and nuts (California Department of Food and Agriculture 2020). Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, certain regions of agricultural production could experience water shortages of up to 16 percent, which would increase water demand as hotter conditions lead to the loss of soil moisture. In addition, crop yield could be threatened by water-induced stress and extreme heat waves, and plants may be susceptible to new and changing pest and disease outbreaks (State of California 2018). Temperature increases could also change the time of year certain crops, such as wine grapes, bloom or ripen and thereby affect their quality (California Climate Change Center 2006).

Ecosystems and Wildlife

Climate change and the potential resultant changes in weather patterns could have ecological effects on the global and local scales. Soil moisture is likely to decline in many regions as a result of higher temperatures, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: timing of ecological events; geographic distribution and range of species; species composition and the incidence of nonnative species within communities; and ecosystem processes, such as carbon cycling and storage (Parmesan 2006; State of California 2018).

4.3 Local Regulations and CEQA Requirements

California Regulations

CARB is responsible for the coordination and oversight of State and local air pollution control programs in California. California has numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

The California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) outlines California's major legislative initiative for reducing GHG emissions. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main state strategies for reducing GHG emissions to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 1990 statewide GHG level and 2020 target of 431 MMT CO_2e, which was achieved in 2016. CARB approved the Scoping Plan on December 11, 2008, which included GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among others (CARB 2008). Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since the Scoping Plan's approval.

CARB approved the 2013 Scoping Plan update in May 2014. The update defined CARB's climate change priorities for the next five years, set the groundwork to reach post-2020 statewide goals, and highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the state's longer term GHG reduction strategies with other state policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use (CARB 2014).

On September 8, 2016, the governor signed Senate Bill (SB) 32 into law, extending the California Global Warming Solutions Act of 2006 by requiring the state to further reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, and implementation of recently adopted policies and legislation, such as SB 1383 and SB 100 (see below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of 6 $MTCO_2e$ by 2030 and 2 $MTCO_2e$ by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, sub-regional, or regional level), but not for specific individual projects because they include all emissions sectors in the state (CARB 2017).

SB 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Natural Resources Agency adopted amendments to the *CEQA Guidelines* for consistency in the analysis and mitigation of greenhouse gas emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

Adopted in September 2016, SB 1383 (Lara, Chapter 395, Statues of 2016) requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. SB 1383 requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

SB 1383 also requires the California Department of Resources Recycling and Recovery, in consultation with the CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills.

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the state's Renewables Portfolio Standard Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

On September 10, 2018, the governor issued Executive Order (EO) B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100.

On September 23, 2020, Governor Newsom issued EO N-79-20, which established the following new statewide goals:

- All new passenger cars and trucks sold in-state to be zero-emission by 2035;
- All medium- and heavy-duty vehicles in the state to be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks;[2] and
- All off-road vehicles and equipment to be zero-emission by 2035 where feasible.

EO N-79-20 directs CARB, the Governor's Office of Business and Economic Development, the California Energy Commission, the California Department of Transportation, and other state agencies to take steps toward drafting regulations and strategies and leveraging agency resources toward achieving these goals.

California Environmental Quality Act

Pursuant to the requirements of SB 97, the Natural Resources Agency has adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, a variety of air districts have adopted quantitative significance thresholds for GHGs.

[2] "Drayage trucks" are on-road, diesel-fueled, heavy-duty trucks that transport containers and bulk to and from the ports and intermodal railyards as well as to many other locations.

Local Regulations

SCAG adopted a Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) that applies to the County of Ventura in September 2020. The 2020-2045 RTP/SCS "builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. It charts a path towards a more mobile, sustainable and prosperous region by making connections between transportation networks, between planning strategies and between the people whose collaboration can improve the quality of life for Southern California" (SCAG 2020).

The City of Moorpark has not yet adopted a Climate Action Plan. Likewise, the General Plan does not include any policies related to GHG emissions.

5 Significance Thresholds and Methodology

5.1 Air Quality Thresholds

To determine whether a project would have a significant impact to air quality, Appendix G of the CEQA Guidelines asks whether a project would:

a. *Conflict with or obstruct implementation of the applicable air quality plan;*
b. *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;*
c. *Expose sensitive receptors to substantial pollutant concentrations; or*
d. *Result in other emissions (such as those leading to odors adversely affecting a substantial number of people.*

The analysis presented in this report is based upon guidance found in the Ventura County Air Quality Assessment Guidelines (Guidelines), adopted by the VCAPCD in 2003. The VCAPCD's Guidelines recommend specific air emission criteria and threshold levels for determining whether a project may have a significant adverse impact on air quality within Ventura County. The project would have a significant impact if operational emissions exceed 25 pounds per day (lbs/day) of ROC or 25 lbs/day of NO_X. The 25 lbs/day thresholds for ROC and NO_X are not intended to be applied to construction emissions because such emissions are temporary. Nevertheless, the VCAPCD's Guidelines state that construction-related emissions should be mitigated if estimates of ROC or NO_X emissions from heavy-duty construction equipment exceed 25 lbs/day for either ROC or NO_X.

The VCAPCD has not established quantitative thresholds for particulate matter for either construction or operation. However, the VCAPCD indicates that a project that may generate fugitive dust emissions in such quantities as to cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or which may endanger the comfort, repose, health, or safety of any such person, or which may cause or have a natural tendency to cause injury or damage to business or property, would have a significant air quality impact. This threshold applies to the generation of fugitive dust during construction grading and excavation activities. .

Carbon Monoxide Hotspots

A CO hotspot is a localized concentration of CO that is above the State or national 1-hour or eight hour CO ambient air standards. Localized CO "hotspots" can occur at intersections with heavy peak hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high such that the local CO concentration exceeds the federal AAQS of 35.0 parts per million (ppm) or the State AAQS of 20.0 ppm.

The VCAPCD has not established quantitative thresholds for CO for either construction or operation. However, the VCAPCD states a CO hotspot screening analysis should be conducted for any project with indirect CO emissions greater than the applicable ozone project significance thresholds (i.e., 25 lbs/day) that may significantly impact roadway intersections currently operating at, or that are expected to operate at, Level of Service (LOS) E or F. A CO hotspot screening analysis should also be conducted for any project-impacted roadway intersection at which a CO hotspot might occur

(VCACPD 2003). If project emissions do not meet these criteria, then the project would have a less than significant impact related to CO hotspots. However, if project emissions exceed these criteria and the screening analysis demonstrates there may be a CO hotspot, the VCAPCD recommends use of the CALINE4 model to determine whether the project would create or contribute to an existing CO hotspot.

5.2 Greenhouse Gas Emissions Thresholds

To determine whether a project would have a significant impact to greenhouse gases, Appendix G of the CEQA Guidelines asks whether a project would:

a. *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or*
b. *Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution toward an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15355).

According to CEQA Guidelines Section 15183.5(b), projects can tier from a qualified GHG reduction plan, which allows for project-level evaluation of GHG emissions through the comparison of the project's consistency with the GHG reduction policies included in a qualified GHG reduction plan. However, neither the City nor VCAPCD has formally adopted a Climate Action Plan or other GHG reduction plan to date. Thus, this approach is not currently feasible for this analysis.

Local air districts have developed significance thresholds, which are numeric mass emissions thresholds that identify the level at which additional analysis of project GHG emissions is necessary. If project emissions are equal to or below the significance threshold, with or without mitigation, the project's GHG emissions would be less than significant. VCAPCD has not established quantitative significance thresholds for evaluating GHG emissions in CEQA analyses, but it recommends using the California Air Pollution Control Officers Association (CAPCOA)'s 2008 CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act white paper and other resources when developing GHG evaluations (VCAPCD 2003). CAPCOA's paper provides a common platform of information and tools to support local governments and was prepared as a resource, not as a guidance document. CEQA Guidelines Section 15064.4 expressly provides a "lead agency shall have discretion to determine, in the context of a particular project," whether to "quantify GHG emissions resulting from a project" and/or "rely on a qualitative analysis or performance-based standards." Updates to CEQA Guidelines Section 15064.4 that took effect in December 2018 further state that a lead agency should "focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change" and that the analysis should "reasonably reflect evolving scientific knowledge and state regulatory schemes."

Considering that no specific GHG threshold or qualified GHG reduction plan has been recommended or adopted by the City or VCAPCD, it is appropriate to refer to guidance from other agencies when discussing GHG emissions. The VCAPCD generally refers to SCAQMD methodology for evaluating GHG emissions. Therefore, based on the report recommendations, the VCAPCD would continue to

evaluate and develop suitable interim GHG threshold options for Ventura County with preference for GHG threshold consistency with the SCAQMD and the SCAG region.

As an interim method of determining significance under CEQA until statewide significance thresholds are established, the SCAQMD developed a tiered flowchart in 2008 to determine GHG significance thresholds. The SCAQMD flowchart uses a tiered approach in which a proposed project is deemed to have a less than significant impact related to GHG emissions when specific conditions are met. Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA. Tier 2 consists of determining whether or not the project is consistent with a GHG reduction plan, including a Climate Action Plan (CAP). The City of Moorpark has not adopted a CAP. Therefore, for the purpose of this analysis, a significant GHG emissions impact would occur if the project-generated emissions exceed 3,000 $MTCO_2e$ (SCAQMD, Proposed Tier 3 Threshold, September 2010).

5.3 Air Quality Analysis Methodology

Construction Emissions Estimates

The California Emissions Estimator Model (CalEEMod) version 2020.4.0 was used to estimate construction emissions. CalEEMod was developed by SCAQMD and is used by jurisdictions throughout the state to quantify criteria pollutant emissions. Maximum daily pollutant emissions during the construction phase include emissions from worker trips, hauling trips, construction vehicle emissions and fugitive dust from site preparation, grading, paving, building construction, and architectural coating phases. Emissions include worker trips, hauling trips, construction vehicle emissions, and fugitive dust. VCAPCD Rule 74.2, Architectural Coatings, was applied to CalEEMod and any non-residential volatile organic compounds (VOC) were assumed to be 150 grams per liter, while residential VOC were assumed to be 75 g/L for interior and 100 g/L for exterior architectural coatings, based on the defaults of CalEEMod. Additionally, Rule 55, Fugitive Dust, was applied to CalEEMod for watering the construction site twice a day. The CalEEMod default phase lengths were adjusted from the defaults to fit the anticipated construction length of approximately 30 months from July 1, 2022 to December 31, 2024. Detailed Assumptions are included in Appendix A.

Operational Emissions

CalEEMod was also used to estimate the project's operational emissions. Operational emissions include mobile source emissions, energy emissions, and area source emissions. Mobile source emissions are generated by the increase in motor vehicle trips to and from the project site associated with operation of on-site development. Trip generation estimates were based on the Traffic Impact Analysis completed for the project by K2 Traffic Engineering, Inc. (K2 Traffic Engineering, Inc. 2021). Emissions attributed to energy use include natural gas consumption for space and water heating. Area source emissions are generated by landscape maintenance equipment, consumer products and architectural coating.

5.4 Greenhouse Gas Emissions Analysis Methodology

Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude of potential project impacts. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98 percent of all GHG emissions by volume (IPCC, 2014) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and SF_6, were also considered for the

analysis. However, emissions of fluorinated gases are primarily associated with industrial processes; because the project involves a residential development, the quantity of fluorinated gases would be minimal. Emissions of all GHGs are converted into their CO_2e. Minimal amounts of other main GHGs (such as chlorofluorocarbons [CFCs]) would be emitted, and these other GHG emissions would not substantially add to the calculated CO_2e amounts. Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) CEQA and Climate Change white paper (2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (2009).

This analysis takes into account current State and federal measures that are intended to reduce GHG emissions. State and federal measures that are built into the emissions model calculation include Title 24 Energy Standards, Pavley (Clean Car Standards) and Low Carbon Fuel Standards, and the Renewable Energy Portfolio requirements.

Construction Emissions

Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches adequately address impacts from temporary construction activity. As stated in the CEQA and Climate Change white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008). As discussed above, following VCAPCD's guidance this analysis follows SCAQMD's recommended GHG thresholds. Therefore, construction-related emissions are amortized over a 30-year period, which is recommended by SCAQMD (2010). Due to the size and the nature of the development, it is possible for demolition, site preparation, grading, paving, and the initial phasing of building construction to occur on different parts of the site on the same day. Therefore, maximum emissions for 2022 take into account this potential conservative scenario. Also, there is the potential for building construction to overlap with both paving and architectural coating activities in future years. Therefore, years 2023 and 2024 assume those conservative scenarios.

On-Site Operational Emissions

CalEEMod provides operational emissions of CO_2, N_2O, and CH_4. Emissions from energy use include electricity and natural gas use. The emissions factors for natural gas combustion are based on EPA's AP-42, (Compilation of Air Pollutant Emissions Factors) and CCAR. Electricity emissions are calculated by multiplying the energy use times the carbon intensity of the utility district per kilowatt hour (CalEEMod User Guide 2021). The default electricity consumption values in CalEEMod include the CEC-sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies.

Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod and utilize standard emission rates from CARB, U.S. EPA, and emission factor values provided by the local air district (CalEEMod User Guide 2021).

Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod User Guide 2021). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions from water and wastewater usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California.

For mobile sources emissions were quantified in CalEEMod. The estimate of total daily trips associated with the project was based on the standard Institute of Transportation Engineers (ITE) vehicle trip rates, consistent with the traffic study, and was calculated and extrapolated to derive total annual mileage in CalEEMod.

6 Impact Analysis

6.1 Air Quality Impacts

AQMP Consistency

The VCAPCD Guidelines state that project consistency with the AQMP can be determined by comparing the actual population growth in Ventura County with the projected growth rates used in the AQMP. However, if there are more recent population forecasts that have been adopted by the Ventura Council of Governments (VCOG) where the total County population is lower than that included in the most recently adopted AQMP population forecasts, lead agencies may use the more recent VCOG forecasts for determining AQMP consistency.

The Ventura County 2020 population was estimated at 886,359 in the 2016 AQMP, with an estimated population of 905,574 by 2025 (project buildout). This represents an approximate 2 percent growth from 2020 and an 8.4 percent increase from 2012 (baseline for AQMP of 835,400) (VCAPCD 2017). The project involves the development of 144 single-family residential units. Using an average household size of 3.23 persons (DOF, 2021), the project would add about 465 residents to the City of Moorpark. The addition of 465 new residents would increase Ventura County's population to 906,039 residents, which falls within the population growth forecast for the County. The project would account for approximately 2.42 percent of Ventura County's forecast population growth through 2025. Therefore, the project would not generate growth that would exceed the VCAPCD's projected population growth forecast and would be consistent with the growth assumptions in the VCAPCD AQMP. No impacts would occur.

Construction Impacts

Construction of the project would generate temporary air pollutant emissions. These impacts are associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy duty construction vehicles and soil hauling trucks, in addition to ROG that would be released during the drying phase upon application of architectural coatings. Construction would generally consist of demolition, site preparation, grading, erection of the proposed buildings, paving, and architectural coating.

The site preparation and grading phases involve the greatest amount of heavy equipment and the greatest generation of fugitive dust. Table 3 summarizes maximum daily pollutant emissions from project construction (Appendix B).

Table 3 Construction Maximum Daily Air Pollutant Emissions (lbs/day)

Construction Year	Estimated Emissions (lbs/day)		
	ROC	NO_x	PM_{10}
Unmitigated Construction Emissions			
2022 Maximum lbs/day	13	124	6
2023 Maximum lbs/day	38	26	1
2024 Maximum lbs/day	38	25	1
Maximum Emissions	**38**	**124**	**6**
VCAPCD Threshold	25	25	N/A
Threshold Exceeded	**Yes**	**Yes**	**No**
Mitigated Construction Emissions			
2022 Maximum lbs/day	3	12	14
2023 Maximum lbs/day	19	5	1
2024 Maximum lbs/day	19	5	1
Maximum Emissions	**19**	**12**	**14**
VCAPCD Threshold	25	25	N/A
Threshold Exceeded	**No**	**No**	**No**

Notes: All calculations were made using CalEEMod. See the Appendix B for CalEEMod results.

As noted earlier, the VCAPCD's 25 lbs/day thresholds for ROC and NO_X do not apply to construction emissions because such emissions are temporary. Therefore, the project's air quality impacts would be less than significant. However, the VCAPCD recommends mitigation if ROC or NO_X emissions exceed 25 lbs/day during construction activities. As shown in Table 3, ROC and NO_X emissions generated during project construction would exceed 25 lbs/day. Implementation of Mitigation Measures AQ-1 and AQ-2 would be required to reduce ROC and NO_x emissions generated during construction activities.

Mitigation Measures

AQ-1: Tier 4 Equipment. The developer shall ensure that all onsite vehicles and equipment with horsepower greater than 50 shall meet, at a minimum, USEPA Tier IV final engine certification requirements. If Tier IV final equipment is not available, the contractor may apply other technologies available for construction equipment such that it would achieve a reduction in NOx and PM emissions comparable to that of Tier IV final construction equipment. Where alternatives to USEPA Tier IV are utilized, the contractor shall be required to provide evidence that these alternative technologies would achieve comparable emissions reductions. Certifications or alternative reduction strategies shall be required prior to receiving a construction permit.

AQ-2: Extended Architectural Coating Activities. The developer shall ensure that the architectural coating activities shall be phased such that they extend for a minimum of 150 days over the duration of the project construction.

Operational Impacts

The long-term operational emissions associated with the project are shown in Table 4. The project would generate an estimated 11 lbs/day of ROG, which is below the VCAPCD threshold of 25 lbs/day. The project would generate an estimated 5 lbs/day of NOx, which is also below the VCAPCD threshold of 25 lbs/day. Therefore, operational air quality impacts would be less than significant.

Table 4 Maximum Daily Operational Emissions (lbs/day)

Emission Source	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Project Emissions					
Area	7	<1	12	<1	<1
Energy	<1	1	<1	<1	<1
Mobile	4	4	36	8	2
Total Project Emissions	**11**	**5**	**48**	**8**	**2**
VCAPCD Thresholds	25	25	N/A	N/A	N/A
Threshold Exceeded?	**No**	**No**	**N/A**	**N/A**	**N/A**

Source: See the Appendix B for CalEEMod calculations.

Note: Totals may not add up due to rounding.

Carbon Monoxide Hotspot Analysis

Areas with high vehicle density, such as congested intersections, have the potential to create high concentrations of CO, known as CO hotspots. A project's localized air quality impact is considered significant if CO emissions create a hotspot where either the California one-hour standard of 20 ppm or the federal and State eight-hour standard of 9.0 ppm is exceeded. This typically occurs at severely congested intersections (level of service [LOS] E or worse). As stated in the Traffic Impact Analysis, existing conditions at all studied intersections currently operate at an LOS of C or better. At opening year, with cumulative projects and the proposed project, the LOS at the studied intersections would be a level D or better. These LOS do not represent a LOS of E or worse and therefore would not result in a CO hotspot for the proposed project.

The project would generate 1,359 vehicle trips per day and would generate the greatest increase of project-generated trips at the intersection of Gabbert Road and North Hills Parkway (34 percent). The existing average daily trip (ADT) volume past where the intersection of Gabbert Road and North Hills Parkway will be developed is 480 trips. The project would result in an additional 1,430 trips at this intersection. All other study intersections would result in increases in vehicular trips (ranging from 3.3 percent at the intersection of Moorpark Avenue at High Street to 27.1 percent at the intersection of Gabbert Rd/Tierra Rejada Rd at Los Angeles Avenue).

As mentioned earlier, the existing CO levels in the County have been historical low enough that VCAPCD monitoring stations throughout the County ceased monitoring ambient CO concentrations in March and July 2004. Because ambient CO concentrations in the County are relatively low, and because the project would not result in a substantial addition of traffic or congestion to any area intersection (especially not any high-volume or already-congested intersection), the project would not be expected to result in a CO hotspot. Impacts would be less than significant.

Toxic Air Contaminants

CARB's Air Quality and Land Use Handbook: A Community Health Perspective (April 2005) recommends against siting sensitive receptors within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. The project site is not located within 500 feet of a freeway or urban road with 100,000 vehicles/day, or a rural road with 50,000 vehicles/day. State Route 23 (SR 23) is the nearest freeway and is located approximately 2.0 miles west of the project site with fewer than 49,500 vehicles/day (Caltrans 2020). The project site is also located approximately 0.25 miles (1,320 feet) north of State Route 118 (SR 118), which has approximately 68,000 average daily trips, which although is greater than 50,000 vehicles/day, is located more than twice the recommended siting distance from the roadway (Caltrans 2020). Therefore, the project would not site sensitive receptors within 500 feet of a freeway or an urban road with 100,000 vehicles/day or rural roads with 50,000 vehicles/day, and the project would not create a human health hazard by exposing sensitive receptors to substantial pollutant concentrations.

Odors

According to the SCAQMD CEQA Air Quality Handbook, land uses typically producing objectionable odors include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The project includes residential uses, which are not listed by the SCAQMD as a land use that produces objectionable odors. Other odors, including the smells of oil or diesel fuels, would be limited to project construction. All off-road construction equipment would be covered by the CARB anti-idling rule (SS2449(d)(2)), which limits idling to five minutes. Project construction would be temporary and would not produce odors long-term. Impacts would be less than significant.

6.2 Greenhouse Gas Emissions Impacts

Construction Emissions

Construction of the project would result in new GHG emissions, primarily due to the operation of diesel-powered heavy construction equipment. Based on CalEEMod results, construction activity would generate an estimated 1,140 metric tons (MT) of CO_2e, as shown in Table 5. Amortized over a 30-year period (the assumed lifetime of a project, based on SCAQMD recommendations), construction of the project would generate approximately 38 MT of CO_2e per year.

Table 5 Estimated Construction Emissions of Greenhouse Gases

Year	Annual Emissions MT CO_2e
2022	282
2023	383
2024	476
Total	**1,140**
Amortized over 30 years	*38*

Source: Calculations were made in CalEEMod, see the Appendix C for full model output.
Note: Total may not add up due to rounding.

Annual Operational Emissions

Operational GHG emissions associated with the project were also estimated using CalEEMod. Table 6 shows operational GHG emissions from the project, in combination with the amortized construction emissions.

Table 6 Long-Term Annual Emissions of Greenhouse Gases

Emission Source	Annual Emissions MT CO_2e
Amortized Construction	38
Operational	
Area	2
Energy	385
Mobile	1,210
Solid waste	96
Water/Wastewater	41
Total Project Emissions	**1,772**
SCAQMD Tier 3 Threshold	3,000
Threshold Exceeded?	**No**

Sources: See Appendix B for calculations.
Note: Total may not add up due to rounding.

As shown in Table 6, the combined annual emissions would total approximately 1,772 MT of CO_2e per year beginning in the first operational year (2025). The annual emissions would not exceed the applicable threshold of 3,000 MT CO_2e per year. Therefore, impacts would be less than significant.

Consistency with GHG Reduction Plans & Policies

The City of Moorpark has not adopted a Climate Action Plan or other qualified GHG reduction plan. The County of Ventura's 2040 General Plan includes an integrated Climate Action Plan. However, this plan applies to unincorporated areas of Ventura County and not incorporated cities such as the City of Moorpark. SCAG has incorporated sustainable community strategy into its RTP/SCS plan, which is designed to help the region achieve its SB 375 GHG emissions reduction target. The SCAG RTP/SCS demonstrates that the SCAG region would achieve its regional emissions reduction targets for the 2020 and 2035 target years. The project would not alter the basic population projections used in the plan and would be consistent with the City of Moorpark General Plan land use designation for the site.

The project would also be required to comply with existing state regulations, which includes The project would be consistent with these goals through project design, which includes complying with the latest Title 24 Green Building Code and Building Efficiency Energy Standards that help the state achieve the overall GHG emissions reduction goals identified in SB 32.

Because there is no locally adopted GHG Reduction Plan to reduce emissions from new development, because the project would be consistent with the applicable land use and zoning designations, and because the project would not conflict with any State regulations intended to reduce GHG emissions statewide, the project would be consistent with applicable plans and programs designed to reduce GHG emissions. Consistency with applicant State regulations would ensure that the project would not conflict with the State's GHG reduction goals. No impacts would occur.

7 References

California Air Pollution Control Officers Association (CAPCOA). California Emissions Estimator Model User's Guide, Version 2020.4.0. May 2021. Available At: http://www.aqmd.gov/caleemod/user's-guide. Accessed: January 2022.

CAPCOA, 2008. CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA). January 2008.

California Air Resources Board [CARB], 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. July. https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf (accessed December 2021).

CARB, 2021. Maps of State and Federal Area Designations. Available at: Maps of State and Federal Area Designations | California Air Resources Board. Accessed January 2022.

CARB, 2020. Annual Air Quality Data Summaries available at http://www.arb.ca.gov/adam/topfour/topfour1.php. Accessed January 2022.

CARB, 2019. Annual Air Quality Data Summaries available at http://www.arb.ca.gov/adam/topfour/topfour1.php. Accessed January 2022.

CARB, 2018. Annual Air Quality Data Summaries available at http://www.arb.ca.gov/adam/topfour/topfour1.php. Accessed January 2022.

CARB, 2017. California's 2017 Climate Change Scoping Plan. November 2017, adopted December 14, 2017. Available at: https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed January 2022.

CARB, 2016a. Ambient Air Quality Standards. May 4, 2016. Available at: Ambient AQ 4may16.xlsx (ca.gov). Accessed January 2022.

CARB, 2014. First Update to the Climate Change Scoping Plan. Approved May 2014. Available At: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2013-scoping-plan-documents. Accessed: January 2022.

CARB, 2008. Climate Change Scoping Plan. December 2008, last amended May 2009. Available At: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2008-scoping-plan-documents. Accessed: January 2022.

California Climate Action Registry (CCAR) General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.

California Climate Change Center [CCCC]. 2006. Climate Scenarios for California. March 2006. Available At: https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/united-states/west-coast-amp-hawaix27i/california---statewide/CCCC.--2006.--Climate-Scenarios-for-California.pdf. Accessed January 2022.

California Coastal Commission 2019. Sea Level Rise. Available at: https://www.coastal.ca.gov/climate/slr/. Accessed January 2022.

California Department of Food and Agriculture. 2020. California Agricultural Statistics Review. August. Available at: https://www.cdfa.ca.gov/Statistics/PDFs/2020_Ag_Stats_Review.pdf. January 2022.

California Department of Finance (DOF). E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2021 with 2010 Census Benchmark. Accessed at: http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/. Accessed: January 2022.

California Department of Water Resources. 2018. Indicators of Climate Change in California. May 2018. Available at: https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf. Accessed: January 2022.

California Natural Resources Agency. December 2009. 2009 California Climate Adaption Strategy.

CalTrans 2020. Traffic Census Program. 2020-AAD.xls. Available At: https://dot.ca.gov/programs/traffic-operations/census. Accessed: January 2022.

Intergovernmental Panel on Climate Change [IPCC], 2021. Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)] August 7, 2021. Cambridge University Press. Available at: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf. Accessed: January 2022.

IPCC, 2018. Summary for Policymakers. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Available At: https://www.ipcc.ch/sr15/. Accessed: January 2022.

IPCC, 2014: Summary for Policymakers. In: Climate Change 2014, Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

K2 Traffic Engineering, Inc. (K2). 2021. Traffic Impact Analysis for North Ranch Residential Development 5979 Gabbert Rd in the City of Moorpark, CA. December 17, 2021.

Parmesan, Camille. 2006. Ecological and Evolutionary Responses to Recent Climate Change. August 24, 2006. In: Annual Review of Ecology, Evolution, and Systematics, Vol. 37 (2006), pp. 637-669. Available At: https://www.fws.gov/southwest/es/documents/R2ES/LitCited/LPC_2012/Parmesan_2006.pdf. Accessed: January 2022.

Southern California Association of Governments. 2020. Adopted Final Connect SOCAL. Available At: https://scag.ca.gov/read-plan-adopted-final-plan. Accessed January 2022.

South Coast Air Quality Management District [SCAQMD], 2010. Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #15. September 28, 2010. Available At: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf. Accessed: January 2022.

South Coast Air Quality Management District (SCAQMD). April 1993. CEQA Air Quality Handbook.

State of California. 2018. California's Fourth Climate Change Assessment Statewide Summary Report. August 27, 2018. Available At: http://www.climateassessment.ca.gov/state/ . Accessed: January 2022.

United States Environmental Protection Agency (U.S. EPA). 2020. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018. U.S. EPA #430-R-20-002. April 2020. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2018. Accessed January 2022.

Ventura County Air Pollution Control District (VCAPCD). 2017. 2016 Ventura County Air Quality Management Plan. February 14, 2017. Available at: http://www.vcapcd.org/AQMP-2016.htm. Accessed: January 2022.

VCAPCD, 2007. Ventura County 2007 Ambient Air Monitoring Network Plan. August, 2007. Available at: http://www.vcapcd.org/pubs/Monitoring/MNP/2007-Final-Network-Assessment-Plan.pdf. Accessed: January 2022.

VCAPCD, 2003. Ventura County Air Quality Assessment Guidelines. Available: http://www.vcapcd.org/pubs/Planning/VCAQGuidelines.pdf. Accessed October 2021.

Appendix A

Assumptions

North Ranch Residential Development
General Assumptions

CalEEMod Inputs that are not modeling defaults:

Project Location	County	Title:	North Ranch - Construction and Operations
	Ventura	Date:	1/21/2022
Climate Zone	8		
Urbanization	Urban		
Operational Year (Buildout)	2025		
Construction Year	2022		
Utility Company	Southern California Edison		

Project Land Use	# Units	Acres
Single Family Residential	144	51.497
Single Family Homes	139	
Estate Lots	5	

Population Determination

persons per dwelling unit	3.23	(DOF 2021)	State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities,*
Population	465		

Population

	2012	2020	2025	from 2012	Fromw 2020	
2016 AQMP	835,400	886,359	905,574	70,174	19,215	growth
				8.40%	2.17%	% growth
With Project			906,039	0.66%	2.42%	% of growth

North Ranch Residential Development
Construction Assumptions

Construction Activities:

Project Schedule:

Phase Name	Start Date	End Date	Days/Week	Adjusted Total Days	Default Total Days	
Demolition	7/1/2022	8/17/22	5	34	70	0.052632
Site Preparation	8/18/2022	9/14/22	5	20	40	0.030075
Grading	9/15/2022	11/29/22	5	54	110	0.082707
Building Construction	11/30/2022	12/31/24	5	545	1110	0.834586
Paving	9/18/2024	12/31/24	5	75	75	
Architectural Coating	9/18/2024	12/31/2024	5	75	75	
				653	1330	

Notes:
Demolition assumed due to existing structures onsite.
Phase length adjusted from default to fit projected project schedule.
Cour Paving and AC assumed to overlap almost completely with BC phase.

Trips and VMT Use CalEEMod Defaults

Offroad Equipment Uses CalEEMod Defaults

North Ranch Residential Development
Construction Assumptions

Dust from Material Movement Uses CalEEMod Defaults
Soil assumed to be balanced onsite
Uses "Mitigated" fugitive dust results to account for VCAPCD Dust control requirements

Demolition
buildings from google earth

1	800	sq ft	
2	600	sq ft	
3	600	sq ft	
4	2581	sq ft	
	4581	sq ft	(conservatively rounded to 5,000 square feet).

Assumes that all existing paving is repurposed onsite.

Onroad Fugitive Dust Uses CalEEMod Defaults

Architectural Coatings Uses CalEEMod Defaults

North Ranch Residential Development
Operational Emissions

Mobile Sources

Vehicle Trips: Uses CalEEMod Defaults
Consistent with KD Traffic Impact Analysis, 2021.

Vehicle Emissions: Uses CalEEMod Defaults

Vehicle Fleet Mix: Uses CalEEMod Defaults

Road Dust: Uses CalEEMod Defaults

Area Sources

Hearths: Uses CalEEMod Defaults

Consumer Products: Uses CalEEMod Defaults

Architectural Coating: Uses CalEEMod Defaults

Landscape Equipment: Uses CalEEMod Defaults

Energy Use

Uses CalEEMod Defaults

North Ranch Residential Development
Operational Emissions

Water/Wastewater

Water: Uses CalEEMod Defaults

Wastewater: Revised in updated analysis to remove emissions from septic.

Septic	Aerobic	Lagoons
10.33	87.46	2.21
	0.98	
	10.1234	0.2066
	97.58	2.42

Solid Waste

Uses CalEEMod Defaults

Off-Road Equiment None Anticipated due to residential land use development.

Stationary Sources None Anticipated due to SFR residential land use development.

Vegetation Not enough vegetation removed or added to result in a quantifiable change.

Appendix B

Calculations

North Ranch Residential Development
Air Quality Emissions - Unmitigated

Estimated Construction Air Pollutant Emissions

	Estimated Construction Emissions (Pounds per Day)		
	ROG	**NOx**	**PM10**
2022	13	124	6
2023	38	26	1
2024	38	25	1
Max Daily	**38**	**124**	**6**
VCAPCD Threshold	*25*	*25*	*-*
Threshold Exceeded?	**Yes**	**Yes**	**No**

Estimated Operational Air Pollutant Emissions

	Estimated Operational Emissions (lbs/day)				
	ROG	**NOx**	**CO**	**PM10**	**PM2.5**
Area	7	0	12	0	0
Energy	0	1	0	0	0
Mobile	4	4	36	8	2
Total	**11**	**5**	**48**	**8**	**2**
VCAPCD	*25*	*25*	*N/A*	*N/A*	*N/A*
Threshold Exceeded?	**No**	**No**	*N/A*	*N/A*	*N/A*

North Ranch Residential Development
Air Quality Emissions - Mitigated

Estimated Construction Air Pollutant Emissions

	Estimated Construction Emissions (Pounds per Day)		
	ROG	**NOx**	**PM10**
2022	3	12	14
2023	19	5	1
2024	19	5	1
Max Daily	**19**	**12**	**14**
VCAPCD Threshold	*25*	*25*	*-*
Threshold Exceeded?	**No**	**No**	**No**

North Ranch Residential Development
Unmitigated CalEEMod - Winter

Construction

Summary by Year

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
D,SP,G,BC,P	2022	13	124	104	0	13	6	19	6	5	12
BC,P, AC	2023	38	26	35	0	1	1	2	0	1	1
BC,P, AC	2024	38	25	35	0	1	1	2	0	1	1

Summary by Phase

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Demolition	2022	3	26	21	0	0	1	1	0	1	1
Site Preparation	2022	3	33	20	0	9	2	10	4	1	6
Grading	2022	4	39	30	0	4	2	6	2	2	3
Building Construction	2022	2	16	18	0	1	1	1	0	1	1
Building Construction	2023	2	15	18	0	1	1	1	0	1	1
Building Construction	2024	2	14	18	0	1	1	1	0	1	1
Paving	2024	1	10	15	0	0	0	1	0	0	0
Architectural Coating	2024	35	1	2	0	0	0	0	0	0	0

North Ranch Residential Development
Unmitigated CalEEMod - Winter

Construction - Detailed by Phase

Demolition onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						0.0627	0	0.0627	9.49E-03	0	9.49E-03
Off-Road		2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553
Total		**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.0627**	**1.2427**	**1.3054**	**0.00949**	**1.1553**	**1.16479**

offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		2.33E-03	0.1062	0.0252	4.00E-04	0.0118	8.70E-04	0.0127	3.23E-03	8.30E-04	4.06E-03
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.05	0.0351	0.4084	1.04E-03	0.1232	7.10E-04	0.1239	0.0327	6.50E-04	0.0333
Total		**5.23E-02**	**1.41E-01**	**4.34E-01**	**1.44E-03**	**1.35E-01**	**1.58E-03**	**1.37E-01**	**3.59E-02**	**1.48E-03**	**3.74E-02**

Site Preparation onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						8.4034	0	8.4034	4.3188	0	4.3188
Off-Road		3.1701	33.0835	19.6978	0.038		1.6126	1.6126		1.4836	1.4836
Total		**3.1701**	**33.0835**	**19.6978**	**0.038**	**8.4034**	**1.6126**	**10.016**	**4.3188**	**1.4836**	**5.8024**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.06	0.0421	0.4901	1.25E-03	0.1479	8.50E-04	0.1487	0.0392	7.80E-04	0.04
Total		**6.00E-02**	**4.21E-02**	**4.90E-01**	**1.25E-03**	**1.48E-01**	**8.50E-04**	**1.49E-01**	**3.92E-02**	**7.80E-04**	**4.00E-02**

North Ranch Residential Development
Unmitigated CalEEMod - Winter

Grading onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						3.9345	0	3.9345	1.562	0	1.562
Off-Road		3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041
Total		**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.9345**	**1.6349**	**5.5694**	**1.562**	**1.5041**	**3.0661**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0667	0.0468	0.5446	1.39E-03	0.1643	9.40E-04	0.1652	0.0436	8.70E-04	0.0445
Total		**6.67E-02**	**4.68E-02**	**5.45E-01**	**1.39E-03**	**1.64E-01**	**9.40E-04**	**1.65E-01**	**4.36E-02**	**8.70E-04**	**4.45E-02**

Building Construction onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		1.7062	15.6156	16.3634	0.0269		0.809	0.809		0.7612	0.7612
Total		**1.7062**	**15.6156**	**16.3634**	**0.0269**	**0**	**0.809**	**0.809**	**0**	**0.7612**	**0.7612**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.0247	0.7495	0.2357	2.91E-03	0.1015	8.26E-03	0.1098	0.0292	7.90E-03	0.0371
Worker		0.1733	0.1217	1.4158	3.60E-03	0.4272	2.45E-03	0.4296	0.1133	2.26E-03	0.1156
Total		**1.98E-01**	**8.71E-01**	**1.65E+00**	**6.51E-03**	**5.29E-01**	**1.07E-02**	**5.39E-01**	**1.43E-01**	**1.02E-02**	**1.53E-01**

North Ranch Residential Development
Unmitigated CalEEMod - Winter

Building Construction onsite 2023

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		1.5728	14.3849	16.244	0.0269		0.6997	0.6997		0.6584	0.6584
Total		**1.5728**	**14.3849**	**16.244**	**0.0269**	**0**	**0.6997**	**0.6997**	**0**	**0.6584**	**0.6584**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.0143	0.5934	0.2084	2.78E-03	0.1015	3.40E-03	0.1049	0.0292	3.25E-03	0.0325
Worker		0.1616	0.1083	1.3106	3.49E-03	0.4272	2.31E-03	0.4295	0.1133	2.13E-03	0.1154
Total		**1.76E-01**	**7.02E-01**	**1.52E+00**	**6.27E-03**	**5.29E-01**	**5.71E-03**	**5.34E-01**	**1.43E-01**	**5.38E-03**	**1.48E-01**

Building Construction onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		1.4716	13.4438	16.1668	0.027		0.6133	0.6133		0.5769	0.5769
Total		**1.4716**	**13.4438**	**16.1668**	**0.027**	**0**	**0.6133**	**0.6133**	**0**	**0.5769**	**0.5769**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.014	0.5907	0.2073	2.74E-03	0.1015	3.41E-03	0.1049	0.0292	3.26E-03	0.0325
Worker		0.1512	0.0972	1.2242	3.38E-03	0.4272	2.22E-03	0.4294	0.1133	2.04E-03	0.1153
Total		**1.65E-01**	**6.88E-01**	**1.43E+00**	**6.12E-03**	**5.29E-01**	**5.63E-03**	**5.34E-01**	**1.43E-01**	**5.30E-03**	**1.48E-01**

North Ranch Residential Development
Unmitigated CalEEMod - Winter

Paving onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Off-Road		0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.431	0.431
Paving		0					0	0		0	0
Total		**0.9882**	**9.5246**	**14.6258**	**0.0228**	**0**	**0.4685**	**0.4685**	**0**	**0.431**	**0.431**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0436	0.028	0.3531	9.80E-04	0.1232	6.40E-04	0.1239	0.0327	5.90E-04	0.0333
Total		**4.36E-02**	**2.80E-02**	**3.53E-01**	**9.80E-04**	**1.23E-01**	**6.40E-04**	**1.24E-01**	**3.27E-02**	**5.90E-04**	**3.33E-02**

Architectural Coating onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Architectural Coating		35.1407					0	0		0	0
Off-Road		0.1808	1.2188	1.8101	2.97E-03		0.0609	0.0609		0.0609	0.0609
Total		**35.3215**	**1.2188**	**1.8101**	**0.00297**	**0**	**0.0609**	**0.0609**	**0**	**0.0609**	**0.0609**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0291	0.0187	0.2354	6.50E-04	0.0822	4.30E-04	0.0826	0.0218	3.90E-04	0.0222
Total		**2.91E-02**	**1.87E-02**	**2.35E-01**	**6.50E-04**	**8.22E-02**	**4.30E-04**	**8.26E-02**	**2.18E-02**	**3.90E-04**	**2.22E-02**

North Ranch Residential Development
Unmitigated CalEEMod - Winter

Operational Emissions 2025

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Area		6.6253	0.1367	11.8689	6.30E-04		0.0659	0.0659		0.0659	0.0659
Energy		0.1017	0.8689	0.3697	5.55E-03		0.0703	0.0703		0.0703	0.0703
Mobile		3.7374	4.3956	35.552	0.0695	8.0004	0.0558	8.0561	2.1327	0.052	2.1847
Total		**10.4644**	**5.4012**	**47.7906**	**0.07568**	**8.0004**	**0.192**	**8.1923**	**2.1327**	**0.1882**	**2.3209**

North Ranch Residential Development
Mitigated CalEEMod - Winter

Construction

Summary by Year

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
D,SP,G,BC	2022	3	12	116	0	13	0	14	6	0	7
BC	2023	19	5	39	0	1	0	1	0	0	0
BC,P, AC	2024	19	5	39	0	1	0	1	0	0	0

Summary by Phase

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Demolition	2022	1	2	24	0	0	0	0	0	0	0
Site Preparation	2022	1	2	21	0	9	0	9	4	0	4
Grading	2022	1	3	34	0	4	0	4	2	0	2
Building Construction	2022	1	4	19	0	1	0	1	0	0	0
Building Construction	2023	1	3	19	0	1	0	1	0	0	0
Building Construction	2024	1	3	19	0	1	0	1	0	0	0
Paving	2024	0	1	18	0	0	0	0	0	0	0
Architectural Coating	2024	18	0	2	0	0	0	0	0	0	0

North Ranch Residential Development
Mitigated CalEEMod - Winter

Construction - Detailed by Phase

Demolition onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						0.0627	0	0.0627	9.49E-03	0	9.49E-03
Off-Road		0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616
Total		**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.0627**	**0.0616**	**0.1243**	**0.00949**	**0.0616**	**0.07109**

offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		2.33E-03	0.1062	0.0252	4.00E-04	0.0118	8.70E-04	0.0127	3.23E-03	8.30E-04	4.06E-03
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.05	0.0351	0.4084	1.04E-03	0.1232	7.10E-04	0.1239	0.0327	6.50E-04	0.0333
Total		**5.23E-02**	**1.41E-01**	**4.34E-01**	**1.44E-03**	**1.35E-01**	**1.58E-03**	**1.37E-01**	**3.59E-02**	**1.48E-03**	**3.74E-02**

Site Preparation onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						8.4034	0	8.4034	4.3188	0	4.3188
Off-Road		0.4656	2.0175	20.869	0.038		0.0621	0.0621		0.0621	0.0621
Total		**0.4656**	**2.0175**	**20.869**	**0.038**	**8.4034**	**0.0621**	**8.4655**	**4.3188**	**0.0621**	**4.3809**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.06	0.0421	0.4901	1.25E-03	0.1479	8.50E-04	0.1487	0.0392	7.80E-04	0.04
Total		**6.00E-02**	**4.21E-02**	**4.90E-01**	**1.25E-03**	**1.48E-01**	**8.50E-04**	**1.49E-01**	**3.92E-02**	**7.80E-04**	**4.00E-02**

North Ranch Residential Development
Mitigated CalEEMod - Winter

Grading onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						3.9345	0	3.9345	1.562	0	1.562
Off-Road		0.7616	3.3	32.9991	0.0621		0.1015	0.1015		0.1015	0.1015
Total		**0.7616**	**3.3**	**32.9991**	**0.0621**	**3.9345**	**0.1015**	**4.036**	**1.562**	**0.1015**	**1.6635**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0667	0.0468	0.5446	1.39E-03	0.1643	9.40E-04	0.1652	0.0436	8.70E-04	0.0445
Total		**6.67E-02**	**4.68E-02**	**5.45E-01**	**1.39E-03**	**1.64E-01**	**9.40E-04**	**1.65E-01**	**4.36E-02**	**8.70E-04**	**4.45E-02**

Building Construction onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		0.5608	2.6936	17.6592	0.0269		0.1018	0.1018		0.1018	0.1018
Total		**0.5608**	**2.6936**	**17.6592**	**0.0269**	**0**	**0.1018**	**0.1018**	**0**	**0.1018**	**0.1018**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.0247	0.7495	0.2357	2.91E-03	0.1015	8.26E-03	0.1098	0.0292	7.90E-03	0.0371
Worker		0.1733	0.1217	1.4158	3.60E-03	0.4272	2.45E-03	0.4296	0.1133	2.26E-03	0.1156
Total		**1.98E-01**	**8.71E-01**	**1.65E+00**	**6.51E-03**	**5.29E-01**	**1.07E-02**	**5.39E-01**	**1.43E-01**	**1.02E-02**	**1.53E-01**

North Ranch Residential Development
Mitigated CalEEMod - Winter

Building Construction onsite 2023

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		0.5385	2.6513	17.6413	0.0269		0.093	0.093		0.093	0.093
Total		**0.5385**	**2.6513**	**17.6413**	**0.0269**	**0**	**0.093**	**0.093**	**0**	**0.093**	**0.093**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.0143	0.5934	0.2084	2.78E-03	0.1015	3.40E-03	0.1049	0.0292	3.25E-03	0.0325
Worker		0.1616	0.1083	1.3106	3.49E-03	0.4272	2.31E-03	0.4295	0.1133	2.13E-03	0.1154
Total		**1.76E-01**	**7.02E-01**	**1.52E+00**	**6.27E-03**	**5.29E-01**	**5.71E-03**	**5.34E-01**	**1.43E-01**	**5.38E-03**	**1.48E-01**

Building Construction onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		0.5199	2.6115	17.6271	0.027		0.0853	0.0853		0.0853	0.0853
Total		**0.5199**	**2.6115**	**17.6271**	**0.027**	**0**	**0.0853**	**0.0853**	**0**	**0.0853**	**0.0853**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.014	0.5907	0.2073	2.74E-03	0.1015	3.41E-03	0.1049	0.0292	3.26E-03	0.0325
Worker		0.1512	0.0972	1.2242	3.38E-03	0.4272	2.22E-03	0.4294	0.1133	2.04E-03	0.1153
Total		**1.65E-01**	**6.88E-01**	**1.43E+00**	**6.12E-03**	**5.29E-01**	**5.63E-03**	**5.34E-01**	**1.43E-01**	**5.30E-03**	**1.48E-01**

North Ranch Residential Development
Mitigated CalEEMod - Winter

Paving onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Off-Road		0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374
Paving		0					0	0		0	0
Total		**0.2805**	**1.2154**	**17.2957**	**0.0228**	**0**	**0.0374**	**0.0374**	**0**	**0.0374**	**0.0374**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0436	0.028	0.3531	9.80E-04	0.1232	6.40E-04	0.1239	0.0327	5.90E-04	0.0333
Total		**4.36E-02**	**2.80E-02**	**3.53E-01**	**9.80E-04**	**1.23E-01**	**6.40E-04**	**1.24E-01**	**3.27E-02**	**5.90E-04**	**3.33E-02**

Architectural Coating onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Architectural Coating		35.1407					0	0		0	0
Off-Road		0.0297	0.1288	1.8324	2.97E-03		3.96E-03	3.96E-03		3.96E-03	3.96E-03
Total		**35.1704**	**0.1288**	**1.8324**	**0.00297**	**0**	**0.00396**	**0.00396**	**0**	**0.00396**	**0.00396**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0291	0.0187	0.2354	6.50E-04	0.0822	4.30E-04	0.0826	0.0218	3.90E-04	0.0222
Total		**2.91E-02**	**1.87E-02**	**2.35E-01**	**6.50E-04**	**8.22E-02**	**4.30E-04**	**8.26E-02**	**2.18E-02**	**3.90E-04**	**2.22E-02**

North Ranch Residential Development
Mitigated CalEEMod - Winter

Operational Emissions 2025

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Area		5.6937	0.1226	10.4445	5.20E-04		0.0575	0.0575		0.0575	0.0575
Energy		0.1017	0.8689	0.3697	5.55E-03		0.0703	0.0703		0.0703	0.0703
Mobile		3.7374	4.3956	35.552	0.0695	8.0004	0.0558	8.0561	2.1327	0.052	2.1847
Total		**9.5328**	**5.3871**	**46.3662**	**0.07557**	**8.0004**	**0.1836**	**8.1839**	**2.1327**	**0.1798**	**2.3125**

North Ranch Residential Development
Unitigated CalEEMod - Summer

Construction

Summary by Year

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
D,SP,G,BC	2022	13	124	104	0	13	6	19	6	5	12
BC	2023	38	26	35	0	1	1	2	0	1	1
BC,P, AC	2024	38	25	35	0	1	1	2	0	1	1

Summary by Phase

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Demolition	2022	3	26	21	0	0	1	1	0	1	1
Site Preparation	2022	3	33	20	0	9	2	10	4	1	6
Grading	2022	4	39	30	0	4	2	6	2	2	3
Building Construction	2022	2	16	18	0	1	1	1	0	1	1
Building Construction	2023	2	15	18	0	1	1	1	0	1	1
Building Construction	2024	2	14	18	0	1	1	1	0	1	1
Paving	2024	1	10	15	0	0	0	1	0	0	0
Architectural Coating	2024	35	1	2	0	0	0	0	0	0	0

North Ranch Residential Development
Unitigated CalEEMod - Summer

Construction - Detailed by Phase

Demolition onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						0.0627	0	0.0627	9.49E-03	0	9.49E-03
Off-Road		2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553
Total		**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.0627**	**1.2427**	**1.3054**	**0.00949**	**1.1553**	**1.16479**

offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		2.40E-03	0.1021	0.0248	4.00E-04	0.0118	8.60E-04	0.0127	3.23E-03	8.30E-04	4.06E-03
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0464	0.03	0.417	1.09E-03	0.1232	7.10E-04	0.1239	0.0327	6.50E-04	0.0333
Total		**4.88E-02**	**1.32E-01**	**4.42E-01**	**1.49E-03**	**1.35E-01**	**1.57E-03**	**1.37E-01**	**3.59E-02**	**1.48E-03**	**3.74E-02**

Site Preparation onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						8.4034	0	8.4034	4.3188	0	4.3188
Off-Road		3.1701	33.0835	19.6978	0.038		1.6126	1.6126		1.4836	1.4836
Total		**3.1701**	**33.0835**	**19.6978**	**0.038**	**8.4034**	**1.6126**	**10.016**	**4.3188**	**1.4836**	**5.8024**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0557	0.036	0.5004	1.30E-03	0.1479	8.50E-04	0.1487	0.0392	7.80E-04	0.04
Total		**5.57E-02**	**3.60E-02**	**5.00E-01**	**1.30E-03**	**1.48E-01**	**8.50E-04**	**1.49E-01**	**3.92E-02**	**7.80E-04**	**4.00E-02**

North Ranch Residential Development
Unitigated CalEEMod - Summer

Grading onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						3.9345	0	3.9345	1.562	0	1.562
Off-Road		3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041
Total		**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.9345**	**1.6349**	**5.5694**	**1.562**	**1.5041**	**3.0661**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0619	0.04	0.556	1.45E-03	0.1643	9.40E-04	0.1652	0.0436	8.70E-04	0.0445
Total		**6.19E-02**	**4.00E-02**	**5.56E-01**	**1.45E-03**	**1.64E-01**	**9.40E-04**	**1.65E-01**	**4.36E-02**	**8.70E-04**	**4.45E-02**

Building Construction onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		1.7062	15.6156	16.3634	0.0269		0.809	0.809		0.7612	0.7612
Total		**1.7062**	**15.6156**	**16.3634**	**0.0269**	**0**	**0.809**	**0.809**	**0**	**0.7612**	**0.7612**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.0251	0.7208	0.2279	2.91E-03	0.1015	8.22E-03	0.1097	0.0292	7.87E-03	0.0371
Worker		0.1608	0.1039	1.4456	3.77E-03	0.4272	2.45E-03	0.4296	0.1133	2.26E-03	0.1156
Total		**1.86E-01**	**8.25E-01**	**1.67E+00**	**6.68E-03**	**5.29E-01**	**1.07E-02**	**5.39E-01**	**1.43E-01**	**1.01E-02**	**1.53E-01**

North Ranch Residential Development
Unitigated CalEEMod - Summer

Building Construction onsite 2023

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		1.5728	14.3849	16.244	0.0269		0.6997	0.6997		0.6584	0.6584
Total		**1.5728**	**14.3849**	**16.244**	**0.0269**	**0**	**0.6997**	**0.6997**	**0**	**0.6584**	**0.6584**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.0149	0.5683	0.2019	2.78E-03	0.1015	3.38E-03	0.1049	0.0292	3.23E-03	0.0324
Worker		0.1496	0.0925	1.3351	3.64E-03	0.4272	2.31E-03	0.4295	0.1133	2.13E-03	0.1154
Total		**1.65E-01**	**6.61E-01**	**1.54E+00**	**6.42E-03**	**5.29E-01**	**5.69E-03**	**5.34E-01**	**1.43E-01**	**5.36E-03**	**1.48E-01**

Building Construction onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		1.4716	13.4438	16.1668	0.027		0.6133	0.6133		0.5769	0.5769
Total		**1.4716**	**13.4438**	**16.1668**	**0.027**	**0**	**0.6133**	**0.6133**	**0**	**0.5769**	**0.5769**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.0145	0.5656	0.2009	2.73E-03	0.1015	3.39E-03	0.1049	0.0292	3.24E-03	0.0325
Worker		0.1398	0.083	1.2446	3.53E-03	0.4272	2.22E-03	0.4294	0.1133	2.04E-03	0.1153
Total		**1.54E-01**	**6.49E-01**	**1.45E+00**	**6.26E-03**	**5.29E-01**	**5.61E-03**	**5.34E-01**	**1.43E-01**	**5.28E-03**	**1.48E-01**

North Ranch Residential Development
Unitigated CalEEMod - Summer

Paving onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Off-Road		0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.431	0.431
Paving		0					0	0		0	0
Total		**0.9882**	**9.5246**	**14.6258**	**0.0228**	**0**	**0.4685**	**0.4685**	**0**	**0.431**	**0.431**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0403	0.0239	0.359	1.02E-03	0.1232	6.40E-04	0.1239	0.0327	5.90E-04	0.0333
Total		**4.03E-02**	**2.39E-02**	**3.59E-01**	**1.02E-03**	**1.23E-01**	**6.40E-04**	**1.24E-01**	**3.27E-02**	**5.90E-04**	**3.33E-02**

Architectural Coating onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Architectural Coating		35.1407					0	0		0	0
Off-Road		0.1808	1.2188	1.8101	2.97E-03		0.0609	0.0609		0.0609	0.0609
Total		**35.3215**	**1.2188**	**1.8101**	**0.00297**	**0**	**0.0609**	**0.0609**	**0**	**0.0609**	**0.0609**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0269	0.016	0.2394	6.80E-04	0.0822	4.30E-04	0.0826	0.0218	3.90E-04	0.0222
Total		**2.69E-02**	**1.60E-02**	**2.39E-01**	**6.80E-04**	**8.22E-02**	**4.30E-04**	**8.26E-02**	**2.18E-02**	**3.90E-04**	**2.22E-02**

North Ranch Residential Development
Unitigated CalEEMod - Summer

Operational Emissions 2025

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Area		6.6253	0.1367	11.8689	6.30E-04		0.0659	0.0659		0.0659	0.0659
Energy		0.1017	0.8689	0.3697	5.55E-03		0.0703	0.0703		0.0703	0.0703
Mobile		3.8457	3.9824	33.5172	0.0719	8.0004	0.0557	8.0561	2.1327	0.052	2.1847
Total		**10.5727**	**4.988**	**45.7558**	**0.07808**	**8.0004**	**0.1919**	**8.1923**	**2.1327**	**0.1882**	**2.3209**

North Ranch Residential Development
Mitigated CalEEMod - Summer

Construction

Summary by Year

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
D,SP,G,BC	2022	3	12	116	0	13	0	14	6	0	7
BC	2023	19	5	39	0	1	0	1	0	0	0
BC,P, AC	2024	19	5	39	0	1	0	1	0	0	0

Summary by Phase

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Demolition	2022	1	2	24	0	0	0	0	0	0	0
Site Preparation	2022	1	2	21	0	9	0	9	4	0	4
Grading	2022	1	3	34	0	4	0	4	2	0	2
Building Construction	2022	1	4	19	0	1	0	1	0	0	0
Building Construction	2023	1	3	19	0	1	0	1	0	0	0
Building Construction	2024	1	3	19	0	1	0	1	0	0	0
Paving	2024	0	1	18	0	0	0	0	0	0	0
Architectural Coating	2024	18	0	2	0	0	0	0	0	0	0

North Ranch Residential Development
Mitigated CalEEMod - Summer

Construction - Detailed by Phase

Demolition onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						0.0627	0	0.0627	9.49E-03	0	9.49E-03
Off-Road		0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616
Total		**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.0627**	**0.0616**	**0.1243**	**0.00949**	**0.0616**	**0.07109**

offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		2.40E-03	0.1021	0.0248	4.00E-04	0.0118	8.60E-04	0.0127	3.23E-03	8.30E-04	4.06E-03
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0464	0.03	0.417	1.09E-03	0.1232	7.10E-04	0.1239	0.0327	6.50E-04	0.0333
Total		**4.88E-02**	**1.32E-01**	**4.42E-01**	**1.49E-03**	**1.35E-01**	**1.57E-03**	**1.37E-01**	**3.59E-02**	**1.48E-03**	**3.74E-02**

Site Preparation onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						8.4034	0	8.4034	4.3188	0	4.3188
Off-Road		0.4656	2.0175	20.869	0.038		0.0621	0.0621		0.0621	0.0621
Total		**0.4656**	**2.0175**	**20.869**	**0.038**	**8.4034**	**0.0621**	**8.4655**	**4.3188**	**0.0621**	**4.3809**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0557	0.036	0.5004	1.30E-03	0.1479	8.50E-04	0.1487	0.0392	7.80E-04	0.04
Total		**5.57E-02**	**3.60E-02**	**5.00E-01**	**1.30E-03**	**1.48E-01**	**8.50E-04**	**1.49E-01**	**3.92E-02**	**7.80E-04**	**4.00E-02**

North Ranch Residential Development
Mitigated CalEEMod - Summer

Grading onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust						3.9345	0	3.9345	1.562	0	1.562
Off-Road		0.7616	3.3	32.9991	0.0621		0.1015	0.1015		0.1015	0.1015
Total		**0.7616**	**3.3**	**32.9991**	**0.0621**	**3.9345**	**0.1015**	**4.036**	**1.562**	**0.1015**	**1.6635**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0619	0.04	0.556	1.45E-03	0.1643	9.40E-04	0.1652	0.0436	8.70E-04	0.0445
Total		**6.19E-02**	**4.00E-02**	**5.56E-01**	**1.45E-03**	**1.64E-01**	**9.40E-04**	**1.65E-01**	**4.36E-02**	**8.70E-04**	**4.45E-02**

Building Construction onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		0.5608	2.6936	17.6592	0.0269		0.1018	0.1018		0.1018	0.1018
Total		**0.5608**	**2.6936**	**17.6592**	**0.0269**	**0**	**0.1018**	**0.1018**	**0**	**0.1018**	**0.1018**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.0251	0.7208	0.2279	2.91E-03	0.1015	8.22E-03	0.1097	0.0292	7.87E-03	0.0371
Worker		0.1608	0.1039	1.4456	3.77E-03	0.4272	2.45E-03	0.4296	0.1133	2.26E-03	0.1156
Total		**1.86E-01**	**8.25E-01**	**1.67E+00**	**6.68E-03**	**5.29E-01**	**1.07E-02**	**5.39E-01**	**1.43E-01**	**1.01E-02**	**1.53E-01**

North Ranch Residential Development
Mitigated CalEEMod - Summer

Building Construction onsite 2023

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		0.5385	2.6513	17.6413	0.0269		0.093	0.093		0.093	0.093
Total		**0.5385**	**2.6513**	**17.6413**	**0.0269**	**0**	**0.093**	**0.093**	**0**	**0.093**	**0.093**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.0149	0.5683	0.2019	2.78E-03	0.1015	3.38E-03	0.1049	0.0292	3.23E-03	0.0324
Worker		0.1496	0.0925	1.3351	3.64E-03	0.4272	2.31E-03	0.4295	0.1133	2.13E-03	0.1154
Total		**1.65E-01**	**6.61E-01**	**1.54E+00**	**6.42E-03**	**5.29E-01**	**5.69E-03**	**5.34E-01**	**1.43E-01**	**5.36E-03**	**1.48E-01**

Building Construction onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Fugitive Dust											
Off-Road		0.5199	2.6115	17.6271	0.027		0.0853	0.0853		0.0853	0.0853
Total		**0.5199**	**2.6115**	**17.6271**	**0.027**	**0**	**0.0853**	**0.0853**	**0**	**0.0853**	**0.0853**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0.0145	0.5656	0.2009	2.73E-03	0.1015	3.39E-03	0.1049	0.0292	3.24E-03	0.0325
Worker		0.1398	0.083	1.2446	3.53E-03	0.4272	2.22E-03	0.4294	0.1133	2.04E-03	0.1153
Total		**1.54E-01**	**6.49E-01**	**1.45E+00**	**6.26E-03**	**5.29E-01**	**5.61E-03**	**5.34E-01**	**1.43E-01**	**5.28E-03**	**1.48E-01**

North Ranch Residential Development
Mitigated CalEEMod - Summer

Paving onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Off-Road		0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374
Paving		0					0	0		0	0
Total		**0.2805**	**1.2154**	**17.2957**	**0.0228**	**0**	**0.0374**	**0.0374**	**0**	**0.0374**	**0.0374**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0403	0.0239	0.359	1.02E-03	0.1232	6.40E-04	0.1239	0.0327	5.90E-04	0.0333
Total		**4.03E-02**	**2.39E-02**	**3.59E-01**	**1.02E-03**	**1.23E-01**	**6.40E-04**	**1.24E-01**	**3.27E-02**	**5.90E-04**	**3.33E-02**

Architectural Coating onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Architectural Coating		35.1407					0	0		0	0
Off-Road		0.0297	0.1288	1.8324	2.97E-03		3.96E-03	3.96E-03		3.96E-03	3.96E-03
Total		**35.1704**	**0.1288**	**1.8324**	**0.00297**	**0**	**0.00396**	**0.00396**	**0**	**0.00396**	**0.00396**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Hauling		0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0
Worker		0.0269	0.016	0.2394	6.80E-04	0.0822	4.30E-04	0.0826	0.0218	3.90E-04	0.0222
Total		**2.69E-02**	**1.60E-02**	**2.39E-01**	**6.80E-04**	**8.22E-02**	**4.30E-04**	**8.26E-02**	**2.18E-02**	**3.90E-04**	**2.22E-02**

North Ranch Residential Development
Mitigated CalEEMod - Summer

Operational Emissions 2025

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category		lb/day									
Area		5.6937	0.1226	10.4445	5.20E-04		0.0575	0.0575		0.0575	0.0575
Energy		0.1017	0.8689	0.3697	5.55E-03		0.0703	0.0703		0.0703	0.0703
Mobile		3.8457	3.9824	33.5172	0.0719	8.0004	0.0557	8.0561	2.1327	0.052	2.1847
Total		**9.6411**	**4.9739**	**44.3314**	**0.07797**	**8.0004**	**0.1835**	**8.1839**	**2.1327**	**0.1798**	**2.3125**

North Ranch Residential Development
CO Hotspot Analysis

Project Traffic

Intersection #	Intersection	% Daily	Total Daily	PM Peak	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
1	Gabbert Rd at Poindexter Ave	16.90%	710	71	0	0	0	0	0	18	11	42	0	0	0	0
2	Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	27.14%	1,140	114	0	22	0	0	0	32	18	13	11	18	0	0
3	Moorpark Ave at High St	3.33%	140	14	0	3	2	4	0	0	0	5	0	0	0	0
4	Moorpark Ave at Poindexter Ave/First St	5.24%	220	22	5	0	0	0	0	0	0	0	9	5	0	3
5	Moorpark Ave at Los Angeles Ave	13.33%	560	56	0	0	0	0	33	6	3	0	0	0	14	0
6	Gabbert Road at North Hills Pkwy	34.05%	1,430	143	90	0	0	0	0	0	0	0	0	0	0	53
	Total		4,200													

Existing Plus Project

Intersection #	Intersection	% Daily	Total Daily
1	Gabbert Rd at Poindexter Ave	5.16%	4,950
2	Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	31.52%	30,230
3	Moorpark Ave at High St	14.72%	14,120
4	Moorpark Ave at Poindexter Ave/First St	15.27%	14,650
5	Moorpark Ave at Los Angeles Ave	32.83%	31,490
6	Gabbert Road at North Hills Pkwy	0.50%	480
			95,920

Existing Plus Project

Intersection #	Intersection	% Daily	Total Daily	PM Peak	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
1	Gabbert Rd at Poindexter Ave	5.65%	5,660	566	0	16	186	262	0	31	20	51	0	0	0	0
2	Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	31.33%	31,370	3,137	148	121	315	316	703	74	83	189	141	93	706	248
3	Moorpark Ave at High St	14.24%	14,260	1,426	27	301	299	275	21	120	89	223	6	7	21	37
4	Moorpark Ave at Poindexter Ave/First St	14.85%	14,870	1,487	57	385	11	8	31	14	11	343	227	297	29	74
5	Moorpark Ave at Los Angeles Ave	32.01%	32,050	3,205	56	71	126	280	982	116	212	119	99	146	949	49
6	Gabbert Road at North Hills Pkwy	1.91%	1,910	191	90	30	0	0	0	0	0	18	0	0	0	53
			100,120													

Cumulative No Project

Intersection #	Intersection	% Daily	Total Daily	PM Peak	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
1	Gabbert Rd at Poindexter Ave	5.47%	1,270	127	0	83	0	0	0	2	2	40	0	0	0	0
2	Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	16.06%	3,730	373	0	36	0	34	36	48	8	17	73	26	95	0
3	Moorpark Ave at High St	33.32%	7,740	774	45	193	32	34	44	146	88	145	0	0	28	19
4	Moorpark Ave at Poindexter Ave/First St	20.15%	4,680	468	0	257	0	0	0	0	0	189	9	13	0	0
5	Moorpark Ave at Los Angeles Ave	25.01%	5,810	581	0	13	2	1	87	152	95	9	82	85	55	0
6	Gabbert Road at North Hills Pkwy	0.00%	0	0												
			23,230													

Cumulative With Project

Intersection #	Intersection	% Daily	Total Daily	PM Peak	NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
1	Gabbert Rd at Poindexter Ave	5.58%	7,140	714	0	100	194	273	0	34	22	91	0	0	0	0
2	Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	28.41%	36,340	3,634	154	161	328	363	768	124	94	213	219	122	830	258
3	Moorpark Ave at High St	17.65%	22,580	2,258	73	506	343	320	66	271	181	377	6	7	50	58
4	Moorpark Ave at Poindexter Ave/First St	15.75%	20,140	2,014	59	658	11	8	32	15	11	546	245	322	30	77
5	Moorpark Ave at Los Angeles Ave	30.11%	38,510	3,851	58	87	133	292	1108	237	315	133	158	51	1042	237
6	Gabbert Road at North Hills Pkwy	2.50%	3,200	320	90	116	0	0	0	0	0	61	0	0	0	53
			127,910													

North Ranch Residential Development
Unmitigated GHG Emissions

Construction Emissions

Emission Source	Annual Emissions (MT CO_2e)
2022	282
2023	383
2024	476
Total	1,140
Amortized Emissions	
30 years	38

Operational Emissions

Emission Source	Annual Emissions (MT CO_2e)	% Emissions
Area	2	0.10%
Energy	385	21.75%
Mobile	1,210	68.26%
Waste	96	5.41%
Water	41	2.33%
Total	1,734	
Amortized Construction	38	2.14%
Total Operational Emissions	1,772	
Threshold	3,000	
Exceed Threshold?	***No***	

North Ranch Residential Development
Mitigated GHG Emissions

Construction Emissions

Emission Source	Annual Emissions (MT CO_2e)
2022	282
2023	383
2024	488
Total	1,152
Amortized Emissions	
30 years	38

Operational Emissions

Emission Source	Annual Emissions (MT CO_2e)
Area	2
Energy	385
Mobile	1,210
Waste	96
Water	41
Total	1,734
Amortized Construction	38
Total Operational Emissions	1,772
Threshold	3,000
Exceed Threshold?	***No***

North Ranch Residential Development
Unmitigated CalEEMod - Annual

Construction

Summary by Year

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		lb/day										tons/year					
D,SP,G,BC	2022	0	2	2	0	0	0	1	0	0	0	0	279	279	0	0	282
BC	2023	0	2	2	0	0	0	0	0	0	0	0	379	379	0	0	383
BC,P, AC	2024	2	2	3	0	0	0	0	0	0	0	0	471	471	0	0	476

Summary by Phase

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		lb/day										tons/year					
Demolition	2022	0	0	0	0	0	0	0	0	0	0	0	60	60	0	0	61
Site Preparation	2022	0	0	0	0	0	0	0	0	0	0	0	35	35	0	0	35
Grading	2022	0	1	1	0	0	0	0	0	0	0	0	151	151	0	0	152
Building Construction	2022	0	0	0	0	0	0	0	0	0	0	0	34	34	0	0	34
Building Construction	2023	0	2	2	0	0	0	0	0	0	0	0	379	379	0	0	383
Building Construction	2024	0	2	2	0	0	0	0	0	0	0	0	381	381	0	0	385
Paving	2024	0	0	1	0	0	0	0	0	0	0	0	79	79	0	0	79
Architectural Coating	2024	1	0	0	0	0	0	0	0	0	0	0	12	12	0	0	12

North Ranch Residential Development
Unmitigated CalEEMod - Annual

Construction - Detailed by Phase

Demolition onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust						2.49E-03	0	2.49E-03	3.80E-04	0	3.80E-04	0	0	0	0	0	0
Off-Road		0.0449	0.4372	0.3501	6.60E-04		0.0211	0.0211		0.0196	0.0196	0	57.7834	57.7834	0.0162	0	58.1892
Total		**0.0449**	**0.4372**	**0.3501**	**0.00066**	**0.00249**	**0.0211**	**0.02359**	**0.00038**	**0.0196**	**0.01998**	**0**	**57.7834**	**57.7834**	**0.0162**	**0**	**58.1892**

offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		4.00E-05	1.81E-03	4.20E-04	1.00E-05	2.00E-04	1.00E-05	2.10E-04	5.00E-05	1.00E-05	7.00E-05	0	0.6848	0.6848	4.00E-05	1.10E-04	0.7184
Vendor		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker		7.80E-04	5.70E-04	6.86E-03	2.00E-05	2.06E-03	1.00E-05	2.07E-03	5.50E-04	1.00E-05	5.60E-04	0	1.6418	1.6418	6.00E-05	5.00E-05	1.6583
Total		**8.20E-04**	**2.38E-03**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.33**	**2.33**	**0.00**	**0.00**	**2.38**

Site Preparation onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust						0.1966	0	0.1966	0.101	0	0.101	0	0	0	0	0	0
Off-Road		0.0317	0.3308	0.197	3.80E-04		0.0161	0.0161		0.0148	0.0148	0	33.4394	33.4394	0.0108	0	33.7098
Total		**0.0317**	**0.3308**	**0.197**	**0.00038**	**0.1966**	**0.0161**	**0.2127**	**0.101**	**0.0148**	**0.1158**	**0**	**33.4394**	**33.4394**	**0.0108**	**0**	**33.7098**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker		5.50E-04	4.10E-04	4.84E-03	1.00E-05	1.45E-03	1.00E-05	1.46E-03	3.90E-04	1.00E-05	3.90E-04	0	1.159	1.159	4.00E-05	4.00E-05	1.1706
Total		**5.50E-04**	**4.10E-04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.16**	**1.16**	**0.00**	**0.00**	**1.17**

North Ranch Residential Development
Unmitigated CalEEMod - Annual

Grading onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust						0.2485	0	0.2485	0.0987	0	0.0987	0	0	0	0	0	0
Off-Road		0.0979	1.0488	0.7841	1.68E-03		0.0441	0.0441		0.0406	0.0406	0	147.2434	147.2434	0.0476	0	148.434
Total		**0.0979**	**1.0488**	**0.7841**	**0.00168**	**0.2485**	**0.0441**	**0.2926**	**0.0987**	**0.0406**	**0.1393**	**0**	**147.2434**	**147.2434**	**0.0476**	**0**	**148.434**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker		1.66E-03	1.22E-03	0.0145	4.00E-05	4.35E-03	3.00E-05	4.38E-03	1.16E-03	2.00E-05	1.18E-03	0	3.4768	3.4768	1.20E-04	1.10E-04	3.5118
Total		**1.66E-03**	**1.22E-03**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.48**	**3.48**	**0.00**	**0.00**	**3.51**

Building Construction onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust																	
Off-Road		0.0196	0.1796	0.1882	3.10E-04		9.30E-03	9.30E-03		8.75E-03	8.75E-03	0	26.6484	26.6484	6.38E-03	0	26.808
Total		**0.0196**	**0.1796**	**0.1882**	**0.00031**	**0**	**0.0093**	**0.0093**	**0**	**0.00875**	**0.00875**	**0**	**26.6484**	**26.6484**	**0.00638**	**0**	**26.808**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		2.90E-04	8.61E-03	2.66E-03	3.00E-05	1.15E-03	9.00E-05	1.24E-03	3.30E-04	9.00E-05	4.20E-04	0	3.2835	3.2835	1.30E-04	4.90E-04	3.4335
Worker		1.84E-03	1.35E-03	0.0161	4.00E-05	4.82E-03	3.00E-05	4.85E-03	1.28E-03	3.00E-05	1.31E-03	0	3.8503	3.8503	1.30E-04	1.20E-04	3.889
Total		**2.13E-03**	**9.96E-03**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**7.13**	**7.13**	**0.00**	**0.00**	**7.32**

North Ranch Residential Development
Unmitigated CalEEMod - Annual

Building Construction onsite 2023

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust																	
Off-Road		0.2045	1.87	2.1117	3.50E-03		0.091	0.091		0.0856	0.0856	0	301.3462	301.3462	0.0717	0	303.1383
Total		**0.2045**	**1.87**	**2.1117**	**0.0035**	**0**	**0.091**	**0.091**	**0**	**0.0856**	**0.0856**	**0**	**301.3462**	**301.3462**	**0.0717**	**0**	**303.1383**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		1.90E-03	0.0768	0.0266	3.60E-04	0.013	4.40E-04	0.0134	3.75E-03	4.20E-04	4.17E-03	0	35.5705	35.5705	1.46E-03	5.33E-03	37.194
Worker		0.0193	0.0136	0.1682	4.60E-04	0.0545	3.00E-04	0.0548	0.0145	2.80E-04	0.0148	0	42.3875	42.3875	1.36E-03	1.24E-03	42.7923
Total		**2.12E-02**	**9.04E-02**	**0.19**	**0.00**	**0.07**	**0.00**	**0.07**	**0.02**	**0.00**	**0.02**	**0.00**	**77.96**	**77.96**	**0.00**	**0.01**	**79.99**

Building Construction onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust																	
Off-Road		0.1928	1.7611	2.1179	3.53E-03		0.0803	0.0803		0.0756	0.0756	0	303.7223	303.7223	0.0718	0	305.5179
Total		**0.1928**	**1.7611**	**2.1179**	**0.00353**	**0**	**0.0803**	**0.0803**	**0**	**0.0756**	**0.0756**	**0**	**303.7223**	**303.7223**	**0.0718**	**0**	**305.5179**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		1.86E-03	0.077	0.0267	3.60E-04	0.0131	4.40E-04	0.0135	3.78E-03	4.30E-04	4.20E-03	0	35.3035	35.3035	1.51E-03	5.28E-03	36.9159
Worker		0.0182	0.0123	0.1582	4.50E-04	0.0549	2.90E-04	0.0552	0.0146	2.70E-04	0.0149	0	41.733	41.733	1.25E-03	1.17E-03	42.1127
Total		**2.01E-02**	**8.93E-02**	**0.18**	**0.00**	**0.07**	**0.00**	**0.07**	**0.02**	**0.00**	**0.02**	**0.00**	**77.04**	**77.04**	**0.00**	**0.01**	**79.03**

North Ranch Residential Development
Unmitigated CalEEMod - Annual

Paving onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Off-Road		0.0371	0.3572	0.5485	8.60E-04		0.0176	0.0176		0.0162	0.0162	0	75.0995	75.0995	0.0243	0	75.7067
Paving		0					0	0		0	0	0	0	0	0	0	0
Total		**0.0371**	**0.3572**	**0.5485**	**0.00086**	**0**	**0.0176**	**0.0176**	**0**	**0.0162**	**0.0162**	**0**	**75.0995**	**75.0995**	**0.0243**	**0**	**75.7067**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker		1.50E-03	1.01E-03	0.0131	4.00E-05	4.54E-03	2.00E-05	4.56E-03	1.20E-03	2.00E-05	1.23E-03	0	3.4461	3.4461	1.00E-04	1.00E-04	3.4775
Total		**1.50E-03**	**1.01E-03**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.45**	**3.45**	**0.00**	**0.00**	**3.48**

Architectural Coating onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Architectural Coating		1.3178					0	0		0	0	0	0	0	0	0	0
Off-Road		6.78E-03	0.0457	0.0679	1.10E-04		2.28E-03	2.28E-03		2.28E-03	2.28E-03	0	9.5747	9.5747	5.40E-04	0	9.5882
Total		**1.32458**	**0.0457**	**0.0679**	**0.00011**	**0**	**0.00228**	**0.00228**	**0**	**0.00228**	**0.00228**	**0**	**9.5747**	**9.5747**	**0.00054**	**0**	**9.5882**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker		1.00E-03	6.70E-04	8.71E-03	2.00E-05	3.02E-03	2.00E-05	3.04E-03	8.00E-04	1.00E-05	8.20E-04	0	2.2974	2.2974	7.00E-05	6.00E-05	2.3183
Total		**1.00E-03**	**6.70E-04**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.30**	**2.30**	**0.00**	**0.00**	**2.32**

North Ranch Residential Development
Unmitigated CalEEMod - Annual

Operational Emissions 2025

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		lb/day										MT/yr					
Area		1.1762	0.0123	1.0682	6.00E-05		5.93E-03	5.93E-03		5.93E-03	5.93E-03	0	1.7466	1.7466	1.67E-03	0	1.7884
Energy		0.0186	0.1586	0.0675	1.01E-03		0.0128	0.0128		0.0128	0.0128	0	383.2961	383.2961	0.0204	5.41E-03	385.4174
Mobile		0.6673	0.7786	6.1807	0.0126	1.4166	0.01	1.4266	0.3782	9.37E-03	0.3876	0	1,191.04	1,191.04	0.0806	0.0558	1,209.68
Waste							0	0		0	0	38.7002	0	38.7002	2.2871	0	95.8782
Water							0	0		0	0	3.3194	33.3196	36.639	0.0968	7.56E-03	41.3104
Total		**1.8621**	**0.9495**	**7.3164**	**0.01367**	**1.4166**	**0.02873**	**1.44533**	**0.3782**	**0.0281**	**0.40633**	**42.0196**	**1609.4001**	**1651.4197**	**2.48657**	**0.06877**	**1734.0745**

North Ranch Residential Development
Mitigated CalEEMod - Annual

Construction

Summary by Year

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		lb/day										tons/year					
D,SP,G,BC	2022	0	0	2	0	0	0	0	0	0	0	0	279	279	0	0	282
BC	2023	0	0	2	0	0	0	0	0	0	0	0	379	379	0	0	383
BC,P, AC	2024	1	0	3	0	0	0	0	0	0	0	0	471	471	0	0	476

Summary by Phase

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		lb/day										tons/year					
Demolition	2022	0	0	0	0	0	0	0	0	0	0	0	60	60	0	0	61
Site Preparation	2022	0	0	0	0	0	0	0	0	0	0	0	35	35	0	0	35
Grading	2022	0	0	1	0	0	0	0	0	0	0	0	151	151	0	0	152
Building Construction	2022	0	0	0	0	0	0	0	0	0	0	0	34	34	0	0	34
Building Construction	2023	0	0	2	0	0	0	0	0	0	0	0	379	379	0	0	383
Building Construction	2024	0	0	2	0	0	0	0	0	0	0	0	381	381	0	0	385
Paving	2024	0	0	1	0	0	0	0	0	0	0	0	79	79	0	0	79
Architectural Coating	2024	1	0	0	0	0	0	0	0	0	0	0	12	12	0	0	12

North Ranch Residential Development
Mitigated CalEEMod - Annual

Construction - Detailed by Phase

Demolition onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust						1.07E-03	0	1.07E-03	1.60E-04	0	1.60E-04	0	0	0	0	0	0
Off-Road		7.86E-03	0.0341	0.3958	6.60E-04		1.05E-03	1.05E-03		1.05E-03	1.05E-03	0	57.7833	57.7833	0.0162	0	58.1891
Total		**0.00786**	**0.0341**	**0.3958**	**0.00066**	**0.00107**	**0.00105**	**0.00212**	**0.00016**	**0.00105**	**0.00121**	**0**	**57.7833**	**57.7833**	**0.0162**	**0**	**58.1891**

offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		4.00E-05	1.81E-03	4.20E-04	1.00E-05	2.00E-04	1.00E-05	2.10E-04	5.00E-05	1.00E-05	7.00E-05	0	0.6848	0.6848	4.00E-05	1.10E-04	0.7184
Vendor		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker		7.80E-04	5.70E-04	6.86E-03	2.00E-05	2.06E-03	1.00E-05	2.07E-03	5.50E-04	1.00E-05	5.60E-04	0	1.6418	1.6418	6.00E-05	5.00E-05	1.6583
Total		**8.20E-04**	**2.38E-03**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.33**	**2.33**	**0.00**	**0.00**	**2.38**

Site Preparation onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust						0.084	0	0.084	0.0432	0	0.0432	0	0	0	0	0	0
Off-Road		4.66E-03	0.0202	0.2087	3.80E-04		6.20E-04	6.20E-04		6.20E-04	6.20E-04	0	33.4394	33.4394	0.0108	0	33.7097
Total		**0.00466**	**0.0202**	**0.2087**	**0.00038**	**0.084**	**0.00062**	**0.08462**	**0.0432**	**0.00062**	**0.04382**	**0**	**33.4394**	**33.4394**	**0.0108**	**0**	**33.7097**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker		5.50E-04	4.10E-04	4.84E-03	1.00E-05	1.45E-03	1.00E-05	1.46E-03	3.90E-04	1.00E-05	3.90E-04	0	1.159	1.159	4.00E-05	4.00E-05	1.1706
Total		**5.50E-04**	**4.10E-04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.16**	**1.16**	**0.00**	**0.00**	**1.17**

North Ranch Residential Development
Mitigated CalEEMod - Annual

Grading onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust						0.1062	0	0.1062	0.0422	0	0.0422	0	0	0	0	0	0
Off-Road		0.0206	0.0891	0.891	1.68E-03		2.74E-03	2.74E-03		2.74E-03	2.74E-03	0	147.2432	147.2432	0.0476	0	148.4338
Total		**0.0206**	**0.0891**	**0.891**	**0.00168**	**0.1062**	**0.00274**	**0.10894**	**0.0422**	**0.00274**	**0.04494**	**0**	**147.2432**	**147.2432**	**0.0476**	**0**	**148.4338**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker		1.66E-03	1.22E-03	0.0145	4.00E-05	4.35E-03	3.00E-05	4.38E-03	1.16E-03	2.00E-05	1.18E-03	0	3.4768	3.4768	1.20E-04	1.10E-04	3.5118
Total		**1.66E-03**	**1.22E-03**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.48**	**3.48**	**0.00**	**0.00**	**3.51**

Building Construction onsite 2022

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust																	
Off-Road		6.45E-03	0.031	0.2031	3.10E-04		1.17E-03	1.17E-03		1.17E-03	1.17E-03	0	26.6484	26.6484	6.38E-03	0	26.808
Total		**0.00645**	**0.031**	**0.2031**	**0.00031**	**0**	**0.00117**	**0.00117**	**0**	**0.00117**	**0.00117**	**0**	**26.6484**	**26.6484**	**0.00638**	**0**	**26.808**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		2.90E-04	8.61E-03	2.66E-03	3.00E-05	1.15E-03	9.00E-05	1.24E-03	3.30E-04	9.00E-05	4.20E-04	0	3.2835	3.2835	1.30E-04	4.90E-04	3.4335
Worker		1.84E-03	1.35E-03	0.0161	4.00E-05	4.82E-03	3.00E-05	4.85E-03	1.28E-03	3.00E-05	1.31E-03	0	3.8503	3.8503	1.30E-04	1.20E-04	3.889
Total		**2.13E-03**	**9.96E-03**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**7.13**	**7.13**	**0.00**	**0.00**	**7.32**

North Ranch Residential Development
Mitigated CalEEMod - Annual

Building Construction onsite 2023

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust																	
Off-Road		0.07	0.3447	2.2934	3.50E-03		0.0121	0.0121		0.0121	0.0121	0	301.3458	301.3458	0.0717	0	303.138
Total		**0.07**	**0.3447**	**2.2934**	**0.0035**	**0**	**0.0121**	**0.0121**	**0**	**0.0121**	**0.0121**	**0**	**301.3458**	**301.3458**	**0.0717**	**0**	**303.138**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		1.90E-03	0.0768	0.0266	3.60E-04	0.013	4.40E-04	0.0134	3.75E-03	4.20E-04	4.17E-03	0	35.5705	35.5705	1.46E-03	5.33E-03	37.194
Worker		0.0193	0.0136	0.1682	4.60E-04	0.0545	3.00E-04	0.0548	0.0145	2.80E-04	0.0148	0	42.3875	42.3875	1.36E-03	1.24E-03	42.7923
Total		**2.12E-02**	**9.04E-02**	**0.19**	**0.00**	**0.07**	**0.00**	**0.07**	**0.02**	**0.00**	**0.02**	**0.00**	**77.96**	**77.96**	**0.00**	**0.01**	**79.99**

Building Construction onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Fugitive Dust																	
Off-Road		0.0681	0.3421	2.3092	3.53E-03		0.0112	0.0112		0.0112	0.0112	0	303.722	303.722	0.0718	0	305.5175
Total		**0.0681**	**0.3421**	**2.3092**	**0.00353**	**0**	**0.0112**	**0.0112**	**0**	**0.0112**	**0.0112**	**0**	**303.722**	**303.722**	**0.0718**	**0**	**305.5175**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		1.86E-03	0.077	0.0267	3.60E-04	0.0131	4.40E-04	0.0135	3.78E-03	4.30E-04	4.20E-03	0	35.3035	35.3035	1.51E-03	5.28E-03	36.9159
Worker		0.0182	0.0123	0.1582	4.50E-04	0.0549	2.90E-04	0.0552	0.0146	2.70E-04	0.0149	0	41.733	41.733	1.25E-03	1.17E-03	42.1127
Total		**2.01E-02**	**8.93E-02**	**0.18**	**0.00**	**0.07**	**0.00**	**0.07**	**0.02**	**0.00**	**0.02**	**0.00**	**77.04**	**77.04**	**0.00**	**0.01**	**79.03**

North Ranch Residential Development
Mitigated CalEEMod - Annual

Paving onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Off-Road		0.0105	0.0456	0.6486	8.60E-04		1.40E-03	1.40E-03		1.40E-03	1.40E-03	0	75.0994	75.0994	0.0243	0	75.7066
Paving		0					0	0		0	0	0	0	0	0	0	0
Total		**0.0105**	**0.0456**	**0.6486**	**0.00086**	**0**	**0.0014**	**0.0014**	**0**	**0.0014**	**0.0014**	**0**	**75.0994**	**75.0994**	**0.0243**	**0**	**75.7066**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker		1.50E-03	1.01E-03	0.0131	4.00E-05	4.54E-03	2.00E-05	4.56E-03	1.20E-03	2.00E-05	1.23E-03	0	3.4461	3.4461	1.00E-04	1.00E-04	3.4775
Total		**1.50E-03**	**1.01E-03**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.45**	**3.45**	**0.00**	**0.00**	**3.48**

Architectural Coating onsite 2024

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Architectural Coating		1.3178					0	0		0	0	0	0	0	0	0	0
Off-Road		1.11E-03	4.83E-03	0.0687	1.10E-04		1.50E-04	1.50E-04		1.50E-04	1.50E-04	0	9.5747	9.5747	5.40E-04	0	9.5882
Total		**1.31891**	**0.00483**	**0.0687**	**0.00011**	**0**	**0.00015**	**0.00015**	**0**	**0.00015**	**0.00015**	**0**	**9.5747**	**9.5747**	**0.00054**	**0**	**9.5882**

Offsite

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		tons/year										tons/year					
Hauling		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker		1.00E-03	6.70E-04	8.71E-03	2.00E-05	3.02E-03	2.00E-05	3.04E-03	8.00E-04	1.00E-05	8.20E-04	0	2.2974	2.2974	7.00E-05	6.00E-05	2.3183
Total		**1.00E-03**	**6.70E-04**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.30**	**2.30**	**0.00**	**0.00**	**2.32**

North Ranch Residential Development
Mitigated CalEEMod - Annual

Operational Emissions 2025

		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category		lb/day										tons/year					
Area		1.0139	0.011	0.94	5.00E-05		5.17E-03	5.17E-03		5.17E-03	5.17E-03	0	1.4844	1.4844	1.27E-03	0	1.5162
Energy		0.0186	0.1586	0.0675	1.01E-03		0.0128	0.0128		0.0128	0.0128	0	383.2961	383.2961	0.0204	5.41E-03	385.4174
Mobile		0.6673	0.7786	6.1807	0.0126	1.4166	0.01	1.4266	0.3782	9.37E-03	0.3876	0	1,191.04	1,191.04	0.0806	0.0558	1,209.68
Waste							0	0		0	0	38.7002	0	38.7002	2.2871	0	95.8782
Water							0	0		0	0	3.3194	33.3196	36.639	0.0968	7.56E-03	41.3104
Total		**1.6998**	**0.9482**	**7.1882**	**0.01366**	**1.4166**	**0.02797**	**1.44457**	**0.3782**	**0.02734**	**0.40557**	**42.0196**	**1609.1379**	**1651.1575**	**2.48617**	**0.06877**	**1733.8023**

North Ranch Residential Development

[Traffic Census Program | Caltrans]

DISTRICT	ROUTE	RTE_SFX	COUNTY	PM_PFX	PM	PM_SFX	DESCRIPTION	BACK_PEAK_HOUR	BACK_PEAK_MADT	BACK_AADT	AHEAD_PEAK_HOUR	AHEAD_PEAK_MADT	AHEAD_AADT
07	023		VEN	R	11.432		MOORPARK, JCT. RTE. 118	4400	57000	49500	1850	24300	21000
07	023		VEN	T	12.260		MOORPARK, JCT. RTE. 118	1850	24300	21000			
07	023		VEN	R	12.900		MOORPARK, JCT. RTE. 118				690	9000	7800
07	118		VEN		14.686		GRIMES CANYON ROAD	1450	20200	16200	1550	20900	16800
07	118		VEN	R	17.494		MOORPARK, W JCT. RTE. 23	2200	30000	24100	2850	39000	31500
07	118		VEN	R	17.905		MOORPARK, EAST JCT. RTE. 23	2850	39000	31500	6200	85000	68000

Appendix C

CalEEMod Output

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

North Ranch - Construction and Operations

Ventura County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	144.00	Dwelling Unit	51.50	259,200.00	465

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Assumptions

Land Use - See Assumptions

Construction Phase - See Assumptions

Grading -

Demolition - See Assumptions

Water And Wastewater - See Assumptions

Construction Off-road Equipment Mitigation - See Assumptions

Area Mitigation - See Assumptions

Vehicle Trips - See Assumptions

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	75	10

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	1,110.00	545.00
tblConstructionPhase	NumDays	70.00	34.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstructionPhase	NumDays	110.00	54.00
tblConstructionPhase	NumDays	40.00	20.00
tblConstructionPhase	PhaseEndDate	3/2/2028	12/31/2024
tblConstructionPhase	PhaseEndDate	8/5/2027	12/31/2024
tblConstructionPhase	PhaseEndDate	10/6/2022	8/17/2022
tblConstructionPhase	PhaseEndDate	5/4/2023	11/29/2022
tblConstructionPhase	PhaseEndDate	11/18/2027	12/31/2024
tblConstructionPhase	PhaseEndDate	12/1/2022	9/14/2022
tblConstructionPhase	PhaseStartDate	11/19/2027	9/18/2024
tblConstructionPhase	PhaseStartDate	5/5/2023	11/30/2022
tblConstructionPhase	PhaseStartDate	12/2/2022	9/15/2022
tblConstructionPhase	PhaseStartDate	8/6/2027	9/18/2024
tblConstructionPhase	PhaseStartDate	10/7/2022	8/18/2022
tblLandUse	LotAcreage	46.75	51.50
tblLandUse	Population	441.00	465.00
tblVehicleTrips	SU_TR	8.55	9.44
tblWater	AerobicPercent	87.46	97.58
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	2.42
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.6915	38.8903	29.5861	0.0635	19.8049	1.6358	21.4183	10.1417	1.5050	11.6260	0.0000	6,152.3527	6,152.3527	1.9493	0.0589	6,202.4233
2023	1.7487	15.0865	17.7630	0.0332	0.5287	0.7055	1.2341	0.1425	0.6638	0.8063	0.0000	3,213.9530	3,213.9530	0.6321	0.0560	3,246.4538
2024	38.0191	24.9217	34.6227	0.0605	0.7341	1.1494	1.8835	0.1970	1.0751	1.2721	0.0000	5,858.3442	5,858.3442	1.3629	0.0595	5,910.1390
Maximum	**38.0191**	**38.8903**	**34.6227**	**0.0635**	**19.8049**	**1.6358**	**21.4183**	**10.1417**	**1.5050**	**11.6260**	**0.0000**	**6,152.3527**	**6,152.3527**	**1.9493**	**0.0595**	**6,202.4233**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.8282	3.5648	33.5437	0.0635	8.5512	0.1125	8.6142	4.3580	0.1119	4.4209	0.0000	6,152.3527	6,152.3527	1.9493	0.0589	6,202.4233
2023	0.7144	3.3529	19.1603	0.0332	0.5287	0.0987	0.6274	0.1425	0.0984	0.2409	0.0000	3,213.9530	3,213.9530	0.6321	0.0560	3,246.4538
2024	36.2087	4.6902	38.7752	0.0605	0.7341	0.1334	0.8674	0.1970	0.1330	0.3300	0.0000	5,858.3442	5,858.3442	1.3629	0.0595	5,910.1390
Maximum	**36.2087**	**4.6902**	**38.7752**	**0.0635**	**8.5512**	**0.1334**	**8.6142**	**4.3580**	**0.1330**	**4.4209**	**0.0000**	**6,152.3527**	**6,152.3527**	**1.9493**	**0.0595**	**6,202.4233**

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	13.13	85.29	-11.60	0.00	53.42	90.13	58.80	55.18	89.42	63.58	0.00	0.00	0.00	0.00	0.00	0.00

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.6253	0.1367	11.8689	6.3000e-004		0.0659	0.0659		0.0659	0.0659	0.0000	21.3915	21.3915	0.0205	0.0000	21.9037
Energy	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859
Mobile	3.7374	4.3956	35.5520	0.0695	8.0004	0.0558	8.0561	2.1327	0.0520	2.1847		7,249.5787	7,249.5787	0.5089	0.3471	7,365.7403
Total	**10.4643**	**5.4012**	**47.7907**	**0.0757**	**8.0004**	**0.1919**	**8.1923**	**2.1327**	**0.1881**	**2.3208**	**0.0000**	**8,380.1647**	**8,380.1647**	**0.5506**	**0.3675**	**8,503.4299**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.6937	0.1226	10.4445	5.2000e-004		0.0575	0.0575		0.0575	0.0575	0.0000	18.1802	18.1802	0.0156	0.0000	18.5703
Energy	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859
Mobile	3.7374	4.3956	35.5520	0.0695	8.0004	0.0558	8.0561	2.1327	0.0520	2.1847		7,249.5787	7,249.5787	0.5089	0.3471	7,365.7403
Total	**9.5328**	**5.3871**	**46.3663**	**0.0756**	**8.0004**	**0.1835**	**8.1839**	**2.1327**	**0.1798**	**2.3124**	**0.0000**	**8,376.9533**	**8,376.9533**	**0.5457**	**0.3675**	**8,500.0965**

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	8.90	0.26	2.98	0.15	0.00	4.37	0.10	0.00	4.45	0.36	0.00	0.04	0.04	0.88	0.00	0.04

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2022	8/17/2022	5	34	
2	Site Preparation	Site Preparation	8/18/2022	9/14/2022	5	20	
3	Grading	Grading	9/15/2022	11/29/2022	5	54	
4	Building Construction	Building Construction	11/30/2022	12/31/2024	5	545	
5	Paving	Paving	9/18/2024	12/31/2024	5	75	
6	Architectural Coating	Architectural Coating	9/18/2024	12/31/2024	5	75	

Acres of Grading (Site Preparation Phase): 30

Acres of Grading (Grading Phase): 162

Acres of Paving: 0

Residential Indoor: 524,880; Residential Outdoor: 174,960; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	52.00	15.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	23.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1466	0.0000	0.1466	0.0222	0.0000	0.0222			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.1466**	**1.2427**	**1.3892**	**0.0222**	**1.1553**	**1.1775**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.3300e-003	0.1062	0.0252	4.0000e-004	0.0118	8.7000e-004	0.0127	3.2300e-003	8.3000e-004	4.0600e-003		44.4123	44.4123	2.8300e-003	7.0700e-003	46.5888
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0500	0.0351	0.4084	1.0400e-003	0.1232	7.1000e-004	0.1239	0.0327	6.5000e-004	0.0333		105.7066	105.7066	3.7900e-003	3.3700e-003	106.8056
Total	**0.0523**	**0.1413**	**0.4336**	**1.4400e-003**	**0.1350**	**1.5800e-003**	**0.1366**	**0.0359**	**1.4800e-003**	**0.0374**		**150.1190**	**150.1190**	**6.6200e-003**	**0.0104**	**153.3944**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0627	0.0000	0.0627	9.4900e-003	0.0000	9.4900e-003			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.0627**	**0.0616**	**0.1243**	**9.4900e-003**	**0.0616**	**0.0711**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.3300e-003	0.1062	0.0252	4.0000e-004	0.0118	8.7000e-004	0.0127	3.2300e-003	8.3000e-004	4.0600e-003		44.4123	44.4123	2.8300e-003	7.0700e-003	46.5888
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0500	0.0351	0.4084	1.0400e-003	0.1232	7.1000e-004	0.1239	0.0327	6.5000e-004	0.0333		105.7066	105.7066	3.7900e-003	3.3700e-003	106.8056
Total	**0.0523**	**0.1413**	**0.4336**	**1.4400e-003**	**0.1350**	**1.5800e-003**	**0.1366**	**0.0359**	**1.4800e-003**	**0.0374**		**150.1190**	**150.1190**	**6.6200e-003**	**0.0104**	**153.3944**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0600	0.0421	0.4901	1.2500e-003	0.1479	8.5000e-004	0.1487	0.0392	7.8000e-004	0.0400		126.8480	126.8480	4.5500e-003	4.0400e-003	128.1667
Total	**0.0600**	**0.0421**	**0.4901**	**1.2500e-003**	**0.1479**	**8.5000e-004**	**0.1487**	**0.0392**	**7.8000e-004**	**0.0400**		**126.8480**	**126.8480**	**4.5500e-003**	**4.0400e-003**	**128.1667**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	0.4656	2.0175	20.8690	0.0380		0.0621	0.0621		0.0621	0.0621	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**0.4656**	**2.0175**	**20.8690**	**0.0380**	**8.4034**	**0.0621**	**8.4655**	**4.3188**	**0.0621**	**4.3809**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0600	0.0421	0.4901	1.2500e-003	0.1479	8.5000e-004	0.1487	0.0392	7.8000e-004	0.0400		126.8480	126.8480	4.5500e-003	4.0400e-003	128.1667
Total	**0.0600**	**0.0421**	**0.4901**	**1.2500e-003**	**0.1479**	**8.5000e-004**	**0.1487**	**0.0392**	**7.8000e-004**	**0.0400**		**126.8480**	**126.8480**	**4.5500e-003**	**4.0400e-003**	**128.1667**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0667	0.0468	0.5446	1.3900e-003	0.1643	9.4000e-004	0.1652	0.0436	8.7000e-004	0.0445		140.9422	140.9422	5.0500e-003	4.4900e-003	142.4075
Total	**0.0667**	**0.0468**	**0.5446**	**1.3900e-003**	**0.1643**	**9.4000e-004**	**0.1652**	**0.0436**	**8.7000e-004**	**0.0445**		**140.9422**	**140.9422**	**5.0500e-003**	**4.4900e-003**	**142.4075**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9345	0.0000	3.9345	1.5620	0.0000	1.5620			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0621		0.1015	0.1015		0.1015	0.1015	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**0.7616**	**3.3000**	**32.9991**	**0.0621**	**3.9345**	**0.1015**	**4.0361**	**1.5620**	**0.1015**	**1.6635**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0667	0.0468	0.5446	1.3900e-003	0.1643	9.4000e-004	0.1652	0.0436	8.7000e-004	0.0445		140.9422	140.9422	5.0500e-003	4.4900e-003	142.4075
Total	**0.0667**	**0.0468**	**0.5446**	**1.3900e-003**	**0.1643**	**9.4000e-004**	**0.1652**	**0.0436**	**8.7000e-004**	**0.0445**		**140.9422**	**140.9422**	**5.0500e-003**	**4.4900e-003**	**142.4075**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0247	0.7495	0.2357	2.9100e-003	0.1015	8.2600e-003	0.1098	0.0292	7.9000e-003	0.0371		314.8148	314.8148	0.0125	0.0472	329.2011
Worker	0.1733	0.1217	1.4158	3.6000e-003	0.4272	2.4500e-003	0.4296	0.1133	2.2600e-003	0.1156		366.4496	366.4496	0.0131	0.0117	370.2595
Total	**0.1980**	**0.8712**	**1.6515**	**6.5100e-003**	**0.5287**	**0.0107**	**0.5394**	**0.1425**	**0.0102**	**0.1527**		**681.2645**	**681.2645**	**0.0256**	**0.0589**	**699.4606**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5608	2.6936	17.6592	0.0269		0.1018	0.1018		0.1018	0.1018	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.5608**	**2.6936**	**17.6592**	**0.0269**		**0.1018**	**0.1018**		**0.1018**	**0.1018**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0247	0.7495	0.2357	2.9100e-003	0.1015	8.2600e-003	0.1098	0.0292	7.9000e-003	0.0371		314.8148	314.8148	0.0125	0.0472	329.2011
Worker	0.1733	0.1217	1.4158	3.6000e-003	0.4272	2.4500e-003	0.4296	0.1133	2.2600e-003	0.1156		366.4496	366.4496	0.0131	0.0117	370.2595
Total	**0.1980**	**0.8712**	**1.6515**	**6.5100e-003**	**0.5287**	**0.0107**	**0.5394**	**0.1425**	**0.0102**	**0.1527**		**681.2645**	**681.2645**	**0.0256**	**0.0589**	**699.4606**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0143	0.5934	0.2084	2.7800e-003	0.1015	3.4000e-003	0.1049	0.0292	3.2500e-003	0.0325		301.8635	301.8635	0.0124	0.0452	315.6425
Worker	0.1616	0.1083	1.3106	3.4900e-003	0.4272	2.3100e-003	0.4295	0.1133	2.1300e-003	0.1154		356.8795	356.8795	0.0119	0.0108	360.4052
Total	**0.1759**	**0.7016**	**1.5190**	**6.2700e-003**	**0.5287**	**5.7100e-003**	**0.5344**	**0.1425**	**5.3800e-003**	**0.1479**		**658.7430**	**658.7430**	**0.0243**	**0.0560**	**676.0477**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5385	2.6513	17.6413	0.0269		0.0930	0.0930		0.0930	0.0930	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.5385**	**2.6513**	**17.6413**	**0.0269**		**0.0930**	**0.0930**		**0.0930**	**0.0930**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0143	0.5934	0.2084	2.7800e-003	0.1015	3.4000e-003	0.1049	0.0292	3.2500e-003	0.0325		301.8635	301.8635	0.0124	0.0452	315.6425
Worker	0.1616	0.1083	1.3106	3.4900e-003	0.4272	2.3100e-003	0.4295	0.1133	2.1300e-003	0.1154		356.8795	356.8795	0.0119	0.0108	360.4052
Total	**0.1759**	**0.7016**	**1.5190**	**6.2700e-003**	**0.5287**	**5.7100e-003**	**0.5344**	**0.1425**	**5.3800e-003**	**0.1479**		**658.7430**	**658.7430**	**0.0243**	**0.0560**	**676.0477**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0140	0.5907	0.2073	2.7400e-003	0.1015	3.4100e-003	0.1049	0.0292	3.2600e-003	0.0325		297.3193	297.3193	0.0127	0.0445	310.8997
Worker	0.1512	0.0972	1.2242	3.3800e-003	0.4272	2.2200e-003	0.4294	0.1133	2.0400e-003	0.1153		348.6909	348.6909	0.0109	0.0101	351.9732
Total	**0.1652**	**0.6878**	**1.4315**	**6.1200e-003**	**0.5287**	**5.6300e-003**	**0.5343**	**0.1425**	**5.3000e-003**	**0.1478**		**646.0102**	**646.0102**	**0.0235**	**0.0546**	**662.8729**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5199	2.6115	17.6271	0.0270		0.0853	0.0853		0.0853	0.0853	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**0.5199**	**2.6115**	**17.6271**	**0.0270**		**0.0853**	**0.0853**		**0.0853**	**0.0853**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0140	0.5907	0.2073	2.7400e-003	0.1015	3.4100e-003	0.1049	0.0292	3.2600e-003	0.0325		297.3193	297.3193	0.0127	0.0445	310.8997
Worker	0.1512	0.0972	1.2242	3.3800e-003	0.4272	2.2200e-003	0.4294	0.1133	2.0400e-003	0.1153		348.6909	348.6909	0.0109	0.0101	351.9732
Total	**0.1652**	**0.6878**	**1.4315**	**6.1200e-003**	**0.5287**	**5.6300e-003**	**0.5343**	**0.1425**	**5.3000e-003**	**0.1478**		**646.0102**	**646.0102**	**0.0235**	**0.0546**	**662.8729**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0436	0.0280	0.3531	9.8000e-004	0.1232	6.4000e-004	0.1239	0.0327	5.9000e-004	0.0333		100.5839	100.5839	3.1400e-003	2.9100e-003	101.5307
Total	**0.0436**	**0.0280**	**0.3531**	**9.8000e-004**	**0.1232**	**6.4000e-004**	**0.1239**	**0.0327**	**5.9000e-004**	**0.0333**		**100.5839**	**100.5839**	**3.1400e-003**	**2.9100e-003**	**101.5307**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2805**	**1.2154**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0436	0.0280	0.3531	9.8000e-004	0.1232	6.4000e-004	0.1239	0.0327	5.9000e-004	0.0333		100.5839	100.5839	3.1400e-003	2.9100e-003	101.5307
Total	**0.0436**	**0.0280**	**0.3531**	**9.8000e-004**	**0.1232**	**6.4000e-004**	**0.1239**	**0.0327**	**5.9000e-004**	**0.0333**		**100.5839**	**100.5839**	**3.1400e-003**	**2.9100e-003**	**101.5307**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.1407					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**35.3215**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0291	0.0187	0.2354	6.5000e-004	0.0822	4.3000e-004	0.0826	0.0218	3.9000e-004	0.0222		67.0559	67.0559	2.0900e-003	1.9400e-003	67.6871
Total	**0.0291**	**0.0187**	**0.2354**	**6.5000e-004**	**0.0822**	**4.3000e-004**	**0.0826**	**0.0218**	**3.9000e-004**	**0.0222**		**67.0559**	**67.0559**	**2.0900e-003**	**1.9400e-003**	**67.6871**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.1407					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**35.1704**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0291	0.0187	0.2354	6.5000e-004	0.0822	4.3000e-004	0.0826	0.0218	3.9000e-004	0.0222		67.0559	67.0559	2.0900e-003	1.9400e-003	67.6871
Total	**0.0291**	**0.0187**	**0.2354**	**6.5000e-004**	**0.0822**	**4.3000e-004**	**0.0826**	**0.0218**	**3.9000e-004**	**0.0222**		**67.0559**	**67.0559**	**2.0900e-003**	**1.9400e-003**	**67.6871**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.7374	4.3956	35.5520	0.0695	8.0004	0.0558	8.0561	2.1327	0.0520	2.1847		7,249.5787	7,249.5787	0.5089	0.3471	7,365.7403
Unmitigated	3.7374	4.3956	35.5520	0.0695	8.0004	0.0558	8.0561	2.1327	0.0520	2.1847		7,249.5787	7,249.5787	0.5089	0.3471	7,365.7403

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,359.36	1,373.76	1359.36	3,761,694	3,761,694
Total	1,359.36	1,373.76	1,359.36	3,761,694	3,761,694

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.553410	0.058491	0.170447	0.127855	0.026791	0.007507	0.012149	0.006212	0.000674	0.000390	0.028812	0.000632	0.006629

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859
NaturalGas Unmitigated	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	9428.15	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859
Total		**0.1017**	**0.8689**	**0.3697**	**5.5500e-003**		**0.0703**	**0.0703**		**0.0703**	**0.0703**		**1,109.1945**	**1,109.1945**	**0.0213**	**0.0203**	**1,115.7859**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	9.42815	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859
Total		**0.1017**	**0.8689**	**0.3697**	**5.5500e-003**		**0.0703**	**0.0703**		**0.0703**	**0.0703**		**1,109.1945**	**1,109.1945**	**0.0213**	**0.0203**	**1,115.7859**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Cleaning Supplies

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.6937	0.1226	10.4445	5.2000e-004		0.0575	0.0575		0.0575	0.0575	0.0000	18.1802	18.1802	0.0156	0.0000	18.5703
Unmitigated	6.6253	0.1367	11.8689	6.3000e-004		0.0659	0.0659		0.0659	0.0659	0.0000	21.3915	21.3915	0.0205	0.0000	21.9037

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7221					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5469					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3564	0.1367	11.8689	6.3000e-004		0.0659	0.0659		0.0659	0.0659		21.3915	21.3915	0.0205		21.9037
Total	**6.6253**	**0.1367**	**11.8689**	**6.3000e-004**		**0.0659**	**0.0659**		**0.0659**	**0.0659**	**0.0000**	**21.3915**	**21.3915**	**0.0205**	**0.0000**	**21.9037**

North Ranch - Construction and Operations - Ventura County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2888					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.1322					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.2727	0.1226	10.4445	5.2000e-004		0.0575	0.0575		0.0575	0.0575		18.1802	18.1802	0.0156		18.5703
Total	**5.6937**	**0.1226**	**10.4445**	**5.2000e-004**		**0.0575**	**0.0575**		**0.0575**	**0.0575**	**0.0000**	**18.1802**	**18.1802**	**0.0156**	**0.0000**	**18.5703**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

North Ranch - Construction and Operations

Ventura County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	144.00	Dwelling Unit	51.50	259,200.00	465

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Assumptions

Land Use - See Assumptions

Construction Phase - See Assumptions

Grading -

Demolition - See Assumptions

Water And Wastewater - See Assumptions

Construction Off-road Equipment Mitigation - See Assumptions

Area Mitigation - See Assumptions

Vehicle Trips - See Assumptions

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	75	10

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	1,110.00	545.00
tblConstructionPhase	NumDays	70.00	34.00

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstructionPhase	NumDays	110.00	54.00
tblConstructionPhase	NumDays	40.00	20.00
tblConstructionPhase	PhaseEndDate	3/2/2028	12/31/2024
tblConstructionPhase	PhaseEndDate	8/5/2027	12/31/2024
tblConstructionPhase	PhaseEndDate	10/6/2022	8/17/2022
tblConstructionPhase	PhaseEndDate	5/4/2023	11/29/2022
tblConstructionPhase	PhaseEndDate	11/18/2027	12/31/2024
tblConstructionPhase	PhaseEndDate	12/1/2022	9/14/2022
tblConstructionPhase	PhaseStartDate	11/19/2027	9/18/2024
tblConstructionPhase	PhaseStartDate	5/5/2023	11/30/2022
tblConstructionPhase	PhaseStartDate	12/2/2022	9/15/2022
tblConstructionPhase	PhaseStartDate	8/6/2027	9/18/2024
tblConstructionPhase	PhaseStartDate	10/7/2022	8/18/2022
tblLandUse	LotAcreage	46.75	51.50
tblLandUse	Population	441.00	465.00
tblVehicleTrips	SU_TR	8.55	9.44
tblWater	AerobicPercent	87.46	97.58
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	2.42
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.6867	38.8834	29.5975	0.0635	19.8049	1.6358	21.4183	10.1417	1.5050	11.6260	0.0000	6,158.7443	6,158.7443	1.9489	0.0577	6,208.6698
2023	1.7373	15.0457	17.7811	0.0334	0.5287	0.7054	1.2341	0.1425	0.6638	0.8063	0.0000	3,229.6631	3,229.6631	0.6312	0.0548	3,261.7866
2024	38.0027	24.8757	34.6466	0.0607	0.7341	1.1494	1.8835	0.1970	1.0751	1.2721	0.0000	5,881.2159	5,881.2159	1.3617	0.0579	5,932.5025
Maximum	**38.0027**	**38.8834**	**34.6466**	**0.0635**	**19.8049**	**1.6358**	**21.4183**	**10.1417**	**1.5050**	**11.6260**	**0.0000**	**6,158.7443**	**6,158.7443**	**1.9489**	**0.0579**	**6,208.6698**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.8234	3.5183	33.5551	0.0635	8.5512	0.1124	8.6142	4.3580	0.1119	4.4209	0.0000	6,158.7443	6,158.7443	1.9489	0.0577	6,208.6698
2023	0.7030	3.3121	19.1784	0.0334	0.5287	0.0987	0.6274	0.1425	0.0984	0.2409	0.0000	3,229.6631	3,229.6631	0.6312	0.0548	3,261.7866
2024	36.1923	4.6441	38.7991	0.0607	0.7341	0.1334	0.8674	0.1970	0.1330	0.3299	0.0000	5,881.2159	5,881.2159	1.3617	0.0579	5,932.5025
Maximum	**36.1923**	**4.6441**	**38.7991**	**0.0635**	**8.5512**	**0.1334**	**8.6142**	**4.3580**	**0.1330**	**4.4209**	**0.0000**	**6,158.7443**	**6,158.7443**	**1.9489**	**0.0579**	**6,208.6698**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	13.14	85.44	-11.59	0.00	53.42	90.13	58.80	55.18	89.42	63.58	0.00	0.00	0.00	0.00	0.00	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.6253	0.1367	11.8689	6.3000e-004		0.0659	0.0659		0.0659	0.0659	0.0000	21.3915	21.3915	0.0205	0.0000	21.9037
Energy	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859
Mobile	3.8457	3.9824	33.5172	0.0719	8.0004	0.0557	8.0561	2.1327	0.0520	2.1847		7,500.8910	7,500.8910	0.4704	0.3246	7,609.3673
Total	**10.5727**	**4.9880**	**45.7559**	**0.0781**	**8.0004**	**0.1918**	**8.1922**	**2.1327**	**0.1881**	**2.3208**	**0.0000**	**8,631.4770**	**8,631.4770**	**0.5121**	**0.3449**	**8,747.0568**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.6937	0.1226	10.4445	5.2000e-004		0.0575	0.0575		0.0575	0.0575	0.0000	18.1802	18.1802	0.0156	0.0000	18.5703
Energy	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859
Mobile	3.8457	3.9824	33.5172	0.0719	8.0004	0.0557	8.0561	2.1327	0.0520	2.1847		7,500.8910	7,500.8910	0.4704	0.3246	7,609.3673
Total	**9.6411**	**4.9739**	**44.3315**	**0.0780**	**8.0004**	**0.1835**	**8.1838**	**2.1327**	**0.1797**	**2.3124**	**0.0000**	**8,628.2657**	**8,628.2657**	**0.5072**	**0.3449**	**8,743.7235**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**8.81**	**0.28**	**3.11**	**0.14**	**0.00**	**4.37**	**0.10**	**0.00**	**4.45**	**0.36**	**0.00**	**0.04**	**0.04**	**0.95**	**0.00**	**0.04**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2022	8/17/2022	5	34	
2	Site Preparation	Site Preparation	8/18/2022	9/14/2022	5	20	
3	Grading	Grading	9/15/2022	11/29/2022	5	54	
4	Building Construction	Building Construction	11/30/2022	12/31/2024	5	545	
5	Paving	Paving	9/18/2024	12/31/2024	5	75	
6	Architectural Coating	Architectural Coating	9/18/2024	12/31/2024	5	75	

Acres of Grading (Site Preparation Phase): 30

Acres of Grading (Grading Phase): 162

Acres of Paving: 0

Residential Indoor: 524,880; Residential Outdoor: 174,960; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	52.00	15.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	23.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1466	0.0000	0.1466	0.0222	0.0000	0.0222			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.1466**	**1.2427**	**1.3892**	**0.0222**	**1.1553**	**1.1775**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.4000e-003	0.1021	0.0248	4.0000e-004	0.0118	8.6000e-004	0.0127	3.2300e-003	8.3000e-004	4.0600e-003		44.3962	44.3962	2.8400e-003	7.0600e-003	46.5719
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0464	0.0300	0.4170	1.0900e-003	0.1232	7.1000e-004	0.1239	0.0327	6.5000e-004	0.0333		110.5003	110.5003	3.4900e-003	3.0300e-003	111.4905
Total	**0.0488**	**0.1321**	**0.4418**	**1.4900e-003**	**0.1350**	**1.5700e-003**	**0.1366**	**0.0359**	**1.4800e-003**	**0.0374**		**154.8965**	**154.8965**	**6.3300e-003**	**0.0101**	**158.0624**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0627	0.0000	0.0627	9.4900e-003	0.0000	9.4900e-003			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.0627**	**0.0616**	**0.1243**	**9.4900e-003**	**0.0616**	**0.0711**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.4000e-003	0.1021	0.0248	4.0000e-004	0.0118	8.6000e-004	0.0127	3.2300e-003	8.3000e-004	4.0600e-003		44.3962	44.3962	2.8400e-003	7.0600e-003	46.5719
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0464	0.0300	0.4170	1.0900e-003	0.1232	7.1000e-004	0.1239	0.0327	6.5000e-004	0.0333		110.5003	110.5003	3.4900e-003	3.0300e-003	111.4905
Total	**0.0488**	**0.1321**	**0.4418**	**1.4900e-003**	**0.1350**	**1.5700e-003**	**0.1366**	**0.0359**	**1.4800e-003**	**0.0374**		**154.8965**	**154.8965**	**6.3300e-003**	**0.0101**	**158.0624**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0557	0.0360	0.5004	1.3000e-003	0.1479	8.5000e-004	0.1487	0.0392	7.8000e-004	0.0400		132.6004	132.6004	4.1900e-003	3.6400e-003	133.7886
Total	**0.0557**	**0.0360**	**0.5004**	**1.3000e-003**	**0.1479**	**8.5000e-004**	**0.1487**	**0.0392**	**7.8000e-004**	**0.0400**		**132.6004**	**132.6004**	**4.1900e-003**	**3.6400e-003**	**133.7886**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	0.4656	2.0175	20.8690	0.0380		0.0621	0.0621		0.0621	0.0621	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**0.4656**	**2.0175**	**20.8690**	**0.0380**	**8.4034**	**0.0621**	**8.4655**	**4.3188**	**0.0621**	**4.3809**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0557	0.0360	0.5004	1.3000e-003	0.1479	8.5000e-004	0.1487	0.0392	7.8000e-004	0.0400		132.6004	132.6004	4.1900e-003	3.6400e-003	133.7886
Total	**0.0557**	**0.0360**	**0.5004**	**1.3000e-003**	**0.1479**	**8.5000e-004**	**0.1487**	**0.0392**	**7.8000e-004**	**0.0400**		**132.6004**	**132.6004**	**4.1900e-003**	**3.6400e-003**	**133.7886**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0619	0.0400	0.5560	1.4500e-003	0.1643	9.4000e-004	0.1652	0.0436	8.7000e-004	0.0445		147.3338	147.3338	4.6500e-003	4.0400e-003	148.6540
Total	**0.0619**	**0.0400**	**0.5560**	**1.4500e-003**	**0.1643**	**9.4000e-004**	**0.1652**	**0.0436**	**8.7000e-004**	**0.0445**		**147.3338**	**147.3338**	**4.6500e-003**	**4.0400e-003**	**148.6540**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9345	0.0000	3.9345	1.5620	0.0000	1.5620			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0621		0.1015	0.1015		0.1015	0.1015	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**0.7616**	**3.3000**	**32.9991**	**0.0621**	**3.9345**	**0.1015**	**4.0361**	**1.5620**	**0.1015**	**1.6635**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0619	0.0400	0.5560	1.4500e-003	0.1643	9.4000e-004	0.1652	0.0436	8.7000e-004	0.0445		147.3338	147.3338	4.6500e-003	4.0400e-003	148.6540
Total	**0.0619**	**0.0400**	**0.5560**	**1.4500e-003**	**0.1643**	**9.4000e-004**	**0.1652**	**0.0436**	**8.7000e-004**	**0.0445**		**147.3338**	**147.3338**	**4.6500e-003**	**4.0400e-003**	**148.6540**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0251	0.7208	0.2279	2.9100e-003	0.1015	8.2200e-003	0.1097	0.0292	7.8700e-003	0.0371		314.6664	314.6664	0.0125	0.0472	329.0363
Worker	0.1608	0.1039	1.4456	3.7700e-003	0.4272	2.4500e-003	0.4296	0.1133	2.2600e-003	0.1156		383.0678	383.0678	0.0121	0.0105	386.5003
Total	**0.1859**	**0.8247**	**1.6735**	**6.6800e-003**	**0.5287**	**0.0107**	**0.5393**	**0.1425**	**0.0101**	**0.1526**		**697.7342**	**697.7342**	**0.0246**	**0.0577**	**715.5366**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5608	2.6936	17.6592	0.0269		0.1018	0.1018		0.1018	0.1018	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.5608**	**2.6936**	**17.6592**	**0.0269**		**0.1018**	**0.1018**		**0.1018**	**0.1018**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0251	0.7208	0.2279	2.9100e-003	0.1015	8.2200e-003	0.1097	0.0292	7.8700e-003	0.0371		314.6664	314.6664	0.0125	0.0472	329.0363
Worker	0.1608	0.1039	1.4456	3.7700e-003	0.4272	2.4500e-003	0.4296	0.1133	2.2600e-003	0.1156		383.0678	383.0678	0.0121	0.0105	386.5003
Total	**0.1859**	**0.8247**	**1.6735**	**6.6800e-003**	**0.5287**	**0.0107**	**0.5393**	**0.1425**	**0.0101**	**0.1526**		**697.7342**	**697.7342**	**0.0246**	**0.0577**	**715.5366**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0149	0.5683	0.2019	2.7800e-003	0.1015	3.3800e-003	0.1049	0.0292	3.2300e-003	0.0324		301.4320	301.4320	0.0124	0.0451	315.1824
Worker	0.1496	0.0925	1.3351	3.6400e-003	0.4272	2.3100e-003	0.4295	0.1133	2.1300e-003	0.1154		373.0212	373.0212	0.0109	9.7400e-003	376.1981
Total	**0.1645**	**0.6608**	**1.5371**	**6.4200e-003**	**0.5287**	**5.6900e-003**	**0.5344**	**0.1425**	**5.3600e-003**	**0.1479**		**674.4532**	**674.4532**	**0.0233**	**0.0548**	**691.3805**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5385	2.6513	17.6413	0.0269		0.0930	0.0930		0.0930	0.0930	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.5385**	**2.6513**	**17.6413**	**0.0269**		**0.0930**	**0.0930**		**0.0930**	**0.0930**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0149	0.5683	0.2019	2.7800e-003	0.1015	3.3800e-003	0.1049	0.0292	3.2300e-003	0.0324		301.4320	301.4320	0.0124	0.0451	315.1824
Worker	0.1496	0.0925	1.3351	3.6400e-003	0.4272	2.3100e-003	0.4295	0.1133	2.1300e-003	0.1154		373.0212	373.0212	0.0109	9.7400e-003	376.1981
Total	**0.1645**	**0.6608**	**1.5371**	**6.4200e-003**	**0.5287**	**5.6900e-003**	**0.5344**	**0.1425**	**5.3600e-003**	**0.1479**		**674.4532**	**674.4532**	**0.0233**	**0.0548**	**691.3805**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0145	0.5656	0.2009	2.7300e-003	0.1015	3.3900e-003	0.1049	0.0292	3.2400e-003	0.0325		296.8802	296.8802	0.0127	0.0444	310.4326
Worker	0.1398	0.0830	1.2446	3.5300e-003	0.4272	2.2200e-003	0.4294	0.1133	2.0400e-003	0.1153		364.4333	364.4333	9.9700e-003	9.0900e-003	367.3912
Total	**0.1543**	**0.6486**	**1.4456**	**6.2600e-003**	**0.5287**	**5.6100e-003**	**0.5343**	**0.1425**	**5.2800e-003**	**0.1478**		**661.3135**	**661.3135**	**0.0227**	**0.0535**	**677.8238**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5199	2.6115	17.6271	0.0270		0.0853	0.0853		0.0853	0.0853	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**0.5199**	**2.6115**	**17.6271**	**0.0270**		**0.0853**	**0.0853**		**0.0853**	**0.0853**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0145	0.5656	0.2009	2.7300e-003	0.1015	3.3900e-003	0.1049	0.0292	3.2400e-003	0.0325		296.8802	296.8802	0.0127	0.0444	310.4326
Worker	0.1398	0.0830	1.2446	3.5300e-003	0.4272	2.2200e-003	0.4294	0.1133	2.0400e-003	0.1153		364.4333	364.4333	9.9700e-003	9.0900e-003	367.3912
Total	**0.1543**	**0.6486**	**1.4456**	**6.2600e-003**	**0.5287**	**5.6100e-003**	**0.5343**	**0.1425**	**5.2800e-003**	**0.1478**		**661.3135**	**661.3135**	**0.0227**	**0.0535**	**677.8238**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0403	0.0239	0.3590	1.0200e-003	0.1232	6.4000e-004	0.1239	0.0327	5.9000e-004	0.0333		105.1250	105.1250	2.8800e-003	2.6200e-003	105.9782
Total	**0.0403**	**0.0239**	**0.3590**	**1.0200e-003**	**0.1232**	**6.4000e-004**	**0.1239**	**0.0327**	**5.9000e-004**	**0.0333**		**105.1250**	**105.1250**	**2.8800e-003**	**2.6200e-003**	**105.9782**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2805**	**1.2154**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0403	0.0239	0.3590	1.0200e-003	0.1232	6.4000e-004	0.1239	0.0327	5.9000e-004	0.0333		105.1250	105.1250	2.8800e-003	2.6200e-003	105.9782
Total	**0.0403**	**0.0239**	**0.3590**	**1.0200e-003**	**0.1232**	**6.4000e-004**	**0.1239**	**0.0327**	**5.9000e-004**	**0.0333**		**105.1250**	**105.1250**	**2.8800e-003**	**2.6200e-003**	**105.9782**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.1407					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**35.3215**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0269	0.0160	0.2394	6.8000e-004	0.0822	4.3000e-004	0.0826	0.0218	3.9000e-004	0.0222		70.0833	70.0833	1.9200e-003	1.7500e-003	70.6522
Total	**0.0269**	**0.0160**	**0.2394**	**6.8000e-004**	**0.0822**	**4.3000e-004**	**0.0826**	**0.0218**	**3.9000e-004**	**0.0222**		**70.0833**	**70.0833**	**1.9200e-003**	**1.7500e-003**	**70.6522**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.1407					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**35.1704**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0269	0.0160	0.2394	6.8000e-004	0.0822	4.3000e-004	0.0826	0.0218	3.9000e-004	0.0222		70.0833	70.0833	1.9200e-003	1.7500e-003	70.6522
Total	**0.0269**	**0.0160**	**0.2394**	**6.8000e-004**	**0.0822**	**4.3000e-004**	**0.0826**	**0.0218**	**3.9000e-004**	**0.0222**		**70.0833**	**70.0833**	**1.9200e-003**	**1.7500e-003**	**70.6522**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.8457	3.9824	33.5172	0.0719	8.0004	0.0557	8.0561	2.1327	0.0520	2.1847		7,500.8910	7,500.8910	0.4704	0.3246	7,609.3673
Unmitigated	3.8457	3.9824	33.5172	0.0719	8.0004	0.0557	8.0561	2.1327	0.0520	2.1847		7,500.8910	7,500.8910	0.4704	0.3246	7,609.3673

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,359.36	1,373.76	1359.36	3,761,694	3,761,694
Total	1,359.36	1,373.76	1,359.36	3,761,694	3,761,694

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.553410	0.058491	0.170447	0.127855	0.026791	0.007507	0.012149	0.006212	0.000674	0.000390	0.028812	0.000632	0.006629

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859
NaturalGas Unmitigated	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	9428.15	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859
Total		**0.1017**	**0.8689**	**0.3697**	**5.5500e-003**		**0.0703**	**0.0703**		**0.0703**	**0.0703**		**1,109.1945**	**1,109.1945**	**0.0213**	**0.0203**	**1,115.7859**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	9.42815	0.1017	0.8689	0.3697	5.5500e-003		0.0703	0.0703		0.0703	0.0703		1,109.1945	1,109.1945	0.0213	0.0203	1,115.7859
Total		**0.1017**	**0.8689**	**0.3697**	**5.5500e-003**		**0.0703**	**0.0703**		**0.0703**	**0.0703**		**1,109.1945**	**1,109.1945**	**0.0213**	**0.0203**	**1,115.7859**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Cleaning Supplies

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.6937	0.1226	10.4445	5.2000e-004		0.0575	0.0575		0.0575	0.0575	0.0000	18.1802	18.1802	0.0156	0.0000	18.5703
Unmitigated	6.6253	0.1367	11.8689	6.3000e-004		0.0659	0.0659		0.0659	0.0659	0.0000	21.3915	21.3915	0.0205	0.0000	21.9037

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7221					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.5469					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3564	0.1367	11.8689	6.3000e-004		0.0659	0.0659		0.0659	0.0659		21.3915	21.3915	0.0205		21.9037
Total	**6.6253**	**0.1367**	**11.8689**	**6.3000e-004**		**0.0659**	**0.0659**		**0.0659**	**0.0659**	**0.0000**	**21.3915**	**21.3915**	**0.0205**	**0.0000**	**21.9037**

North Ranch - Construction and Operations - Ventura County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2888					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.1322					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.2727	0.1226	10.4445	5.2000e-004		0.0575	0.0575		0.0575	0.0575		18.1802	18.1802	0.0156		18.5703
Total	**5.6937**	**0.1226**	**10.4445**	**5.2000e-004**		**0.0575**	**0.0575**		**0.0575**	**0.0575**	**0.0000**	**18.1802**	**18.1802**	**0.0156**	**0.0000**	**18.5703**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

North Ranch - Construction and Operations

Ventura County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	144.00	Dwelling Unit	51.50	259,200.00	465

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Assumptions

Land Use - See Assumptions

Construction Phase - See Assumptions

Grading -

Demolition - See Assumptions

Water And Wastewater - See Assumptions

Construction Off-road Equipment Mitigation - See Assumptions

Area Mitigation - See Assumptions

Vehicle Trips - See Assumptions

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	75	10

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	1,110.00	545.00
tblConstructionPhase	NumDays	70.00	34.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstructionPhase	NumDays	110.00	54.00
tblConstructionPhase	NumDays	40.00	20.00
tblConstructionPhase	PhaseEndDate	3/2/2028	12/31/2024
tblConstructionPhase	PhaseEndDate	8/5/2027	12/31/2024
tblConstructionPhase	PhaseEndDate	10/6/2022	8/17/2022
tblConstructionPhase	PhaseEndDate	5/4/2023	11/29/2022
tblConstructionPhase	PhaseEndDate	11/18/2027	12/31/2024
tblConstructionPhase	PhaseEndDate	12/1/2022	9/14/2022
tblConstructionPhase	PhaseStartDate	11/19/2027	9/18/2024
tblConstructionPhase	PhaseStartDate	5/5/2023	11/30/2022
tblConstructionPhase	PhaseStartDate	12/2/2022	9/15/2022
tblConstructionPhase	PhaseStartDate	8/6/2027	9/18/2024
tblConstructionPhase	PhaseStartDate	10/7/2022	8/18/2022
tblLandUse	LotAcreage	46.75	51.50
tblLandUse	Population	441.00	465.00
tblVehicleTrips	SU_TR	8.55	9.44
tblWater	AerobicPercent	87.46	97.58
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	2.42
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1992	2.0104	1.5648	3.1800e-003	0.4616	0.0909	0.5525	0.2038	0.0840	0.2878	0.0000	279.2107	279.2107	0.0816	9.1000e-004	281.5224
2023	0.2257	1.9604	2.3066	4.3200e-003	0.0675	0.0917	0.1592	0.0182	0.0863	0.1045	0.0000	379.3042	379.3042	0.0745	6.5700e-003	383.1246
2024	1.5770	2.2550	2.9409	5.3600e-003	0.0756	0.1010	0.1766	0.0204	0.0948	0.1151	0.0000	471.1766	471.1766	0.0996	6.6100e-003	475.6371
Maximum	**1.5770**	**2.2550**	**2.9409**	**5.3600e-003**	**0.4616**	**0.1010**	**0.5525**	**0.2038**	**0.0948**	**0.2878**	**0.0000**	**471.1766**	**471.1766**	**0.0996**	**6.6100e-003**	**475.6371**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0447	0.1883	1.7439	3.1800e-003	0.2054	5.7600e-003	0.2111	0.0893	5.7500e-003	0.0950	0.0000	279.2104	279.2104	0.0816	9.1000e-004	281.5221
2023	0.0912	0.4350	2.4882	4.3200e-003	0.0675	0.0128	0.0803	0.0182	0.0128	0.0310	0.0000	379.3038	379.3038	0.0745	6.5700e-003	383.1242
2024	1.4201	0.4835	3.2332	5.3600e-003	0.0756	0.0135	0.0891	0.0204	0.0135	0.0338	0.0000	471.1761	471.1761	0.0996	6.6100e-003	475.6367
Maximum	**1.4201**	**0.4835**	**3.2332**	**5.3600e-003**	**0.2054**	**0.0135**	**0.2111**	**0.0893**	**0.0135**	**0.0950**	**0.0000**	**471.1761**	**471.1761**	**0.0996**	**6.6100e-003**	**475.6367**

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**22.27**	**82.22**	**-9.59**	**0.00**	**42.38**	**88.68**	**57.16**	**47.24**	**87.93**	**68.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-1-2022**	**9-30-2022**	1.0960	0.0949
2	**10-1-2022**	**12-31-2022**	1.1226	0.1389
3	**1-1-2023**	**3-31-2023**	0.5411	0.1307
4	**4-1-2023**	**6-30-2023**	0.5454	0.1305
5	**7-1-2023**	**9-30-2023**	0.5514	0.1319
6	**10-1-2023**	**12-31-2023**	0.5532	0.1336
7	**1-1-2024**	**3-31-2024**	0.5125	0.1295
8	**4-1-2024**	**6-30-2024**	0.5108	0.1279
9	**7-1-2024**	**9-30-2024**	0.7354	0.3006
		Highest	1.1226	0.3006

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1762	0.0123	1.0682	6.0000e-005		5.9300e-003	5.9300e-003		5.9300e-003	5.9300e-003	0.0000	1.7466	1.7466	1.6700e-003	0.0000	1.7884
Energy	0.0186	0.1586	0.0675	1.0100e-003		0.0128	0.0128		0.0128	0.0128	0.0000	383.2961	383.2961	0.0204	5.4100e-003	385.4174
Mobile	0.6673	0.7786	6.1807	0.0126	1.4166	0.0100	1.4266	0.3782	9.3700e-003	0.3876	0.0000	1,191.0378	1,191.0378	0.0806	0.0558	1,209.6801
Waste						0.0000	0.0000		0.0000	0.0000	38.7002	0.0000	38.7002	2.2871	0.0000	95.8782
Water						0.0000	0.0000		0.0000	0.0000	3.3194	33.3196	36.6390	0.0968	7.5600e-003	41.3104
Total	**1.8621**	**0.9495**	**7.3163**	**0.0137**	**1.4166**	**0.0288**	**1.4454**	**0.3782**	**0.0281**	**0.4063**	**42.0197**	**1,609.4000**	**1,651.4197**	**2.4865**	**0.0688**	**1,734.0744**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0139	0.0110	0.9400	5.0000e-005		5.1700e-003	5.1700e-003		5.1700e-003	5.1700e-003	0.0000	1.4844	1.4844	1.2700e-003	0.0000	1.5162
Energy	0.0186	0.1586	0.0675	1.0100e-003		0.0128	0.0128		0.0128	0.0128	0.0000	383.2961	383.2961	0.0204	5.4100e-003	385.4174
Mobile	0.6673	0.7786	6.1807	0.0126	1.4166	0.0100	1.4266	0.3782	9.3700e-003	0.3876	0.0000	1,191.0378	1,191.0378	0.0806	0.0558	1,209.6801
Waste						0.0000	0.0000		0.0000	0.0000	38.7002	0.0000	38.7002	2.2871	0.0000	95.8782
Water						0.0000	0.0000		0.0000	0.0000	3.3194	33.3196	36.6390	0.0968	7.5600e-003	41.3104
Total	**1.6998**	**0.9482**	**7.1882**	**0.0136**	**1.4166**	**0.0280**	**1.4446**	**0.3782**	**0.0274**	**0.4055**	**42.0197**	**1,609.1378**	**1,651.1575**	**2.4861**	**0.0688**	**1,733.8022**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**8.72**	**0.13**	**1.75**	**0.07**	**0.00**	**2.64**	**0.05**	**0.00**	**2.70**	**0.19**	**0.00**	**0.02**	**0.02**	**0.02**	**0.00**	**0.02**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2022	8/17/2022	5	34	
2	Site Preparation	Site Preparation	8/18/2022	9/14/2022	5	20	
3	Grading	Grading	9/15/2022	11/29/2022	5	54	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Building Construction	Building Construction	11/30/2022	12/31/2024	5	545	
5	Paving	Paving	9/18/2024	12/31/2024	5	75	
6	Architectural Coating	Architectural Coating	9/18/2024	12/31/2024	5	75	

Acres of Grading (Site Preparation Phase): 30

Acres of Grading (Grading Phase): 162

Acres of Paving: 0

Residential Indoor: 524,880; Residential Outdoor: 174,960; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	52.00	15.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	23.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.4900e-003	0.0000	2.4900e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0449	0.4372	0.3501	6.6000e-004		0.0211	0.0211		0.0196	0.0196	0.0000	57.7834	57.7834	0.0162	0.0000	58.1892
Total	**0.0449**	**0.4372**	**0.3501**	**6.6000e-004**	**2.4900e-003**	**0.0211**	**0.0236**	**3.8000e-004**	**0.0196**	**0.0200**	**0.0000**	**57.7834**	**57.7834**	**0.0162**	**0.0000**	**58.1892**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.8100e-003	4.2000e-004	1.0000e-005	2.0000e-004	1.0000e-005	2.1000e-004	5.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6848	0.6848	4.0000e-005	1.1000e-004	0.7184
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.7000e-004	6.8600e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.6418	1.6418	6.0000e-005	5.0000e-005	1.6583
Total	**8.2000e-004**	**2.3800e-003**	**7.2800e-003**	**3.0000e-005**	**2.2600e-003**	**2.0000e-005**	**2.2800e-003**	**6.0000e-004**	**2.0000e-005**	**6.3000e-004**	**0.0000**	**2.3266**	**2.3266**	**1.0000e-004**	**1.6000e-004**	**2.3767**

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0700e-003	0.0000	1.0700e-003	1.6000e-004	0.0000	1.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.8600e-003	0.0341	0.3958	6.6000e-004		1.0500e-003	1.0500e-003		1.0500e-003	1.0500e-003	0.0000	57.7833	57.7833	0.0162	0.0000	58.1891
Total	**7.8600e-003**	**0.0341**	**0.3958**	**6.6000e-004**	**1.0700e-003**	**1.0500e-003**	**2.1200e-003**	**1.6000e-004**	**1.0500e-003**	**1.2100e-003**	**0.0000**	**57.7833**	**57.7833**	**0.0162**	**0.0000**	**58.1891**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.8100e-003	4.2000e-004	1.0000e-005	2.0000e-004	1.0000e-005	2.1000e-004	5.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6848	0.6848	4.0000e-005	1.1000e-004	0.7184
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.7000e-004	6.8600e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.6418	1.6418	6.0000e-005	5.0000e-005	1.6583
Total	**8.2000e-004**	**2.3800e-003**	**7.2800e-003**	**3.0000e-005**	**2.2600e-003**	**2.0000e-005**	**2.2800e-003**	**6.0000e-004**	**2.0000e-005**	**6.3000e-004**	**0.0000**	**2.3266**	**2.3266**	**1.0000e-004**	**1.6000e-004**	**2.3767**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1966	0.0000	0.1966	0.1010	0.0000	0.1010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0317	0.3308	0.1970	3.8000e-004		0.0161	0.0161		0.0148	0.0148	0.0000	33.4394	33.4394	0.0108	0.0000	33.7098
Total	**0.0317**	**0.3308**	**0.1970**	**3.8000e-004**	**0.1966**	**0.0161**	**0.2127**	**0.1010**	**0.0148**	**0.1159**	**0.0000**	**33.4394**	**33.4394**	**0.0108**	**0.0000**	**33.7098**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	4.1000e-004	4.8400e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	3.9000e-004	0.0000	1.1590	1.1590	4.0000e-005	4.0000e-005	1.1706
Total	**5.5000e-004**	**4.1000e-004**	**4.8400e-003**	**1.0000e-005**	**1.4500e-003**	**1.0000e-005**	**1.4600e-003**	**3.9000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1590**	**1.1590**	**4.0000e-005**	**4.0000e-005**	**1.1706**

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0840	0.0000	0.0840	0.0432	0.0000	0.0432	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6600e-003	0.0202	0.2087	3.8000e-004		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	33.4394	33.4394	0.0108	0.0000	33.7097
Total	**4.6600e-003**	**0.0202**	**0.2087**	**3.8000e-004**	**0.0840**	**6.2000e-004**	**0.0847**	**0.0432**	**6.2000e-004**	**0.0438**	**0.0000**	**33.4394**	**33.4394**	**0.0108**	**0.0000**	**33.7097**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	4.1000e-004	4.8400e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	3.9000e-004	0.0000	1.1590	1.1590	4.0000e-005	4.0000e-005	1.1706
Total	**5.5000e-004**	**4.1000e-004**	**4.8400e-003**	**1.0000e-005**	**1.4500e-003**	**1.0000e-005**	**1.4600e-003**	**3.9000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1590**	**1.1590**	**4.0000e-005**	**4.0000e-005**	**1.1706**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2485	0.0000	0.2485	0.0987	0.0000	0.0987	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0979	1.0488	0.7841	1.6800e-003		0.0441	0.0441		0.0406	0.0406	0.0000	147.2434	147.2434	0.0476	0.0000	148.4340
Total	**0.0979**	**1.0488**	**0.7841**	**1.6800e-003**	**0.2485**	**0.0441**	**0.2926**	**0.0987**	**0.0406**	**0.1393**	**0.0000**	**147.2434**	**147.2434**	**0.0476**	**0.0000**	**148.4340**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	1.2200e-003	0.0145	4.0000e-005	4.3500e-003	3.0000e-005	4.3800e-003	1.1600e-003	2.0000e-005	1.1800e-003	0.0000	3.4768	3.4768	1.2000e-004	1.1000e-004	3.5118
Total	**1.6600e-003**	**1.2200e-003**	**0.0145**	**4.0000e-005**	**4.3500e-003**	**3.0000e-005**	**4.3800e-003**	**1.1600e-003**	**2.0000e-005**	**1.1800e-003**	**0.0000**	**3.4768**	**3.4768**	**1.2000e-004**	**1.1000e-004**	**3.5118**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1062	0.0000	0.1062	0.0422	0.0000	0.0422	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0206	0.0891	0.8910	1.6800e-003		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	147.2432	147.2432	0.0476	0.0000	148.4338
Total	**0.0206**	**0.0891**	**0.8910**	**1.6800e-003**	**0.1062**	**2.7400e-003**	**0.1090**	**0.0422**	**2.7400e-003**	**0.0449**	**0.0000**	**147.2432**	**147.2432**	**0.0476**	**0.0000**	**148.4338**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	1.2200e-003	0.0145	4.0000e-005	4.3500e-003	3.0000e-005	4.3800e-003	1.1600e-003	2.0000e-005	1.1800e-003	0.0000	3.4768	3.4768	1.2000e-004	1.1000e-004	3.5118
Total	**1.6600e-003**	**1.2200e-003**	**0.0145**	**4.0000e-005**	**4.3500e-003**	**3.0000e-005**	**4.3800e-003**	**1.1600e-003**	**2.0000e-005**	**1.1800e-003**	**0.0000**	**3.4768**	**3.4768**	**1.2000e-004**	**1.1000e-004**	**3.5118**

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0196	0.1796	0.1882	3.1000e-004		9.3000e-003	9.3000e-003		8.7500e-003	8.7500e-003	0.0000	26.6484	26.6484	6.3800e-003	0.0000	26.8080
Total	**0.0196**	**0.1796**	**0.1882**	**3.1000e-004**		**9.3000e-003**	**9.3000e-003**		**8.7500e-003**	**8.7500e-003**	**0.0000**	**26.6484**	**26.6484**	**6.3800e-003**	**0.0000**	**26.8080**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.9000e-004	8.6100e-003	2.6600e-003	3.0000e-005	1.1500e-003	9.0000e-005	1.2400e-003	3.3000e-004	9.0000e-005	4.2000e-004	0.0000	3.2835	3.2835	1.3000e-004	4.9000e-004	3.4335
Worker	1.8400e-003	1.3500e-003	0.0161	4.0000e-005	4.8200e-003	3.0000e-005	4.8500e-003	1.2800e-003	3.0000e-005	1.3100e-003	0.0000	3.8503	3.8503	1.3000e-004	1.2000e-004	3.8890
Total	**2.1300e-003**	**9.9600e-003**	**0.0188**	**7.0000e-005**	**5.9700e-003**	**1.2000e-004**	**6.0900e-003**	**1.6100e-003**	**1.2000e-004**	**1.7300e-003**	**0.0000**	**7.1337**	**7.1337**	**2.6000e-004**	**6.1000e-004**	**7.3225**

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.4500e-003	0.0310	0.2031	3.1000e-004		1.1700e-003	1.1700e-003		1.1700e-003	1.1700e-003	0.0000	26.6484	26.6484	6.3800e-003	0.0000	26.8080
Total	**6.4500e-003**	**0.0310**	**0.2031**	**3.1000e-004**		**1.1700e-003**	**1.1700e-003**		**1.1700e-003**	**1.1700e-003**	**0.0000**	**26.6484**	**26.6484**	**6.3800e-003**	**0.0000**	**26.8080**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.9000e-004	8.6100e-003	2.6600e-003	3.0000e-005	1.1500e-003	9.0000e-005	1.2400e-003	3.3000e-004	9.0000e-005	4.2000e-004	0.0000	3.2835	3.2835	1.3000e-004	4.9000e-004	3.4335
Worker	1.8400e-003	1.3500e-003	0.0161	4.0000e-005	4.8200e-003	3.0000e-005	4.8500e-003	1.2800e-003	3.0000e-005	1.3100e-003	0.0000	3.8503	3.8503	1.3000e-004	1.2000e-004	3.8890
Total	**2.1300e-003**	**9.9600e-003**	**0.0188**	**7.0000e-005**	**5.9700e-003**	**1.2000e-004**	**6.0900e-003**	**1.6100e-003**	**1.2000e-004**	**1.7300e-003**	**0.0000**	**7.1337**	**7.1337**	**2.6000e-004**	**6.1000e-004**	**7.3225**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3462	301.3462	0.0717	0.0000	303.1383
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3462**	**301.3462**	**0.0717**	**0.0000**	**303.1383**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9000e-003	0.0768	0.0266	3.6000e-004	0.0130	4.4000e-004	0.0134	3.7500e-003	4.2000e-004	4.1700e-003	0.0000	35.5705	35.5705	1.4600e-003	5.3300e-003	37.1940
Worker	0.0193	0.0136	0.1682	4.6000e-004	0.0545	3.0000e-004	0.0548	0.0145	2.8000e-004	0.0148	0.0000	42.3875	42.3875	1.3600e-003	1.2400e-003	42.7923
Total	**0.0212**	**0.0903**	**0.1949**	**8.2000e-004**	**0.0675**	**7.4000e-004**	**0.0683**	**0.0182**	**7.0000e-004**	**0.0189**	**0.0000**	**77.9580**	**77.9580**	**2.8200e-003**	**6.5700e-003**	**79.9863**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0700	0.3447	2.2934	3.5000e-003		0.0121	0.0121		0.0121	0.0121	0.0000	301.3458	301.3458	0.0717	0.0000	303.1380
Total	**0.0700**	**0.3447**	**2.2934**	**3.5000e-003**		**0.0121**	**0.0121**		**0.0121**	**0.0121**	**0.0000**	**301.3458**	**301.3458**	**0.0717**	**0.0000**	**303.1380**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9000e-003	0.0768	0.0266	3.6000e-004	0.0130	4.4000e-004	0.0134	3.7500e-003	4.2000e-004	4.1700e-003	0.0000	35.5705	35.5705	1.4600e-003	5.3300e-003	37.1940
Worker	0.0193	0.0136	0.1682	4.6000e-004	0.0545	3.0000e-004	0.0548	0.0145	2.8000e-004	0.0148	0.0000	42.3875	42.3875	1.3600e-003	1.2400e-003	42.7923
Total	**0.0212**	**0.0903**	**0.1949**	**8.2000e-004**	**0.0675**	**7.4000e-004**	**0.0683**	**0.0182**	**7.0000e-004**	**0.0189**	**0.0000**	**77.9580**	**77.9580**	**2.8200e-003**	**6.5700e-003**	**79.9863**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.8600e-003	0.0770	0.0267	3.6000e-004	0.0131	4.4000e-004	0.0135	3.7800e-003	4.3000e-004	4.2000e-003	0.0000	35.3035	35.3035	1.5100e-003	5.2800e-003	36.9159
Worker	0.0182	0.0123	0.1582	4.5000e-004	0.0549	2.9000e-004	0.0552	0.0146	2.7000e-004	0.0149	0.0000	41.7330	41.7330	1.2500e-003	1.1700e-003	42.1127
Total	**0.0201**	**0.0893**	**0.1849**	**8.1000e-004**	**0.0680**	**7.3000e-004**	**0.0688**	**0.0184**	**7.0000e-004**	**0.0191**	**0.0000**	**77.0366**	**77.0366**	**2.7600e-003**	**6.4500e-003**	**79.0286**

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0681	0.3421	2.3092	3.5300e-003		0.0112	0.0112		0.0112	0.0112	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.0681**	**0.3421**	**2.3092**	**3.5300e-003**		**0.0112**	**0.0112**		**0.0112**	**0.0112**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.8600e-003	0.0770	0.0267	3.6000e-004	0.0131	4.4000e-004	0.0135	3.7800e-003	4.3000e-004	4.2000e-003	0.0000	35.3035	35.3035	1.5100e-003	5.2800e-003	36.9159
Worker	0.0182	0.0123	0.1582	4.5000e-004	0.0549	2.9000e-004	0.0552	0.0146	2.7000e-004	0.0149	0.0000	41.7330	41.7330	1.2500e-003	1.1700e-003	42.1127
Total	**0.0201**	**0.0893**	**0.1849**	**8.1000e-004**	**0.0680**	**7.3000e-004**	**0.0688**	**0.0184**	**7.0000e-004**	**0.0191**	**0.0000**	**77.0366**	**77.0366**	**2.7600e-003**	**6.4500e-003**	**79.0286**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0371	0.3572	0.5485	8.6000e-004		0.0176	0.0176		0.0162	0.0162	0.0000	75.0995	75.0995	0.0243	0.0000	75.7067
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0371**	**0.3572**	**0.5485**	**8.6000e-004**		**0.0176**	**0.0176**		**0.0162**	**0.0162**	**0.0000**	**75.0995**	**75.0995**	**0.0243**	**0.0000**	**75.7067**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-003	1.0100e-003	0.0131	4.0000e-005	4.5400e-003	2.0000e-005	4.5600e-003	1.2000e-003	2.0000e-005	1.2300e-003	0.0000	3.4461	3.4461	1.0000e-004	1.0000e-004	3.4775
Total	**1.5000e-003**	**1.0100e-003**	**0.0131**	**4.0000e-005**	**4.5400e-003**	**2.0000e-005**	**4.5600e-003**	**1.2000e-003**	**2.0000e-005**	**1.2300e-003**	**0.0000**	**3.4461**	**3.4461**	**1.0000e-004**	**1.0000e-004**	**3.4775**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0105	0.0456	0.6486	8.6000e-004		1.4000e-003	1.4000e-003		1.4000e-003	1.4000e-003	0.0000	75.0994	75.0994	0.0243	0.0000	75.7066
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0105**	**0.0456**	**0.6486**	**8.6000e-004**		**1.4000e-003**	**1.4000e-003**		**1.4000e-003**	**1.4000e-003**	**0.0000**	**75.0994**	**75.0994**	**0.0243**	**0.0000**	**75.7066**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-003	1.0100e-003	0.0131	4.0000e-005	4.5400e-003	2.0000e-005	4.5600e-003	1.2000e-003	2.0000e-005	1.2300e-003	0.0000	3.4461	3.4461	1.0000e-004	1.0000e-004	3.4775
Total	**1.5000e-003**	**1.0100e-003**	**0.0131**	**4.0000e-005**	**4.5400e-003**	**2.0000e-005**	**4.5600e-003**	**1.2000e-003**	**2.0000e-005**	**1.2300e-003**	**0.0000**	**3.4461**	**3.4461**	**1.0000e-004**	**1.0000e-004**	**3.4775**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.3178					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7800e-003	0.0457	0.0679	1.1000e-004		2.2800e-003	2.2800e-003		2.2800e-003	2.2800e-003	0.0000	9.5747	9.5747	5.4000e-004	0.0000	9.5882
Total	**1.3246**	**0.0457**	**0.0679**	**1.1000e-004**		**2.2800e-003**	**2.2800e-003**		**2.2800e-003**	**2.2800e-003**	**0.0000**	**9.5747**	**9.5747**	**5.4000e-004**	**0.0000**	**9.5882**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-003	6.7000e-004	8.7100e-003	2.0000e-005	3.0200e-003	2.0000e-005	3.0400e-003	8.0000e-004	1.0000e-005	8.2000e-004	0.0000	2.2974	2.2974	7.0000e-005	6.0000e-005	2.3183
Total	**1.0000e-003**	**6.7000e-004**	**8.7100e-003**	**2.0000e-005**	**3.0200e-003**	**2.0000e-005**	**3.0400e-003**	**8.0000e-004**	**1.0000e-005**	**8.2000e-004**	**0.0000**	**2.2974**	**2.2974**	**7.0000e-005**	**6.0000e-005**	**2.3183**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.3178					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1100e-003	4.8300e-003	0.0687	1.1000e-004		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	9.5747	9.5747	5.4000e-004	0.0000	9.5882
Total	**1.3189**	**4.8300e-003**	**0.0687**	**1.1000e-004**		**1.5000e-004**	**1.5000e-004**		**1.5000e-004**	**1.5000e-004**	**0.0000**	**9.5747**	**9.5747**	**5.4000e-004**	**0.0000**	**9.5882**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-003	6.7000e-004	8.7100e-003	2.0000e-005	3.0200e-003	2.0000e-005	3.0400e-003	8.0000e-004	1.0000e-005	8.2000e-004	0.0000	2.2974	2.2974	7.0000e-005	6.0000e-005	2.3183
Total	**1.0000e-003**	**6.7000e-004**	**8.7100e-003**	**2.0000e-005**	**3.0200e-003**	**2.0000e-005**	**3.0400e-003**	**8.0000e-004**	**1.0000e-005**	**8.2000e-004**	**0.0000**	**2.2974**	**2.2974**	**7.0000e-005**	**6.0000e-005**	**2.3183**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6673	0.7786	6.1807	0.0126	1.4166	0.0100	1.4266	0.3782	9.3700e-003	0.3876	0.0000	1,191.0378	1,191.0378	0.0806	0.0558	1,209.6801
Unmitigated	0.6673	0.7786	6.1807	0.0126	1.4166	0.0100	1.4266	0.3782	9.3700e-003	0.3876	0.0000	1,191.0378	1,191.0378	0.0806	0.0558	1,209.6801

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,359.36	1,373.76	1359.36	3,761,694	3,761,694
Total	1,359.36	1,373.76	1,359.36	3,761,694	3,761,694

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.553410	0.058491	0.170447	0.127855	0.026791	0.007507	0.012149	0.006212	0.000674	0.000390	0.028812	0.000632	0.006629

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	199.6565	199.6565	0.0169	2.0400e-003	200.6865
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	199.6565	199.6565	0.0169	2.0400e-003	200.6865
NaturalGas Mitigated	0.0186	0.1586	0.0675	1.0100e-003		0.0128	0.0128		0.0128	0.0128	0.0000	183.6396	183.6396	3.5200e-003	3.3700e-003	184.7309
NaturalGas Unmitigated	0.0186	0.1586	0.0675	1.0100e-003		0.0128	0.0128		0.0128	0.0128	0.0000	183.6396	183.6396	3.5200e-003	3.3700e-003	184.7309

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.44128e+006	0.0186	0.1586	0.0675	1.0100e-003		0.0128	0.0128		0.0128	0.0128	0.0000	183.6396	183.6396	3.5200e-003	3.3700e-003	184.7309
Total		**0.0186**	**0.1586**	**0.0675**	**1.0100e-003**		**0.0128**	**0.0128**		**0.0128**	**0.0128**	**0.0000**	**183.6396**	**183.6396**	**3.5200e-003**	**3.3700e-003**	**184.7309**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.44128e+006	0.0186	0.1586	0.0675	1.0100e-003		0.0128	0.0128		0.0128	0.0128	0.0000	183.6396	183.6396	3.5200e-003	3.3700e-003	184.7309
Total		**0.0186**	**0.1586**	**0.0675**	**1.0100e-003**		**0.0128**	**0.0128**		**0.0128**	**0.0128**	**0.0000**	**183.6396**	**183.6396**	**3.5200e-003**	**3.3700e-003**	**184.7309**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.1258e+006	199.6565	0.0169	2.0400e-003	200.6865
Total		**199.6565**	**0.0169**	**2.0400e-003**	**200.6865**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.1258e+006	199.6565	0.0169	2.0400e-003	200.6865
Total		**199.6565**	**0.0169**	**2.0400e-003**	**200.6865**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0139	0.0110	0.9400	5.0000e-005		5.1700e-003	5.1700e-003		5.1700e-003	5.1700e-003	0.0000	1.4844	1.4844	1.2700e-003	0.0000	1.5162
Unmitigated	1.1762	0.0123	1.0682	6.0000e-005		5.9300e-003	5.9300e-003		5.9300e-003	5.9300e-003	0.0000	1.7466	1.7466	1.6700e-003	0.0000	1.7884

North Ranch - Construction and Operations - Ventura County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1318					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0123					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0321	0.0123	1.0682	6.0000e-005		5.9300e-003	5.9300e-003		5.9300e-003	5.9300e-003	0.0000	1.7466	1.7466	1.6700e-003	0.0000	1.7884
Total	**1.1762**	**0.0123**	**1.0682**	**6.0000e-005**		**5.9300e-003**	**5.9300e-003**		**5.9300e-003**	**5.9300e-003**	**0.0000**	**1.7466**	**1.7466**	**1.6700e-003**	**0.0000**	**1.7884**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0527					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9366					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0246	0.0110	0.9400	5.0000e-005		5.1700e-003	5.1700e-003		5.1700e-003	5.1700e-003	0.0000	1.4844	1.4844	1.2700e-003	0.0000	1.5162
Total	**1.0139**	**0.0110**	**0.9400**	**5.0000e-005**		**5.1700e-003**	**5.1700e-003**		**5.1700e-003**	**5.1700e-003**	**0.0000**	**1.4844**	**1.4844**	**1.2700e-003**	**0.0000**	**1.5162**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	36.6390	0.0968	7.5600e-003	41.3104
Unmitigated	36.6390	0.0968	7.5600e-003	41.3104

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	9.38218 / 5.91485	36.6390	0.0968	7.5600e-003	41.3104
Total		**36.6390**	**0.0968**	**7.5600e-003**	**41.3104**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	9.38218 / 5.91485	36.6390	0.0968	7.5600e-003	41.3104
Total		**36.6390**	**0.0968**	**7.5600e-003**	**41.3104**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	38.7002	2.2871	0.0000	95.8782
Unmitigated	38.7002	2.2871	0.0000	95.8782

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	190.65	38.7002	2.2871	0.0000	95.8782
Total		**38.7002**	**2.2871**	**0.0000**	**95.8782**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	190.65	38.7002	2.2871	0.0000	95.8782
Total		**38.7002**	**2.2871**	**0.0000**	**95.8782**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B
Biological Studies

July 29, 2021

West Pointe Homes, Inc.
26500 West Agoura Road, #652
Calabasas, CA 91301

Subj: Biological Resources Technical Report Update
Moorpark 67 / North Ranch Residential Development Project, City of Moorpark

Dear Ms. Rasmussen:

This letter report provides an update to the Biological Resources Technical Report prepared for the Baher Property: A.P.N. 5110-190-285 & - 305 (prepared by LDC Environmental, dated March 2009). In accordance with the peer review comments provided by the City of Moorpark in October 2020, this letter report provides updates associated with the current onsite vegetation communities and focused surveys for specific special-status plant and wildlife species, as well as an evaluation of potential impacts of the project on biological resources based on **Attachment 1, Conceptual Grading, Drainage, & Utility Plan** (prepared by Delane Engineering, dated May 31, 2020). Information that has not changed since the 2009 report will not be discussed in this report, including project location, project description, regional overview, non-biotic characteristics of the site, and wildlife movement corridors and habitat linkages. Reports addressing protected trees, jurisdictional waters and habitat, and coastal California Gnatcatcher surveys will be provided under separate cover.

METHODS

A literature review was performed that included information available in standard references and relevant lists and databases pertaining to the status and known occurrences of sensitive and special-status biological resources. Other sources of information included aerial photographs, topographic maps, soil survey maps, climatic data, relevant policy and planning documents, and previous biological studies of the site, if available. The following sources were among those reviewed in preparation for field surveys, or that were consulted during preparation of this report. For a complete list, please refer to the References section of this report.

- *Biogeographic Information and Observation System ("BIOS")*, California Department of Fish and Wildlife ("CDFW"), data accessed on June 14, 2021;
- *California Natural Diversity Database ("CNDDB") Rarefind 5* report for the 7.5' USGS Moorpark quadrangle and the eight surrounding quadrangles, CDFW, data accessed on June 14, 2021;
- *California Native Plant Society ("CNPS") Inventory of Rare and Endangered Vascular Plants of California* for the 7.5' USGS Moorpark quadrangle and the eight surrounding quadrangles, CDFW, data accessed on June 14, 2021;
- *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities,* CDFW, March 10, 2018

- *FWS Critical Habitat Mapper for Threatened and Endangered Species,* U.S. Fish and Wildlife Service ("USFWS"), data accessed on June 14, 2021.
- *Special Vascular Plants, Bryophytes, and Lichens List,* CDFW, January 2021;
- *Vegetation Classification of the Santa Monica Mountains National Recreation Area and Environs in Ventura and Los Angeles Counties,* CNPS & CDFW, January 2006; and
- *Special Animals List,* CDFW, November 2020.

Lists generated from the CNDDB and the CNPS literature searches are provided as **Attachment 2, CNDDB and CNPS Database Results - June 14, 2021**.

Envicom Corporation biologist Erin Roberts conducted the biological survey and vegetation community mapping of the property boundary and those areas outside the property boundary where grading activities will occur ("Study Area") over the course of three (3) days between June 16, 2021 and July 14, 2021. These surveys were conducted per the following times and conditions:

- June 16, 2021 between the hours of 7:00 a.m. and 2:00 p.m. in warm conditions (mid-60s to mid-80s °F) with partially cloudy to clear skies and light winds (1-7 m.p.h.);
- June 17, 2021 between the hours of 6:30 a.m. and 1:30 p.m. in in warm conditions (mid-60s to high-80s °F) with clear skies and light winds (1-3 m.p.h.);
- July 14, 2021 between the hours 9:00 a.m. and 11:00 a.m. in warm conditions (mid-60s to high-70s °F) with clear skies and light wind (2-5 m.p.h.).

Data collected during the June 16th and 17th surveys included an inventory of all vascular plants, vertebrate wildlife species, plant communities. Vascular plants were identified to the taxonomic level necessary to determine applicable protection status and species determinations were made using the *Jepson Manual: Vascular Plants of California, 2nd Edition* (Baldwin B. et al. 2012). Vertebrate wildlife species were identified by direct observation, sign, (e.g. tracks, scat, or burrows), or vocalization and species identification relied upon Reid (2006), Sibley (2016), and Stebbins (2003). Plant communities were mapped using orthorectified, high-resolution aerial imagery from 2020 which was representative of the current conditions of those areas within Survey Area. The surveys were performed by slowly walking transects across the Survey Area and investigating particular areas as thoroughly as necessary. As all these areas were accessible by foot, this survey methodology resulted in an investigation of all plant communities and habitats growing within the Study Area.

Per the City of Moorpark's peer review comments, the June 17th and July 14th surveys included focused surveys for white rabbit-tobacco (*Pseudognaphalium leucocephalum*), Plummer's mariposa lily (*Calochortus plummerae*), coast horned lizard (*Phrynosoma blainvillii*)[1] and coastal whiptail (*Aspidoscelis tigris stejnegeri*). The surveys were performed by slowly walking transects across the Study Area and investigating particular areas that support the habitat requirements specific to these species.

[1] Since the preparation of the 2009 report, the standardized naming for the *Phrynosoma coronatum* complex has been updated, resulting in *Phrynosoma blainvillii* as the only coast horn lizard identified in the current CNDDB Rarefind 5 report.

RESULTS

Vegetation Communities

The vegetation growing within the Study Area generally consists of ruderal grassland habitat, coastal scrub habitat, mulefat scrub habitat, and landscaping. The vegetation within the Study Area was correlated with the *Vegetation Classification of the Santa Monica Mountains Natural Recreation Area and Environs in Ventura and Los Angeles Counties, California* (CDFW/CNPS, January 2006) and the *California Natural Communities List* (CDFW, September 9, 2020). These documents provide lists of plant communities occurring in the Santa Monica Mountains and the environs and in the State of California, respectively. The latter provides the current conservation status rank (also known as "rarity rank"), which is used to determine the sensitivity of the plant community. Plant communities with global or state status ranks of G1 through G3, or S1 through S3 respectively, are sensitive and are referred to as "natural communities of special concern." Plant communities are classified based on plant species composition and abundance, as well as the underlying abiotic conditions of the stand, such as slope, aspect, or soil type.

All nine (9) of the vegetation communities mapped and described in the 2009 report were recorded within the project site. For consistency purposes, the community descriptions provided in the prior report for Ruderal Grasslands, Landscaping, Ruderal Grasslands with CSS, Ruderal Grasslands with Landscaping, CSS with Ruderal Grassland, and Developed have not been updated and will not be reiterated in this report. However, the total acreages of each of these communities within the Study Area have been updated and are provided below in **Table 1, Vegetation Communities and Other Land Cover within the Study Area**. Further, one (1) additional coastal scrub vegetation community predominately comprising California Brittle Bush (*Encelia californica*) was mapped in the northwestern portion of the Study Area. The description of this community is provided below. The map of the vegetation communities recorded within the Study Area is provided as **Attachment 3, Biological Resources & Project Impacts Map** and representative photographs of these vegetation communities are provided as **Attachment 4A and 4B, Representative Photos of Onsite Vegetation Communities**. No Sensitive Plant Communities/Habitats identified in the CNDDB Rarefind 5 application generated for the Moorpark quadrangle and the eight surrounding quadrangles were observed within the Study Area. A list of these communities is provided in Attachment 2.

Table 1
Vegetation Communities and Other Land Cover within the Study Area

Habitat Class	Vegetation Community or Land Cover[2]	Conservation Status Rank[3]	Acres
Coastal Scrub	California Brittle Bush (*Encelia californica*) Scrub Alliance [32.050.00]	G3S3	2.18
	California Sagebrush (*Artemisia californica*) Scrub Association [32.010.01]	G4S4	3.98
Herbaceous	Ruderal Grassland	Not ranked	11.21
	Landscaping	Not ranked	1.81
	Ruderal Grassland with CSS & Landscaping	Not ranked	3.43
	CSS with Ruderal Grassland	Not ranked	4.03
	Ruderal Grassland with CSS	Not ranked	40.55
Scrub Shrubland	Mulefat Scrub (*Baccharis salicifolia*) [63.510.01]	G5S5	0.83
	Scalebroom Scrub (*Lepidospartum squamatum*) [32.070.00]	G3S3	0.20
Other Landcover	Developed	Not ranked	3.63
		TOTAL ACREAGE	**71.85**
*Number is approximate due to rounding			

Coastal Scrub

Coastal scrub comprises approximately 6.16 acres (8.58 percent) of the vegetation within the Study Area. Vegetation mapping per the State Vegetation Classification yields two (2) types of coastal scrub vegetation communities within the Study Area, including California Brittle Bush (*Encelia californica*) Scrub Alliance and California Sagebrush (*Artemisia californica*) Scrub Association.

California Brittle Bush Scrub Alliance [G3S3]

This scrub alliance is found in the northwestern portion of the Study Area, on a gentle to moderate southwest-facing slope, comprising approximately 2.18 acres (3.03 percent) of the Study Area. The shrub layer is predominately continuous and is characterized by a strong dominance of California brittle bush (greater than 70 percent relative cover) with a scattered distribution of giant wild rye (*Elymus codensatus*), California sagebrush, and coastal prickly pear (*Opuntia littoralis*), as well as

[2] Numbers in brackets are unique codes for each plant community, as provided in the *California Natural Communities List* (CDFW, November 8, 2019).

[3] A conservation status rank (also known as "rarity rank") or a "high inventory priority" designation is used to determine the significance of project impacts to plant communities. The conservation status ranking system consists of a geographic scale (G=Global; S=State) and a degree of threat (1=critically imperiled; 2=imperiled; 3=vulnerable to extirpation or extinction; 4=apparently secure; and 5=demonstrably widespread, abundant, or secure). Plant community alliances with global or state conservation status ranks of G1 through G3, or S1 through S3, respectively, are rare or sensitive and are considered to be "natural communities of special concern."

scattered non-native brome grasses and hoary mustard (*Hirschfeldia incana*) in the herbaceous layer. In addition, blue elderberry (*Sambucus nig*ra ssp. *caerulea*) are sparsely distributed throughout the emergent layer. The California Brittle Bush Scrub Alliance is considered rare or sensitive by the State of California.

California Sagebrush (*Artemisia californica*) Scrub Association [G4S4]

This scrub association is found in the northwestern and eastern edge of the Study Area, on gentle to moderate slopes of variable aspect, comprising approximately 3.98 acres (5.54 percent) of the Study Area. The shrub layer is relatively continuous and is characterized by a strong dominance of California sagebrush (greater than 60 percent relative cover) and a scattered, mostly non-native herbaceous layer. Also present in varying covers are purple sage *(Salvia leucophylla*), deerweed (*Acmispon glaber*), California buckwheat (*Eriogonum fasciculatum*), and coyote bush (*Baccharis pilularis*). The California Sagebrush Association is not considered rare or sensitive by the State of California.

Scrub Shubland

Mulefat Scrub [G5S5]

Mulefat (*Baccharis salicifolia*) Scrub is growing in the central portion of the Study Area and appears to be associated with an ephemeral drainage/ditch that traverses the property in a north to south direction. This vegetation community comprises approximately 0.83 acre (1.16 percent) of the site and supports an open to intermittent shrub layer dominated by a mix of mulefat and blue elderberry. The herbaceous layer is disturbed and comprises a mix of non-native grasses and herbaceous species, including red brome (*Bromus madritensis*), ripgut (*Bromus diandrus*), tocalote (*Centaurea melitensis*), and black mustard (*Brassica nigra*). This vegetation community is not considered rare or sensitive by the State of California.

Scalebroom Scrub [G3S3]

Scalebroom Scrub (*Lepidospartum squamatum*) is growing within the portion of the unnamed blueline stream that passes through the northwesternmost corner of the Study Area. This vegetation community comprises 0.20 acre (0.28 percent) of the site and primarily consists of two (2) large patches of giant reed (*Arundo donax*) surrounded by patches of scalebroom, mulefat, and coyote bush. Scalebroom Scrub is considered rare or sensitive by the State of California.

Plant Communities / Habitats Listed in CNDDB

A review of the California Department of Fish and Wildlife's Natural Diversity Database ("CNDDB") Rarefind 5 application reported that 11 Sensitive Plant Communities/Habitats have been recorded by other observers in the Moorpark Quadrangle, or within the adjacent quadrangles, including:

- California Walnut Woodland;
- Southern Coast Live Oak Riparian Forest;
- Southern Cottonwood Willow Riparian Forest;
- Southern Mixed Riparian Forest;

- Southern Riparian Forest;
- Southern Riparian Scrub;
- Southern Sycamore Alder Riparian Woodland;
- Southern Willow Scrub;
- Valley Needlegrass Grassland;
- Valley Oak Woodland; and
- Walnut Forest.

None of these CNDDB-listed communities were observed within the Study Area during the June 2021 surveys.

Plant Species Observed

A total of 66 vascular plant taxa were identified within the Study Area, including three (3) gymnosperms, 55 dicots and eight (8) monocots. A total of 32 plants were native species and 34 were non-native or introduced, representing a relatively equal proportion of natives to non-natives. A complete list of vascular plant species observed within the Study Area is provided as **Attachment 5, Vascular Plants Observed - June 16 & 17, 2021 and July 14, 2021**.

Special-Status Plant Species

An evaluation of the potential for occurrence at the site for special-status plant species known to occur in the region was undertaken through a search of the CNPS Online Inventory of Rare and Endangered Plants, 8th ed. (CNPS 2021) and the California Department of Fish and Wildlife's Natural Diversity Data Base (CNDDB) Rarefind 5 application (CDFW 2021) for sensitive "elements" reported within the Moorpark quadrangle, and eight (8) others that surround it, namely Thousand Oaks, Santa Paula, Simi, Camarillo, Santa Paula Peak, Fillmore, Piru, and Newbury Park. The CNDDB/CNPS derived lists are provided as Attachment 2. Plants with a CRPR of 4 were not included in this analysis as they are not rare, but rather are on a "watch list" of species with limited distribution and cannot be called "rare" from a statewide perspective.

Most special-status plant species known to occur in the region were precluded from occurring at the site due to the lack of suitable habitat and the disturbed nature of the site. Further, given the intensity and timing of the field surveys, several species for which the site provides suitable habitat can be confirmed as absent or the potential for occurrence of these species has been reduced. See **Attachment 6, Potential for Occurrence of Special-Status Plant Species** for additional information.

Per the peer review comments provided by the City of Moorpark in October 2020, focused surveys were conducted on June 17, 2021 and July 14, 2021 for white rabbit-tobacco (*Pseudognaphalium leucocephalum*) and Plummer's mariposa lily (*Calochortus plummerae*), as well as for those species with low potential for occurrence, namely Gerry's curly-leaved monardella and Ojai navarretia. Two (2) individual white rabbit-tobacco plants were found adjacent to the alluvial wash that runs through the northwest corner of the Study Area, outside the development footprint. The location of this small population is provided on Attachment 3. No Plummer's mariposa lily's,

Gerry's curly-leaved monardella, or Ojai navarretia were found within the Study Area. Based on no recorded CNDDB Rarefind 5 occurrences within the site and the intensity and correct timing of the June and July surveys to allow reliable detection, these species can be confirmed as absent. Further, it should be noted that since the March 2009 report was written, Plummer's mariposa lily is no longer a rare or sensitive species, as it has been down-listed from a CRPR of 1B.2 to a CRPR listing of 4.2.

Wildlife Species Observed

Wildlife observed during the biological surveys were primarily species that are common or relatively common to the region. A list of wildlife species observed during the field surveys is provided as **Attachment 7, Wildlife Species Observed - June 16 & 17, 2021 and July 14, 2021**. The species observed represent only a fraction of the wildlife species that can be expected to utilize the site for cover, foraging, and reproduction. Furthermore, species observed include those that are more easily detected during daytime surveys. Several species (e.g. reptiles, birds, small mammals) likely occur at the site, and a wide range of larger mobile species can be expected to utilize the site's resources routinely, such as foraging raptors, and medium- to large-sized mammals, such as coyotes, deer, bobcats, and skunks. Several holes that appear to be potential coyote dens were found at the site. Bird species observed during the surveys consisted primarily of year-round and summer residents, and potential migrants. Several species of birds can be expected to nest at the site in any given year.

Special-Status Wildlife Species

No special-status wildlife species considered to be rare, threatened, or endangered were observed during the 2021 surveys, although there is potential for some special-status wildlife species that were not observed to occur at the site and the vicinity of the site, even if in some cases only infrequently, in transit, or on a temporary basis. An analysis of the potential for occurrence of special-status wildlife at the site is provided as **Attachment 8, Potential for Occurrence of Special-Status Plant Species**. The potential for occurrence analysis was undertaken through research of the CDFW Natural Diversity Database (CDFW 2021) using the Rarefind 5 application for special-status "elements" on the USGS 7.5' Moorpark quadrangle and the eight (8) adjacent quadrangles. The potential for occurrence analysis provides a assessment of the potential for the occurrence of special-status animals based on their known distribution and habitat requirements. The following 10 special-status animals, including one (1) amphibian, four (4) reptiles, three (3) birds, and two (2) mammals were determined to have at least some probability to occur at the site with varying probabilities ranging from low to high:

Amphibians

- Western spadefoot (*Spea hammondii*) [SSC]

Reptiles

- California glossy snake (*Arizona elegans occidentalis*) [SSC]
- Coast horned lizard (*Phrynosoma blainvillii*) [SSC]

- Coast patch-nosed snake (*Salvadora hexalepis virgultea*) [SSC]
- Coastal whiptail (*Aspidoscelis tigris stejnegeri*) [SSC]

Birds

- Coastal California Gnatcatcher (*Polioptila californica californica*) [FT/SSC]
- Golden eagle (*Aquila chrysaetos*) [FP]
- White-tailed kite (*Elanus leucurus*) [CFP]

Mammals

- Pallid bat (*Antrozous pallidus*) [SSC]
- Western mastiff bat (*Eumops perotis californicus*) [SSC]

The potential presence of these species was ranked from low potential (western spadefoot, coast patch-nosed snake, golden eagle, and the bat species), to moderate potential (California glossy snake, coastal California gnatcatcher, white-tailed kite), to high potential (coastal California gnatcatcher, coast horned lizard, coastal whiptail). The golden eagle, white-tailed kite, and all the bat species would only potentially forage at the site and would not roost and/or reproduce at the site. These species are highly mobile and able to escape capture or trampling.

The site contains potentially suitable habitat for the coastal California Gnatcatcher and CNDDB database reports several observations within close proximity of the Study Area. For this reason and given the relatively large project footprint, protocol surveys for the coastal California gnatcatcher are recommended.

Per the peer review comments provided by the City of Moorpark in October 2020, focused surveys for coastal whiptail and coast horned lizard were performed on July 14, 2021. Also, due to the presence of suitable habitat, the focused survey was expanded to include the California glossy snake and the coast patch-nosed snake. This survey focused on recording the presence and absence of these species as determined by visual observation and potential burrows, as well as the availability of the food and microhabitat requirements of these four (4) special-status species. During this survey habitat and food resources required by these species was documented; however, none of these special-status species were observed.

IMPACTS ANALYSIS

The project proposes development of 138 residential lots within a relatively undeveloped site. To determine impacts to biological resources related to this development, this impact analysis relies on the Conceptual Grading, Drainage, & Utility Plan prepared by Delane Engineering, dated May 31, 2020 (Attachment 1). The proposed limits of grading and anticipated fuel modification activities based on the standard Ventura County requirements of at least 100-feet from structures (Ventura County Fire Protection District Fire Prevention Bureau, Standard 515, Chapter 1.4) are shown overlaid on the site's biological resources on Figure 3. Based on this requirement, it is anticipated that most of the potential fuel modification clearing activities will occur within the limits of grading, with only a small 0.06 acre section in the northwest portion of the Study Area that could be potentially impacted by fuel modification activities. The plant communities that

would be impacted by project grading and potential fuel modification activities are summarized below in **Table 2**, **Impacts to Plant Communities**.

Table 2
Impacts to Vegetation Communities

Habitat Class	Vegetation Community	Status Rank	Total Onsite (Acres)	Grading Impacts		Additional Impacts from Fuel Modification		Total Impacted Acres	Total Percent Impacted
				Acres Impacted	Percent Impacted	Acres Impacted	Percent Impacted		
Coastal Scrub	California Brittle Bush (*Encelia californica*) Scrub Alliance [32.050.00]	G3S3	2.18	0.71	32.57%	0.03	1.38%	0.74	33.94%
	California Sagebrush (*Artemisia californica*) Scrub Association [32.010.01]	G4S4	3.98	0.45	11.31%	0.00	0.00%	0.45	11.31%
Herbaceous	Ruderal Grassland	Not ranked	11.21	8.07	72.00%	0.00	0.00%	8.07	72.00%
	Landscaping	Not ranked	1.81	0.66	36.46%	0.00	0.00%	0.66	36.46%
	Ruderal Grassland with CSS & Landscaping	Not ranked	3.43	3.43	100.00%	0.00	0.00%	3.43	100.00%
	CSS with Ruderal Grassland	Not ranked	4.03	2.04	50.62%	0.03	0.74%	2.07	51.36%
	Ruderal Grassland with CSS	Not ranked	40.55	36.97	91.17%	0.00	0.00%	36.97	91.17%

Habitat Class	Vegetation Community	Status Rank	Total Onsite (Acres)	Grading Impacts		Additional Impacts from Fuel Modification		Total Impacted Acres	Total Percent Impacted
				Acres Impacted	Percent Impacted	Acres Impacted	Percent Impacted		
Scrub Shrubland	Mulefat Scrub (*Baccharis salicifolia*) [63.510.01]	G5S5	0.83	0.60	72.29%	0.00	0.00%	0.60	72.29%
	Scalebroom Scrub (*Lepidospartum squamatum*) [32.070.00]	G3S3	0.20	0.00	0.00%	0.00	0.00%	0.00	0.00%
Other Landcover	Developed	Not ranked	3.63	2.43	66.94%	0.00	0.00%	2.43	66.94%
							TOTALS	***55.42***	***77.05%***

Impacts to Sensitive Natural Plant Communities

Impacts to California Brittlebush Coastal Scrub

Grading for the proposed project would result in the removal of approximately 0.71 acre of California Brittle Bush Scrub Alliance, which is considered a sensitive natural community by CDFW. Also, fuel modification for the proposed project would potentially impact approximately 0.03 acre of the California Brittle Bush Scrub Alliance, depending on site-specific fuel modification requirements, which are to the discretion of the Ventura County Fire Department ("VCFD"). Grading of the California Brittle Bush Scrub Alliance would be a significant, but mitigable impact. No additional impacts to onsite natural sensitive plant communities are anticipated as a result of this project.

Impacts to Special-Status Plants

The white rabbit-tobacco is growing in the northwestern corner of the Study Area, approximately 300 feet outside the anticipated development footprint. No other special-status plant species were found within the Study Area. As previously discussed in the potential for occurrence analysis for special-status plant species, many of the special-status species known to occur in the region are presumed to be absent from the site due to lack of suitable habitat or confirmation via appropriately timed springtime rare plant surveys. Therefore, Project impacts to special-status wildlife species are considered less than significant.

Impacts to Special-Status Wildlife

Many of the special-status wildlife species that may potentially occur at the site are capable of escaping harm during project development (e.g. non-nesting birds and foraging bats), while others are vulnerable to direct impacts, including injury and mortality. In this case, the special-status

species that could be directly impacted include potentially occurring land dwelling animals, including the California glossy snake (*Arizona elegans occidentalis*) [SSC], coast horned lizard (*Phrynosoma blainvillii*) [SSC], coast patch-nosed snake (*Salvadora hexalepis virgultea*) [SSC], and the coastal whiptail (*Aspidoscelis tigris stejnegeri*) [SSC]; the burrowing western spadefoot (*Spea hammondii*) [SSC] species; and the two (2) bat species, pallid bat (*Antrozous pallidus*) [SSC], and western mastiff bat (*Eumops perotis californicus*) [SSC], which could roost in trees at the site. DFirect loss or injury to individuals of a special-status wildlife species would be a significant but mitigable impact. Although there is potential that several individuals of these species could be impacted, if present, the habitat loss associated with the project would not significantly impact a population of these species, given the acreage of habitat that would be affected and the amount of remaining suitable habitat in the surrounding area. Impacts to nesting birds, including nesting special-status bird species, are addressed under the Impacts to Nesting Birds section below.

Impacts to Nesting Birds

Ground and vegetation disturbing activities including but not limited to grading and fuel modification, if conducted during the nesting bird season (February 1 to August 31), would have the potential to result in removal or disturbance to trees and shrubs that could contain active bird nests. In addition, these activities would also affect herbaceous vegetation that could support and conceal ground-nesting species. Project activities that result in the loss of bird nests, eggs, and young would be in violation of one or more of California Fish and Game Code sections 3503 (any bird nest), 3503.5 (birds-of-prey), or 3511 (Fully Protected birds). In addition, removal or destruction of one or more active nests of any other birds listed by the federal Migratory Bird Treaty Act of 1918 (MBTA), whether nest damage was due to vegetation removal or to other construction activities, would be considered a violation of the MBTA and California Fish and Game Code Section 3511. The potential for loss of protected bird nests, eggs, or young due to project activities would be a significant but mitigable impact.

MITIGATION MEASURES

The 2009 report provided several mitigation measures addressing potential significant impacts resulting from project development. Several of these measures are still applicable, while others have been updated to account for current CEQA guidelines, current site conditions, and updates to the sensitivity of species. These are discussed in detail below. The mitigation measures provided in the 2009 report that remain relevant and have not been updated are as follows:

- Mitigation Measure 1a
- Mitigation Measure 1b
- Mitigation Measure 1d
- Mitigation Measure 2
- Mitigation Measure 3a
- Mitigation Measure 3b
- Mitigation Measure 3c
- Mitigation Measure 5a
- Mitigation Measure 5b

- Mitigation Measure 5c
- Mitigation Measure 6a
- Mitigation Measure 6b
- Mitigation Measure 7a
- Mitigation Measure 7b
- Mitigation Measure 9a
- Mitigation Measure 9b
- Mitigation Measure 10a
- Mitigation Measure 10b
- Mitigation Measure 11

It is our recommendation that Mitigation Measure 1c not be a requirement of the project because it is not necessary to offset a sensitive vegetation and those protections provided under this measure are encapsulated in Mitigation 1a. Mitigation Measure 1a and 1c reads as follows:

MM 1a In order for any remaining unmodified natural open space within or adjacent to the project site to continue to function as a natural part of the regional ecosystem to the greatest extent possible, the applicant shall develop a management plan for the protection and maintenance of remaining onsite open space areas. The plan shall be incorporated into the CC & R's for the tract and shall contain at least the following elements:

- Goals and Objectives
- Permitted and Prohibited Uses
- Exotic Plant and Animal Management
- Litter Management
- Responsible Parties
- Funding
- Enforcement and Penalties
- Trespass Remediation
- Contingencies

The project's Homeowners Association is expected to be the long-term owner of the any remaining unmodified natural open space and would be responsible for any necessary maintenance.

MM 1c Any coastal sage scrub that is remaining after full project development will be preserved and enhanced. Any natural open space areas (excluding areas of mule fat scrub and southern alluvial fan scrub) and not affected by fuel modification requirements will be used for the creation of coastal sage scrub. Details of the proposed restoration and creation efforts and success criteria shall be described in a Mitigation and Monitoring Plan that is to be approved by CDFG prior to implementation.

Mitigation Measure Updates

The following mitigation measure has been added to the prior measures required to mitigate for "Impacts to Vegetation Communities & Habitats":

MM 1(e) Restoration of California Brittle Bush Scrub

Grading and fuel modification impacts to the California brittle bush scrub plant community shall be compensated by restoration of in-kind habitat in an area(s) to be preserved as permanent open space. To the extent possible, this shall be accomplished by the on-site restoration of disturbed habitats (e.g., non-native grassland) in-kind habitats. Restoration should be implemented only where suitable conditions exist to support viable in-kind habitats. If on-site restoration is not possible, compensation for the loss or modification of the California brittle bush scrub communities may be accomplished by off-site restoration of in-kind habitat or by a contribution to an in-lieu fee program approved by the City of Moorpark.

A Mitigation and Monitoring Plan shall be developed by a qualified biologist, restoration ecologist, or resource specialist, and approved by the City of Moorpark prior to issuance of the grading permit for the Project. In broad terms, the plan shall at a minimum include:

- Description of the project/impact and mitigation sites
- Specific objectives
- Success criteria
- Plant palettes
- Implementation plan
- Maintenance activities
- Monitoring plan
- Contingency measures/adaptive management

Success criteria shall at a minimum be evaluated based on percent cover of planted native species, as well as control of invasive plant species within the restoration area.

The performance standards for the Mitigation and Monitoring Plan shall be at a minimum the following:

- Within five years after introducing the native plants to the mitigation site, the acreage of restored California brittle bush scrub shall be no less than the acreage lost to project construction.
- Within five years after introducing the native plants to the mitigation site, the absolute cover of native species shall be no less than 80% within the restoration area.

- Non-native species in the treated area shall be less than 15% relative cover by the end of the third year of treatment and less than 5% relative cover by the end of the fifth year of treatment; and,
- Restoration will be considered successful after the success criteria have been met for a period of at least 2 years without any maintenance or remediation activities other than invasive species control.

The restoration project shall be initiated prior to development of the project, and shall be implemented over a five-year period. The restoration project shall incorporate an iterative process of annual monitoring and evaluation of progress, and allow for adjustments to the restoration plan, as necessary, to achieve desired outcomes and meet success criteria. Annual reports discussing the implementation, monitoring, and management of the restoration project shall be submitted to the City of Moorpark. Five years after Project start, a final report shall be submitted to the City, which shall at a minimum discuss the implementation, monitoring, and management of the restoration project over the five-year period, and indicate whether the restoration project has been successful based on established success criteria. The annual reports and the final report shall include as-built plans submitted as an appendix to the report. The project shall be extended if success criteria have not been met at the end of the five-year period to the satisfaction of the City.

If impacts to the California brittle bush scrub are to be mitigated by a contribution of an in-lieu fee, the applicant shall provide evidence of payment of the in-lieu fee prior to issuance of the grading permit. The fee shall be based on the cost per acre to restore or create in-kind habitat and the acreage of the plant community impacted. In-lieu fees shall be used for the restoration of in-kind habitat.

The following mitigation measure has been updated to address changes in the nomenclature of the horned lizard (Phrynosoma sp.) and current special-status species, as well to account for the pre-project focused surveys that were conducted in 2021:

MM 8(a) Pre-construction Survey for Special-Status Wildlife Species

Prior to the commencement of ground disturbance or vegetation removal activities, including but not limited to grubbing, grading, and fuel modification, two (2) pre-construction surveys for special-status wildlife species, including coast horned lizard (*Phrynosoma blainvillii*), coastal western whiptail, California glossy snake (*Arizona elegans occidentalis*), Coast patch-nosed snake (*Salvadora hexalepis virgultea*), and western spadefoot (Spea hammondii), by a qualified biologist(s) to determine presence/absence of these species at the site. The first survey shall be conducted within 14 days and the second survey shall be conducted within three (3) days of commencement of ground or vegetation disturbing activities. These surveys should coincide with weather conditions that are conducive for each species; sunny late-spring or summer days with above-average temperatures for,

coast horned lizard (*Phrynosoma blainvillii*), coastal western whiptail (Stebbins 2003) California glossy snake (*Arizona elegans occidentalis*) and the Coast patch-nosed snake (*Salvadora hexalepis virgultea*) and after substantial rainfall events in the winter and spring for western spadefoot (Ervin and Cass 2007). If the any of the four (4) species are found to occur onsite during the additional, then Mitigation Measure–8b shall be instituted.

Sincerely,

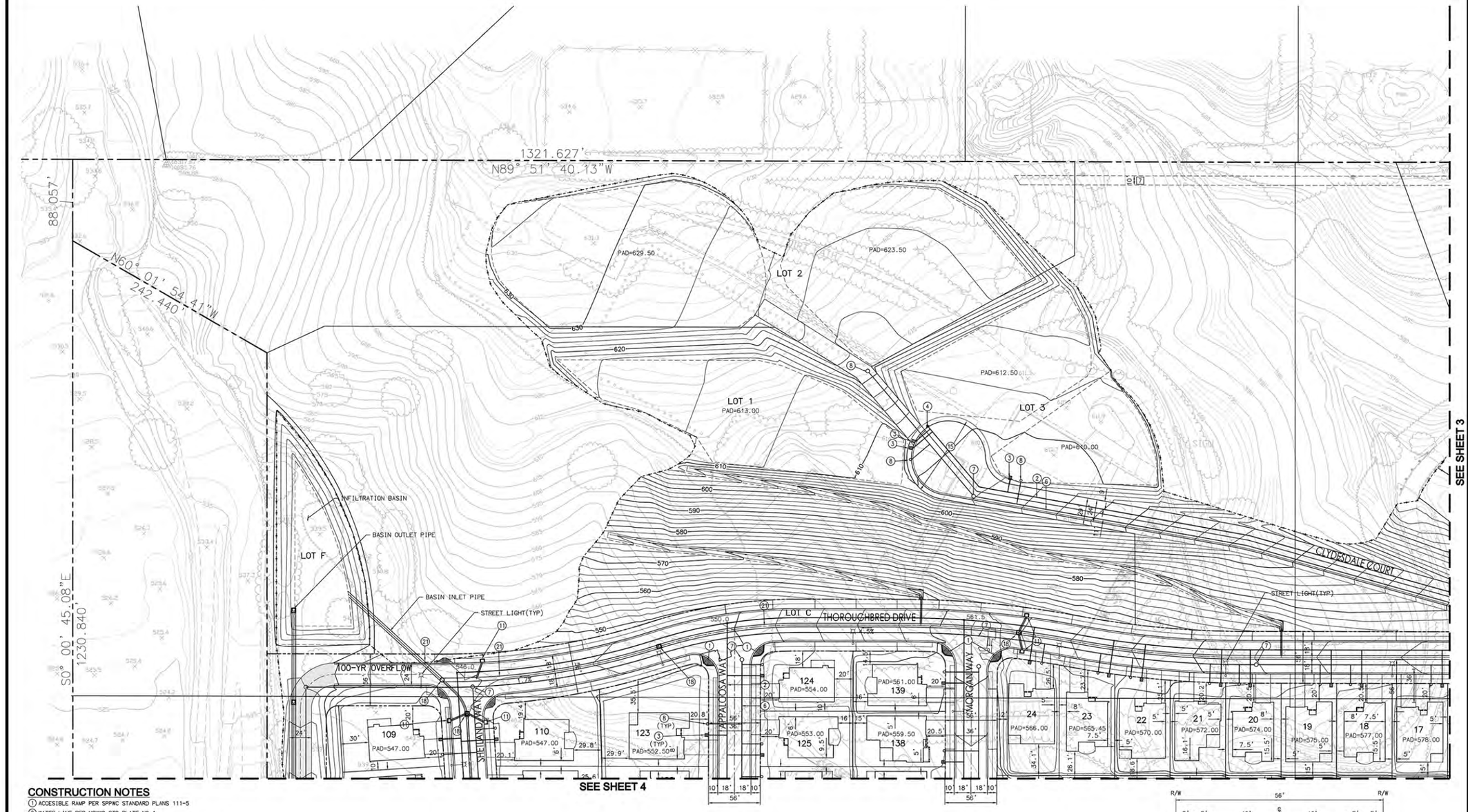


Erin Roberts
Biologist / Restoration Ecologist

ATTACHMENTS:

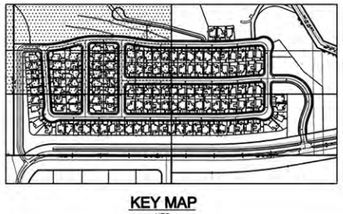
Attachment 1 – Conceptual Grading, Drainage, & Utility Plan
Attachment 2 - CNDDB & CNPS Database Results
Attachment 3 - Biological Resources & Project Impacts Map
Attachment 4A - Representative Photos of the Study Area
Attachment 4B - Representative Photos of Onsite Vegetation Communities
Attachment 5 - Vascular Plants Observed - June 16 & 17, 2021 and July 14, 2021
Attachment 6 - Potential for Occurrence of Special-Status Plant Species
Attachment 7 - Wildlife Species Observed - June 16 & 17, 2021
Attachment 8 - Potential for Occurrence of Special-Status Wildlife Species

Attachment 1
Conceptual Grading, Drainage, & Utility Plan

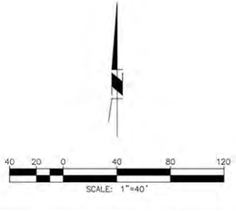


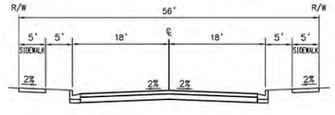
CONSTRUCTION NOTES

1. ACCESIBLE RAMP PER SPPWC STANDARD PLANS 111-5
2. WATER LINE PER VCWWD STD PLATE NO 1
3. DOMESTIC WATER SERVICE AND MATER PER VCWWD STD PLATE NO 6
4. FIRE HYDRANT PER VCWWD STD PLATE NO 8
5. IRRIGATION SERVICE METER AND BACKFLOW
6. SEWER MAIN PER VCWWD STD PLATE 30
7. SEWER MANHOLE PER SPPWC STD PLAN 200-1
8. SANITARY SEWER SERVICE LATERAL AND CLEANOUT PER VCWWD STD PLATE 33
9. 4" THICK CONCRETE SIDEWALK
10. LANDSCAPE
11. CURB OPENING CATCH BASIN & LOCAL DEPRESSION PER SPPWC STD PLAN 300-3 & 313-3
12. ALL WEATHER ACCESS ROAD
13. PAVED PRIVATE DRIVEWAY
14. CURB AND GUTTER PER SPPWC STD PLAN 120-2
15. CUL-DE-SAC PER COUNTY OF VENTURA ROADWAY STD, TYPE III
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20. STORM DRAIN HEADWALL AND TRASH RACK PER SPPWC STD PLAN 361-2
21. STORM DRAIN PIPE (RCP)
22. GRATED INLET
23. RAISED LANDSCAPED MEDIAN
24. STORM DRAIN OUTLET STRUCTURE PER SPPWC STD PLAN 384-3



KEY MAP
NTS





TYPICAL INTERIOR STREETS
NTS
PRIVATE STREETS - LOT C

VESTING TENTATIVE TRACT MAP

VTTM NO. 5847

CONCEPTUAL GRADING, DRAINAGE & UTILITY PLAN

REGISTERED PROFESSIONAL ENGINEER — No C 72391 — CIVIL — STATE OF CALIFORNIA

PREPARED BY
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26500 WEST AGOURA ROAD #652
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JAMES RASMUSSEN

SHEET 2 OF 8 SHEETS

PLOT DATE: 5/21/20 1:48 PM FILE NAME: N:\PROJECTS\VENTURA\VENTURA COUNTY\105-25-02\DWG\VESTING TENTATIVE MAP.DWG

SAVE DATE: 5/21/20 STEVEDOWNS

CONSTRUCTION NOTES

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APN: 511-0-190-215

APN: 511-0-190-205

APN: 511-0-190-305

APN: 511-0-190-295

N89° 58' 40.76"E
687.338'

S31° 26' 00.00"E

GABBERT ROAD

S31° 26' 00.00"E
626.800'

635.189'

PROPOSED DOMESTIC WATER CONNECTION TO VCWWD 12" ACP GABBERT ROAD WATER MAIN (DWG NO 105168)

EXISTING 8" ACP GABBERT ROAD TRANSMISSION LINE (DWG NO 38695)

313.770'
N68° 37' 10.00"W
314.121'
N68° 37' 10.00"W
99.730'

LOT 4

LOT 5

LOT E

ACCESS RD

THOROUGHBRED DRIVE

PAD=590.00

PAD=578.00

PAD=578.80

PAD=577.80

PAD=577.00

PAD=578.50

PAD=578.85

PAD=578.25

PAD=577.67

PAD=577.10

PAD=577.00

PAD=576.50

PAD=574.90

572.8

STREET LIGHT(TYP)

SEE SHEET 2

SEE SHEET 5

SCALE: 1"=40'

KEY MAP
NTS

VESTING TENTATIVE TRACT MAP

VTTM NO. 5847

CONCEPTUAL GRADING, DRAINAGE & UTILITY PLAN

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JAMES RASMUSSEN

SHEET 3 OF 8 SHEETS

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SAVE DATE: 5/31/20 STEVEDOWNS

SEE SHEET 2

SEE SHEET 5

SECONDARY ACCESS ROAD

PROPOSED STORM DRAIN DISCHARGE POINT TO VCWPD GABBERT CANYON CHANNEL

24' WIDE ACCESS ROAD

SHELAND WAY

APPALOOSA WAY

MORGAN WAY

TENNESSEE WALKER DRIVE

NORTH RANCH DRIVE

LOT A

LOT C

PROPOSED SEWER MAIN

PROPOSED WATER MAIN

NORTH HILLS PARKWAY (PUBLIC)

NORTH HILLS PARKWAY CENTERLINE

STREET LIGHT(TYP)

VARIABLE SLOPE 2:1 TO 3:1

T54

P.M.B. 14-43

PARCEL B

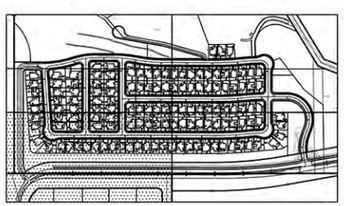
(PER TITLE REPORT)

3 M.R. 41

PARCEL B

CONSTRUCTION NOTES

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KEY MAP
NTS

40 20 0 40 80 120
SCALE: 1"=40'



NORTH HILLS PARKWAY
STA 51+30 TO 68+65
NTS

VESTING TENTATIVE TRACT MAP

VTTM NO. 5847

CONCEPTUAL GRADING, DRAINAGE & UTILITY PLAN

REGISTERED PROFESSIONAL ENGINEER — ROBIN C. DELANE — No C 72391 — CIVIL — STATE OF CALIFORNIA

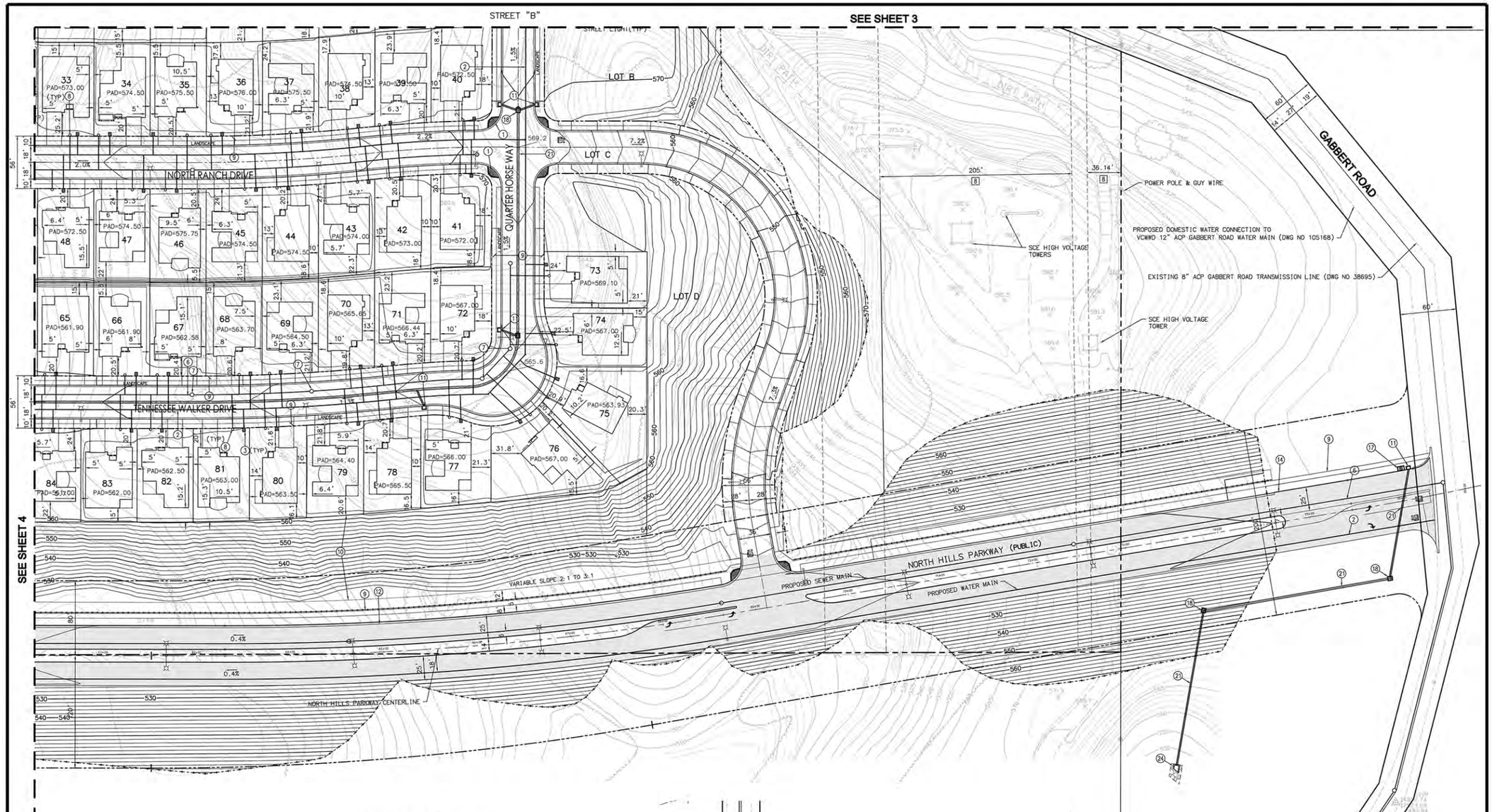
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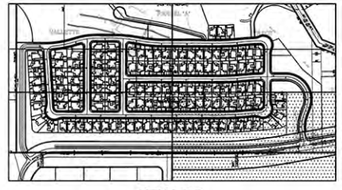
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JAMES RASMUSSEN

SHEET 4 OF 8 SHEETS

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SAVE DATE:5/31/20 STEVEDOMAS

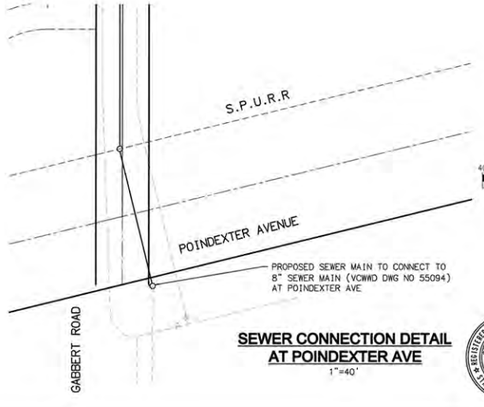




KEY MAP
NTS

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24. STORM DRAIN OUTLET STRUCTURE PER SPPWC STD PLAN 384-3



SEWER CONNECTION DETAIL AT POINDEXTER AVE
1"=40'

REGISTERED PROFESSIONAL ENGINEER — JOHN C. DELANE — No C 72391 — CIVIL — STATE OF CALIFORNIA

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VESTING TENTATIVE TRACT MAP

VTTM NO. 5847

CONCEPTUAL GRADING, DRAINAGE & UTILITY PLAN

SHEET 5 OF 8 SHEETS

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SAVE DATE: 5/21/20 STEVEDOWNS

Attachment 2
CNDDB and CNPS Database Results

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Moorpark (3411838) OR Simi (3411837) OR Santa Paula (3411931) OR Santa Paula Peak (3411941) OR Fillmore (3411848) OR Piru (3411847) OR Camarillo (3411921) OR Newbury Park (3411828) OR Thousand Oaks (3411827))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agoura Hills dudleya	PDCRA040A7	Threatened	None	G5T1	S1	1B.2
Dudleya cymosa ssp. agourensis						
American badger	AMAJF04010	None	None	G5	S3	SSC
Taxidea taxus						
arroyo chub	AFCJB13120	None	None	G2	S2	SSC
Gila orcuttii						
bank swallow	ABPAU08010	None	Threatened	G5	S2	
Riparia riparia						
Bell's sage sparrow	ABPBX97021	None	None	G5T2T3	S3	WL
Artemisiospiza belli belli						
Blochman's dudleya	PDCRA04051	None	None	G3T2	S2	1B.1
Dudleya blochmaniae ssp. blochmaniae						
Braunton's milk-vetch	PDFAB0F1G0	Endangered	None	G2	S2	1B.1
Astragalus brauntonii						
burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Athene cunicularia						
California condor	ABNKA03010	Endangered	Endangered	G1	S1	FP
Gymnogyps californianus						
California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Arizona elegans occidentalis						
California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eremophila alpestris actia						
California legless lizard	ARACC01070	None	None	G3G4	S3S4	SSC
Anniella spp.						
California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Linderiella occidentalis						
California Orcutt grass	PMPOA4G010	Endangered	Endangered	G1	S1	1B.1
Orcuttia californica						
California Walnut Woodland	CTT71210CA	None	None	G2	S2.1	
California Walnut Woodland						
chaparral nolina	PMAGA080E0	None	None	G3	S3	1B.2
Nolina cismontana						
chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Senecio aphanactis						
coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Phrynosoma blainvillii						

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
coast patch-nosed snake *Salvadora hexalepis virgultea*	ARADB30033	None	None	G5T4	S2S3	SSC
coastal California gnatcatcher *Polioptila californica californica*	ABPBJ08081	Threatened	None	G4G5T3Q	S2	SSC
coastal whiptail *Aspidoscelis tigris stejnegeri*	ARACJ02143	None	None	G5T5	S3	SSC
conejo buckwheat *Eriogonum crocatum*	PDPGN081G0	None	Rare	G1	S1	1B.2
Conejo dudleya *Dudleya parva*	PDCRA04016	Threatened	None	G1	S1	1B.2
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
dune larkspur *Delphinium parryi ssp. blochmaniae*	PDRAN0B1B1	None	None	G4T2	S2	1B.2
foothill yellow-legged frog *Rana boylii*	AAABH01050	None	Endangered	G3	S3	SSC
Gerry's curly-leaved monardella *Monardella sinuata ssp. gerryi*	PDLAM18163	None	None	G3T1	S1	1B.1
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
Greata's aster *Symphyotrichum greatae*	PDASTE80U0	None	None	G2	S2	1B.3
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G3G4	S4	
late-flowered mariposa-lily *Calochortus fimbriatus*	PMLIL0D1J2	None	None	G3	S3	1B.3
least Bell's vireo *Vireo bellii pusillus*	ABPBW01114	Endangered	Endangered	G5T2	S2	
Lyon's pentachaeta *Pentachaeta lyonii*	PDAST6X060	Endangered	Endangered	G1	S1	1B.1
Malibu baccharis *Baccharis malibuensis*	PDAST0W0W0	None	None	G1	S1	1B.1
marcescent dudleya *Dudleya cymosa ssp. marcescens*	PDCRA040A3	Threatened	Rare	G5T2	S2	1B.2
mesa horkelia *Horkelia cuneata var. puberula*	PDROS0W045	None	None	G4T1	S1	1B.1
Nuttall's scrub oak *Quercus dumosa*	PDFAG050D0	None	None	G3	S3	1B.1
Ojai fritillary *Fritillaria ojaiensis*	PMLIL0V0N0	None	None	G3	S3	1B.2
Ojai navarretia *Navarretia ojaiensis*	PDPLM0C130	None	None	G2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G4	S3	SSC
Payne's bush lupine *Lupinus paynei*	PDFAB2B580	None	None	G1Q	S1	1B.1
Plummer's mariposa-lily *Calochortus plummerae*	PMLIL0D150	None	None	G4	S4	4.2
Riverside fairy shrimp *Streptocephalus woottoni*	ICBRA07010	Endangered	None	G1G2	S1S2	
Ross' pitcher sage *Lepechinia rossii*	PDLAM0V060	None	None	G1	S1	1B.2
San Bernardino ringneck snake *Diadophis punctatus modestus*	ARADB10015	None	None	G5T2T3	S2?	
San Diego desert woodrat *Neotoma lepida intermedia*	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Santa Ana sucker *Catostomus santaanae*	AFCJC02190	Threatened	None	G1	S1	
Santa Monica grasshopper *Trimerotropis occidentiloides*	IIORT36300	None	None	G1G2	S1S2	
Santa Susana tarplant *Deinandra minthornii*	PDAST4R0J0	None	Rare	G2	S2	1B.2
slender mariposa-lily *Calochortus clavatus var. gracilis*	PMLIL0D096	None	None	G4T2T3	S2S3	1B.2
south coast gartersnake *Thamnophis sirtalis pop. 1*	ARADB3613F	None	None	G5T1T2	S1S2	SSC
Southern California legless lizard *Anniella stebbinsi*	ARACC01060	None	None	G3	S3	SSC
southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	ABPBX91091	None	None	G5T3	S3	WL
Southern Coast Live Oak Riparian Forest *Southern Coast Live Oak Riparian Forest*	CTT61310CA	None	None	G4	S4	
Southern Cottonwood Willow Riparian Forest *Southern Cottonwood Willow Riparian Forest*	CTT61330CA	None	None	G3	S3.2	
Southern Mixed Riparian Forest *Southern Mixed Riparian Forest*	CTT61340CA	None	None	G2	S2.1	
Southern Riparian Forest *Southern Riparian Forest*	CTT61300CA	None	None	G4	S4	
Southern Riparian Scrub *Southern Riparian Scrub*	CTT63300CA	None	None	G3	S3.2	
Southern Sycamore Alder Riparian Woodland *Southern Sycamore Alder Riparian Woodland*	CTT62400CA	None	None	G4	S4	
southern tarplant *Centromadia parryi ssp. australis*	PDAST4R0P4	None	None	G3T2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Southern Willow Scrub *Southern Willow Scrub*	CTT63320CA	None	None	G3	S2.1	
southwestern willow flycatcher *Empidonax traillii extimus*	ABPAE33043	Endangered	Endangered	G5T2	S1	
steelhead - southern California DPS *Oncorhynchus mykiss irideus pop. 10*	AFCHA0209J	Endangered	None	G5T1Q	S1	
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
two-striped gartersnake *Thamnophis hammondii*	ARADB36160	None	None	G4	S3S4	SSC
umbrella larkspur *Delphinium umbraculorum*	PDRAN0B1W0	None	None	G3	S3	1B.3
unarmored threespine stickleback *Gasterosteus aculeatus williamsoni*	AFCPA03011	Endangered	Endangered	G5T1	S1	FP
Valley Needlegrass Grassland *Valley Needlegrass Grassland*	CTT42110CA	None	None	G3	S3.1	
Valley Oak Woodland *Valley Oak Woodland*	CTT71130CA	None	None	G3	S2.1	
Verity's dudleya *Dudleya verityi*	PDCRA040U0	Threatened	None	G1	S1	1B.1
Walnut Forest *Walnut Forest*	CTT81600CA	None	None	G1	S1.1	
western mastiff bat *Eumops perotis californicus*	AMACD02011	None	None	G4G5T4	S3S4	SSC
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western small-footed myotis *Myotis ciliolabrum*	AMACC01140	None	None	G5	S3	
western spadefoot *Spea hammondii*	AAABF02020	None	None	G2G3	S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white rabbit-tobacco *Pseudognaphalium leucocephalum*	PDAST440C0	None	None	G4	S2	2B.2
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
white-veined monardella *Monardella hypoleuca ssp. hypoleuca*	PDLAM180A5	None	None	G4T3	S3	1B.3
woven-spored lichen *Texosporium sancti-jacobi*	NLTEST7980	None	None	G3	S2	3
yellow warbler *Setophaga petechia*	ABPBX03010	None	None	G5	S3S4	SSC

Record Count: 81

Attachment 3
Biological Resources & Project Impacts Map



Aerial Source: Valtus Imagery Services: Hexagon Imagery Program (HxIP), 2020.

Legend

- Property Boundary
- Fuel Modification Zone (100-Ft.)
- Grading Footprint
- Ec — California Brittle Bush Scrub (*Encelia californica*)
- Ac — California Sagebrush Scrub (*Artemisia californica*)
- RG — Ruderal Grassland
- L — Landscaping
- RCL — Ruderal Grassland with CSS and Landscaping
- CR — CSS with Ruderal Grassland
- RC — Ruderal Grassland with CSS
- Bs — Mulefat Scrub (*Baccharis salicifolia*)
- Ls — Scalebroom Scrub (*Lepidospartum squamatum*)
- D — Developed

Special-Status Plant Species

- White rabbit-tabacco (*Pseudognaphalium leucocephalum*) [CRPR 2B.2]

Biological Resources & Project Impacts Map

FEET 0 150 300

Attachment 3

Attachment 4
Representative Photos of the Study Area



Photo 1: Representative photo of the California Brittle Bush Shrubland Alliance growing in the northwestern portion of the Survey Area.



Photo 2: Representative photo of the California Sagebrush Shrubland Alliance growing in the eastern portion of the Survey Area.



Photo 3: Representative photo of the California Sagebrush Shrubland Alliance growing in the eastern portion of the Survey Area.



Photo 4: Representative photo of the Landscaping within the Survey Area.



Photo 5: Representative photo of the Ruderal Grassland with CSS and Landscaping growing around the developed portions of the Survey Area.



Photo 6: Representative photo of the CSS with Ruderal Grassland growing within the Survey Area.



Photo 7: Representative photo of the Ruderal Grassland with CSS growing within the Survey Area.



Photo 8: Representative photo of the Mulefat scrub growing in the central portion of the Survey Area.



Photo 9: Representative photo of the Scalebroom Scrub growing in the northeastern-most edge of the Survey Area.

Attachment 5
Vascular Plants Observed - June 16 & 17, 2021 and July 14, 2021

GROUP **Family** ***Scientific Name***	**Common Name**
GYMNOSPERMS	
Pinaceae	
**Pinus canariensis*	Canary Island pine
**Pinus halpensis*	Aleppo pine
**Pinus pinea*	stone pine
FLOWERING PLANTS - DICOTS	
Adoxaceae	
Sambucus nigra ssp. *caerulea*	blue elderberry
Aizoaceae	
**Carpobrotus* sp.	sea fig
Anacardiaceae	
**Schinus molle*	Peruvian pepper tree
Malosma laurina	laurel sumac
Apiaceae	
**Foeniculum vulgare*	sweet fennel
Apocynaceae	
Asclepias fascicularis	narrowleaf milkweed
Asclepias californica	California milkweed
Asteraceae	
Ambrosia psilostachya	western ragweed
Artemisia californica	California sagebrush
Artemisia douglasiana	mugwort
Baccharis pilularis	coyote bush
Baccharis salicifolia	mulefat
**Centaurea melitensis*	tocalote
Corethrogyne filaginifolia	woolly aster
Encelia californica	California brittlebush
Ericameria linearifolia	slender-leaved goldenbush
Ericameria palmeri	Palmer's goldenbush
Hazardia squarrosa	sawtooth goldenbush
Heterotheca grandiflora	telegraph weed
**Lactuca serriola*	prickly lettuce
**Hypochaeris glabra*	annual cat's ear
Pseudognaphalium californicum	California everlasting
**Sonchus asper*	prickly sowthistle
Stephanomeria exigua	whiteplume wirelettuce
Boraginaceae	
Phacelia cicutaria	caterpillar phacelia
Brassicaceae	
**Brassica nigra*	black mustard
**Hirschfeldia incana*	hoary mustard
Cactaceae	
Opuntia littoralis	coastal prickly pear
Chenopodiaceae	
**Atriplex semibaccata*	creeping saltbush
**Salsola* sp.	Russian thistle

GROUP **Family** ***Scientific Name***	**Common Name**
Cucurbitaceae	
Cucurbita foetidissima	coyote gourd
Marah macrocarpa	wild cucumber
Euphorbiaceae	
Croton setigerus	dove weed
Euphorbia polycarpa	prostrate spurge
**Ricinus communis*	castor bean
Fabaceae	
Acmispon glaber	deerweed
**Melilotus indicus*	yellow sweet clover
Fagaceae	
Quercus agrifolia	coast live oak
Geraniaceae	
**Erodium botrys*	longbeak stork's bill filaree
**Erodium cicutarium*	red-stemmed filaree
Lamiaceae	
**Marrubium vulgare*	white horehound
Salvia apiana	white sage
Salvia leucophylla	purple sage
Oleaceae	
**Fraxinus uhdei*	evergreen ash
Polygonaceae	
Eriognum fasciculatum	California buckwheat
Phrymaceae	
Mimulus aurantiacus	bush monkey flower
Proteaceae	
**Grevillea robusta*	silk oak
Sapindaceae	
**Cupaniopsis anacardiodes*	carrotwood tree
Solanaceae	
Datura wrightii	western jimsonweed
**Nicotiana glauca*	tobacco tree
Scrophulariaceae	
**Myoporum lateum*	myoporum
FLOWERING PLANTS-MONOCOTS	
Agavaceae	
**Agave americana*	century plant
Hesperoyucca whipplei	chaparral yucca
Arecaceae	
**Syagrus romanzoffiana*	queen palm
**Washingtonia robusta*	Mexican fan palm
Poaceae	
**Arundo donax*	giant reed
**Avena barbata*	slender oat grass
**Avena fatua*	common wild oat grass
**Bromus diandrus*	ripgut grass
**Bromus hordeaceus*	soft brome
**Bromus madritensis* ssp. *rubens*	red brome

GROUP **Family** ***Scientific Name***	**Common Name**
Elymus codensatus	giant wild rye
**Stipa miliacea*	smilo grass

Attachment 6
Potential for Occurrence of Special-Status Plant Species

Common Name (*Scientific Name*)	Form	Common Blooming Period	Primary Habitat Association	Status (Federal/State/CNPS)	Potential to Occur (Observed, High, Moderate, Low, None)
Agoura Hills dudleya (*Dudleya cymosa* ssp. *agourensis*)	perennial herb	May - June	Rocky, volcanic breccia in chaparral and cismontane woodland at elevations between 260 to 460 meter.	FT/1B.2	**None.** Suitable habitats are absent.
Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)	perennial herb	April - June	Open, rocky slopes, often in shallow clays over serpentine or rocky areas with little soils in coastal sage scrub, coastal bluff scrub, chaparral, valley and foothill grassland at elevations between 5 to 290 meters.	1B.1	**None.** Suitable habitats are absent.
Braunton's milk vetch (*Astragalus brauntonii*)	perennial herb	January - August	Recent burn or disturbed areas, usually on sandstone with carbonate layers in chaparral, coastal scrub, valley and foothill grassland at elevations between 3 and 640 meters. A soil specialist in saline, somewhat alkaline soils high in calcium, manganese, with some potassium.	FE/1B.1	**None**. Absence of live or dead plants. Also, suitable calcareous soils appear to be absent, so unlikely to occur as dormant seedbank.
California Orcutt grass (*Orcuttia californica*)	annual herb	April - August	Vernal pools at elevations between 10 and 660 meters.	FE /CE/ 1B.1	**None**. Suitable vernal pool habitats are absent.

Common Name (*Scientific Name*)	Form	Common Blooming Period	Primary Habitat Association	Status (Federal/State/CNPS)	Potential to Occur (Observed, High, Moderate, Low, None)
chaparral nolina (*Nolina cismontane*)	perennial evergreen shrub	May - July	Primarily on sandstone, shale, and gabbro substrate in chaparral and coastal scrub at elevations between 140 and 1100 meters.	1B.2	**None**. Suitable sandstone, shale, and gabbro substrates are absent. Also, absence of this perennial species confirmed by field survey.
chaparral ragwort (*Senecio aphanactis*)	annual herb	January – April	Drying alkaline flats in chaparral, cismontane woodland and coastal scrub at elevations between 20-1020 meters.	2B.2	**None**. Drying alkaline flats are absent at the site.
conejo buckwheat (*Eriogonum crocatum*)	perennial herb	April - July	Conejo volcanic outcrops and rocky sites in chaparral, coastal scrub, valley and foothill grassland at elevations between 90 and 580 meters.	CR/1B.2	**None**. Conejo volcanic outcrops and rocky sites absent. Also, absence of this perennial species confirmed by field survey.
conejo dudleya (*Dudleya parva*)	perennial herb	May - June	Clay or volcanic soils on rocky slopes and grassy hillsides at elevations between 90 and 380 meters.	FT/1B.2	**None**. Suitable volcanic rock outcrops are absent.
dune larkspur (*Delphinium parryi* ssp. *blochmaniae*)	perennial herb	April - June	Rocky areas and dunes in chaparral (maritime) and coastal dunes at elevations between 0 to 200 meters.	1B.2	**None**. Site lacks suitable habitats.

Common Name (*Scientific Name*)	Form	Common Blooming Period	Primary Habitat Association	Status (Federal/State/CNPS)	Potential to Occur (Observed, High, Moderate, Low, None)
Gerry's curly-leaved monardella (*Monardella sinuata* ssp. *gerryi*)	annual herb	April - June	Sandy openings in coastal scrub at elevations between 150 to 245 meters.	1B.1	**Low**. Suitable habitat is potentially present within the site. However, this species was not observed during surveys performed in during blooming season.
Greata's aster (*Symphyotrichum greatae*)	perennial rhizomatous herb	June - October	Mesic canyons in chaparral, cismontane woodland, broadleaved upland forest, lower montane coniferous forest, and riparian woodlands at elevations between 335 to 2,015 meters.	1B.3	**None**. Site lacks suitable habitats.
late-flowered mariposa-lily (*Calochortus fimbriatus*)	perennial bulbiferous herb	June - August	Serpentine soils in dry, open coastal woodland, chaparral, cismontane woodland, and riparian woodland at elevations between 275 and 1,905 meters.	1B.3	**None**. Site lacks suitable serpentine soils.
Lyon's pentachaeta (*Pentachaeta lyonii*)	annual herb	March - August	Rocky, clay substrates in coastal scrub, valley and foothill grassland, and openings in chaparral, usually at the ecotone between grassland and chaparral or edges of firebreaks,	FE / CE / 1B.1	**None**. Suitable habitats absent.

Common Name (*Scientific Name*)	Form	Common Blooming Period	Primary Habitat Association	Status (Federal/State/CNPS)	Potential to Occur (Observed, High, Moderate, Low, None)
			at elevations between 30 and 690 meters.		
Malibu baccharis (*Baccharis malibuensis*)	perennial deciduous shrub	August	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland at elevations between 150 to 305 meters.	1B.1	**None.** Absence of perennial species confirmed by field survey.
marcescent duleya (*Dudleya cymosa* ssp. *marcescens*)	perennial herb	April - July	On sheer rock surfaces and rocky volcanic cliffs in chaparral at elevations between 150 and 520 meters.	FT/CR/1B.2	**None.** Suitable habitat not present. Also, absence of perennial species confirmed by field survey.
mesa horkelia (*Horkelia cuneata* var. *puberula*)	perennial herb	February – July	Sandy or gravelly sites in maritime chaparral, cismontane woodland, and coastal scrub at elevations between 70 and 810 meters.	1B.1	**None.** Absence of perennial species confirmed by field survey.
Nuttall's scrub oak (*Quercus dumosa*)	perennial evergreen shrub	February - April	Sandy, clay, loam soils in closed-cone coniferous forest, chaparral, and coastal scrub at elevations between 15 and 400 meters.	1B.1	**None**. Absence of perennial species confirmed by field survey.
Ojai fritillary (*Fritillaria ojaiensis*)	perennial bulbiferous herb	February - May	Rocky sites, as well as sometimes on serpentine and roadsides, in broadleaved upland	1B.2	**None**. Suitable habitats absent.

Common Name (*Scientific Name*)	Form	Common Blooming Period	Primary Habitat Association	Status (Federal/State/CNPS)	Potential to Occur (Observed, High, Moderate, Low, None)
			forests, chaparral, cismontane woodland, and lower montane coniferous forests at elevations between 95 and 1,140 meters.		
Ojai navarretia (*Navarretia ojaiensis*)	annual herb	May - July	Valley and foothill grassland and openings in chaparral and coastal scrub at elevations between 275 and 620 meters.	1B.1	**Low**. Not observed during field survey performed during blooming season. Potentially occurring in the less disturbed portions of the onsite coastal sage communities.
Payne's bush lupine (*Lupinus paynei*)	perennial shrub	March – April	Sandy areas within coastal scrub, riparian scrub, and valley and foothill grassland at elevations between 220 and 420 meters.	1B.1	**None.** Perennial shrub confirmed absent with field survey.
Ross' pitcher sage (*Lepechinia rossii*)	perennial shrub	May - September	Chaparral habitats in soil derived from fine-grained, reddish sedimentary rock at elevations between 670 and 915 meters.	1B.2	**None**. Suitable habitat absent. Absence confirmed by field survey.
Santa Monica dudleya (*Dudleya cymosa ssp. ovatifolia*)	perennial herb	March - June	In canyons on north-facing slopes on volcanic or sedimentary substrates in chaparral and coastal scrub at elevations between 150 and 1675 meters.	FT/1B.1	**None**. Suitable habitat absent. Absence confirmed by field survey.

Common Name (*Scientific Name*)	Form	Common Blooming Period	Primary Habitat Association	Status (Federal/State/CNPS)	Potential to Occur (Observed, High, Moderate, Low, None)
Santa Susana tarplant (*Deinandra minthornii*)	perennial deciduous shrub	July - November	Rocky sites in chaparral and coastal scrub.	CR/1B.2	**None**. Suitable rocky sites absent. Absence confirmed by field survey.
slender mariposa-lily (*Calochortus clavatus* var. *gracilis*)	perennial bulbiferous herb	March – June	Shaded foothill canyons in chaparral, coastal scrub, and valley and foothill grassland at elevations between 320 and 1,000 meters.	1B.2	**None**. Shaded foothill canyons are absent at site.
southern tarplant (*Centromadia parryi* ssp. *australis*)	annual herb	May - November	Marsh and swamp margins, vernally mesic valley and foothill grasslands, and vernal pools at elevations between 0 and 480 meters.	1B.1	**None**. Suitable habitats absent.
umbrella larkspur (*Delphinium umbraculorum*)	perennial herb	April - June	Mesic sites in cismontane woodland and chaparral habitats at elevations between 215 and 2,075 meters.	1B.3	**None**. Suitable habitats absent. Absence confirmed by field survey.
Verity's dudleya (*Dudleya verityi*)	perennial herb	May - June	Rocky, volcanic sites in chaparral, cismontane woodland, and coastal scrub.	FT/1B.1	**None**. Suitable habitats absent. Absence confirmed by field survey.
vernal barley (*Hordeum intercedens*)	annual herb	March - June	Coastal dunes, coastal scrub, vernal pools, and saline flats and depressions at elevations between 5 and 1,000 meters.	CRPR 3.2	**None**. Suitable habitats absent.

Common Name (*Scientific Name*)	Form	Common Blooming Period	Primary Habitat Association	Status (Federal/State/CNPS)	Potential to Occur (Observed, High, Moderate, Low, None)
white rabbit-tobacco (*Pseudognaphalium leucocephalum*)	perennial herb	August - November	Sandy, gravelly sites in chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats at elevations between 35 and 515 meters.	2B.2	**Observed.** Two (2) individual plants were found growing in the alluvial wash in the northwestern edge of the Survey Area, outside the anticipated limits of grading.
white-veined monardella (*Monardella hypoleuca* ssp. *hypoleuca*)	perennial herb	May – August	Dry slopes in chaparral and cismontane woodland at elevations between 50 and 1,525 meters.	1B.3	**None**. Suitable habitats absent. Absence confirmed by field survey.
woven-spored lichen (*Texosporium sancti-jacobi*)	crustose lichen	N/A	Open sites in chaparral with *Adenostoma faciculatum*, *Eriogonum*, *Selaginella* found on soil, small mammal pellets, and dead twigs at elevations between 60 and 870 meters.	3	**None**. Suitable habitats absent. Absence confirmed by field survey.

Attachment 7
Wildlife Species Observed - June 16 & 17, 2021

Common Name	***Scientific Name***
REPTILES	
side-blotched lizard	*Uta stansburiana elegans*
western fence lizard	*Sceloporus occidentalis*
BIRDS	
Allen's hummingbird	*Selasphorus sasin*
American crow	*Corvus brachyrhynchos*
barn owl	*Tyto alba*
black phoebe	*Sayornis nigricans*
bushtit	*Psaltriparus minimus*
California quail	*Callipepla californica*
California scrubjay	*Aphelocoma californica*
California thrasher	*Toxostoma redivivum*
California towhee	*Melozone crissalis*
common raven	*Corvus corax*
Cooper's hawk	*Accipiter cooperii*
greater roadrunner	*Geococcyx californianus*
hooded oriole	*Icterus cucullatus*
house finch	*Haemorhous mexicanus*
Hutton's vireo	*Vireo huttoni*
lesser goldfinch	*Spinus psaltria*
mourning dove	*Zenaida macroura*
northern flicker	*Colaptes auratus*
northern mockingbird	*Mimus polyglottos*
northern rough-winged swallow	*Stelgidopteryx serripennis*
phainopepla	*Phainopepla nitens*
red-tailed hawk	*Buteo jamaicensis*
rock pigeon	*Columba livia*
spotted towhee	*Pipilo maculatus*
turkey vulture	*Cathartes aura*
western kingbird	*Tyrannus verticalis*
MAMMALS	
Botta's pocket gopher	*Thomomys bottae*
California ground squirrel	*Spermophilus beecheyi*
coyote	*Canis latrans*
desert cottontail	*Sylvilagus audubonii*
mule deer	*Odocoileus hemionus*
*Virginia opossum	*Didelphis virginiana*

Attachment 8
Potential for Occurrence of Special-Status Wildlife Species

Common Name (*Scientific Name*)	Status (Federal / State)	Primary Habitat Associations	Potential to Occur (Observed, Potentially Present, Presumed Absent, Absent)
Invertebrates			
There is no potential for occurrence of special-status invertebrates due to lack of suitable habitat.			
Fish			
No species of fish have potential to occur due to lack of permanent water at the site.			
Amphibians			
western spadefoot (*Spea hammondii*)	--/SSC	Almost completely terrestrial, entering water only to breed. Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	**Potentially Present.** The unnamed wash traveling through the northwest corner of the site could provide breeding habitat.
Reptiles			
California glossy snake (*Arizona elegans occidentalis*)	--/SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	**Potentially Present.**
coast horned lizard (*Phrynosoma blainvillii*)	--/SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	**Potentially Present.** Suitable habitat and food resources exist within the Study Area.
coast patch-nosed snake (*Salvadora hexalepis virgultea*)	--/SSC	Requires small animal burrows for refuge and overwintering sites in brushy or shrubby vegetation in coastal Southern California.	**Potentially Present.** Suitable habitat exists within the Study Area.

Common Name (*Scientific Name*)	**Status (Federal / State)**	**Primary Habitat Associations**	**Potential to Occur** (Observed, Potentially Present, Presumed Absent, Absent)
coastal whiptail (*Aspidoscelis tigris stejnegeri*)	--/SSC	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland & riparian areas. Ground may be firm soil, sandy, or rocky.	**Potentially Present.** Suitable habitat exists within the Study Area. Species is highly mobile and easily escapes capture or trampling.
foothill yellow-legged frog (*Rana boylii*)	CE/SSC	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats.	**Presumed Absent.** No shallow streams within Study Area.
Southern California legless lizard / California legless lizard (*Anniella stebbinsi* / *Anniella* sp.)	--/SSC	Sandy areas within other habitats; also in litter under live oaks. Soil moisture is essential.	**Presumed Absent.** No suitable habitat within Study Area.
south coast garter snake (*Thamnophis sirtalis*)	--/SSC	Marsh and upland habitats near permanent water with good strips of vegetation.	**Presumed Absent.** No permanent water within Study Area.
two-striped gartersnake (*Thamnophis hammondii*)	--/SSC	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	**Presumed Absent.** No suitable habitat within Study Area.
western pond turtle (*Emys marmorata*)	--/SSC	Inhabits permanently or nearly permanent bodies of water in may habitat types, below 6000 ft elevation. Requires basking sites, such as partially submerged logs, vegetation mats, or open mud banks. Needs suitable nesting sites with a proper thermal and hydric environment for incubation of the eggs. Nest sites are typically located on relatively dry, exposed slopes.	**Presumed Absent.** No suitable habitat within Study Area.

Common Name (*Scientific Name*)	Status (Federal / State)	Primary Habitat Associations	Potential to Occur (Observed, Potentially Present, Presumed Absent, Absent)
Birds			
bank swallow (*Riparia riparia*)	--/CT	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	**Presumed Absent.** Study Area lacks suitable habitat.
burrowing owl (*Athene cunicularia*)	--/SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**Presumed Absent.** Species was not observed in Study Area and nesting habitat that is typically associated with this species does not occur onsite.
California condor (*Gymnogyps californianus*)	FP	Requires vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Nests are built in deep canyons containing clefts in the rocky walls.	**Presumed Absent.** Species was not observed in Study Area and nesting habitat that is typically associated with this species does not occur onsite.
coastal California gnatcatcher (*Polioptila californica californica*)	FT/SSC	Obligate, permanent resident of coastal scrub below 2,500 ft in southern California. Low, coastal scrub in arid washes, on mesas and slopes.	**Potentially Present.** Study Area provides suitable habitat and this species has been recorded within close proximity of the Study Area.
golden eagle (*Aquila chrysaetos*)	None / CFP	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	**Potentially Present.** Potentially foraging occasionally over Study Area, but no potential to nest at this site.
least Bell's vireo (V*ireo bellii pusillus*) (nesting)	FE/CE	Rare and local summer resident in lowland riparian woodlands, breeding in willow thickets and other dense, low riparian growth in lowlands and the lower portions of the canyons, generally along permanent or semi-permanent streams.	**Presumed Absent.** No suitable habitat within the Study Area.

Common Name (*Scientific Name*)	**Status (Federal / State)**	**Primary Habitat Associations**	**Potential to Occur** (Observed, Potentially Present, Presumed Absent, Absent)
southwestern willow flycatcher (*Empidonax traillii extimus*)	FE/CE	Fairly common and widespread migrant from mid-May to early June, and again from August to early October. Formerly bred in wet willow thickets, but breeders are virtually gone from the L.A region and endangered over most of the southwest. Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows (Zeiner et al., 1990b).	**Presumed Absent.** No suitable habitat within Study Area.
tricolored blackbird (*Agelaius tricolor*)	--/SSC	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	**Presumed Absent.** No suitable habitat within Study Area.
western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FT/CE	Riparian forest nester, along broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with understory of blackberry, nettles, or wild grape. Presumed extirpated throughout much of the L.A County region.	**Presumed Absent.** No suitable habitat within Study Area.
white-tailed kite (*Elanus leucurus*)	--/CFP	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Potentially Present.** Potentially foraging occasionally over Study Area, but no potential to nest at this site.
yellow warbler (*Setophaga petechia*)	--/SSC	Riparian plant associations near water. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants.	**Presumed Absent.** Study Area lacks suitable habitat.

Common Name (*Scientific Name*)	Status (Federal / State)	Primary Habitat Associations	Potential to Occur (Observed, Potentially Present, Presumed Absent, Absent)
Mammals			
American badger (*Taxidea taxus*)	--/SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Presumed Absent.** The species and its diagnostic signs (e.g. burrows and dugout rodent burrows) were not observed in the Study Area.
pallid bat (*Antrozous pallidus*)	--/SSC	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Potentially Present.** Limited potential to forage within the Study Area, but no potential to roost, reproduce or hibernate.
San Diego desert woodrat (*Neotoma lepida intermedia*)	--/SSC	Coastal scrub of Southern California from San Diego County to San Luis Obispo County. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops, rocky cliffs, and slopes.	**Presumed Absent.** The species commonly builds their nests among rocky areas, which were not found within the Study Area.
western mastiff bat (*Eumops perotis californicus*)	None / SSC	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	**Potentially Present.** Potential to forage over the Study Area, and low potential to roost, reproduce or hibernate within the trees at the site.

BIOLOGICAL RESOURCES TECHNICAL REPORT
BAHER PROPERTY: A.P.N. 5110-190-285 & -305
CITY OF MOORPARK, CALIFORNIA







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BIOLOGICAL RESOURCES TECHNICAL REPORT
BAHER PROPERTY: A.P.N. 5110-190-285 & -305
CITY OF MOORPARK, CALIFORNIA

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Section **TABLE OF CONTENTS** **Page**

EXECUTIVE SUMMARY....iii
INTRODUCTION....1
Methodology....1
Literature Review....1
REGIONAL OVERVIEW....3
PROJECT SITE DESCRIPTION....4
Non-Biotic Characteristics....4
Vegetation Communities & Plant Composition....4
General Wildlife....11
Sensitive Biological Resources....13
Wildlife Movement Corridors & Habitat Linkages....30
REGULATORY SETTINGS....34
Jurisdictional Waters & Habitats – Waters of the US, Waters of the State, & Riparian Habitats....34
Waters of the US....34
Waters of the State....37
Riparian Habitat....38
Endangered Species Act....38
California Endangered Species Act....39
Migratory Bird Treaty Act....40
City of Moorpark's Historic Trees, Native Oak Trees & Mature Trees Ordinances....41
ENVIRONMENTAL IMPACTS & MITIGATION MEASURES....44
Thresholds of Significance....44
Project Impacts & Mitigation Measures....45
REFERENCES....65

FIGURES

Figure 1: Regional Map....2
Figure 2: Onsite Soils....5
Figure 3: Onsite Vegetation Communities....7
Figure 4: Locally Recorded Sensitive Species Occurrences....14
Figure 5: Recorded Coastal California Gnatcatcher Occurrences and Designated Critical Habitat....28
Figure 6: Regional Wildlife Corridors in the Vicinity of the Project Site....33
Figure 7: Onsite Drainages....34
Figure 8: Onsite Coast Live Oaks....43
Figure 9: Impacts to Onsite Vegetation Communities....47

TABLES

Table 1: Sensitive plants known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite……... 15
Table 2: Sensitive wildlife known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite……..... 17
Table 3: Sensitive vegetation communities and habitats known to occur in the vicinity of the project site……..... 21
Table 4: Summary of the permanent impacts due to grading to the vegetation communities onsite……..…….. 48

APPENDICES

Appendix 1: Flora & Fauna Compendium
Appendix 2: Sensitive Species Accounts

EXECUTIVE SUMMARY

This biological resources technical report describes the existing biological resources on the West Point Homes' Baher Property project site (A.P.N. 5110-190-285 and -305), anticipated impacts, and proposed mitigation measures. The project site is comprised of 67.96 acres of undeveloped and developed areas in the City of Moorpark. The site supports 5.60 acres of coastal sage scrub (CSS), 3.34 acres of ruderal grassland, 1.51 acres of landscaped areas, 43.10 acres of ruderal with CSS elements, 6.84 acres of ruderal with landscaping and CSS elements; 4.79 acres of CSS with ruderal elements, 0.30 acres mule fat scrub, and 0.26 acres of southern alluvial fan scrub.

Several habitat/vegetation types protected under City, County, State, $^{and}/_{or}$ Federal legislation or policies occur on the project site. These are coastal sage scrub, mule fat scrub, southern alluvial fan scrub, and streamcourses. In each case there is a prescribed permitting process that must be followed and conditions that must be met in order to legally impact these resources. The U.S. Army Corps of Engineers (USACE), California Regional Water Quality Control Board (CRWQCB), and California Department of Fish and Game (CDFG) regulate impacts to streamcourses. Additionally, CSS gets de facto protection due to the potential occupation by sensitive species that include coastal California gnatcatcher.

There are 72 sensitive biological resources known to occur in the area, of which 26 are plants, 33 are wildlife, and 13 are habitat types. Of these, five (5) sensitive wildlife species are known to occur on the site. Two (2) sensitive plants possibly occur on the project site. An additional 11 sensitive wildlife species possibly occur on the site as residents or transients, including the federally and state-listed coastal California gnatcatcher. Three (3) sensitive habitats are present on the project site.

Project grading activities would result in the permanent loss of 53.93 acres of the vegetation communities that are found onsite. Additional areas may also be impacted in the future due to the need for fuel modification for wildfire safety (in accordance with the City of Moorpark or County of Ventura's standards) $^{and}/_{or}$ landscaping around the estate lots. Formal jurisdictional delineations were not conducted on the project site as a part of this biological resources evaluation, but two definable drainages are found onsite. According to grading plans for the project, implementation would impact a portion of each of these drainages.

Mitigation would be required in order to obtain some or all of the necessary permits needed for the project. Mitigation may include one or a combination of the following measures: impact avoidance; purchase of credits in an established mitigation bank; purchase and preservation of similar habitats in the project vicinity; $^{and}/_{or}$ creation or enhancement of existing similar resources on the project site or in the project vicinity. In conclusion, if all impacts to biological resources are mitigated appropriately, project implementation would result in no significant unavoidable impacts to biological resources on the project site.

INTRODUCTION

The floral and faunal composition of the project site is described herein from information compiled through field reconnaissance, supplemented by existing documentation of biological resources within the Baher Property project vicinity. The site was surveyed in December 2009 by LDC biologists. The specific location of the proposed project site is 5979 Gabbert Road, City of Moorpark, Ventura County, California (see **Figure 1**). Geographically the site is located on the northern edge of the Little Simi Valley on the southern flank of Oak Ridge. The 67.96 acre site can be located on the USGS 7.5 minute *Moorpark* quadrangle map. The site is located in Section 6 in T2N, R19 W San Bernardino Baseline and Meridian.

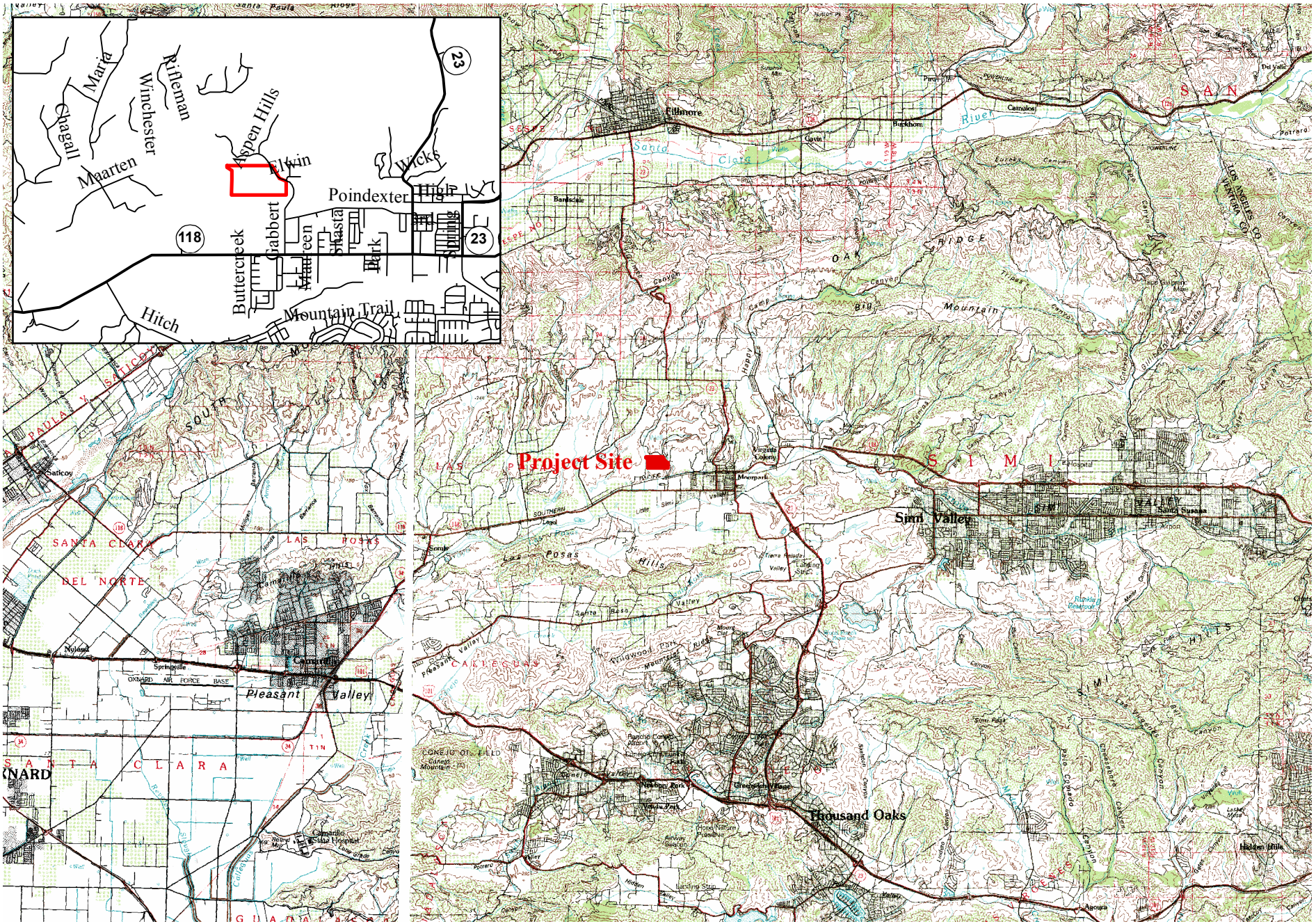
Methodology

Habitat types were located and mapped in the field with the aid of a 200 scale (1"=200') aerial photographs. Habitats generally do not have sharp boundaries, but are usually somewhat indistinct, with several species from a given community found in adjacent communities.

Plant components of the site were determined through the use of field identification, combined with spring floristic surveys previously done by LDC biologists on parcels in the immediate vicinity of the project site. Faunal constituents were determined through the use of field identification, combined with documented habitat preferences of regional wildlife species that, whether or not detected during the survey, are thought to include the site within their range. The overall biotic composition of the site was derived from this information.

Literature Review

In addition to the general flora and fauna field surveys, vegetation mapping, wildlife inventories, and habitat assessments, information on the biological resources of the proposed project site was obtained by reviewing existing available data. Databases such as the California Natural Diversity Database (CNDDB 2008) and California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (CNPS 2008) were reviewed regarding the potential occurrence of any special status plant species or sensitive habitat within or in close proximity of the project site. In addition, reports from biological surveys conducted in the project area and relevant published literature were reviewed for occurrences of sensitive biological resources.



Regional Map

Source: USGS

Baher Property

A.P.N. 5110-190-285 and -305

LDC ENVIRONMENTAL

The resources used in this thorough archival review included the following:

- California Natural Diversity Data Base (CNDDB) for the USGS 7.5' quadrangle which comprised the study area: *Moorpark* and neighboring quads for pertinent data;
- California Native Plant Society Online Inventory of Rare and Endangered Plants (7^{th} edition);
- Special Animals, CDFG, Biogeographic Data Branch, Februaury 2008;
- Special Vascular Plants, Bryophytes, and Lichens List, CDFG, Biogeographic Data Branch, April 2008;
- State and Federally Listed Endangered, Threatened and Rare Plants of California; CDFG, Biogeographic Data Branch, April 2008;
- State and Federally Listed Endangered and Threatened Animals of California, CDFG, Biogeographic Data Branch, May 2008;
- Review of previous biological assessment reports and species lists for the region and neighboring areas;
- Published literature (Biggs 2000, Borror and White 1970, Boyd 1999, Burt and Grossenheider 1976, Hogue 1993, Holland 1986, Garrett and Dunn 1981, Jameson and Peeters 2004, Jennings and Hayes 1994, Manolis 2003, Moe 2004, Munz 1935, Powell and Hogue 1979, Ray 1988, Sibley 2000, Small 1994, Stebbins 2003, Williams 1986);
- Additional published literature and scientific articles; and
- Aerial photos of the project area and regional geologic and local soil maps (Woodruff et al. 1970).

REGIONAL OVERVIEW

The project site is located on the northern edge of the Little Simi Valley on the southern flank of Oak Ridge. The Little Simi Valley is drained to the west by Arroyo Simi/Arroyo Las Posas (part of the Calleguas Watershed Unit). The Las Posas upland area, a broad elevated region that slopes gently to the south, separates the South Mountain-Oak Ridge highlands from the Las Posas-Camarillo Hills between Little Simi Valley on the east and the Oxnard Plain on the west. This relatively low-lying area is also referred to as the Las Posas Valley. Numerous north-south-trending drainages cut South Mountain and Oak Ridge creating steep narrow canyons on north-facing slopes and wide flat-bottomed canyons with incised streams on south-facing slopes. Quaternary surficial deposits cover the floor and margins of the Little Simi Valley, Santa Clara River Valley in the north, and Arroyo Las Posas in the south, and extend up into the larger canyons that drain South Mountain and Oak Ridge. The Simi fault, located at the eastern end of the Simi-Santa Rosa fault system, bounds the northern margins of the Simi and Tierra Rejada Valleys. West of Simi Valley, the Simi fault has placed Miocene Conejo Volcanics over Plio-Pleistocene Saugus Formation rocks (Yerkes and Campbell 1997).

The region experiences a Mediterranean climate characterized by hot dry summers, and cool, mild winters, with precipitation occurring in the winter months. The area is within the climatic transition zone from the moister coastal region to the more arid inland regions of southern California. The transition zone is characterized by shift in species composition of the plant and animal communities from coastal species or races to those found in the inland valleys. Many plant and animal specimens collected in this transition region exhibit characteristics of both inland and coastal populations. Valley and coast live oak woodlands and savannas, riparian woodland, chaparral, coastal sage scrub, and grassland compose the natural biotic communities in the project vicinity.

PROJECT SITE DESCRIPTION

The physical and biotic characteristics of the site are described as it existed at the time of the biological surveys.

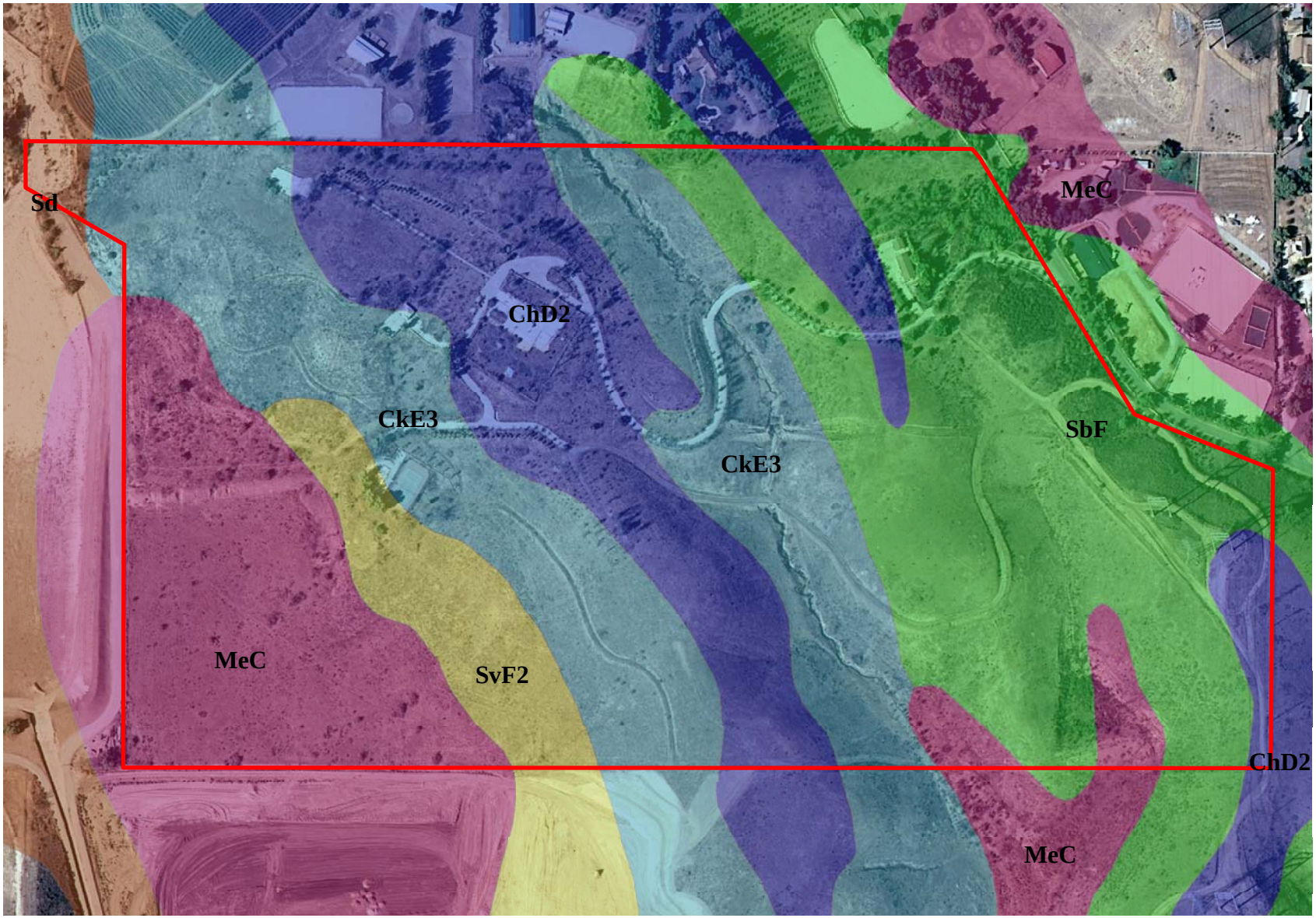
Non-Biotic Characteristics

The topography of the project site is defined by three rolling, broad-topped ridges that trend from northwest to southeast, the basins in between, and a relatively flat area in the southwest corner. An incised drainage is found between two of the ridgelines in the center of the project site and a portion of a wash of an unnamed blueline stream is located in the northwest corner. The soils onsite have primarily been mapped as five (5) types of sandy or gravelly loam, with a small portion sandy alluvial soil in the wash in northwest corner (see **Figure 2**).

The developed portions of the project site comprise 2.22 acres (3.27%) of the project site, which includes three (3) buildings that are still present onsite: a single-family residential home and a garage in the northeast corner, and a large storage shed in the northwest section. Two (2) concrete pads, a tennis court, long, winding driveways, and four (4) transmission line towers are also located on the project site.

Vegetation Communities & Plant Composition

The plant communities that are found on the project site were defined in the field using Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (1986) and the numerical habitat designation from Sawyer and Keeler-Wolfe's *A Manual of California Vegetation* (1995). Plant community boundaries are rarely definable by a sharp line but are usually somewhat indistinct, with several species from a given community found in adjacent communities. This is especially true onsite where coastal sage scrub, ruderal grassland, and landscaping elements occur together in various degrees.



ChD2 - Chesterton coarse sandy loam, 5 to 15% slopes, eroded
CkE3 - Chesterton sandy loam, 9 to 30% slopes, severely eroded
MeC - Metz loamy sand, 2 to 9% slopes
SbF - San Andreas sandy loam, 30 to 50% slopes
Sd - sandy alluvial land
SvF2 - Soper gravelly loam, 30 to 50%, eroded

0 137.5 275 550 Feet

N

Onsite Soils

Source: USDA NRCS

Baher Property
A.P.N. 5110-190-285 and -305

LDC ENVIRONMENTAL

As shown in **Figure 3**, the eight (8) vegetation communities on the project site were mapped based on the species dominant in an area, along with the occurrences of habitat elements typically associated with other communities. See **Appendix 1** for a comprehensive listing of the plant species either observed or expected to occur onsite. Given that the surveys of the project site were conducted in December, the plant list has been supplemented with three floristic surveys conducted in the spring of 2004 on parcels in the immediate vicinity of the project site (A.P.N.s 5110-180-110, 5110-190-120, 5110-190-150, 500-0-180-185, 500-0-190-195, 511-0-190-205, and Tentative Tract 5505).

The following are descriptions of each community present onsite:

Coastal Sage Scrub (California Sagebrush 32.010.01)

Areas that are defined as coastal sage scrub (CSS) are strongly dominated by species that are associated with this community. Dominance is based primarily on the coverage of the CSS species compared with species associated with our communities.

CSS is found on **5.60 acres** (8.24%) of the project site. California sagebrush (*Artemisia californica*) is the dominant CSS-associated plant on the project site, with deerweed (*Lotus scoparius*), white sage (*Salvia apiana*), blue elderberry (*Sambucus mexicana*), California brittlebush (*Encelia californica*), and saw-toothed goldenbush (*Hazardia squarrosa*) also occurring frequently. Nonnative, herbaceous annuals such as red brome (*Bromus madritensis* ssp. *rubens*), longbeak stork's bill (*Erodium botrys*), and shortpod mustard (*Hirschfeldia incana*) are a substantial portion of the understory vegetation.

Coastal sage scrub occurs in comparatively dry, hot, and exposed areas, frequently on south- or southwest-facing slopes. The vegetation consists generally of semi-woody subshrubs 1 to 4 feet high, for which the principle adaptation is the exploitation of moisture in the thin, upper soil horizons during the cool winter season. Coastal sage scrub often occurs in thin soil over bedrock. Most coastal sage species are active during the winter months, initiating new growth shortly after the onset of fall rains. About two-thirds of the plant species found in the coastal sage scrub are drought-deciduous, losing their leaves in the summer; the remainders are evergreens that are adapted to arid environments. Venturan coastal sage scrub occurs typically on low moisture-availability sites: steep, xeric slopes or clay-rich soils that are slow to release stored water (Holland 1986). Because of the frequent occurrence of the habitat in less than ideal situations, the vegetative cover is frequently more open than in adjacent communities. The more open nature of coastal sage scrub permits the occurrence of a greater herbaceous component of forbs, grasses, and succulents than is usually associated with dense stands of mature chaparral.

According to the Coastal Sage Scrub Scientific Review Panel, appointed by the California Secretary of Resources, approximately 100 species of plants and animals considered rare, Sensitive, Threatened, or Endangered by federal and state resource agencies, are associated with coastal sage scrub (NCCPAP 1992). The primary threat to most of these species is loss of habitat. Various sources estimate that 70 to 90 percent of



- Coastal Sage Scrub (CSS) 5.60 acres
- Ruderal Grassland 3.34 acres
- Landscaping 1.51 acres
- Ruderal Grassland w/ CSS 43.25 acres
- Ruderal Grassland w/ CSS and Landscaping 6.84 acres
- CSS w/ Ruderal Grassland 4.79 acres
- Southern Alluvial Fan Scrub 0.26 acres
- Mule Fat Scrub 0.15 acres
- Developed 2.22 acres

0 130 260 520 Feet

N

Onsite Vegetation Communities

Source: Land Design Consultants, Inc.

Baher Property
A.P.N. 5110-190-285 and -305

LDC ENVIRONMENTAL

the historic distribution of the habitat in Southern California has been eliminated by agricultural and urban development. In his review of the status of the California Gnatcatcher, Atwood quotes leading plant ecologists on the status of coastal sage scrub (Atwood 1990):

> Klopatek et. al. concluded that coastal sagebrush present in 1967 showed a 37% decrease relative to its potential area (1979). Hanes stated the coastal sage scrub community is the most endangered vegetative type in Southern California due to the pressures of urbanization, flood control projects and rock quarries (1976). Kirkpatrick and Hutchenson (1977) described coastal sage scrub as one of the least known and fastest disappearing types of vegetation in California and Axlerod observed that the community is rapidly disappearing under spreading urbanization (1978). Mooney noted that coastal sage scrub often occupies choice development sites and is being destroyed over large areas of the state (1977). Westman (1981) calculated that coastal sage scrub in California had been reduced to 10-15% of its former extent (1981). Because this calculation presumably included the Diablan coastal sage scrub association that occurs in the comparatively undeveloped portion of coastal California north of Ventura County, this relative degree of coastal sage scrub loss in Southern California may be even higher. Westman believed coastal sage scrub to be one of the most endangered habitat types in the nation (1987). O'Leary concluded that the present decade likely represents an 'eleventh-hour' period for the imperiled plant community (1990).

The widely recognized decline of the Venturan coastal sage scrub, coupled with the decline of many animal species dependent on the habitat, has led to the presence of Venturan coastal sage scrub on a site becoming a serious constraint to development. This, in turn, has led to the development of the Natural Community Conservation Planning/Coastal Sage Scrub project (NCCP). The purpose of the NCCP is to develop a plan or procedure that would allow the systematic evaluation of the remaining coastal sage scrub in the state and direct the development of a plan for the preservation of the habitat. Generally the plan is to preserve enough of the habitat in designated preservation areas to preserve all of its component species as well. If it can be demonstrated that the habitat and component species are no longer threatened due to their preservation in designated areas, then the remaining habitat would not be protected. The NCCP has been implemented in San Diego and Orange Counties, but Los Angeles and Ventura Counties have not yet developed a regional conservation plan for the habitat. Even where the NCCP has been implemented, the results of the plan are not yet evident. This lack of evidence regarding the success of the NCCP leads to the conclusion that Venturan coastal sage scrub is still an imperiled habitat.

Ruderal Grassland (Non-native Grassland 42.000.00)

Areas that are defined as ruderal grassland are strongly dominated by species that are associated with this community. Dominance is based primarily on the coverage of the ruderal species compared with species associated with our communities.

Ruderal grassland communities are found on **3.34 acres** (4.91%) of the project site in areas that have undergone past disturbances. Ruderal grassland species are typically nonnative, herbaceous annuals that displace native species. The most abundant ruderal grassland species onsite are red brome, wild oat (*Avena fatua*), longbeak stork's bill, shortpod mustard, and black mustard (*Brassica nigr*a).

Landscaping

Areas that are defined as landscaping are strongly dominated by species that are associated with this community. Dominance is based primarily on the coverage of the landscaping species compared with species associated with our communities.

Landscaped areas are found on **1.51 acres** (2.22%) of the project site. This community type occurs onsite around the single-family residential structure in the northeast corner. The most abundant plants used for landscaping are primarily trees that include privets (*Ligustrum* sp.), Aleppo pine (*Pinus halepensis*), Peruvian pepper (*Schinus molle*), carrotwood (*Cupaniopsis anacardiopsis*), and Mexican fan palm (*Washingtonia robusta*).

Ruderal Grassland with CSS Elements/Ruderal with Landscaping & CSS Elements

Areas that are defined as Ruderal Grassland with CSS Elements and Ruderal Grassland with Landscaping and CSS Elements are those areas with greater than 50% coverage from nonnative, herbaceous annuals, but woody and semi-woody shrubs associated with CSS or ornamentals used for landscaping occur infrequently and do not define the structure of the community.

Ruderal Grassland with CSS Elements communities are found on **43.25 acres** (63.65%) of the project site in areas that have undergone past disturbances.

Ruderal Grassland with Landscaping and CSS Elements communities are found on **6.84 acres** (10.06%) of the project site in areas that have undergone past disturbances.

CSS with Ruderal Grassland Elements

Areas that are defined as CSS with Ruderal Grassland Elements are those areas with greater than 50% coverage from woody and semi-woody shrubs associated with CSS, with the coverage in between the shrubs dominated by nonnative, herbaceous annual plant species.

CSS with Ruderal Grassland Elements communities are found on **4.79 acres** (7.05%) of the project site in areas that have undergone past disturbances.

Mule Fat Scrub (Mulefat Scrub 63.510.00)

Mule fat scrub is present on **0.15 acres** (0.22%) of the project site within the northern and southern portions of the channelized drainage. The habitat is a poorly developed, tall, riparian scrub that is strongly dominated by mule fat (*Baccharis salicifolia*). Other shrubs present include Pacific willow (*Salvia lasiandra* var. *lasiandra*), California sagebrush, and blue elderberry.

This early seral community is maintained by frequent flooding. Absent this, most stands would succeed to cottonwood or sycamore dominated riparian forests or woodlands. The habitat is found in intermittent stream channels that have fairly coarse substrate and moderate depth to the water table. It frequently occurs as a patchy understory in light gaps in sycamore alluvial woodland, especially under heavy grazing. The habitat is widely scattered along intermittent streams and near larger rivers from about Tehama County south through the Coast Ranges and Sierra Nevada to San Diego and northwestern Baja California Norte, usually below about 2,000 feet (Holland 1986).

Southern Alluvial Fan Scrub (Scalebroom Scrub 32.070.00)

Southern alluvial fan scrub is present on **0.26 acres** (0.38%) of the project site confined to the northwest corner in the wash of the unnamed blueline stream. This area is composed of sandy, alluvial soils and was primarily devoid of vegetation, with the exception of a few white sage, scalebroom (*Lepidospartum squamatum*), and blue elderberry.

Southern alluvial fan scrub is an open to moderately dense vegetation community composed of broad-leaved phreatophyte evergreen scrub that attains a height of 3-5 feet. It is dominated by scalebroom, which is primarily restricted to floodplains, although it occurs rarely in other habitats. Common subdominant shrub species that are found in the community include California sagebrush or *Artemisia tridentata* ssp. *parishii* (limited distribution; mainly with desert affinities), plus blue elderberry and various coastal sage scrub and chaparral species. The open understory areas are typically dominated by ruderal herbaceous species (native and non-native) usually associated with grassland communities. Scattered riparian trees and shrubs are often found in association with scalebroom and include western sycamore (*Platanus racemosa*), mule fat, and sometimes Fremont's cottonwood (*Populus fremontii*). Southern alluvial fan scrub is likely an early seral stage of Riversidian Alluvial Fan Sage Scrub (Magney 1992).

Southern alluvial fan scrub is primarily restricted to floodplain habitats that flood occasionally (5-10 years) and have a substrate that contains riverine cobbles, boulders, and sand. Many upland species become established in the streamside habitat due to the flood occurrences. The occasional flooding and sediment reworking, however, is the driving force that maintains this vegetation type (Magney 1992). Southern alluvial fan scrub occurs in central and southern cismontane California from the Monterey Bay area to northern Baja California. It was formerly extensive along floodplain habitats of

southern and central California, but it is now very much reduced by flood control, agriculture, and urban expansion (Magney 1992).

The California Department of Fish and Game considers scalebroom scrub vegetation community a high priority for inventory in the CNDDB, due to its rarity and threats to it. Lead and trustee agencies may request that impacts to these communities be addressed in environmental documents.

General Wildlife

In natural environments many wildlife species may be habitat specialists; however, most wildlife species are not restricted to a single vegetation community, occurring instead in several communities, especially those of similar species composition and physical structure. Some animals, birds, and wide-ranging mammals in particular, may utilize an array of dissimilar communities for forage and cover. Wildlife diversity is high in southern California due to the convergence of the multiple biomes, varied topography of the region, and the resulting mix of vegetation communities.

The following paragraphs list some of the species of the different types of wildlife that were either observed ([o]) or are expected to occur ([e]) on the project site. For a comprehensive list, see **Appendix 1**.

Fish

No permanent aquatic resources exist on the project site and the drainages onsite do not have a viable connection to habitable water bodies or watercourses (including the Arroyo Simi) that would allow fish to migrate onto the site, so no fish species are expected to occur.

Amphibians

Amphibians observed during the surveys or expected to occur within or in the immediate vicinity of the project site (due to the presence of the habitat elements with which the species are typically associated and the project site is within the range of the species) include:

- black-bellied slender salamander (*Batrachoseps nigriventris*) [e];
- California toad (*Bufo boreas halophilus*) [e]; and
- Pacific treefrog (*Pseudacris regilla*) [e].

Reptiles

Common and abundant reptiles observed during the surveys or expected to occur within or in the immediate vicinity of the project site (due to the presence of the habitat elements with which the species are typically associated and the project site is within the range of the species) include:

- Great Basin fence lizard (*Sceloporus occidentalis longpipes*) [o];
- western side-blotched lizard (*Uta stansburiana elegans*) [o];
- San Diego gopher snake (*Pituophis catenifer annectens*) [e]; and
- southern Pacific rattlesnake (*Crotalus oreganus helleri*) [e].

Birds

Common and abundant birds observed during the surveys include:

- red-tailed hawk (*Buteo jamaicensis*);
- American kestrel (*Falco sparverius*);
- California quail (*Callipepla californica*);
- mourning dove (*Zenaida macroura*);
- Anna's hummingbird (*Calypte anna*);
- northern flicker (*Colaptes auratus*);
- Say's phoebe (*Sayornis saya*);
- Bewick's wren (*Thryomanes bewickii*);
- yellow-rumped warbler (*Dendroica coronata*);
- white-crowned sparrow (*Zonotrichia leucophrys*);
- California towhee (*Pipilo crissalis*);
- savannah sparrow (*Passerculus sandwichensis*);
- western meadowlark (*Sturnella neglecta*);
- lesser goldfinch (*Carduelis psaltria*); and
- house finch (*Carpodacus mexicanus*).

Common and abundant birds observed during the surveys that are expected to nest on the project site due to the necessary habitat elements being present include:

- California quail;
- mourning dove;
- Anna's hummingbird;
- Bewick's wren;
- yellow-rumped warbler;
- California towhee;
- lesser goldfinch; and
- house finch.

Mammals

Common and abundant mammals observed during the surveys or expected to occur as transients within or in the immediate vicinity of the project site (due to the presence of the habitat elements with which the species are typically associated and the project site is within the range of the species) include:

- desert cottontail (*Sylvilagus audubonii*) [o];
- California ground squirrel (*Spermophilus beecheyi*) [o];
- house mouse (*Mus musculus*) [e]
- deer mouse (*Peromyscus maniculatus*) [e];
- California mouse (*Peromyscus californicus*) [e];
- coyote (*Canis latrans*) [o];
- raccoon (*Procyon lotor*) [o]; and
- striped skunk (*Mephitis mephitis*) [o].

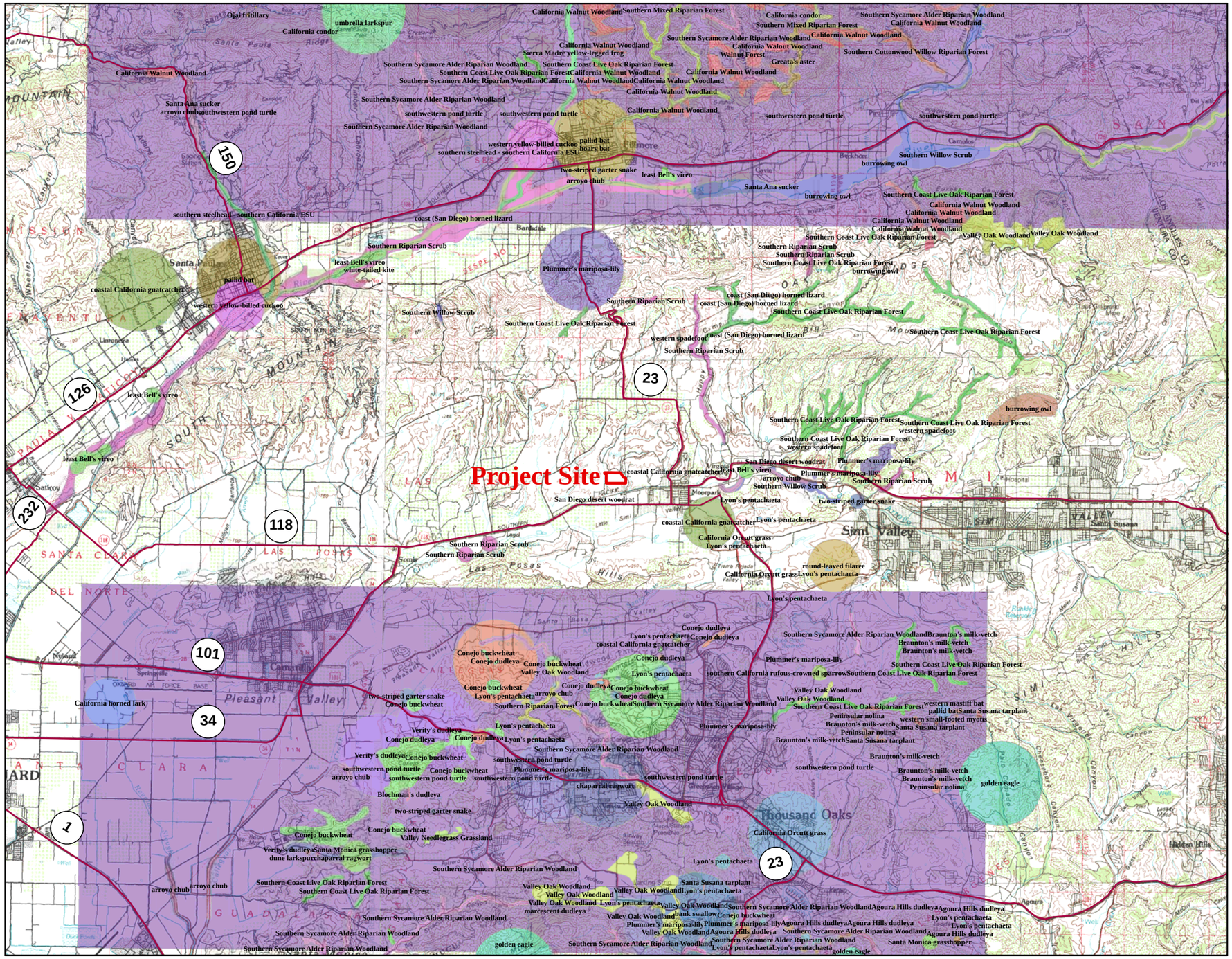
In addition to the listed mammals, the project site is likely used by a variety of bats for foraging.

Sensitive Biological Resources

This section discusses the sensitive biotic resources reported in the vicinity of the project site and their known or expected onsite status. The status of each resource was determined by consideration of: known preferred ecologic parameters and direct observation for plants, known habitat preferences and direct observation for faunal components, and direct observation for habitat types.

There are 72 biotic elements (26 plants, 33 animals, and 13 habitat types.) considered sensitive by resource management organizations and known to occur in the region (see **Figure 4**). This determination is based on local knowledge of LDC biologists and searches of appropriate references and databases. **Table 1, 2,** and **3** summarizes the results of the evaluation for the sensitive biotic resources reported or known to occur in the vicinity of the project site (considered to be the USGS 7.5 *Moorpark* quad and the surrounding 8 quads), its status with the different government agencies and conservation organizations, and its expected occurrence onsite. The individual species accounts (found in **Appendix 2**) give greater detail of the natural history of the plant or animal in the region, which were used in the determination of the species presence within the project site.

General sources used for the determination of sensitive biological resources and their potential presence onsite are as follows: **wildlife** - U.S. Fish and Wildlife Service (FWS) (2008), California Department of Fish and Game (1980, 1989,) California Natural Diversity Data Base (CNDDB 2008, Remsen (1978), and Partners in Flight (2006); **plants** - FWS (2008), CDFG (1989, 2008), CNDDB (2008), and California Native Plant Society (CNPS, 2008) (Smith and Berg 1988); and **habitats** - CNDDB (2008) and Holland (1986). Sources for the individual species are listed on their species account page in **Appendix 2**.



Locally Recorded Sensitive Species Occurrences

Source: CDFG's CNDDB and USGS

Baher Property
A.P.N. 5110-190-285 and -305

Table 1: Sensitive plants known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	NatureServe	CNPS
Woven-spored lichen	*Texosporium sancti-jacobi*	N	--	--	G3/S1.1	--
Southern Tarplant	*Centromadia parryi* ssp. *australis*	N	--	--	G4T2/S2.1	1B.1
Santa Susana Tarplant	*Deinandra minthornii*	N	-	R	G2/S2.2	1B.2
Lyon's Pentachaeta	*Pentachaeta lyonii*	N	E	E	G1/S1.1	1B.1
White Rabbit Tobacco	*Pseudognaphalium leucocephalum*	P	--	--	G4/S3.2	2.2
Chaparral Ragwort	*Senecio aphanactis*	N	--	--	G3?/S1.2	2.2
Greata's Aster	*Symphyotrichum greatae*	N	--	--	G2/S2.3	1B.3
Blochman's Dudleya	*Dudleya blochmaniae* ssp. *blochmaniae*	N	--	--	G2T2/S2.1	1B.1
Agoura Hills Dudleya	*Dudleya cymosa* ssp. *agourensis*	N	T	--	G5T1/S1.2	1B.2
Marcescent Dudleya	*Dudleya cymosa* ssp. *marcescens*	N	T	R	G5T2/S2.2	1B.2
Conejo Dudleya	*Dudleya parva*	N	T	--	G2/S2.1	1B.2
Verity's Dudleya	*Dudleya verityi*	N	T	--	G1/S1.1	1B.2
Braunton's Milk-vetch	*Astragalus brauntonii*	N	E	--	G2/S2.1	1B.1
Round-leaved Filaree	*California macrophyllum*	N	--	--	G3/S3.1	1B.1

Table 1: Sensitive plants known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	NatureServe	CNPS
Ross' Pitcher Sage	*Lepechinia rossii*	N	--	--	G1/S1.2	1B.2
Abrams' Oxytheca	*Acanthoscyphus parishii* var. *abramsii*	N	--	--	G4?T2/S2.2	1B.2
Conejo Buckwheat	*Eriogonum crocatum*	N	--	R	G2/S2.1	1B.2
Dune Larkspur	*Delphinium parryi* ssp. *blochmaniae*	N	--	--	G4T2/S2.2	1B.2
Umbrella Larkspur	*Delphinium umbraculorum*	N	--	--	G2G3/S2S3.3	1B.3
Mesa Horkelia	*Horkelia cuneata* ssp. *puberula*	N	--	--	G4T2/S2.1	1B.1
Plummer's Mariposa Lily	*Calochortus plummerae*	P	--	--	G3/S3.2	1B.2
Late-flowered Mariposa Lily	*Calochortus weedii* var. *vestus*	N	--	--	G3G4T2/S2.2	1B.2
Ojai Fritillary	*Fritillaria ojaiensis*	N	--	--	G1/S1.2	1B.2
Vernal Barley	*Hordeum intercedens*	N	--	--	G3G4/S3S4	3.2
Chaparral Nolina	*Nolina cismontane*	N	--	--	G1/S1.1	1B.2
California Orcutt Grass	*Orcuttia californica*	N	E	E	G2/S2.1	1B.1

Table 2: Sensitive wildlife known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	CDFG	NatureServe	Other Organizations
INVERTEBRATE							
Riverside Fairy Shrimp	*Streptocephalus woottoni*	N	E	--	--	G1/S1	IUCN: EN
Santa Monica Grasshopper	*Trimerotropis occidentaloides*	U	--	--	--	G1G2/S1S2	IUCN: EN
FISH							
Arroyo Chub	*Gila orcutti*	N	--	--	SSC	G2/S2	USFS: S
Santa Ana Sucker	*Catostomus santaanae*	N	T	--	SSC	G1S1	IUCN: VU USFS: S
Southern Steelhead	*Oncorhynchus mykiss irideus*	N	E	--	SSC	G5T2Q/S2	-
AMPHIBIANS							
Western Spadefoot	*Spea hammondii*	P	--	--	SSC	G3/S3	BLM: S IUCN: NT
Sierra Madre Yellow-legged Frog	*Rana muscosa*	N	E	--	--	G1/S1	IUCN: VU USFS: S
California Red-legged Frog	*Rana aurora draytonii*	N	T	--	SSC	G4T2T3/S2S3	IUCN: NT

Table 2: Sensitive wildlife known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	CDFG	NatureServe	Other Organizations
REPTILES							
Southwestern Pond Turtle	*Actinemys marmorata pallida*	N	--	--	SSC	G3G4T2T3Q/S2	BLM: S IUCN: VU
Coast (San Diego) Horned Lizard	*Phrynosoma coronatum blainvillei*	P	--	--	SSC	G4G5/S3S4	BLM: S
Coast (California) Horned Lizard	*Phrynosoma coronatum frontale*	P	--	--	SSC	G4G5/S3S4	BLM: S
Coastal Western Whiptail	*Aspidoscelis tigris stejnegeri*	P	--	--	--	G5T3T4/S2S3	--
Two-striped Garter Snake	*Thamnophis hammondii*	N	--	--	SSC	G3/S2	BLM: S IUCN: DD USFS: S
BIRDS							
California Condor	*Gymnogyps californianus*	N	E	E	--	G1/S1	ABC: GL Audubon: WL CDF: S IUCN: CR USBC: WL
Sharp-shinned Hawk	*Accipiter striatus*	OT	--	--	WL	G5/S3	IUCN: LC
Cooper's Hawk	*Accipiter cooperii*	OT	--	--	WL	G5/S3	IUCN: LC

Table 2: Sensitive wildlife known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	CDFG	NatureServe	Other Organizations
Golden Eagle (nesting and wintering)	*Aquila chrysaetos*	PT	--	--	FP/SSC	G5/S3	BLM: S CDF: S IUCN: LC USFWS: BCC
White-tailed Kite (nesting)	*Elanus leucurus*	PT	--	--	FP	G5T3Q/S1	--
Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	N	C	E	--	G5T3Q/S1	IUCN: LC USFS: S USFWS: BCC
Burrowing Owl	*Athene cunicularia hypugaea*	N	--	--	SC	G4/S2	BLM: S IUCN: LC USFWS: BCC
Allen's Hummingbird	*Selasphorus sasin*	O	--	--	--	G5/SNR	Audubon: WL IUCN: LC USBC: WL
Least Bell's Vireo	*Vireo bellii pusillus*	N	E	E	--	G5T2/S2	ABC: GL Audubon: WL IUCN: NT USBC: WL USFWS: BBC
California Horned Lark	*Eremophila alpestris actia*	N	--	--	WL	G5T3Q S3	IUCN: LC
Bank Swallow (nesting)	*Riparia riparia*	N	--	T	--	G5/S2S3	IUCN: LC

Table 2: Sensitive wildlife known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	CDFG	NatureServe	Other Organizations
Coastal California Gnatcatcher	*Polioptila californica californica*	P	T	--	SC	G3T2/S2	ABC: GL Audubon: WL IUCN: LC USBC: WL
Southern California Rufous-crowned Sparrow	*Aimophila ruficeps canescens*	O	--	--	WL	G5T2T4/S2S3	IUCN: LC
Lark Sparrow	*Chondestes grammacus*	O	--	--	--	G5/SNR	--
MAMMALS							
Hoary Bat	*Lasiurus cinereus*	PT	--	--	SC	G5/S4?	IUCN: VU WBWG: H
Western Small-footed Myotis	*Myotis ciliolabrum*	PT	--	--	-	G5/S2S3	BLM: S IUCN: VU WBWG: H
Pallid Bat	*Antrozous pallidus*	PT	--	--	SC	G5/S3	BLM: S IUCN: LC USFS: S WBWG: H
Western Mastiff Bat	*Eumops perotis californicus*	PT	--	--	SC	G5T4/S3?	BLM: S IUCN: VU WBWG: H
San Diego Desert Woodrat	*Neotoma lepida intermedia*	N	--	--	SC	G5T3?/S3?	IUCN: DD
American Badger	*Taxidea taxus*	N	--	--	SC	G5/S4	IUCN: LC

Table 3: Sensitive vegetation communities and habitats known to occur in the vicinity of the project site		
Vegetation Community/Habitat	**Presence Onsite**	**NatureServe**
California Walnut Woodland	N	G2/S2.1
Coastal Sage (Chaparral) Scrub	O	G3/S3.2
Mule Fat Scrub	O	G4/S4
Scalebroom Scrub (Southern Alluvial Fan Scrub)	O	--
Southern Coast Live Oak Riparian Forest	N	G4/S4
Southern Cottonwood Willow Riparian Forest	N	G3/S3.2
Southern Mixed Riparian Forest	N	G2/S2.1
Southern Riparian Forest	N	G4/S4
Southern Riparian Scrub	N	G3/S3.2
Southern Sycamore Alder Riparian Woodland	N	G4/S4
Southern Willow Scrub	N	G3/S2.1
Valley Needlegrass Grassland	N	G1/S3.1
Valley Oak Woodland	N	G1/S2.1
Walnut Forest	N	G1/S1.1

FOOTNOTES FOR SENSITIVE BIOLOGICAL RESOURCES -- Tables 1-3

Presence Onsite

O Species **O**ccurs onsite as a year-round resident or breeds onsite.
L Species **L**ikely occurs onsite.
P Species **P**ossibly may occur onsite.
PT Species Possibly may occur onsite as a Transient. For birds and bats – no nesting/roosting habitat occurs onsite.
U Species is **U**nlikely to occur onsite.
N **N**o occurrence onsite.
Un Data for the species is limited and its natural history has not been fully described.
N† **N**o occurrence onsite and no species account provided because the sensitive resource has no possibility of occurrence onsite.
T Indicates species are **T**ransient
E For habitats, **E**lements of the habitat occur onsite.

Federal Status – The Federal Endangered Species Act is administered by the United States Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration Fisheries (NOAA).

E Endangered: Species is in immediate danger of extirpation or extinction from existing pressures.

T Threatened: Species not presently in eminent danger of extinction, but is likely to become an Endangered species in the foreseeable future in the absence of special protection and management efforts.

C Candidate: Candidate species are plants and animals for which the Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act, but for which development of a listing regulation is precluded by other higher priority listing activities.

D Delisted: Species is no longer in immediate danger of extirpation or extinction nor is it likely to reach this status in the foreseeable future. Delisted species are monitored according to a post-delisting monitoring plan.

State Status – The California Endangered Species Act of 1984 (CESA) (Fish & Game Code §§2050, *et seq.*) and the Native Plant Protection Act of 1977 (NPPA) (Fish & Game Code §§1900-1913) generally parallel the main provisions of the Federal Endangered Species Act and are administered by the California Department of Fish and Game.

E Endangered: a species of plant, fish, or wildlife which is "in serious danger of becoming extinct throughout all, or a significant portion of its range." This designation is limited to species or subspecies native to California. (CESA)

T Threatened: a native species or subspecies of a bird, mammal, fish amphibian, reptile or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts. (CESA)

R Rare: (applies to plants only) a species, subspecies, or variety is rare when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. (This designation was replaced by "threatened" for all animal species in 1985) (NPPA)

CDFG - The Wildlife Branch, Nongame Wildlife Program is responsible for producing and updating SSC publications for mammals, birds, reptiles, and amphibians. The Fisheries Branch is responsible for updates to the Fish Species of Special Concern document.

SSC: Species of Special Concern; native species not having state or federal Threatened or Endangered Species status, but thought to warrant monitoring due to declining population numbers. (Includes those species tracked in the CNDDB but not given any other special status.)

FP: Fully Protected; The classification of Fully Protected was the State's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds and mammals. Most of the species on these lists have subsequently been listed under the state $^{and}/_{or}$ federal endangered species acts. The Fish and Game Code sections dealing with Fully Protected species state that these species "....may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected" species, although take may be authorized for necessary scientific research. This language arguably makes the "Fully Protected" designation the strongest and most restrictive regarding the "take" of these species. In 2003 the code sections dealing with fully protected species were amended to allow the Department to authorize take resulting from recovery activities for state-listed species.

WL: Watch List. The species warrants further monitoring and review, but no actions or legal protection are given.

NatureServe – The California Department of Fish and Game maintains the California Natural Diversity Database (CNDDB) in conjunction with NatureServe to help drive conservation decisions, aid in the environmental review of projects and land use changes, and provide baseline data helpful in recovering endangered species and for research projects. NatureServe ranks are shorthand formulas that provide information on the rarity of a species or subspecies, both throughout its global range and its range within the State.

GLOBAL RANKS*: Worldwide status of a full species: G1 to G5

G1 = Extremely endangered: <6 viable occurrences (EO's) or <1,000 individuals, or < 2,000 acres of occupied habitat
G2 = Endangered: about 6-20 EO's or 1,000 - 3,000 individuals, or 2,000 to 10,000 acres of occupied habitat
G3 = Restricted range, rare: about 21-80 EO's, or 3,000 – 10,000 individuals, or 10,000 – 50,000 acres of occupied habitat
G4 = Apparently secure; some factors exist to cause some concern such as narrow habitat or continuing threats
G5 = Demonstrably secure; commonly found throughout its historic range

STATE RANKS*: Statewide status of a full species or a subspecies: S1 to S5

Same general definitions as global ranks, but just for the range of the taxa within California.

T-RANKS*: Status of a subspecies throughout its range: T1 to T5

A subspecies is given a T-rank. This is attached to the G-rank for the full species. The S-rank, in this case, will refer to the status of the subspecies within California. The T-rank has the same general definitions as the global ranks.

* Uncertainty about the rank of an element is expressed in two major ways: by expressing the rank as a range of values (e.g., S2S3 means the rank is somewhere between S2 and S3) or by adding a ? to the rank (eg., S2? Indicates more certainty than S2S3, but less than S2).

Q Questionable taxonomy: Taxonomic distinctiveness of this entity at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or the inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority conservation priority.

CNPS – The California Native Plant Society tracks the conservation status of hundreds of plant species and maintains the CNPS *Inventory of Rare and Endangered Plants of California*. The CNPS Rare Plan Program's data are widely accepted as the standard for information on the rarity and endangerment status of the California flora.

1A CNPS Priority List 1A: plant presumed extinct in CA.
1B CNPS Priority List 1B: plant Rare, Threatened, or Endangered in CA and elsewhere; eligible for state listing.
2 CNPS Priority List 2: plant rare, threatened, or Endangered in CA, but more common elsewhere; eligible for state listing.
3 CNPS Priority List 3: more information is needed about this species; some eligible for state listing.
4 CNPS Priority List 4: on watch list for plants of limited distribution.

The CNPS Threat Rank is an extension added onto the CNPS List and designates the level of endangerment by a 1 to 3 ranking as follows:

.1 - Seriously threatened in California (high degree/immediacy of threat)
.2 - Fairly threatened in California (moderate degree/immediacy of threat)
.3 - Not very threatened in California (low degree/immediacy of threats or no current threats known)

Other Organizations

ABC: Green list - The American Bird Conservancy Green List contains all the highest priority birds for conservation in the continental U.S. and Canada. It builds on the species assessments conducted for many years by Partners in Flight for land birds and expands it to include shorebirds, waterbirds, and waterfowl.

BLM: S - Bureau of Land Management Sensitive. BLM Manual §6840 defines sensitive species as"…those species that are (1) under status review by the FWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing my become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats." Existing California-BLM policy concerning the designation of sensitive species identifies two conditions that must be met before a species may be considered as BLM sensitive: (1) a significant population of the species must occur on BLM-administered lands, and (2) the potential must exist for improvement of the species' condition through BLM management. The "Sensitive Species" designation is not meant in include federally listed species, proposed species, candidate species or State listed species. It is BLM policy to provide sensitive species with the same level of protection that is given federal candidate species.

FS: S – Forest Service: Sensitive: The USDA Forest Service defines sensitive species as those plant and animal species identified by a regional forester that are not listed or proposed for listing by the federal Endangered Species Act for which population viability is a concern, as evidenced by significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

FWS: BCC - Fish and Wildlife Service: Birds of Conservation Concern: The goal of the Birds of Conservation Concern 2002 report is to accurately identify the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent our highest conservation priorities and draw attention to species in need of conservation action.

IUCN - The World Conservation Union, through its Species Survival Commission assess, on a global scale, the conservation status of species, subspecies, varieties, and even selected subpopulations in order to highlight taxa threatened with extinction, and therefore promote their conservation.

DD Data Deficient: inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution $^{and}/_{or}$ population status.
EN Endangered: faces very high risk of extinction in the wild
LC Least Concern: does not qualify for Critically Endangered, Endangered, Vulnerable, or Near Threatened.
LR/LC Lower Risk: has been evaluated and does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Subcategory: Least Concern (taxa which do not qualify for Conservation Dependent or Near Threatened).
LR/NT Lower Risk: has been evaluated and does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Subcategory: Near Threatened (taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable).
NT Near Threatened: is close to qualifying for or is likely to qualify for a threatened category in the near future.
VU Vulnerable: faces high risk of extinction in the wild.

There is an additional hierarchical alphanumeric system of criteria and subcriteria for those species that qualify as Threatened (eg.VU/B1+2c). Please refer to *The IUCN Red List of Threatened Species 2001 Categories and Criteria (v. 3.1)* for further details (http://www.redlist.org/).

WBWG - The Western Bat Working Group is comprised of agencies, organizations and individuals interested in bat research, management and conservation from the 13 western states and Provinces of British Columbia and Alberta, and Northern Mexico.

High (H) Priority: Species considered the highest priority for funding, planning, and conservation actions based on species distribution, status, ecology and known threats (Imperiled)

Medium (M) Priority: Species that warrant closer evaluation, more research, and conservation actions of both the species and possible threats, generally due to a lack of meaningful information about the species.

Low (L) Priority: Current information indicates that the population is stable and major changes in status in the near future are unlikely, although there may be localized concerns and conservation actions would still apply.

Xerces - The Xerces Society Red list of pollinators. The Xerces Society is an international non-profit organization dedicated to protecting biological diversity through invertebrate conservation.

CI Critically Imperiled: At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

Note: range designations for plant species in the species accounts follow the Jepson Manual designations.

Sensitive Plant Species & the Project Site

The following discussion provides a brief summary of the results of detailed analysis made for each of the sensitive plant species known to occur in the vicinity of the project site. Only the plant species that occur, are possible, or whose absence cannot be confirmed are discussed. For the other species that are presumed not to occur in the project site, their absence is due to the lack of the necessary vegetation communities and habitat elements that are typically associated with the species. For a more complete analysis of all the species please refer to **Appendix 2**.

No plant species listed as Rare, Threatened, or Endangered was found on the project site and none are expected to occur. Other plant species included in the California Natural Diversity Database, while not directly protected by State or Federal law, are considered sensitive and are listed by other recognized organizations, primarily the California Native Plant Society.

White Rabbit Tobacco – Possible on the Project Site

The species is possible onsite because the site does have the vegetation communities and habitat elements associated with the species in the sandy wash area in the northwest portion of the property. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site.

Plummer's Mariposa Lily – Possible on the Project Site

Although the species was not observed during the surveys of the project site, or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site, the site does have the vegetation communities and habitat elements associated with the species. Additionally, nine (9) occurrences of the species have been recorded in the CNDDB within 12 miles of the project site, with the nearest populations located approximately 4 miles to the east and 4 miles to the north.

Sensitive Wildlife Species & the Project Site

The following discussion provides a brief summary of the results of detailed analysis made for each of the sensitive wildlife species known to occur in the vicinity of the project site. Only the wildlife species that occur, are possible, or whose absence cannot be confirmed are discussed. For the other species that are presumed not to occur in the project site, their absence is due to the lack of the necessary vegetation communities and habitat elements that are typically associated with the species. For a more complete analysis of each species please refer to **Appendix 2**.

No wildlife species listed as Rare, Threatened, or Endangered was located on the project site, but one (1) federally listed Threatened species, coastal California gnatcatcher, is possible.

Coastal California Gnatcatcher – Possible on the Project Site

Although the species was not observed during the surveys of the project site, coastal sage scrub dominated by California sagebrush does occur onsite that could be utilized by the species. Four (4) occurrences of the species have been recorded in the CNDDB within 10 miles of the project site, with the nearest occurrences located approximately 1.5 miles to the east. Additionally, the USFWS has designated several units of critical habitat for the species that are within 2.5 miles of the site. See **Figure 5**.

Other wildlife species included in the California Natural Diversity Database, while not directly protected by State or Federal law, are considered sensitive and are listed by other recognized organizations, primarily the California Department of Fish and Game.

Allen's Hummingbird, Southern California Rufous-crowned Sparrow, & Lark Sparrow – Occur on the Project Site

The three (3) species were observed on the project site during the surveys and habitat is available onsite for nesting for each species.

Sharp-shinned Hawk – Occurs as a Transient on the Project Site

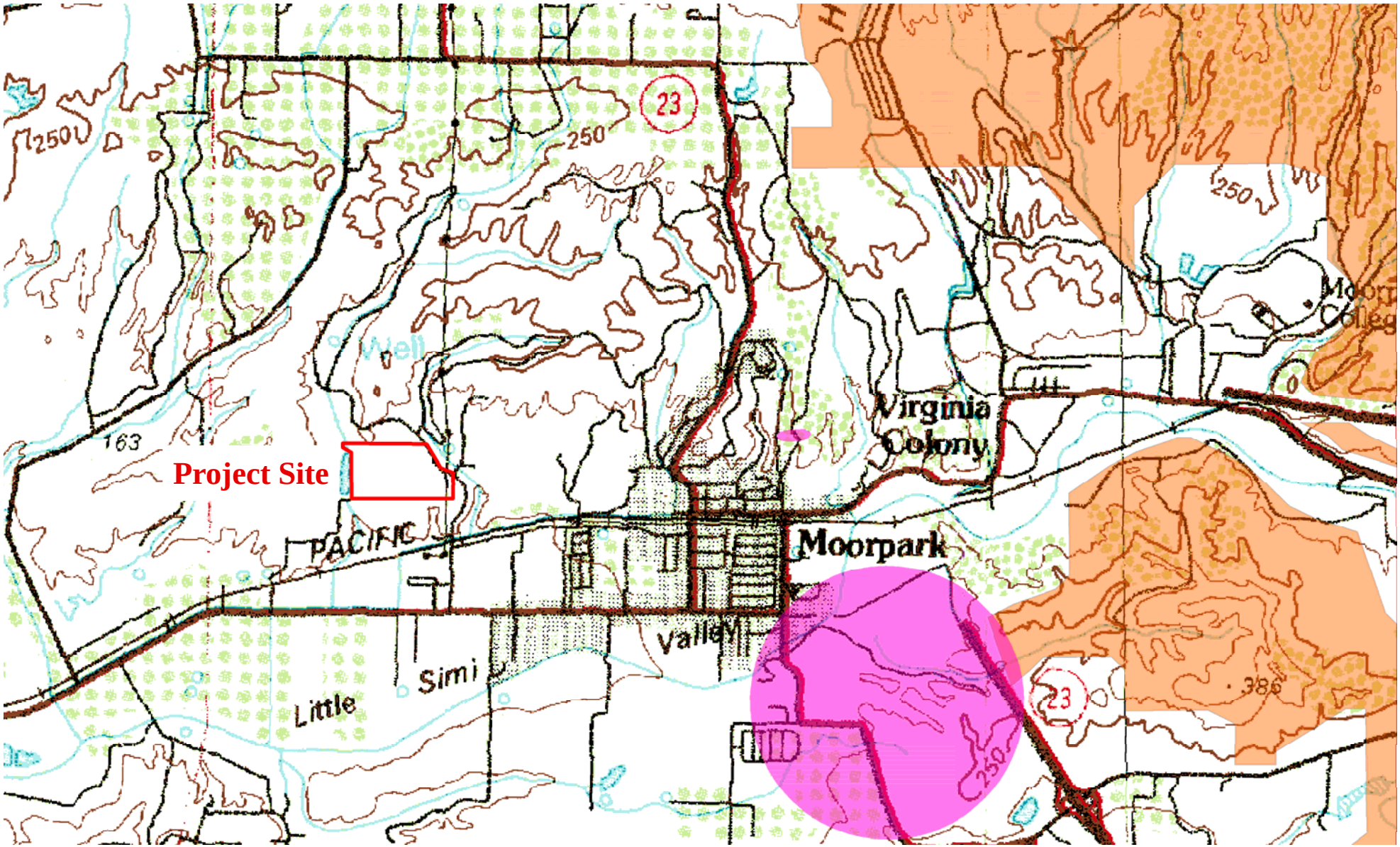
The species was observed foraging over the site during surveys; however, the lack of dense riparian woodland habitat makes it very unlikely that the species would nest onsite.

Cooper's Hawk – Occurs as a Transient on the Project Site

The species was observed foraging over the site during surveys; however, the lack of dense woodland habitat makes it unlikely that the species would nest onsite.

Western Spadefoot – Possible on the Project Site

Although the species was not observed during the surveys of the project site, the weather conditions during the surveys were not conducive for the species to be active aboveground. The species may possible occur in the unnamed wash and associated upland areas in the northwest corner of the site. the species has been recorded in the Arroyo Simi watershed and water flow in the unnamed wash on the northwest corner of the site could establish pools that the species could use for breeding. The species would not be active except during a season of exceptional rainfall that allowed temporary pools to persist for 3 to 6 weeks. Additionally, three (3) occurrences of the species have been recorded in the CNDDB within 8 miles of the project site, with the nearest located approximately 3.5 miles to the northeast.



Coastal California Gnatcatcher Occurrences from the CNDDB

USFWS Designated Critical Habitat for Coastal California Gnatcatcher

Recorded Coastal California Gnatcatcher Occurrences and Designated Critical Habitat

Source: CDFG, USFWS, and USGS

Baher Property
A.P.N. 5110-190-285 and -305

0 0.25 0.5 1 Miles

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LDC ENVIRONMENTAL

Coast (San Diego) Horned Lizard – Possible on the Project Site

Although the species was not observed during the surveys of the project site, the temperatures during the surveys were not conducive for reptile activity. The species may possible occur in the unnamed wash on the northwest corner of the site. Additionally, four (4) occurrences of the species have been recorded in the CNDDB within 8 miles of the project site in similar habitat, with the nearest located approximately 4 miles to the northeast.

Coast (California) Horned Lizard – Possible on the Project Site

Although the species was not observed during the surveys of the project site, the temperatures during the surveys were not conducive for reptile activity. The species may possible occur in the unnamed wash on the northwest corner of the site. Additionally, one (1) occurrence of the species has been recorded in the CNDDB within 5 miles to the east of the project site in similar habitat. Note: Brattstrom (1997) found *Phrynosoma coronatum blainvillei* and *Phrynosoma coronatum frontale* to be synonyms of *Phrynosoma coronatum*. The subspecies are no longer recognized in the scientific domain, but are listed separate in this report to be in concurrence with the CDFG's listing of both subspecies.

Coastal Western Whiptail – Possible on the Project Site

Although the species was not observed during the surveys of the project site, the temperatures during the surveys were not conducive for reptile activity. The species may possibly occur in the unnamed wash on the northwest corner of the site. Additionally, four (4) occurrences of the species have been recorded in the CNDDB within 12 miles of the project site in similar habitat, with the nearest located approximately 5 miles to the east.

White-tailed Kite & Golden Eagle – Possible as Transients on the Project Site

The two (2) species may forage on the site as transients, but they are unlikely to nest onsite due to a lack of appropriate habitat.

Hoary Bat, Western Small-footed Myotis, Pallid Bat, & Western Mastiff Bat - Possible as Transients on the Project Site

The four (4) species were not observed roosting in the abandoned structures and trees onsite and the site lacks rocky areas with crevices that could be used. It is possible for the species to forage on the site due to the occurrence of roosting habitat in the vicinity of the project site.

Sensitive Vegetation Communities & Habitats & the Project Site

Coastal Sage (Chaparral) Scrub, Mule Fat Scrub, and Scalebroom Scrub (Southern Alluvial Fan Scrub) – Occurs on the Project Site

See the description for these vegetation communities on pages 6 and 10.

Wildlife Movement Corridors & Habitat Linkages

The term "wildlife movement corridor" implies a continuous unidirectional movement of individual animals. While wildlife movement corridors may sometimes be utilized in this way, the most important functions of a wildlife movement corridor are the long term dispersal of genetic material between population centers and the maintenance of balanced, viable populations in these areas. The term "habitat linkage" better characterizes this concept. The term habitat linkage has been described as "an undisturbed habitat parcel which connects two or more reserve parcels (generally public land holdings) with habitat suitable for movement of mobile terrestrial organisms between the reserve parcels. These linkages must be conceived as large 'planes' of habitat rather than as narrow travel routes, which offer the greatest possible potential of facilitating short- and long-term wildlife movement between parcels. The habitat linkages serve to both permit movement between isolated populations and maintain an integrated, functioning landscape-wide ecosystem (Lieberstein et al. 1987).

The reason that the preservation of habitat linkages is desirable is based on the concept of island biogeography. According to this concept, an isolated area of land (island) of a given size, and at a specific distance from a species source (mainland), can support a specific number of species at equilibrium. Many studies have indicated that, in general, habitat (or island) size is the most important factor in determining land vertebrate species diversity (Adams and Dove 1989). If an isolated area contains more species than it can support at equilibrium, species extinctions will occur within the area until equilibrium is reached. Habitat linkages can serve to greatly increase the effective size of an otherwise isolated parcel of land by linking it to other isolated parcels. These linkages will allow for an increase in species diversity disproportionate to the area involved. The main purpose of corridors (habitat linkages) is to permit a continuous exchange of individuals and genes for species that will not cross degraded or developed habitat, thereby preventing degradation of genotypes and eventual extinctions (Frankel and Soule 1981).

Habitat linkages can generally be described as coming in three types which reflect temporal usage of the linkage: short-term, intermediate-term, and long-term. Frequently these temporal designations coincide with the size of biological unit being considered. In general, the smaller and less mobile the biological unit (animal, plant, etc.) considered, the longer term and more stable a linkage is required for effective utilization. For example, a large mammal may cross a habitat linkage area in a short time whereas a smaller species may require an entire lifetime, or even several generations, to cross a similar area. Habitat linkages are important for the free movement of animals between population centers, for access to food and water sources during drought, as escape routes

from brush fires, and, in the longer term, for dispersal of genetic traits between population centers.

In general, habitat linkages consist of a strip of land that connects two or more larger land areas and is free of barriers which would seriously curtail or prevent wildlife passage. Their value depends upon width, habitat type, and structure, nature of surrounding habitat, human use patterns, and other factors. Typically, a wildlife corridor provides refuge and ease of movement, and often follows ridgelines or drainages. Several factors contribute to the usefulness of a wildlife pathway. Most important is vegetative cover; this allows wildlife to remain hidden while moving, which is very important for an animal's feeling of comfort, especially for prey species. Another factor is a natural substrate on which to walk; most animals prefer a surface with which they are familiar and where they can get traction if they need to make a hurried escape. The presence of varied terrain features such as streamcourses and ridgelines provides suitable habitats for a larger number of species. Food and water availability are also important factors to a habitat linkage. In southern California water is often the goal toward which wildlife moves, and preserving the ability of wildlife to reach water is an important part of maintaining the integrity of a natural area.

When a habitat linkage is thought of in linear terms, or as a corridor, width is often the most important factor in determining the value of the linkage. A wider corridor has a better chance of being used by a larger number of species; therefore, the guiding principal is the wider, the better (Noss 1987). A 1,000 foot wide corridor was chosen by Lieberstein as the minimum width for effective corridor utilization (1989). Another report states that in areas of low density housing (1 house per 10 acres) the absolute minimum corridor (habitat linkage) width should be no less than 1,600 feet of natural vegetation and topography (Temple and Cary 1988). The Santa Monica Mountains Conservancy says that, "there needs to be enough quality and quantity of habitat available along the length of the corridor to allow for an adequate exchange of the full range of desired species"(Edelman 1991). Statements or rules regarding the required width of an effective habitat linkage are hard to support because little scientific study has been done to substantiate any minimum effective width. One reason little study has been done is that, to determine the long term effects of relative levels of genetic isolation would require a study lasting for many generations of the species in question and involving many areas of similar habitat with dissimilar habitat linkages.

Rather than subscribing to rules regarding the minimum width of an effective corridor, several principles alluded to earlier should be followed:

- The most important principle is to include as wide an array of habitat and terrain types as possible. Habitat and terrain are listed together because they so frequently coincide; i.e. riparian habitat is found in canyon bottoms and oak woodlands are frequently found on north facing slopes. Vegetationally intact ridges and canyon bottoms are the most important topographic features to include as they are the most frequently used natural wildlife pathways.

- The habitat types included in the linkage should be contiguous with the same habitats on the reserve parcels. This will allow wildlife to move into the linkage without crossing unfamiliar habitats.

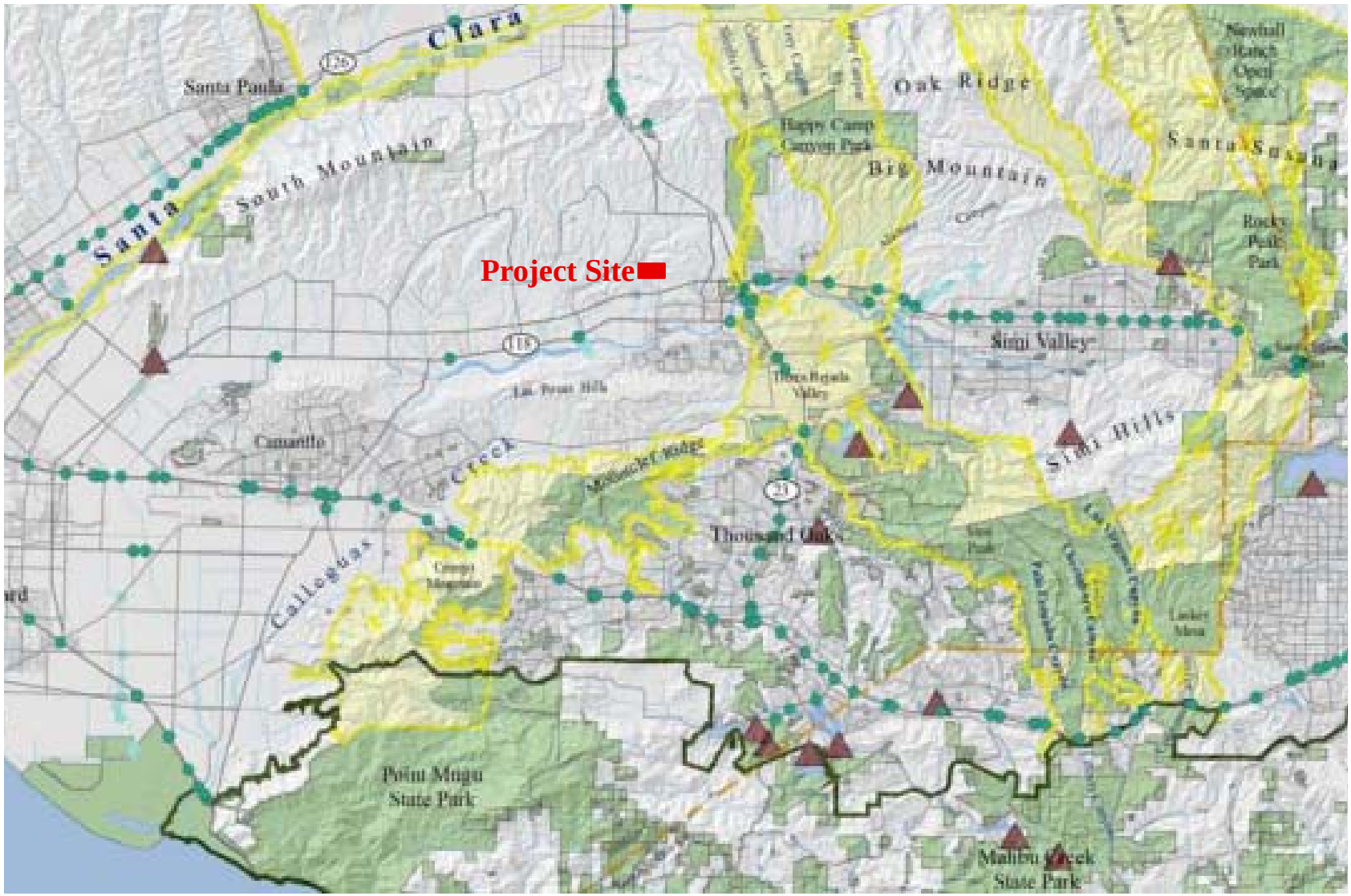
- Riparian areas are the most significant components of a viable habitat linkage. Almost all wildlife utilizing a habitat linkage will require water.

For maximum ecological benefit, habitat linkages should be composed of an entire watershed. An entire watershed is likely to contain the greatest selection of the components discussed previously.

Wildlife Movement Corridors & Habitat Linkages & the Project Site

The local area that the project is located in has been drastically altered due to the establishment of agricultural businesses (primarily citrus orchards) and residential communities that have fragmented the landscape. This has created a disjunction between the undeveloped portions of Oak Ridge in the north and the Las Posas Hills in the south; the largest remaining open spaces in the immediate area. The wash of the unnamed blueline stream that runs through the northwest corner of the project site could potentially be used by wildlife, but the stream's southern terminus (where it flows into a concrete channel) is just south of the site and does not connect to an open space area. A residential area to the east and orchards to the west limit travel in either direction.

On a regional level, the project site does not provide connectivity to the two largest expanses of open space: the Los Padres National Forest in the Sierra Madre Mountains to the north and the Santa Monica Mountains National recreation Area to the south. The South Coast Missing Linkages Project did not include the project site and the area that it is in as a potential connection between these two large undeveloped areas (Penrod et al. 2006). The nearest potential linkage between the two areas was found to be approximately 2 miles east of the project site in Happy Camp Canyon (Penrod et al. 2006). See **Figure 6.**



Linkage Design
Protected Lands
Bridges/Culverts
Dams

N

Regional Wildlife Corridors in the Vicinity of the Project Site

Source: Penrod et al. 2006

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REGULATORY SETTINGS

Jurisdictional Waters & Habitats – Waters of the US, Waters of the State, & Riparian Habitats

Formal jurisdictional delineations were not conducted on the project site as a part of this biological resources evaluation, but two definable drainages are found onsite (see **Figure 7**). The wash of the unnamed, ephemeral blueline stream in the northwest corner is part of larger system which drains a portion of the East Las Posas watershed. The wash has been mapped as an intermittent streambed in the USFWS National Wetlands Inventory, 2007. The stream flows into a retention basin that is just west of the project site and then is directed into a concrete flood control channel. The channel continues for approximately 1.5 miles to the southeast until it connects with the Arroyo Simi/Arroyo Las Posas system. These systems then connect with Calleguas Creek, which flows into the Pacific Ocean at Mugu Lagoon.

The second drainage system on the project site consists of a small, ephemeral stream that has eroded an incised channel, which runs from north to south in the middle of the property. The source of water for this system is natural runoff from a watershed that drains a small area north and the eastern portion of the site. Nuisance water from the single-family homes, horse stables, and orchard operations to the north of the site also contribute to the system. The incised channel terminates just south of the project site, with water continuing as sheet-flow.

If necessary, jurisdictional delineations would be conducted and would be used to apply for the USACE Section 404 permit, CRWQCB's Section 401 Water Quality Certification $^{\text{and}}/_{\text{or}}$ a Report of Waste Discharge under California Water Code Section 13260, and a Streambed Alteration Agreement as required by California Fish and Game Code Sections 1600 through 1616.

Waters of the US

Under provisions of the Clean Water Act (CWA), the ACOE administers the day-to-day activities required by Section 404. These include the individual permit decisions, jurisdictional determinations, developing policy and guidance, and enforcing provisions of Section 404. In 2006, the Supreme Court addressed the jurisdictional scope of Section 404 of the CWA, specifically the term "the waters of the U.S.," in their decisions on *Rapanos v. U.S.* and in *Carabell v. U.S.* (hereafter referred to as Rapanos). The following is taken from the *Jurisdictional Determination Form Instructional Guidebook* issued in May 2007:

> The decision provides two new analytical standards for determining whether water bodies that are not traditional navigable waters (TNWs), including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction: (1) if the water body is relatively permanent, or if the water body is a wetland that directly abuts



Onsite Drainages *

USFWS National Wetlands Inventory 2007

* The size of the onsite drainages have been approximated from the aerial, not from formal jurisdictional delineations.

0 125 250 500 Feet

N

Onsite Drainages

Source: Land Design Consultants, Inc.

Baher Property

A.P.N. 5110-190-285 and -305

LDC ENVIRONMENTAL

(e.g., the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent water body (RPW), or (2) if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with TNWs. CWA jurisdiction over TNWs and their adjacent wetlands was not in question in this case, and, therefore, was not affected by the *Rapanos* decision. In addition, at least five of the Justices in *Rapanos* agreed that CWA jurisdiction exists over all TNWs and over all wetlands adjacent to TNWs.

As a consequence of the U.S. Supreme Court decision in *Rapanos*, the EPA and the Corps, in coordination with the Office of Management and Budget (OMB) and the President's Council on Environmental Quality (CEQ), developed the Memorandum Regarding Clean Water Act Jurisdiction Following *Rapanos v. United States*. This guidance requires the application of the two new standards described above, as well as a greater level of documentation, to support an agency jurisdictional determination (JD) for a particular water body. Furthermore, this guidance required the Corps and EPA to develop a revised JD form to be used by field staff for documenting assertion or declination of CWA jurisdiction.

The Memo states that the agencies will assert jurisdiction over the following categories of water bodies: TNWs; all wetlands adjacent to TNWs; non-navigable tributaries of TNWs that are relatively permanent (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally); and wetlands that directly abut such tributaries. In addition, the agencies will assert jurisdiction over every water body that is not an RPW if that water body is determined (on the basis of a fact-specific analysis) to have a significant nexus with a TNW. The classes of water body that are subject to CWA jurisdiction only if such a significant nexus is demonstrated are: non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, $^{and}/_{or}$ biological, integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands.

Waters of the US & the Project Site

Formal jurisdictional delineations were not conducted on the project site as a part of this biological resources evaluation, but two definable drainages are found onsite. The unnamed, ephemeral blueline stream in the northwest corner is a non-RPW that flows indirectly into a TNW. The stream is a tributary of Arroyo Las Posas, which is a tributary to Calleguas Creek, which in turn is a tributary to the Pacific Ocean (a navigable water of the United States). A jurisdictional determination is needed to establish if the blueline stream has a significant nexus with the TNW. If the nexus determination is

established, then the blueline stream would be considered a Waters of the US and would require an individual Section 404 permit from the USACE.

The smaller ephemeral stream with the incised channel consists of swales and erosional features (e.g., gullies, small volume, infrequent, or short duration flow), which the USACE does not usually assert jurisdiction over.

Waters of the State

The California Regional Water Quality Control Board (CRWQCB) regulates discharge of waste in any region that could affect the Waters of the State under the California Porter-Cologne Water Quality Act or Waters of the US under Section 401 of the Federal Clean Water Act. Under the Porter-Cologne Act, a Report of Waste Discharge must be submitted prior to discharging waste, or proposing to discharge waste, within any region that could affect the quality of the Waters of the State (California Water Code Section 13260). Waste Discharge Requirements (WDRs) or a waiver of WDRs will then be issued by the CRWQCB. Waters of the State are defined as any surface water or groundwater, including saline waters, which are within the boundaries of the state (California Codes: Public Resource Code Section 71200). This differs from the Clean Water Act definition of Waters of the US by its inclusion of groundwater and waters outside the ordinary high water mark in its jurisdiction. While all Waters of the US also fall under the category of Waters of the State, some Waters of the State may be identified beyond the delineation of Waters of the US, and the CRWQCB may exert authority to regulate waste discharge into these waters even if the waters do not fall under USACE Federal jurisdiction.

All projects that have a federal component and may affect Waters of the US, including those that require a Section 404 permit from the USACE, must also comply with Section 401 of the Clean Water Act. If discharge into Waters of the US is being proposed, a 401 water quality certification from the CRWQCB is required (Sections 3830 through 3869, Title 23 of the California Code of Regulation) in addition to obtaining WDRs for impacts to Waters of the State.

<u>Waters of the State & the Project Site</u>

Formal jurisdictional delineations were not conducted on the project site as a part of this biological resources evaluation, but two definable drainages are found onsite. The need to acquire a 401 water quality certification $^{and}/_{or}$ WDR is dependent on the USACE's jurisdictional determination of the unnamed blueline stream and whether or not CRWQCB takes jurisdiction of either of the two drainages.

Riparian Habitats

The California Department of Fish and Game asserts jurisdiction over the bed and bank of a river, stream, or lake and associated wildlife and habitats as established in California Fish and Game Code Sections 1600-1616. In accordance with Section 1602 of the Code, the CDFG regulates activities which will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake" and requires notification prior to such activities. In addition, Section 1603 of the Code states that "after the notification is complete, the department shall determine whether the activity may substantially adversely affect an existing fish and wildlife resource" and a Streambed Alteration Agreement may be pursued. These regulations were established to protect the wildlife resources that are associated with the riparian habitats that occur within and adjacent to ephemeral to year-round drainage systems.

Riparian Habitats & the Project Site

Formal jurisdictional delineations were not conducted on the project site as a part of this biological resources evaluation, but two definable drainages are found onsite. The unnamed, ephemeral blueline stream and the small, ephemeral incised stream both have definable beds and banks. The small stream has plant species (mule fat and Pacific willow) and vegetation communities (mule fat scrub) that are typically associated with riparian habitats that the CDFG asserts jurisdiction over, so a Streambed Alteration Agreement must be obtained.

Endangered Species Act

The Federal Endangered Species Act (ESA) provides a program for the conservation of plants and animals, and their associated habitat, whose populations have declined to levels that jeopardize the species' existence. The USFWS maintains a worldwide list which, as of Feb. 20, 2008, included 1574 endangered species and 351 threatened species. Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees. The law requires federal agencies, in consultation with the USFWS $^{and}/_{or}$ the U.S. National Oceanic and Atmospheric Administration Fisheries Service, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a "taking" of any listed species of endangered plants or wildlife.

The following is quoted from Christman and Albrecht (1999):

> The Endangered Species Act (ESA) of 1973 protects plants and animals that are listed by the federal government as "endangered" or "threatened." Two sections, § 7 and § 9, are central. ESA § 9 makes it unlawful for anyone to "take" a listed animal, and this includes significantly modifying

its habitat. This applies to private parties and private land; a landowner is not allowed to harm an endangered animal or its habitat on his property.

Section 7 applies not to private parties but to federal agencies, but it covers their issuing permits for private activities, such as § 404 permits issued by the Corps of Engineers to applicants who want to do construction work in waters or wetlands. Specifically, § 7 imposes an affirmative duty on federal agencies to ensure that their actions (including permitting) are not likely to jeopardize the continued existence of a listed species (plant or animal) or result in the destruction or modification of critical habitat. See 50 C.F.R. § 402.01(a). Both § 7 and § 9 allow "incidental" takes, but only with a permit.

The ESA is enforced by the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Services (NMFS). In the Act, "Secretary" refers to the Secretary of Commerce, acting through the NMFS for marine species listed in 50 C.F.R. § 222.23(a) (endangered) and § 227.4 (threatened), or to the Secretary of the Interior, acting through the FWS for other plants and animals (see 50 C.F.R. §§ 17.2(b), 402.01(b)). Also, the Secretary of Agriculture has some authority over the importing and exporting of plants.

Endangered Species Act & the Project Site

One (1) species listed under the ESA, coastal California gnatcatcher (Threatened), is possible on the project site. The USFWS has designated several units of critical habitat for the species that are within 3 miles of the project site.

California Endangered Species Act

The California Endangered Species Act sets forth procedures by which individuals, organizations, or the Department of Fish and Game can submit petitions to the Fish and Game Commission requesting that a species, subspecies, or variety of plant or animal be added to, deleted from, or changed in status on the State lists of rare, threatened or endangered species. The factors that contribute to determining the need to list a species include the present or threatened modification or destruction of habitat, competition, predation, disease, overexploitation by collectors, or other natural occurrences or human-related activities.

The following is quoted from California Wetlands Information System (2005):

> The California Endangered Species Act (CESA) (Fish & Game Code §§2050, *et seq.*) generally parallels the main provisions of the Federal Endangered Species Act and is administered by the CDFG. Under CESA the term "endangered species" is defined as a species of plant, fish, or wildlife which is "in serious danger of becoming extinct throughout all, or

a significant portion of its range" and is limited to species or subspecies native to California. CESA establishes a petitioning process for the listing of threatened or endangered species. The California Fish and Game Commission is required to adopt regulations for this process and establish criteria for determining whether a species is endangered or threatened. The California Code of Regulations, tit. 14 §670.1(a) sets forth the required contents for such a petition.

CESA prohibits the "taking" of listed species except as otherwise provided under State law. Unlike its Federal counterpart, CESA applies the take prohibitions to species petitioned for listing (state candidates). §86 of the Fish and Game Code defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." State lead agencies are required to consult with DFG to ensure that any action it undertakes is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat.

California Endangered Species Act & the Project Site

No plant or wildlife species listed under CESA are assumed to occur on the project site due to the lack of the necessary vegetation communities and habitat elements that are typically associated with the species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 is the primary legislation protecting native birds in the United States and one of this country's earliest environmental laws. It bans "taking" any native birds; "taking" can mean killing a wild bird or possessing parts of a wild bird, including feathers, nests, or eggs.

The following is quoted from United States Fish and Wildlife Service (2005):

> The Migratory Bird Treaty Act (MBTA), originally passed in 1918, implements the United States' commitment to four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The original treaty upon which the MBTA was passed was the Convention for the protection of Migratory Birds signed with Great Britain in 1916 on behalf of Canada for the protection "of the many species of birds that traverse certain parts of the United States and Canada in their annual migration." The primary motivation for negotiation of the 1916 treaty and the passage of the MBTA was to stop the "indiscriminate slaughter" of migratory birds by market hunters and others. The MBTA was subsequently amended as treaties were signed with Mexico (1936, amended 1972 and 1999), Japan (1972), and Russia (1976).

Each of the treaties protects selected species of birds and provides for closed and open seasons for hunting game birds. The MBTA protects over 800 species of birds by implementing the 4 treaties within the United States. The list of migratory bird species protected by the MBTA appears in Title 50, section 10.13, of the Code of Federal Regulations (50 CFR 10.13).

The MBTA provides that it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a permit issued by the Secretary of the Interior. Some regulatory exceptions apply. Take is defined in regulations as: "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect."

Migratory Bird Treaty Act & the Project Site

Migratory birds (including, but not limited the following birds observed onsite: mourning doves, Anna's hummingbird, blue-gray gnatcatcher, and song sparrow) are known to use the types of vegetation communities found on the project site for breeding purposes (Garrett and Dunn 1981). These birds are covered under the MBTA and are protected from unlawful take.

City of Moorpark's Historic Trees, Native Oak Trees & Mature Trees Ordinances

The City of Moorpark has established municipal codes (Chapter 12.12) to protect and preserve, to the greatest extent possible, mature trees, native oak trees and historic trees, especially where such trees are associated with proposals for urban development, as such trees are a significant, historical, aesthetic and valuable ecological resource The provisions of the ordinances apply to all living historic trees, native oak trees and mature trees, including but not limited to, where those trees are associated with proposals for urban development, on all public or private property within the limits of the city. No native oak tree, historic tree or mature tree can be removed, cut down, or otherwise destroyed unless a tree removal permit has been issued by the city. The City defines an "historic tree" as a living tree designated by resolution of the city council as an historic tree because of an association with some event or person of historical significance to the community or because of special recognition due to size, condition, or aesthetic qualities. A "mature tree" is defined as being a living tree with a cross-sectional area of all major stems equaling 72 or more square inches when measured four and one-half (4½) feet above the root crown. A "native oak tree" is defined as a living tree of the genus *Quercus* and species *lobata*, *agrifolia*, *dumosa*, or hybrids thereof (Ord. 101 § 1 (part), 1988).

Where one or more native oak trees, historic trees or mature trees are associated with any

proposal for urban development, the director of community development for the City of Moorpark, or his or her designated representative, shall cause a report to be prepared on those trees, otherwise, tree removals (public and private) shall be processed through the community services department. Where tree(s) are proposed for removal that are associated with a proposal for urban development, the director of community development, or his or her designee, shall cause an appraisal of the value of said tree(s) to be prepared. The director of community development, or his or her designated representative, may waive the requirement for a tree report or may waive the requirement for survey of one (1) or more trees based upon the director's judgment that the tree(s) would have little or no value in that location (Ord. 101 § 1 (part), 1988).

City of Moorpark's Historic Trees, Native Oak Trees & Mature Trees Ordinances & the Project Site

A formal tree survey and report were not conducted on the project site as a part of this biological resources evaluation, but two (2) coast live oaks (*Quercus agrifolia*) and numerous other mature trees with cross-sectional areas of 72 or more square inches (approximately equal to a trunk diameter of 9.5 inches) may occur onsite. See **Figure 8** for the location of the coast live oaks onsite.



Coast Live Oak

0 130 260 520 Feet

N

Onsite Coast Live Oaks

Source: Land Design Consultants, Inc.

Baher Property

A.P.N. 5110-190-285 and -305

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ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

The California Environmental Quality Act (CEQA) requires that agencies examine the potentially significant environmental impacts of projects that they may carry out or approve, and implement all feasible mitigation measures or alternatives that will reduce or avoid such impacts. Under CEQA Guidelines Section 21002, a lead agency can approve a project that may have significant environmental impacts only after 1) adopting all feasible mitigation measures and alternatives that will reduce or avoid the projects potentially significant impacts, and 2) making findings and issuing a "statement of overriding considerations" that "specific economic, legal, social, technological, or other considerations . . . make infeasible the [remaining] mitigation measures or alternatives identified in [an] environmental impact report." Project impacts that may "reduce the number or restrict the range" of rare, threatened or endangered species are per se "significant" for purposes of CEQA analysis.

Threshold of Significance

Thresholds of significance for impacts to biological resources are established by criteria set forth in the California Public Resources Code that implement the policy statement set forth by the State Legislature in Section 21001(c): "Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities…"

From CEQA Guidelines Section 15064.7(a), a threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant.

CEQA Guidelines Section 15065(a) states that a project may have a significant effect if the project has the potential to: substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels,; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species; or eliminate important examples of the major periods of California history or prehistory.

Under CEQA Guidelines Section 15380(c), the terms "endangered," "rare," and "threatened" include species that have been formally listed. In addition, CEQA Guidelines Section 15380(b1) independently defines a species to be "endangered" when "its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors . . . ." CEQA Guidelines Section 15380(b2) independently define a species to be "rare" when "either: (A) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or

a significant portion of its range that it may become endangered if its environment worsens; or (B) The species is likely to become endangered within the foreseeable future throughout all or significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act." In other words, where a species meets CEQA's independent definitions for rarity, a mandatory finding of significance may be required even though the species has no recognizable legal status under CESA, the NPPA or other laws.

Additional criteria from the CEQA Guidelines used to establish if an impact is significant come from Appendix G:

T-1 Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Services.

T-2 Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Services.

T-3 Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

T-4 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

T-5 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

T-6 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Project Impacts & Mitigation Measures

The proposed project development consists of six (6) residential lots; five (5) 5-acre minimum estate lots in the northern portion of the project site and one multi-family lot with 545 units in the southern portion. The project design includes internal streets and associated infrastructure. Adjacent to the south of the project site is the approved North Hills Industrial Park, which is currently under construction. This project includes North Hills Parkway, which will run along the southern boundary of the project site. The proposed North Village Drive, part of a proposed mixed use development to the northwest of the project (A.P.N. 510-0-180-110 and 510-0-190-120), would run along and within the western boundary of the project site.

On a project that is undertaken on mix of developed and undeveloped land, impacts to biological resources are unavoidable. The primary impact of the proposed project would be the direct removal of onsite plant communities and the wildlife habitat that they represent. Degradation of remaining natural areas after project implementation would constitute a secondary project impact. The loss of habitat and sensitive wildlife species is cumulatively significant on a regional level, but the project's contribution to these losses is not significant. There are also instances of specific impacts to sensitive resources that are significant, but would be reduced to less than significant if the proposed mitigation measures are implemented.

There is a potential for secondary impacts to the biotic resources remaining in the open space areas after project completion. These impacts may be direct, such as removal by new residents, or indirect such as the poisoning of native plants with herbicides or fertilizers used in landscaping. Other secondary impacts include degradation of the remaining natural habitats by the new site occupants and their pets, and the introduction of exotic plants into the natural environment through nonnative landscaping. The native vegetation that remains within the planning areas or along the perimeter of the offsite open space areas might be adversely impacted by various project associated grading activities such as deposition of dust on vegetation.

The mitigations proposed for each of the impacts would reduce the impact to less than significant on a project and cumulative level. In conclusion, project implementation would result in no significant unavoidable impacts to biological resources on the project site, because all impacts to biological resources would be mitigated to levels of less than significant.

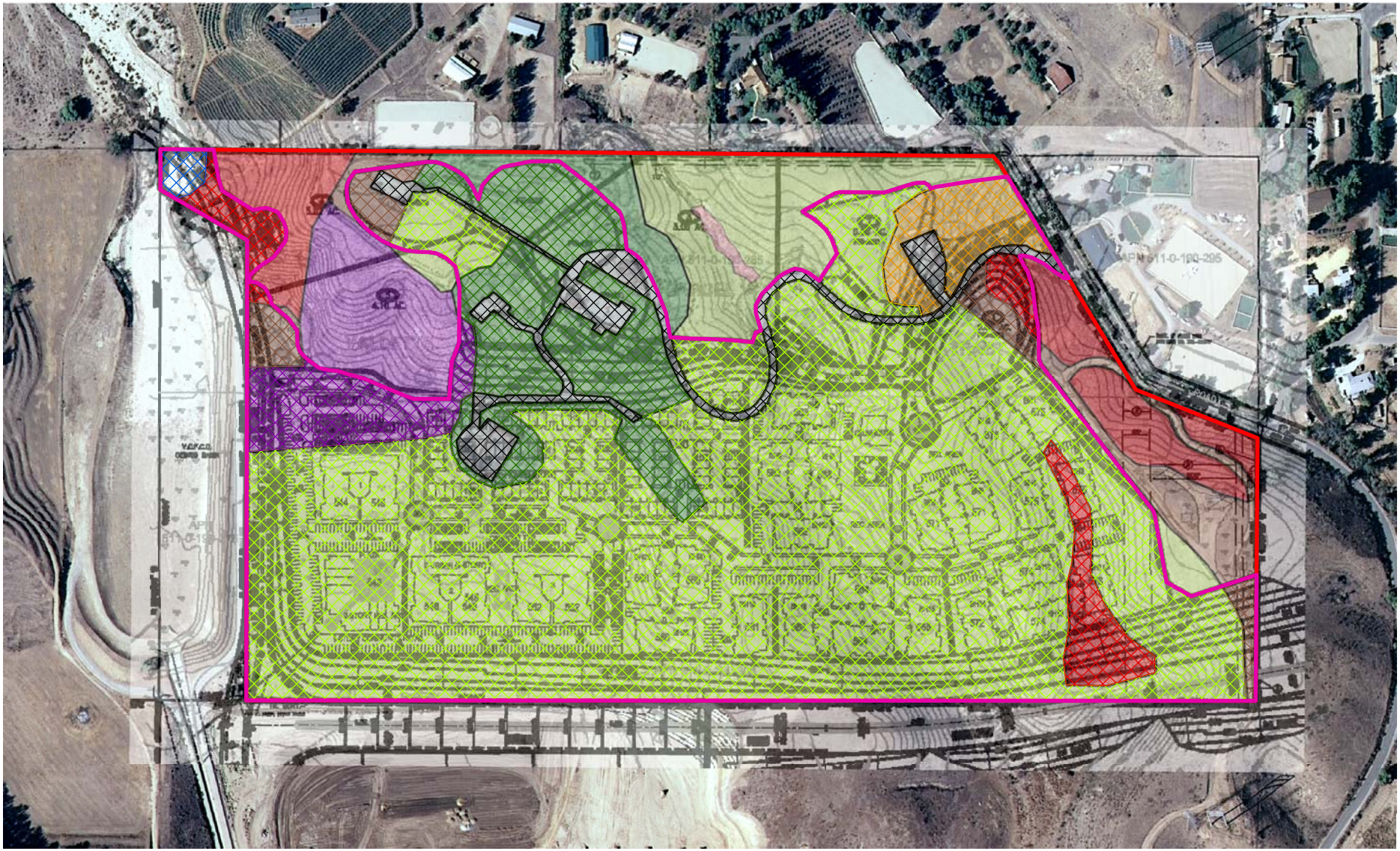
Impacts to Vegetation Communities & Habitats

Impact–1: Proposed project grading activities would permanently impact a total of 53.93 acres of the vegetation communities that are found onsite (See Table 4 for a summary of the impacts and Figure 9 for an exhibit of the areas impacted).

Additional areas may also be impacted in the future due to the need for fuel modification for wildfire safety (in accordance with the City of Moorpark or County of Ventura's standards) $^{and}/_{or}$ landscaping around the estate lots.

Significance Before Mitigation

Coastal sage scrub is not specifically protected in Ventura County; however, resource management agencies recognize the regional decline of this habitat and actively protect it in conjunction with the many sensitive wildlife species that are dependent on the habitat. Losses of coastal sage scrub are considered significant on a project and cumulative level.



Grading Limits

Impacted CSS 2.11 acres

Impacted Ruderal Grassland 1.45 acres

Impacted Landscape 1.51 acres

Impacted Ruderal Grassland with CSS 38.59

Impacted Ruderal Grassland with Landscaping & CSS 5.64 acres

Impacted CSS with Ruderal Grassland 2.00

Impacted SAFS 0.26 acres

Impacted Mule Fat Scrub 0 acres

Impacted Developed 2.22 acres

0 125 250 500 Feet

N

Impacts to Onsite Vegetation Communities

Source: Land Design Consultants, Inc.

Baher Property

A.P.N. 5110-190-285 and -305

LDC ENVIRONMENTAL

The development of the project site would contribute to the incremental loss of open space in the area. Though not significant in itself on the project site, the loss of open space, and each habitat occupying that open space, on the project site contributes to the significant cumulative loss of undeveloped open space in the rapidly expanding southern California suburban areas.

The loss of southern alluvial fan sage scrub and mule fat scrub due to project implementation are addressed under **Impact – 2**.

Table 4: Summary of the permanent impacts due to grading to the vegetation communities onsite.

Community Type	Total Onsite	Amount Impacted	Amount Remaining	Percent Remaining
Coastal Sage Scrub (CSS)	5.60	2.11	3.49	62.3%
Ruderal Grassland	3.34	1.45	1.89	56.6%
Landscaping	1.51	1.51	0	0%
Ruderal Grassland w/ CSS Elements	43.25	38.59	4.66	10.8%
Ruderal Grassland with Landscaping & CSS Elements	6.84	5.64	1.20	17.5%
Coastal Sage Scrub w/ Ruderal Grassland	4.79	2.00	2.79	58.2%
Southern Alluvial Fan Scrub (SAFS)	0.26	0.26	0	0%
Mule Fat Scrub	0.15	0.15	0.15	100%
Developed	2.22	2.22	0	0%
Totals:	67.96	53.93	14.18	20.9%

Mitigation Measure – 1a

In order for any remaining unmodified natural open space within or adjacent to the project site to continue to function as a natural part of the regional ecosystem to the greatest extent possible, the applicant shall develop a management plan for the protection and maintenance of remaining onsite open space areas. The plan shall be incorporated into the CC & R's for the tract and shall contain at least the following elements:

- Goals and Objectives
- Permitted and Prohibited Uses
- Exotic Plant and Animal Management
- Litter Management
- Responsible Parties
- Funding
- Enforcement and Penalties
- Trespass Remediation
- Contingencies

The project's Homeowners Association is expected to be the long-term owner of the any remaining unmodified natural open space and would be responsible for any necessary maintenance.

Mitigation Measure – 1b

To reduce coastal sage scrub loss resulting from fuel modification, a fuel modification zone shall be developed to restrict brush clearance to the minimum distance specified by the Ventura County Fire Department. Clearance distances shall take into account the presence of any block walls used between developable areas and the adjacent native habitat areas.

Mitigation Measure – 1c

Any coastal sage scrub that is remaining after full project development will be preserved and enhanced. Any natural open space areas (excluding areas of mule fat scrub and southern alluvial fan scrub) and not affected by fuel modification requirements will be used for the creation of coastal sage scrub. Details of the proposed restoration and creation efforts and success criteria shall be described in a Mitigation and Monitoring Plan that is to be approved by CDFG prior to implementation.

Mitigation Measure – 1d

To eliminate potential unapproved or offsite grading incidents earth-moving equipment shall be confined to within the approved limits of grading during construction. The limits of grading shall be fenced so that construction equipment does not impact areas outside the approved limits of grading.

Significance After Mitigation

If the proposed mitigation measures are implemented, impacts to coastal sage scrub will be reduced to be reduced to less than significant on a project and cumulative level. Implementation of the mitigation measures will also reduce the project's contribution to cumulative loss of open space and habitats to less than significant.

Impact–2: Proposed project activities would permanently impact streamcourses and habitats that federal and state agencies assert jurisdiction over.

Formal jurisdictional delineations were not conducted on the project site as a part of this biological resources evaluation, but two definable drainages are found onsite. The grading plans for the current project design would impact the wash of the unnamed, ephemeral blueline stream in the northwest corner is part of larger system which drains a portion of the East Las Posas watershed. The alluvial wash of the stream supports southern alluvial fan scrub (scalebroom scrub), which the CDFG considers a high priority for inventory in the CNDDB, due to its rarity and potential threats to known occurrences of the community.

The second drainage system on the project site consists of a small, ephemeral stream that has eroded an incised channel, which runs from north to south in the middle of the property. The grading plans for the current project design would impact the southern portion of this system. A portion of the northern reach of the drainage supports 0.015 acres of mule fat scrub, which the CDFG considers a high priority for inventory in the CNDDB. This portion would not be impacted by grading under the current project design, but could be impacted in the future due to the need for fuel modification for wildfire safety (in accordance with the City of Moorpark or County of Ventura's standards) $^{and}/_{or}$ landscaping around the estate lots

Significance Before Mitigation

Any unmitigated impacts as a result of fill, removal, or discharge to Waters of the State, Waters of the US, $^{and}/_{or}$ CDFG bed and bank and associated riparian habitat are considered significant on a project and cumulative level.

Mitigation Measure – 2

Jurisdictional delineations will be conducted using the methods described in Part IV of *The Corps of Engineers Wetlands Delineation Manual* (1987) and in accordance with CDFG Guidelines. These determinations will be used with the proposed project plans to determine if jurisdictional areas will be impacted by project implementation. These determinations will be used to apply for the USACE Section 404 permit; CRWQCB's Section 401 Water Quality Certification $^{and}/_{or}$ a Report of Waste Discharge under California Water Code Section 13260; $^{and}/_{or}$ a Streambed Alteration Agreement as required by California Fish and Game Code Sections 1600 through 1616.

Conditions for the permit, certification, $^{and}/_{or}$ agreement may require one of the following mitigations:

- The onsite creation of at least an equal amount of equal quality riparian habitat.
- Enhancement of quality onsite riparian habitat, usually on a greater than 1:1 habitat lost to habitat enhanced ratio.
- Creation of offsite riparian habitat where none currently exists.
- Preservation of offsite riparian habitat by direct purchase of payment of an in-lieu fee to the Santa Monica Mountains Conservancy or similar organization.

All mitigation measures involving the creation of riparian habitat should be self-sustaining and utilize natural water supplies.

Significance After Mitigation

If the proposed mitigation measures are implemented, including any conditions required by the USACE, CRWQCB, $^{and}/_{or}$ CDFG, the potential impacts to Waters of the US, Waters of the State, $^{and}/_{or}$ streambed and banks, including any associated riparian habitat, will be reduced to less than significant on a project and cumulative level.

Impact–3: Proposed project activities and the resulting development could potentially cause impacts to downstream waters.

The location of the project site in the Calleguas Creek watershed means that any aspect of project implementation that affects the drainages onsite may also affect the entire downstream riparian community. Indirectly, downstream habitats could be affected by onsite construction and the resulting use of the property, both of which could produce by-products that would eventually impact Calleguas Creek. The result of this could be a significant alteration of the biochemistry of the creek, possibly resulting in a degradation of the watershed's ability to support sensitive and non-sensitive plants and animals. Construction activities and activities associated with the proposed use of the site as storage yard could present several potential sources for water quality degradation in the stream including the following:

Construction activities, especially those involving the mixing of mortar and concrete, often result in the production of substantial quantities of sullied waste water which would seriously pollute the creek if it were to be deposited there.

- Other construction activities that expose the earth and remove vegetation have the potential to increase erosion. Erosion may result in the degradation of downstream water quality, increased siltation, and turbidity.
- In addition to direct impacts like those above, build-out of the project site would have a number of secondary impacts to the watershed. These include a variety of activities that are seemingly innocuous but are ultimately harmful to the environment. The list includes the application of pesticides and fertilizers in landscaping, and the disposal or spillage of cleaning solvents, paints, and automobile fluids (oil, gasoline, etc.) on impervious surfaces. A serious concern over the careless disposal of these chemicals is that their deposition in the ground, or in areas which would run off the site, would eventually lead to the contamination of Arroyo Las Posas and Calleguas Creek. Without mitigation, the buildup of such toxic materials would be harmful to the wildlife that depends on this water source. The buildup of toxic materials may also occur from streets and other paved areas. This would not pose the same threat to the watershed if runoff is filtered prior to being deposited into the Calleguas Creek watershed.

<u>Significance Before Mitigation</u>

These impacts would be significant on an individual project basis and at the cumulative level unless preventative mitigation measures are taken.

<u>Mitigation Measure – 3a</u>

To Prevent Contaminated Wastewater from Entering Downstream Habitats: Designated areas shall be set aside for equipment washing and small batch mixing of concrete or other chemicals. The set aside areas shall be lined with an impermeable liner and all washings or residue shall be collected and properly disposed of following construction.

Mitigation Measure – 3b

To Prevent Downstream Impacts from Runoff and Erosion: A complete Storm Water Pollution Prevention Plan SWPPP shall be prepared, approved by the City, and implemented. Monitoring of the SWPPP measures shall take place monthly during the summer and weekly during the winter. SWPPP measures shall also be checked after each rain event. A monitoring report shall be prepared and presented to the City bi-annually or whenever measures are not being adequately implemented.

Mitigation Measure – 3c

To Prevent Downstream Impact from Development Area Runoff - The first 0.75 inch of rainfall on the site must be captured and treated prior to release into the Arroyo Simi and Calleguas Creek natural watershed. These measures shall limit pollution in Arroyo Simi and further downstream into the Calleguas Creek and the potential negative impact on the sensitive species and other aquatic plant and animals.

- Use permeable materials for parking and driving surfaces where feasible.
- All low flows and first flush runoff from the project site will be filtered $^{and}/_{or}$ treated in a 3-stage extended detention system using mechanical and biological treatments.
- Use biofilters such as a swale or a vegetated strip, where feasible. A swale is a vegetated channel that treats concentrated flow. A street strip (e.g. a parkway) treats flow and is placed parallel to the contributing surface.
- Runoff shall be collected into catch basins with filtration units that remove floating debris, solids, and soluble/insoluble pollutants; such as deflection separator units, oil/water separators, $^{and}/_{or}$ media filters prior to outlet onto natural alluvial areas for infiltration.
- All catch basins and inlets shall be stenciled with "Warning! Drains to Ocean" notes and symbols per NPDES BMP standards, as approved by the Department of Public Works.
- Utilize riprap at the outlets of storm drains, culverts, and conduits to minimize erosion.

Significance After Mitigation

If the proposed mitigation measures are implemented, the downstream impacts from runoff and erosion shall be reduced to a level of less than significant on an individual project basis and the project's contribution to cumulative impacts shall be reduced to a level of less than significant.

Impacts to Protected Plants

Impact–4: Proposed project activities could potentially cause the loss of sensitive plant species.

Implementation of the proposed project activities could potentially result in the loss of individual white rabbit tobacco (CNPS 2.2) and Plummer's mariposa lily (CNPS 1B.2) on the project sites.

Significance Before Mitigation

As the white rabbit tobacco and Plummer's mariposa lily are not specifically protected, the loss of individuals would not violate state of Federal Endangered Species Act or California Fish and Game Code. However, according to CEQA the reduction in numbers of a species that has become sensitive as a result of previous human impacts is considered potentially significant on the project and cumulative level.

Mitigation Measure – 4

Prior to the commencement of the proposed projects activities, a qualified biologist will conduct focused surveys for white rabbit tobacco and Plummer's mariposa lily on the project site where the species may occur. If either of the species are found to occur in the proposed impact area, a report shall be prepared in accordance with the CNPS Botanical Survey Guidelines (CNPS 2001) and submitted to the CDFG prior to commencement of maintenance activities. The report shall recommend measures to avoid significant impacts to populations of the species and offer mitigation to reduce any impacts to less than significant levels. Depending on the abundance of individuals within the proposed impact area, mitigation measures could include a salvage program, which would involve the transplantation and propagation of the species, or acquiring/preserving land with similar population structure.

Significance After Mitigation

If the proposed mitigation measures are implemented, the potential impacts to white rabbit tobacco and Plummer's mariposa lily will be reduced to less than significant on a project and cumulative level.

Impact–5: Proposed project activities could potentially cause the loss of mature trees and coast live oaks.

A formal tree survey and report were not conducted on the project site as a part of this biological resources evaluation, but two (2) coast live oaks (*Quercus agrifolia*) and numerous mature trees with cross-sectional areas of 72 or more square inches (approximately equal to a trunk diameter of 9.5 inches) may occur onsite.

Significance Before Mitigation

The removal of coast live oaks and mature trees would be significant under the City of Moorpark's Municipal Code Chapter 12.12, unless the director of community development, or his or her designated representative, waives the requirement for a tree report and may waive the requirement for survey of one (1) or more trees based upon the director's judgment that the tree(s) would have little or no value in that location (Ord. 101 § 1 (part), 1988).

Mitigation Measure – 5a

If deemed necessary by director of community development, prior to the commencement of the proposed projects activities, a tree survey will be conducted on the project site and a tree report will be prepared. In accordance with Municipal Code 12.12.050 (Urban development proposals—Report guidelines), the tree reports shall be prepared by an arborist, horticulturist, or registered landscape architect who is on a list approved by resolution of the city council. The tree report will contain the following:

- the precise vertical and horizontal location within plus or minus one (1) foot of each mature tree on the subject parcel and the generalized locations of all mature trees within twenty (20) feet of the project boundary.
- Tree type by common name and genus and species;
- The diameter of trunks or main stems as measured four and one-half (4½) feet above the root crown;
- The average spread of each tree;
- A letter grade for the health of each tree. Grades employed shall be "A" for outstanding, "B" for good, "C" for average, "D" for below average;
- A letter grade for the aesthetic quality of each tree employing those grades defined above;
- Disclosure of any significant disease or insect infestations, heart rot, fire, mechanical or wind damage;
- Recommended tree surgery, chemical treatment or other remedial measures intended to improve the health, safety or life expectancy of the tree;
- Appraisal value of each tree which shall be established and provided to the city using the most recent edition of the Guide for Establishing Values of Trees and Other Plants, prepared by the Council of Tree Landscape Appraisers.

Mitigation Measure – 5b

In accordance with Municipal Code 12.12.060 (Urban development proposals—Tree preservation guidelines) the initial project layout, design and grading shall recognize the desirability of preserving native oak trees, historic trees or mature trees with appropriate modifications and adjustments to accommodate preservation and maintenance by locating the best candidates in areas where preservation is feasible. Design of the grading and other improvements shall reflect consideration of the following safeguards:

- Location in minimum growing areas as required by individual species;
- No disruption or removal of structural feeder roots;
- Fencing of trees at or beyond their driplines during grading and construction activities;
- No filling, cutting, development, or compaction of soils within the dripline;
- Such other measures required by the species of tree to be preserved as recommended by the consulting arborist, horticulturist, or landscape architect

According to Municipal Code 12.12.060, the City of Moorpark recognizes that the complete preservation of healthy trees may sometimes be incompatible with normal land developmental considerations. It may not always be practical to preserve all healthy trees on the project site, and therefore, the city and the developer must be willing to compromise the goal of complete tree preservation in order to address other public safety and design concerns. In such instances, the design of the development must address preservation of the most desirable and significant of the healthy trees and the developer is encouraged to utilize creative land planning techniques to achieve this end. Following approval of such a development, the developer shall submit grading, improvement, and precise landscaping plans detailing the approved preservation plan. Such plans shall be approved by the city engineer $^{\text{and}}/_{\text{or}}$ the director of community development, as appropriate.

If the removal of coast live oaks or mature trees is unavoidable under the approved preservation plan, then Mitigation Measure – 5c will be instituted.

Mitigation Measure – 5c

In accordance with Municipal Code 12.12.070 (Tree removal permits-Requirements), tree(s) that are proposed for removal shall be an appraised for the value of the tree(s) using the most recent edition of the Guide for Establishing Values of Trees and Other Plants, prepared by the Council of Tree Landscape Appraisers. The resulting value shall be applied to upgrading the size of tree plantings associated with the project.

Significance After Mitigation

If the proposed mitigation measures are implemented, the potential impacts to mature trees and coast live oaks will be reduced to less than significant on a project and cumulative level.

Impacts to Wildlife

Landscaping around the project site may provide new habitats that could attract some fauna not now present as well as increasing habitat value for some species present or expected onsite. These would principally be introduced species or highly adaptive native species that are tolerant of human disturbance. Among those nonnative species that might experience a population increase caused by the altered environment, and are often considered pests are the Norway rat, house mouse, spotted dove, rock pigeon, European starling, and house sparrow. Those native species that might experience a population increase caused by the altered environment include the northern mockingbird, house finch, and mourning dove.

Impact–6: Proposed project activities could potentially cause the take of the ESA-listed coastal California gnatcatcher.

Although the species was not observed during the surveys of the project site, coastal sage scrub dominated by California sagebrush does occur onsite that could be utilized by the species. Four (4) occurrences of the species have been recorded in the CNDDB within 10 miles of the project site, with the nearest occurrences located approximately 1.5 miles to the east. Additionally, the USFWS has designated several units of critical habitat for the species that are within 2.5 miles of the site.

Significance Before Mitigation

Direct mortality and the loss of their associated habitat of species listed as threatened would be a violation of section 9 of the federal Endangered Species Act (58 Federal Register 65088) and is considered both independently and cumulatively significant.

Mitigation Measure–6a

Directed surveys will be conducted by a 10(a)(1)(A) permitted biologist in accordance with the Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Guidelines, February 28, 1997 (USFWS 1997). The following summarizes the protocols of the directed survey:

- Breeding and non-breeding season survey protocol for presence/absence of coastal California gnatcatchers are as follows:
- From March 15 through June 30, a minimum of six (6) surveys shall be conducted at least one week apart. The protocol for the breeding season was designed to provide a 95% confidence level of detecting coastal California gnatcatchers at a site when they are present.
- From July 1 through March 14, a minimum of nine (9) surveys shall be conducted at least two weeks apart.
- Surveys shall be conducted between 6:00 a.m. and 12:00 p.m. Surveys shall avoid periods of excessive or abnormal heat, wind, rain, fog, or other inclement weather.

- Taped coastal California gnatcatcher vocalizations shall be used only until individuals have been initially located. Tapes shall not be used frequently or to elicit further behaviors from the birds.
- Surveys shall be conducted by slowly walking survey routes. Sites with deep canyons, ridge lines, steep terrain, and thick shrub cover should be surveyed more slowly. Prevailing site conditions and professional judgment must be applied to determine appropriate survey rates and acreage covered per day. These factors may dictate that the maximum daily coverage specified below is not prudent under certain conditions.
- No more than 80 acres (32 ha) shall be surveyed per biologist per day.

The permittee shall provide the following information in a report to the appropriate Service Fish and Wildlife Office, described above, and the California Department of Fish and Game within 45 days following the field surveys.

- The location of the survey area delineated on a 7.5 minute U.S. Geological Survey topographic map at 1:24,000 and 1:200 scale.
- Names of all biologists and associated personnel with reference to their section 10(a)(1)(A) permit number. A complete description of survey methods, including, the number of acres surveyed per biologist per hour and how many total acres surveyed per day per biologist, the number and dates of surveys, start and stop time of surveys, survey routes delineated on maps, the temperature and weather conditions at the beginning and end of each survey, and how frequently taped vocalizations were used.
- Written and mapped qualitative descriptions of plant communities (including dominant species and habitat quality) on and adjacent to the area surveyed.
- The number, age (adult, independent juvenile, dependent juvenile, recently fledged juvenile, nestling, unknown), sex of all coastal California gnatcatchers, and color band information (from top to bottom and from left to right) if any. These data also shall be plotted on 1:24,000 and 1:200 scale maps of the survey area.
- Copies of all reports or other documents that include information gathered under the authority of Service permits (e.g., reports for clients prepared by consulting firm) shall be submitted to the appropriate Service Fish and Wildlife Office immediately upon completion. Raw/field data, notes, and other information resulting form work conducted under this permit shall be submitted to the Service immediately upon request.

If there results of the protocol surveys indicate that the coastal California gnatcatcher is absent from the project site, then no further mitigation measures are necessary. If the species is determined to be present, then Mitigation Measure–6b will be instituted.

Mitigation Measure–6b

If there results of the protocol surveys indicate that the coastal California gnatcatcher is present on or adjacent to the project site such measures to avoid a take of the species shall include:

- Flagging and marking known nest sites.
- Prohibition of demolition, salvaging, and site remediation within specified distances (500 – 1,000 feet) from a nest site between February 15 and August 30.

The project site developer and their biological consultant will coordinate the results of the protocol surveys with the USFWS and CDFG, and shall develop appropriate strategies to compensate for the loss of sage scrub habitat during decommissioning. Removal of coastal sage scrub that has been occupied by the coastal California gnatcatcher shall be compensated at a ratio of 3:1. Depending on whether the USACE exerts jurisdiction, either a Section 7 consultation will be initiated or Section 10 permit application will be filed with the USFWS by the developer. The exact means of compensation would be coordinated with the appropriate agencies, but could include:

- Development of an on-site HCP or participation in an adjacent HCP or NCCP program.
- Restoration of on-site or nearby disturbed areas of coastal scrub.
- Preservation of coastal sage scrub vegetation within the project site $^{and}/_{or}$ within established coastal sage scrub vegetation on nearby sites and incorporation of appropriate conservation easements.
- Conduct Section 7 consultation between USFWS and USACE.

Significance After Mitigation

If the proposed mitigation measures are implemented, the potential impacts to coastal California gnatcatcher will be reduced to less than significant on a project and cumulative level.

Impact–7: Proposed project activities could potentially cause the take of breeding birds onsite and in adjacent offsite areas. This includes sensitive species and birds covered under the Migratory Bird Treaty Act.

Implementation of the proposed project activities could potentially result in impacts to breeding birds, including three (3) sensitive species (Allen's hummingbird, southern California rufous-crowned sparrow, & lark sparrow; listed by various agencies) that utilize the various vegetation communities found on the project site. Two (2) sensitive raptors (sharp-shinned hawk and Cooper's hawk; both are on the CDFG Watch List), red-tailed hawks, red-shouldered hawk, American kestrel, and great-horned owl are known to occur on the project site as transients and may breed in the immediate vicinity. Additionally, several relatively common birds covered under the MBTA are known to breed within the PSA (Garrett and Dunn 1981).

Significance Before Mitigation

Allen's hummingbird, southern California rufous-crowned sparrow, & lark sparrow are not specifically protected and the loss of individuals of these species would not violate state or federal Endangered Species Acts or California Fish and Game Code. However, according to CEQA the reduction in numbers of a species that has become sensitive as a result of previous human impacts is considered potentially significant on the project level and is significant on a cumulative level.

The six (6) species of raptor are protected under Fish and Game Code 3503.5 ("It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto") and the loss of any individuals or the failures of any nests would be significant.

The taking of a nest (either directly or by causing it to fail) of a migratory bird and impacts to areas used for foraging by migratory birds are unlawful according to the Migratory Bird Treaty Act (U.S. Code, Title 16, Chapter 7, Subchapter II, § 703).

Mitigation Measure–7a

If it is feasible, the clearing of vegetation and construction activities will be conducted between August 31st and February 1st, which is outside of the typical breeding/fledging season for the sensitive bird species and migratory birds that may nest on or in the immediate vicinity of the project site.

Mitigation Measure–7b

If clearing of vegetation and construction activities within the selected projects are planned between February 1st and August 31st, then breeding bird surveys will be conducted by qualified biologists at a maximum of two (2) weeks prior to the commencement of activities. Nests and birds exhibiting breeding behavior will be identified within 500 feet of the area to be impacted and efforts will be made (including the creation of appropriate buffers around the nests and areas used by breeding birds, rerouting vehicular traffic, limiting the number of vehicles, the use of non-mechanized tools, etc.) to limit disturbances to the nests. A qualified biologist will monitor the identified nests and birds exhibiting breeding behavior during the duration of the work or until successful fledging occurs, whichever comes first. If the monitor notes that identified birds and nests are being negatively affected by the construction activity, then the buffers will be increased to an appropriate distance to ensure fledging is successful.

After the completion of the construction activities or the completion of onsite breeding activities, a letter report summarizing the work and its affect on the breeding birds will be produced and submitted to the CDFG.

Significance After Mitigation

If the proposed mitigation measures are implemented, the potential impacts to the sensitive species, raptors, and breeding migratory birds will be reduced to less than significant on a project and cumulative level.

Impact–8: Proposed project activities could potentially cause the take of sensitive amphibians and reptiles.

Implementation of the proposed project activities could potentially result in the direct mortality of four (4) sensitive species (western spadefoot, San Diego coast horned lizard, California coast horned lizard, and coastal western whiptail; the first three are listed by the CDFG as Species of Special Concern and the last is listed by NatureServe) that may potentially occur on the project site.

Significance Before Mitigation

Western spadefoot, San Diego coast horned lizard, California coast horned lizard, and coastal western whiptail are not specifically protected and the loss of individuals of these species would not violate state or federal Endangered Species Acts or California Fish and Game Code. However, according to CEQA, the reduction in numbers of a species that has become sensitive as a result of previous human impacts is considered potentially significant on the project level and is significant on a cumulative level.

Mitigation Measure–8a

Additional surveys for the four (4) species should conducted onsite in the areas with appropriate habitat for each species. The surveys should coincide with weather conditions that are conducive for each species; sunny late-spring or summer days with above-average temperatures for San Diego coast horned lizard, California coast horned lizard, and coastal western whiptail (Stebbins 2003) and after substantial rainfall events in the winter and spring for western spadefoot (Ervin and Cass 2007).

If the any of the four (4) species are found to occur onsite during the additional, then Mitigation Measure–8b shall be instituted.

Mitigation Measure–8b

If any individual of the four species are found during the survey, then a salvage program will be initiated for the site. The salvage program will consist of the capture of individuals from the area to be impacted by the project implementation and their relocation to a predetermined offsite location, which has CDFG's approval, with appropriate habitat that will not be impacted by the project activities or other construction activities in the vicinity. Time allowed for the salvage program will be determined by the size of the project site and the abundance of the species that are found onsite. The salvage program will continue with the monitoring of the initial ground disturbance

construction activities. The salvage program will conclude when all of the ground within the grading limits has been affected by construction activities.

After the completion of the salvage program a letter report summarizing the surveys and salvage opportunities will be prepared and submitted to the CDFG.

Significance After Mitigation

If the proposed mitigation measures are implemented, the potential impacts to western spadefoot, San Diego coast horned lizard, California coast horned lizard, and coastal western whiptail will be reduced to less than significant on a project and cumulative level.

Impact–9: Proposed project activities would directly and indirectly impact the general wildlife and their associated habitats that are found on and in the vicinity of the project site.

General Wildlife Mortality: The immediate impact of project implementation would be the direct mortality of species that are unable to escape grading/construction equipment. Species of low mobility, particularly burrowing reptiles and mammals would probably be eliminated by site preparation.

General Wildlife Habitat Loss: Those species that are able to escape grading equipment would be impacted by the loss of habitat they previously occupied. Many species can be expected to move to adjacent areas of similar habitat. Wildlife that does emigrate is subject to mortality by predation and unsuccessful competition for food and territory, decreasing chances for survival.

The loss of habitat results in the loss of species that depend on each habitat. Some of these may be common in the habitat or elsewhere in the state. Others may be limited in distribution to the local biome and there may be few remaining habitat areas supporting these less common wildlife populations in cismontane southern California. Even the habitat that is dominated by nonnative plant species holds some value as foraging habitat for many native wildlife species.

General Wildlife Displacement and Competition: Indirectly, wildlife populations in the surrounding area would be affected adversely by loss of available habitat within the project site as resident wildlife species were displaced by development. This displacement would cause temporary increased stress on nearby wildlife populations as competition for food, water, and nesting sites increased.

General Wildlife Disruption in Surrounding Areas: Another direct impact is that onsite activity would disturb all wildlife in the vicinity. Generally this impact is considered temporary and insignificant. However, during bird nesting season, activities have the potential to disrupt nesting activities in adjacent areas (addressed in **Impact–7**).

Significance Before Mitigation

The development of the project site would contribute to the incremental loss of open space and natural habitat in the area. Natural open space is rapidly becoming a scarce commodity in the southern California region. Though not significant on a project level, the loss of open space, and each habitat occupying that open space, on the project site contributes to the significant cumulative loss of undeveloped open space in the rapidly expanding urban/suburban area.

Mitigation Measure–9a

Prior to the initiation of any grading and during initial grubbing and topsoil salvage, biologists shall attempt to capture and relocate all reptiles within the impact area. Other ground dwelling wildlife, i.e. amphibians and mammals, shall be relocated if the opportunity presents itself. Wildlife shall be relocated to preserved areas of the site when appropriate or to nearby (in the same watershed) permanent open space areas. It is assumed that a two-person team can adequately salvage the reptiles on the entire site in half a day.

Mitigation Measure–9b

To reduce impacts resulting from construction vehicle traffic, routes and trips shall be restricted to a minimum number. Earth-moving equipment shall be confined to the narrowest possible corridor during construction. Earth-moving and other construction equipment shall be confined to the project footprint and shall not operate or maneuver in areas outside the project footprint. The entire edge of grading shall be fenced with brightly colored "snow fence" or similar material. This shall serve to alert equipment operators of the grading limits. All vehicle access shall be via areas within the impact zone. No temporary access roads shall be made through portions of the site that shall be preserved as natural open space.

Significance After Mitigation

If the proposed mitigation measures are implemented, the project's potential contribution to cumulative impacts to wildlife due to habitat loss, displacement and competition, and disruption in surrounding areas will be reduced to less than significant.

Impact–10: Proposed project activities and the resulting development could increase litter in the area and result in the mortality of a sensitive species.

The increased human presence on the site could result in a substantial increase in the amount of litter deposited on the site and in surrounding natural areas. Aside from being an eyesore, litter is detrimental to wildlife for a variety of reasons. Many larger animals would attempt to eat the remnants of food products often associated with litter and in the process ingest plastic and other inedible and potentially fatal products. Many smaller

animals and birds would use various inorganic litter products for nesting materials with potentially fatal results to their young.

Significance Before Mitigation

If litter generated by the project results in the mortality of a sensitive species, that impact would be considered significant. Cumulatively, the impact of litter on wildlife is significant and the potential litter generated by the project during and after implementation would contribute to the cumulative impact.

Mitigation Measure–10a

The construction of litter barriers (i.e.: walls or small mesh-chain link fence) around the project site shall be accomplished in order to limit the progression of litter into the open spaces of the project area or surrounding areas. Continuous deflective separation units shall be installed in the storm drain inlets to remove gross pollutants from storm water.

Mitigation Measure–10b

CC & R's for the proposed tract will include litter management, which will be enforced the Homeowners Association.

Significance After Mitigation

If the proposed mitigation measures are implemented, the potential impacts to sensitive species from litter and the project's contribution to cumulative impacts from litter will be reduced to less than significant on a project and cumulative level.

Impact–11: Proposed project activities and the resulting development could result in an increase in night lighting, which may be detrimental to sensitive species in nearby natural areas.

Night lighting may be detrimental to animals in nearby natural areas for a variety of reasons. These include disruption of circadian rhythms and avoidance due to light sensitivity in species with exceptional night vision. Some insectivorous species benefit from night lighting because it attracts and concentrates large numbers of insects for feeding purposes. However, the typical net effect of lighting is that adjacent areas are utilized by wildlife to less than their fullest extent. The impact of increased night lighting is significant on a project level. Regionally, the cumulative impact of increased night lighting on wildlife is significant, but the project's contribution to this cumulative impact is less than significant.

Significance Before Mitigation

If night lighting generated by the project negatively affects sensitive species, that impact would be considered significant. Cumulatively, the impact of night lighting on wildlife is significant and the potential night lighting generated by the project after implementation would contribute to the cumulative impact.

Mitigation Measure–11

To reduce the potentially adverse effects of night lighting on surrounding open space areas, the following measures shall be recorded in the CC & R's and enforced by the Homeowners Association:

- Low-intensity exterior lighting;
- Low elevation lighting poles;
- Internal silvering of the globe or external opaque reflectors directing the light away from open space areas; and
- Lighting activated by timers or motion-detectors that are directed inward from the perimeter of the site. The degree to which these measures are utilized shall be dependant upon the distance of the light source from the urban edge.

Significance After Mitigation

If the proposed mitigation measures are implemented, the potential impacts to sensitive species from night lighting and the project's contribution to cumulative impacts from night lighting will be reduced to less than significant on a project and cumulative level.

REFERENCES

The following resources, whether directly quoted, referenced, or cited, were used in the preparation of this report:

Abrams, L. 1923. Illustrated Flora of the Pacific States. Stanford University Press. Stanford, California.

Adams, L. W., and L. E. Dove. 1989. Wildlife reserves and corridors in the urban environment. ISBN 0-942015-02-9, Natl. Inst. for Urban Wildl., Columbia, Md. 91pp.

AOU (American Ornithologists' Union). 1998. Check-List of North American Birds. Seventh Edition. American Ornithologists' Union, Washington, D.C.

Brattstrom, B.H. 1997. Status of the Subspecies of the Coast Horned Lizard, *Phrynosoma coronatum*. Journal of Herpetology 31: 434-436.

Calflora. 2008. Information on California plants for education, research and conservation. [web application]. Berkeley, California: The Calflora Database [a non-profit organization]. http://www.calflora.org/.

California Department of Fish and Game. 1980. At the Crossroads: A Report on the Status of California Endangered and Rare Fish and Wildlife. State of California Resources Agency, Sacramento, California.

California Department of Fish and Game. 2008. State and Federally Listed Endangered, Threatened and Rare Plants of California, CDFG, Biogeographic Data Branch, April 2008.

California Department of Fish and Game. 2008. State and Federally Listed Endangered, Threatened and Rare Animals of California, CDFG, Biogeographic Data Branch, May 2008.

California Department of Fish and Game. 2008. Special Vascular Plants, Bryophytes, and Lichens List. Natural Diversity Database. California Department of Fish and Game. Sacramento. Biannual Publication. April 2008.

California Department of Fish and Game. 2008. List of Special Animals. California Department of Fish and Game. Sacramento. Biannual Publication. February 2008.

California Wetlands Information System. 2005. California Endangered Species Act Summary. http://ceres.ca.gov/wetlands/permitting/cesa_summary.html.

Christman, J.N. and V.S. Albrecht. 1999. The Endangered Species Act Overview. Hutton and Williams LLP. http://library.findlaw.com/1999/Jan/1/241467.html.

CNPS. 2008. California Native Plant Society's Inventory of Rare and Endangered Plants. California Native Plant Society. http://www.cnps.org.
2001. Botanical Survey Guidelines. California Native Plant Society. http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf.

CNDDB. 2008. California Natural Diversity Data Base. Data Base Record Search of Information on Threatened , Endangered, Rare, or Otherwise Sensitive Species and Communities in the Vicinities of: Simi California. California Department of Fish and Game, State of California Resources Agency, Sacramento, California.

CRWQCB. 2007. Revised water quality standards for surface waters of the Antelope hydrologic unit. California regional Water Quality Control Board, Lahontan Region.http://www.waterboards.ca.gov/lahontan/board_info/agenda/2007/nov/item17_enc3.pdf.

eBird. 2008. Real-time, online checklist program. Cornell Lab of Ornithology and National Audubon Society. http://ebird.org.

Edelman, P. 1991. Critical Wildlife Corridor/Habitat Linkage Areas between the Santa Susana Mountains, the Simi Hills and the Santa Monica Mountains. Prepared for The Nature Conservancy.

England and Nelson. 1976. Los Angeles County Significant Ecological Area Study. Prepared for the Los Angeles County Department of Regional Planning.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual-Technical Report Y-87-1 (online edition). U.S. Army Corps of Engineers Waterways Experiment Station.
http://www.saj.ACOE.army.mil/permit/documents /87manual.pdf.

Ervin, E. L. and T. L. Cass. 2007. *Spea hammondii* Reproductive pattern. Herpetological Review. 38 (2): 196-197.

ESA (Environmental Science Associates). 2004. Final Environmental Impact report: Lancaster Water Reclamation Plant 2020 Facility Plan. Prepared for the County Sanitation Districts of Los Angeles County.

Frankel, O. and M. Soule. *Conservation and evolution*. Cambridge Univ. Press, Cambridge, 1981.

Garrett, K. and J. Dunn. 1981. Birds of Southern California: Status and Distribution. Los Angeles Audubon Society.

Grinnell, J. 1933. Review of the Recent Mammal Fauna of California. University of California Publications in Zoology. Vol 40, No. 2, pp. 71-234. University of California Press, Berkeley California.

Hickman, James C., ed. 1993. The Jepson Manual: Higher Plants of California. Berkeley: University of California Press.

Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. California Department of Fish and Game (Sacramento), Nongame Heritage Program Report.

Ingles, L.G. 1965. Mammals of the Pacific states: California, Oregon, and Washington. Stanford University Press, Stanford, CA.

Jennings, M.R. 1983. An Annotated Check List of the Amphibians and Reptiles of California. California Fish and Game 69(3):151-171.

Jennings, M., M. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. California Department of Fish and Game, Special Publication: 1-20. http://www.dfg.ca.gov/habcon/info/herp_ssc.pdf.

Jepson Flora Project. 2008. Jepson online interchange for California floristics. University and Jepson Herbaria of the University of California at Berkeley. http://ucjeps.berkeley.edu/interchange.html

Jones, J.K., J.R., D.C. Carter, H.H. Genoways, R.S. Hoffman, and D.W. Rice. 1982. Revised Checklist of North American Mammals North of Mexico, 1982. Occas. Pap. Mus. Texas Tech Univ., No. 80.

Klopatek, J.M., R.J. Olson, C.J. Emerson, and J.L. Jones. 1979. Land-use conflicts with natural vegetation in the United States. Environ. Conservation 6: 191-199.

Lannoo, M. ed. 2005. Amphibian Declines: The Conservation Status of United States Species. University of California Press, Berkeley, California.

Lieberstein, T. 1989. Masters Thesis: Reserve design in the Santa Monica Mountains. California State University, Northridge.

Lieberstein, T., Nava, K., Crother, J, Galieti, J., Morgenstern, E., Robinson, M., Bathker, C., 1987. Wildlife corridor design: A case study for Los Angeles and Ventura Counties. In: Hardy, D.F., McIntire, E. (Eds.), Part III in the series: biogeography and the zoo. California State University, Northridge, CA.

Magney, D. L. 1992. Descriptions of three new southern California vegetation types: Southern Cactus Scrub, Southern Coastal Needlegrass Grassland, and Scalebroom Scrub. Crossosoma 18: 1-9.

McConnaughey, B.H. and E. McConnaughey. 1985. The Audubon Society Nature Guides: Pacific Coast. Alfred A. Knopf, New York, NY.

Miller, A.C. and B.S. Payne. 2000. An evaluation of aquatic habitats on Edwards Air Force Base, California. Environmental Laboratory U.S. Army Engineer Research and Development Center. http://el.erdc.usace.army.mil/elpubs/pdf/trel00-19/trel00-19.pdf.

Molina, K.C. and K.L. Garrett. 2005. Snowy Plover. West Mojave Habitat Conservation Plan Species Accounts. http://www.blm.gov/pgdata/etc/medialib//blm/ca/pdf/pdfs/cdd_pdfs.Par.fda13fcc.File.pdf/Snpl1.pdf.

Munz, P.A. 1974. A Flora of Southern California. University of California Press, Berkeley, California.

Munz, P.A., and D.D. Keck. 1959. A California Flora. University of California Press, Berkeley, California.

National Audubon Society 2008. Important Bird Areas in the U.S. http://www.audubon.org/bird/iba.

Niehaus, T.F. and C.L. Ripper. 1976. A Field Guide to Pacific States Wildflowers. Houghton Mifflin Company. Boston, Massachusetts.

Noss, R.F. 1987. Corridors in real landscapes: a reply to Simberloff and Cox. Conservation Biology 1: 159-164.

Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, E. Rubin, R. Sauvajot, S. Riley, and D. Kamradt. 2006. South Coast Missing Linkages Project: A Linkage Design for the Santa Monica Mountains-Sierra Madre Connection. Produced by South Coast Wildlands, Idyllwild, CA. www.scwildlands.org, in cooperation with Natural Park Service, Santa Monica Mountains Conservancy, California State Parks, and the Nature Conservancy.

Remsen, J.V. 1978. Bird Species of Special Concern in California: An Annotated List of Declining or Vulnerable Bird Species. Nongame Wildlife Investigations, Wildlife Management Branch, California Department of Fish and Game. Administrative Report No. 78-1.

Robbins, W.W., M.K. Bellue and W.S. Ball. 1951 Weeds of California. State of California Department of Agriculture.

Ruth, J.M. 2006. Partners in Flight – U.S. website. Served by the USGS Patuxent Wildlife Research Center, Laurel, Maryland, USA. http://www.partnersinflight.org

Sawyer, John O. and Todd Keeler-Wolf. 1997. A Manual of California Vegetation-Online Edition. California Native Plant Society. http://endeavor.des.ucdavis.edu/cnps/intro.html.

Scott, T. 2001. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. http://ecoregion.ucr.edu

Shafroth, P.B., J.R. Cleverly, T.L. Dudley, J.P. Taylor, C.V. Riper III, E.P. Weeks, and J. N. Stuart. 2005. Control of *Tamarix* in the western United States: implications for water salvage, wildlife use, and riparian restoration. Environmental Management 35: 231-246.

Sibley, D.A. 2003. The Sibley field guide to birds of western North America. Knopf.

Smith, J.P. and K. Berg. 1988. Inventory of Rare and Endangered Vascular Plants of California. Special Publication No. 1 (4th Edition), California Native Plant Society.

Smyth, M., and H. M. Coulombe. 1971. Notes on the use of desert springs by birds in California. Condor 73:240-243.

South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion. 2008. South Coast Wildlands. http://www.scwildlands.org/reports/SCMLRegionalReport.pdf

Stebbins, R.C. 1989. Museum of Vertebrate Zoology. University of California at Berkeley. Berkeley, CA 94720. Personal communication.

2003. A Field Guide to Western Reptiles and Amphibians. 3rd Edition. Houghton Mifflin Company.

Stokes, D. and L. 1996. Field Guide to Birds, Western Region. Little, Brown and Company, Boston, New York, and London.

Temple, S.A. and Cary, J.R.. 1988. Modeling dynamics of habitat-interior bird populations in fragmented landscapes. Conservation Biology. 2: 340-347.

Thorne, R.F. 1976. The Vascular Plant Communities of California. In: June Latting, ed., Plant Communities of Southern California. Special Publication No. 2, California Native Plant Society.

United States Army Corps of Engineers and the Environmental Protection Agency. 2007. *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook.* Retrieved June 2007 <http://www.usace.army.mil/cw/cecwo/reg/cwa_guide/jd_guidebook_051207final.pdf>

USDA NRCS (United States Department of Agriculture National Resources Conservation Service). 2004. Soil Survey Geographic (SSURGO) database for Ventura Area, California. Retrieved in 2008 from http://SoilDataMart.nrcs.usda.gov/.

United States Fish and Wildlife Service (FWS). 1991. Endangered and Threatened Wildlife and Plants. U.S. Department of the Interior. Federal Register 50 CFR 17.11 and 17.12.

United States Fish and Wildlife Service (FWS). 2005. Act Summaries: Migratory Bird treaty Act. http://www.fws.gov/permits/mbpermits/ActSummaries.html.

USGS (United States Geological Survey). Moorpark and Simi quadrangles, California [map]. 1:24,000. 7.5 Minute Series. Washington D.C.: USGS, 1971. Retrieved from http://casil.ucdavis.edu/mapsurfer/.

West Mojave Plan. 2005. A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment. Bureau of Land Management. http://www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter1_Bookmarks.pdf.

Zeiner, D.C., W. F. Laudenslayer, K. E. Mayer and M. White eds. 1990. California's Wildlife: Volume II - Birds. California Department of Fish and Game. Sacramento, California.

Zeiner, D.C., W.F. Laudenslayer, Jr., and K.E. Mayer. 1988. California's wildlife. Volume I. Amphibians and reptiles. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento, California.

APPENDIX 1

FLORA AND FAUNA COMPENDIA







FLORAL COMPENDIUM

The ninety (90) plants listed (55 natives and 35 nonnatives) were either observed (marked [o]) or are expected to occur (marked [e]) on the project site. This list is not intended as an exhaustive listing of the vegetation occurring on the site; some annual herbs or very uncommon species may not have been detected by the field survey. Given that the surveys of the project site were conducted in December, the plant list has been supplemented with three floristic surveys conducted in the spring of 2004 on parcels in the immediate vicinity of the project site (A.P.N.s 5110-180-110, 5110-190-120, 5110-190-150, 500-0-180-185, 500-0-190-195, 511-0-190-205, and Tentative Tract 5505). Species preceded by * are nonnatives and those preceded by @ are ornamentals installed as landscaping components. Species

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VASCULAR PLANTS

GYMNOSPERMAE

PINACEAE - PINE FAMILY

*@	*Pinus halepensis*	Aleppo pine [o]

ANGIOSPERMAE (DICOTYLEDONS)

AIZOACEAE - ICEPLANT FAMILY

*@	*Carpobrotus aequilaterus*	sea-fig [o]

ANACARDIACEAE - SUMAC FAMILY

	Malosma laurina	laurel sumac [o]
*@	*Schinus molle*	Peruvian pepper-tree [o]

APIACEAE - CARROT FAMILY

	Apiastrum angustifolium	wild celery [o]
*	*Foeniculum vulgare*	sweet fennel [o]

ASCLEPIADACEAE - MILKWEED FAMILY

	Asclepias fascicularis	narrow-leaved milkweed [o]

ASTERACEAE - SUNFLOWER FAMILY

	Acourtia microcephala	sacapellote [e]
	Ambrosia psilostachya	western ragweed [e]
*	*Anthemis cotula*	mayweed [e]
	Artemisia californica	coastal sagebrush [o]
	Artemisia douglasiana	California mugwort [o]
	Baccharis pilularis	coyote brush [o]
	Baccharis salicifolia	mule fat [o]
*	*Centaurea melitensis*	tocalote [o]
*	*Centaurea solstitialis*	yellow star-thistle [e]
	Chaenactis glabriuscula	yellow pincushion [e]
	Cirsium occidentale	cobweb thistle [e]
	Cirsium occidentale var. *californicum*	California thistle [e]
*	*Conyza canadensis*	horseweed [o]
	Encelia californica	California brittlebush [o]
	Ericameria arborescens	golden fleece [e]
	Ericameria linearifolia	narrow-leaved goldenbush [o]
	Erigeron foliosus	leafy fleabane [e]
	Gnaphalium palustre	lowland cudweed [o]

	Grindelia camporum	gum-plant [e]
	Hazardia squarrosa	saw-toothed goldenbush [o]
	Helianthus annuus	common sunflower [o]
	Hemizonia fasciculata	fascicled tarweed [e]
	Heterotheca grandiflora	telegraph weed [o]
	Lepidospartum squamatum	scalebroom [o]
	Rafinesquia californica	California chicory [e]
*	*Silybum marianum*	milk thistle [e]
*	*Sonchus asper*	prickly sow-thistle [o]
*	*Sonchus oleraceus*	common sow-thistle [o]
*	*Xanthium strumarium*	cocklebur [o]

BORAGINACEAE - BORAGE FAMILY

	Amsinckia menziesii	small-flowered fiddleneck [e]
	Cryptantha clevelandii	white forget-me-not [e]

BRASSICACEAE - MUSTARD FAMILY

*	*Brassica nigra*	black mustard [o]
*	*Hirschfeldia incana*	short-podded mustard [o]
*	*Raphanus sativus*	wild radish [e]
*	*Sisymbrium officinale*	hedge-mustard [e]

CACTACEAE - CACTUS FAMILY

	Opuntia littoralis	coastal prickly pear [o]

CAPPARIDACEAE - CAPER FAMILY

	Iisomeris arborea	bladderpod [e]

CAPRIFOLIACEAE - HONEYSUCKLE FAMILY

	Sambucus mexicana	blue elderberry [o]

CHENOPODIACEAE - GOOSEFOOT FAMILY

*	*Atriplex semibaccata*	Australian saltbush [e]

CONVOLVULACEAE - MORNING-GLORY FAMILY

	Calystegia macrostegia	western bindweed [o]
	Cuscuta californica	California dodder [o]

CUCURBITACEAE - GOURD FAMILY

	Cucurbita foetidissima	coyote-melon [o]
	Marah macrocarpus	wild cucumber [o]

EUPHORBIACEAE - SPURGE FAMILY

	Eremocarpus setigerus	dove weed [o]
*	*Ricinus communis*	castor bean [o]

FABACEAE - PEA FAMILY

	Lotus scoparius	deerweed [o]
	Lupinus arboreus	bush lupine [o]

FAGACEAE - OAK FAMILY

	Quercus agrifolia	coast live oak [o]

GERANIACEAE - GERANIUM FAMILY

*	*Erodium botrys*	longbeak stork's bill filaree [o]
*	*Erodium cicutarium*	red-stemmed filaree [o]

HYDROPHYLLACEAE - WATERLEAF FAMILY

	Phacelia cicutaria	caterpillar phacelia [o]

LAMIACEAE - MINT FAMILY

*	*Marrubium vulgare*	horehound [o]
	Salvia apiana	white sage [o]
	Salvia leucophylla	purple sage [o]
	Salvia mellifera	black sage [o]

MYOPORACEAE - MYOPORUM FAMILY

*	*Myoporum laetum*	myoporum [o]

NYCTAGINACEAE - FOUR-O'CLOCK FAMILY

	Abronia villosa	desert sand-verbena [e]
	Mirabilis californica	wishbone bush [e]

OLEACEAE - OLIVE FAMILY

*@	*Ligustrum* sp.	privet [o]

ONAGRACEAE - EVENING-PRIMROSE FAMILY

	Epilobium canum	California fuchsia [o]

POLYGONACEAE - BUCKWHEAT FAMILY

*	*Rumex crispus*	curly dock [o]

RHAMNACEAE - BUCKTHORN FAMILY

	Ceanothus cuneatus	buck brush [o]

SALICACEAE - WILLOW FAMILY

@	*Populus fremontii*	Fremont's cottonwood [o]
	Salvia lasiandra var. *lasiandra*	Pacific willow [o]

SAPINDACEAE - SOAPBERRY FAMILY

*	*Cupaniopsis anacardioides*	carrotwood [o]

SCROPHULARIACEAE - FIGWORT FAMILY

	Keckiella cordifolia	heart-leaved penstemon [e]
	Mimulus aurantiacus	orange bush monkey-flower [o]

SOLANACEAE - NIGHTSHADE FAMILY

	Datura wrightii	western jimsonweed [o]
*	*Nicotiana glauca*	tree tobacco [o]
	Solanum douglasii	Douglas' nightshade [o]

ANGIOSPERMAE (MONOCOTYLEDONS)

ARECACEAE - PALM FAMILY

*@	*Phoenix canariensis*	date palm [o]
*@	*Washingtonia robusta*	Mexican fan palm [o]

LILIACEAE - LILY FAMILY

*@	*Agave americana*	century plant [e]
	Chlorogalum pomeridianum	soap lily [e]
	Yucca whipplei	our lord's candle [o]

POACEAE - GRASS FAMILY

*	*Arundo donax*	giant reed [o]
*	*Avena barbata*	slender wild oat [o]
*	*Avena fatua*	common wild oat [o]
*	*Bromus diandrus*	ripgut grass [o]
*	*Bromus hordeaceus*	soft chess [o]
*	*Bromus madritensis* var. *rubens*	red brome [o]
*@	*Cortaderia atacamensis*	pampas grass [o]
	Leymus condensatus	giant wild rye [o]

FAUNAL COMPENDIUM

The following list includes the 107 species observed (marked [o]) or expected (marked [e]) to occur on or in the immediate vicinity of the project site. Expectation of occurrence is based on the known ranges and habitat requirements of each species. Only locally breeding and over-wintering birds are listed. Transients (migrants) and vagrants other than those seen during the survey are not included. The site is within the range of a number of bat species in several families, but it is assumed that none of the species occur on the project site due to the lack of various habitat elements. As their distribution varies according to season, and as the precise habitat requirements of each species are not well known, it is difficult to determine which species may be foraging over the project site.

AMPHIBIANS (3)

PLETHODONTIDAE - LUNGLESS SALAMANDERS

E	*Batrachoseps nigriventris*	black-bellied slender salamander [e]

BUFONIDAE - TRUE TOADS

E	*Bufo boreas halophilus*	California toad [e]

HYLIDAE -TREEFROGS

E	*Pseudacris regilla*	Pacific treefrog [e]

REPTILES (10)

PHRYNOSOMATIDAE

	Sceloporus occidentalis longpipes	Great Basin fence lizard [o]
	Uta stansburiana elegans	western side-blotched lizard [o]

SCINCIDAE - SKINKS

	Plestiodon skiltonianus skiltonianus	Skilton's skink [e]

ANGUIDAE - ALLIGATOR LIZARDS

	Elgaria multicarinatus webbii	San Diego alligator lizard [e]

COLUBRIDAE - COLUBRID SNAKES

	Coluber constrictor mormon	western yellow-bellied racer [e]
	Hypsiglena ochrorhyncha klauberi	San Diego nightsnake [e]
	Lampropeltis getula californiae	common kingsnake [e]

	Masticophis flagellum piceus	red coachwhip [e]
	Pituophis catenifer annectens	San Diego gopher snake [e]

VIPERIDAE - VIPERS

	Crotalus oreganus helleri	Southern Pacific rattlesnake [e]

BIRDS (64)

CATHARTIDAE - NEW WORLD VULTURES

	Cathartes aura	turkey vulture [o]

ACCIPITRIDAE - HAWKS

	Accipiter striatus	sharp-shinned hawk [o]
	Accipiter cooperii	Cooper's hawk [o]
	Buteo lineatus	red-shouldered hawk [o]
	Buteo jamaicensis	red-tailed hawk [o]

FALCONIDAE - FALCONS

	Falco sparverius	American kestrel [o]

PHASIANIDAE - PHEASANTS & QUAILS

	Callipepla californica	California quail [o]

COLUMBIDAE - PIGEONS & DOVES

*	*Columba livia*	rock dove [o]
	Zenaida macroura	mourning dove [o]

CUCULIDAE - CUCKOOS & ROADRUNNERS

	Geococcyx californianus	greater roadrunner [o]

TYTONIDAE - BARN OWLS

	Tyto alba	common barn-owl [e]

STRIGIDAE - TRUE OWLS

	Bubo virginianus	great horned owl [o]

APODIDAE - SWIFTS

	Aeronautes saxatalis	white-throated swift [e]

TROCHILIDAE - HUMMINGBIRDS

	Calypte anna	Anna's hummingbird [o]
	Calypte costae	Costa's hummingbird [e]
	Selasphorus sasin	Allen's hummingbird [o]

PICIDAE - WOODPECKERS

	Melanerpes formicivorus	acorn woodpecker [o]
	Colaptes auratus	northern flicker [o]

TYRANNIDAE - TYRANT FLYCATCHERS

	Sayornis nigricans	black phoebe [o]
	Sayornis saya	Say's phoebe [o]
	Tyrannus vociferans	Cassin's kingbird [e]
	Tyrannus verticalis	western kingbird [o]

VIREONIDAE - VIREOS

	Vireo huttoni	Hutton's vireo [o]

CORVIDAE - JAYS & CROWS

	Aphelocoma coerulescens	scrub jay[e]
	Corvus brachyrhynchos	American crow [o]
	Corvus corax	common raven [o]

HIRUNDINIDAE - SWALLOWS

	Tachycineta bicolor	tree swallow [e]
	Tachycineta thalassina	violet-green swallow [e]
	Stelgidopteryx serripennis	northern rough-winged swallow [e]
	Hirundo rustica	barn swallow [e]

AEGITHALIDAE - BUSHTITS

	Psaltriparus minimus	bushtit [e]

TROGLODYTIDAE - WRENS

	Thryomanes bewickii	Bewick's wren [o]
	Troglodytes aedon	house wren [e]

REGULIDAE – KINGLETS

	Regulus calendula	ruby-crowned kinglet [o]

SYLVIIDAE - OLD WORLD WARBLERS AND GNATCATCHERS

	Polioptila caerulea	blue-gray gnatcatcher [o]

TURDIDAE - THRUSHES

	Sialia mexicana	western bluebird [e]
	Turdus migratorius	American robin [e]

MIMIDAE - THRASHERS

	Mimus polyglottos	northern mockingbird [o]

STURNIDAE - STARLINGS

*	*Sturnus vulgaris*	European starling [o]

BOMBYCILLIDAE - WAXWINGS

	Bombycilla cedrorum	cedar waxwing [e]

PARULIDAE - WOOD-WARBLERS

	Vermivora celata	orange-crowned warbler [e]
	Dendroiea coronata	yellow-rumped warbler [o]
	Wilsonia pusilla	Wilson's warbler [e]

EMBERIZIDAE - EMBERIZIDS

	Pipilo erythrophthalmus	spotted towhee [o]
	Pipilo crissalis	California towhee [o]
	Aimophila ruficeps	rufous-crowned sparrow [o]
	Spizella passerina	chipping sparrow [e]
	Pooecetes gramineus	vesper sparrow [o]
	Chondestes grammacus	lark sparrow [o]
	Amphispiza belli	sage sparrow [e]
	Passerculus sandwichensis	savannah sparrow [o]
	Passerella iliaca	fox sparrow [o]
	Melospiza melodia	song sparrow [e]

	Melospiza lincolnii	Lincoln's sparrow [o]
	Zonotrichia atricapilla	golden-crowned sparrow [o]
	Zonotrichia leucophrys	white-crowned sparrow [o]

CARDINALIDAE - CARDINALS, SALTATORS, AND ALLIES

	Pheucticus melanocephalus	black-headed grosbeak [e]

ICTERIDAE - BLACKBIRDS

	Sturnella neglecta	western meadowlark [o]
	Euphagus cyanocephalus	Brewer's blackbird [e]
	Icterus cucullatus	hooded oriole [e]
	Icterus bullockii	Bullock's oriole [e]

FRINGILLIDAE - FINCHES

	Carpodacus mexicanus	house finch [o]
	Carduelis psaltria	lesser goldfinch [o]

PASSERIDAE - OLD WORLD SPARROWS

*	*Passer domesticus*	house sparrow [e]

MAMMALS (30)

DIDELPHIDAE - NEW WORLD OPOSSUMS

*	*Didelphis virginiana*	Virginia opossum [e]

VESPERTILIONIDAE - EVENING BATS

	Myotis evotis	long-eared myotis [e]
	Myotis thysanodes	fringed myotis [e]
	Myotis volans	long-legged myotis [e]
	Myotis californicus	California myotis [e]
	Myotis ciliolabrum	western small-footed myotis [e]
	Myotis leibii	small-footed myotis [e]
	Eptesicus fuscus	big brown bat [e]
	Lasiurus blossevillii	western red bat [e]
	Lasiurus cinereus	hoary bat [e]
	Antrozous pallidus	pallid bat [e]

MOLOSSIDAE - FREE-TAILED BATS

	Tadarida brasiliensis	Brazilian free-tailed bat [e]
	Eumops perotis	western mastiff bat [e]

LEPORIDAE - HARES & RABBITS

	Sylvilagus audubonii	desert cottontail [o]

SCIURIDAE - SQUIRRELS

	Spermophilus beecheyi	California ground squirrel [o]
*	*Sciurus niger*	fox squirrel [e]

GEOMYIDAE - POCKET GOPHERS

	Thomomys bottae	Botta's pocket gopher [o]

HETEROMYIDAE - POCKET MICE & KANGAROO RATS

	Perognathus longimembris	little pocket mouse [e]
	Perognathus californicus	California pocket mouse [e]

CRICETIDAE - NEW WORLD RATS & MICE

	Peromyscus californicus	California mouse [e]
	Peromyscus maniculatus	deer mouse [e]
	Neotoma fuscipes	dusky-footed woodrat [e]

MURIDAE - OLD WORLD RATS & MICE

*	*Rattus rattus*	black rat [e]
*	*Rattus norvegicus*	Norway rat [e]
*	*Mus musculus*	house mouse [e]

CANIDAE - WOLVES & FOXES

	Canis latrans	coyote [o]

PROCYONIDAE - RACCOONS

	Procyon lotor	raccoon [e]

MUSTELIDAE - WEASELS, SKUNKS & OTTERS

	Mephitis mephitis	striped skunk [e]

FELIDAE - CATS

	Felis rufus	bobcat [e]

CERVIDAE - DEER

	Odocoileus hemionus	mule deer [e]

APPENDIX 2

SENSITIVE SPECIES EVALUATIONS







APPENDIX 2: SENSITIVE SPECIES EVALUATIONS

Sensitive biotic resources reported in the project vicinity and their known or expected statuses on the site are discussed in-depth in these accounts. The status of each resource was determined by consideration of known preferred ecologic parameters and direct observation for plants, known habitat preferences and direct observation for faunal components, and direct observation for habitat types.

There are 72 biotic elements considered sensitive by resource management organizations and are known to occur in the region (only the 69 sensitive plants and wildlife are evaluated). This determination is based on local knowledge of LDC biologists and searches of appropriate references and databases. Sources used for the determination of sensitive biological resources and their potential presence onsite are as follows: **wildlife** - U.S. Fish and Wildlife Service (USFWS) (2008), California Department of Fish and Game (1980, 1989), California Natural Diversity Data Base (CNDDB 2008), Remsen (1978), and Partners in Flight (2006); **plants** - USFWS (2008), CDFG (1989, 2008), CNDDB (2008), and California Native Plant Society (CNPS, 2008) (Smith and Berg 1988); and **habitats** - CNDDB (2008) and Holland (1986).

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APPENDIX 2: SENSITIVE SPECIES EVALUATIONS

Sensitive plants known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	NatureServe	CNPS	Page
Woven-spored lichen	*Texosporium sancti-jacobi*	N	--	--	G3/S1.1	--	1
Southern Tarplant	*Centromadia parryi* ssp. *australis*	N	--	--	G4T2/S2.1	1B.1	2
Santa Susana Tarplant	*Deinandra minthornii*	N	--	R	G2/S2.2	1B.2	2
Lyon's Pentachaeta	*Pentachaeta lyonii*	N	E	E	G1/S1.1	1B.1	3
White Rabbit Tobacco	*Pseudognaphalium leucocephalum*	P	--	--	G4/S3.2	2.2	4
Chaparral Ragwort	*Senecio aphanactis*	N	--	--	G3?/S1.2	2.2	5
Greata's Aster	*Symphyotrichum greatae*	N	--	--	G2/S2.3	1B.3	6
Blochman's Dudleya	*Dudleya blochmaniae* ssp. *blochmaniae*	N	--	--	G2T2/S2.1	1B.1	6
Agoura Hills Dudleya	*Dudleya cymosa* ssp. *agourensis*	N	T	--	G5T1/S1.2	1B.2	7
Marcescent Dudleya	*Dudleya cymosa* ssp. *marcescens*	N	T	R	G5T2/S2.2	1B.2	8
Conejo Dudleya	*Dudleya parva*	N	T	--	G2/S2.1	1B.2	8
Verity's Dudleya	*Dudleya verityi*	N	T	--	G1/S1.1	1B.2	9
Braunton's Milk-vetch	*Astragalus brauntonii*	N	E	--	G2/S2.1	1B.1	10

Sensitive plants known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	NatureServe	CNPS	Page
Ross' Pitcher Sage	*Lepechinia rossii*	N	--	--	G1/S1.2	1B.2	11
Abrams' Oxytheca	*Acanthoscyphus parishii* var. *abramsii*	N	--	--	G4?T2/S2.2	1B.2	12
Conejo Buckwheat	*Eriogonum crocatum*	N	--	R	G2/S2.1	1B.2	13
Dune Larkspur	*Delphinium parryi* ssp. *blochmaniae*	N	--	--	G4T2/S2.2	1B.2	13
Umbrella Larkspur	*Delphinium umbraculorum*	N	--	--	G2G3/S2S3.3	1B.3	14
Mesa Horkelia	*Horkelia cuneata* ssp. *puberula*	N	--	--	G4T2/S2.1	1B.1	15
Plummer's Mariposa Lily	*Calochortus plummerae*	P	--	--	G3/S3.2	1B.2	15
Late-flowered Mariposa Lily	*Calochortus weedii* var. *vestus*	N	--	--	G3G4T2/S2.2	1B.2	16
Ojai Fritillary	*Fritillaria ojaiensis*	N	--	--	G1/S1.2	1B.2	17
Vernal Barley	*Hordeum intercedens*	N	--	--	G3G4/S3S4	3.2	17
Chaparral Nolina	*Nolina cismontane*	N	--	--	G1/S1.1	1B.2	18
California Orcutt Grass	*Orcuttia californica*	N	E	E	G2/S2.1	1B.1	19

Sensitive wildlife known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	CDFG	NatureServe	Other Organizations	Page
INVERTEBRATE								
Riverside Fairy Shrimp	*Streptocephalus woottoni*	N	E	--	--	G1/S1	IUCN: EN	20
Santa Monica Grasshopper	*Trimerotropis occidentaloides*	N	--	--	--	G1G2/S1S2	IUCN: EN	20
FISH								
Arroyo Chub	*Gila orcutti*	N	--	--	SC	G2/S2	USFS: S IUCN: VU	21
Santa Ana Sucker	*Catostomus santaanae*	N	T	--	SC	G1S1	USFS: S	22
Southern Steelhead	*Oncorhynchus mykiss irideus*	N	E	--	SC	G5T2Q/S2	--	22
AMPHIBIANS								
Western Spadefoot	*Spea hammondii*	P	--	--	SC	G3/S3	BLM: S IUCN: NT	23
Sierra Madre Yellow-legged Frog	*Rana muscosa*	N	E	--	--	G1/S1	IUCN: VU	24
California Red-legged Frog	*Rana aurora draytonii*	N	T	--	SC	G4T2T3/S2S3	USFS: S IUCN: NT	25

Sensitive wildlife known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	CDFG	NatureServe	Other Organizations	Page
REPTILES								
Southwestern Pond Turtle	*Actinemys marmorata pallida*	N	--	--	SC	G3G4T2T3Q/S2	BLM: S IUCN: VU	26
Coast (San Diego) Horned Lizard	*Phrynosoma coronatum blainvillei*	P	--	--	SC	G4G5/S3S4	BLM: S	27
Coast (California) Horned Lizard	*Phrynosoma coronatum frontale*	P	--	--	SC	G4G5/S3S4	BLM: S	28
Coastal Western Whiptail	*Aspidoscelis tigris stejnegeri*	P	--	--	SC	G5T3T4/S2S3	--	29
Two-striped Garter Snake	*Thamnophis hammondii*	N	--	--	SC	G3/S2	BLM: S IUCN: DD USFS: S	30
BIRDS								
California Condor	*Gymnogyps californianus*	N	E	E	--	G1/S1	ABC: GL Audubon: WL CDF: S IUCN: CR USBC: WL	30

Sensitive wildlife known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	CDFG	NatureServe	Other Organizations	Page
White-tailed Kite (nesting)	*Elanus leucurus*	PT	--	--	FP	G5T3Q/S1	--	31
Sharp-shinned Hawk	*Accipiter striatus*	OT	--	--	WL	G5/S3	IUCN: LC	32
Cooper's Hawk	*Accipiter cooperii*	OT	--	--	WL	G5/S3	IUCN: LC	33
Golden Eagle	*Aquila chrysaetos*	PT	--	--	FP/SSC	G5/S3	BLM: S CDF: S IUCN: LC USFWS: BCC	34
Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	N	C	E	--	G5T3Q/S1	IUCN: LC USFS: S USFWS: BCC	34
Burrowing Owl	*Athene cunicularia hypugaea*	N	--	--	SC	G4/S2	BLM: S IUCN: LC USFWS: BCC	35
Allen's Hummingbird	*Selasphorus sasin*	O	--	--	--	G5/SNR	Audubon: WL IUCN: LC USBC: WL	36

Sensitive wildlife known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	CDFG	NatureServe	Other Organizations	Page
Least Bell's Vireo	*Vireo bellii pusillus*	N	E	E	--	G5T2/S2	ABC: GL Audubon: WL IUCN: NT USBC: WL USFWS: BBC	37
California Horned Lark	*Eremophila alpestris actia*	N	--	--	WL	G5T3Q S3	IUCN: LC	38
Bank Swallow (nesting)	*Riparia riparia*	N	--	T	--	G5/S2S3	IUCN: LC	38
Coastal California Gnatcatcher	*Polioptila californica californica*	P	T	--	SC	G3T2/S2	ABC: GL Audubon: WL IUCN: LC USBC: WL	39
Southern California Rufous-crowned Sparrow	*Aimophila ruficeps canescens*	O	--	--	WL	G5T2T4/S2S3	IUCN: LC	41
Lark Sparrow	*Chondestes grammacus*	O	--	--	--	G5/SNR	--	42
MAMMALS								
Hoary Bat	*Lasiurus cinereus*	PT	--	--	SC	G5/S4?	IUCN: VU WBWG: H	42

Sensitive wildlife known to occur in the vicinity of the project site, their statuses under various agencies, and their status onsite.

Common Name	Scientific Name	Presence Onsite	Federal Status	State Status	CDFG	NatureServe	Other Organizations	Page
Western Small-footed Myotis	*Myotis ciliolabrum*	PT	--	--	--	G5/S2S3	BLM: S IUCN: VU WBWG: H	43
Pallid Bat	*Antrozous pallidus*	PT	--	--	SC	G5/S3	BLM: S IUCN: LC USFS: S WBWG: H	44
Western Mastiff Bat	*Eumops perotis californicus*	PT	--	--	SC	G5T4/S3?	BLM: S IUCN: VU WBWG: H	45
San Diego Desert Woodrat	*Neotoma lepida intermedia*	N	--	--	SC	G5T3?/S3?	IUCN: DD	45
American Badger	*Taxidea taxus*	N	--	--	SC	G5/S4	IUCN: LC	46

FOOTNOTES FOR SENSITIVE BIOLOGICAL RESOURCES

Presence Onsite

O Species **O**ccurs onsite as a year-round resident or breeds onsite.
L Species **L**ikely occurs onsite.
P Species **P**ossibly may occur onsite.
PT Species Possibly may occur onsite as a Transient. For birds and bats – no nesting/roosting habitat occurs onsite.
U Species is **U**nlikely to occur onsite.
N **N**o occurrence onsite.
Un Data for the species is limited and its natural history has not been fully described.
N† **N**o occurrence onsite and no species account provided because the sensitive resource has no possibility of occurrence onsite.
T Indicates species are **T**ransient
E For habitats, **E**lements of the habitat occur onsite.

Federal Status – The Federal Endangered Species Act is administered by the United States Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration Fisheries (NOAA).

E Endangered: Species is in immediate danger of extirpation or extinction from existing pressures.

T Threatened: Species not presently in eminent danger of extinction, but is likely to become an Endangered species in the foreseeable future in the absence of special protection and management efforts.

C Candidate: Candidate species are plants and animals for which the Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act, but for which development of a listing regulation is precluded by other higher priority listing activities.

D Delisted: Species is no longer in immediate danger of extirpation or extinction nor is it likely to reach this status in the foreseeable future. Delisted species are monitored according to a post-delisting monitoring plan.

State Status – The California Endangered Species Act of 1984 (CESA) (Fish & Game Code §§2050, *et seq.*) and the Native Plant Protection Act of 1977 (NPPA) (Fish & Game Code §§1900-1913) generally parallel the main provisions of the Federal Endangered Species Act and are administered by the California Department of Fish and Game.

E Endangered: a species of plant, fish, or wildlife which is "in serious danger of becoming extinct throughout all, or a significant portion of its range." This designation is limited to species or subspecies native to California. (CESA)

T Threatened: a native species or subspecies of a bird, mammal, fish amphibian, reptile or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts. (CESA)

R Rare: (applies to plants only) a species, subspecies, or variety is rare when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. (This designation was replaced by “threatened” for all animal species in 1985) (NPPA)

CDFG - The Wildlife Branch, Nongame Wildlife Program is responsible for producing and updating SSC publications for mammals, birds, reptiles, and amphibians. The Fisheries Branch is responsible for updates to the Fish Species of Special Concern document.

SSC: Species of Special Concern; native species not having state or federal Threatened or Endangered Species status, but thought to warrant monitoring due to declining population numbers. (Includes those species tracked in the CNDDB but not given any other special status.)

FP: Fully Protected; The classification of Fully Protected was the State's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds and mammals. Most of the species on these lists have subsequently been listed under the state and/or federal endangered species acts. The Fish and Game Code sections dealing with Fully Protected species state that these species "....may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected" species, although take may be authorized for necessary scientific research. This language arguably makes the "Fully Protected" designation the strongest and most restrictive regarding the "take" of these species. In 2003 the code sections dealing with fully protected species were amended to allow the Department to authorize take resulting from recovery activities for state-listed species.

WL: Watch List. The species warrants further monitoring and review, but no actions or legal protection are given.

NatureServe – The California Department of Fish and Game maintains the California Natural Diversity Database (CNDDB) in conjunction with NatureServe to help drive conservation decisions, aid in the environmental review of projects and land use changes, and provide baseline data helpful in recovering endangered species and for research projects. NatureServe ranks are shorthand formulas that provide information on the rarity of a species or subspecies, both throughout its global range and its range within the State.

GLOBAL RANKS*: Worldwide status of a full species: G1 to G5

G1 = Extremely endangered: <6 viable occurrences (EO's) or <1,000 individuals, or < 2,000 acres of occupied habitat
G2 = Endangered: about 6-20 EO's or 1,000 - 3,000 individuals, or 2,000 to 10,000 acres of occupied habitat
G3 = Restricted range, rare: about 21-80 EO's, or 3,000 – 10,000 individuals, or 10,000 – 50,000 acres of occupied habitat
G4 = Apparently secure; some factors exist to cause some concern such as narrow habitat or continuing threats
G5 = Demonstrably secure; commonly found throughout its historic range

STATE RANKS*: Statewide status of a full species or a subspecies: S1 to S5

Same general definitions as global ranks, but just for the range of the taxa within California.

T-RANKS*: Status of a subspecies throughout its range: T1 to T5

A subspecies is given a T-rank. This is attached to the G-rank for the full species. The S-rank, in this case, will refer to the status of the subspecies within California. The T-rank has the same general definitions as the global ranks.

* Uncertainty about the rank of an element is expressed in two major ways: by expressing the rank as a range of values (e.g., S2S3 means the rank is somewhere between S2 and S3) or by adding a ? to the rank (eg., S2? Indicates more certainty than S2S3, but less than S2).

Q Questionable taxonomy: Taxonomic distinctiveness of this entity at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or the inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority conservation priority.

CNPS – The California Native Plant Society tracks the conservation status of hundreds of plant species and maintains the CNPS *Inventory of Rare and Endangered Plants of California*. The CNPS Rare Plan Program's data are widely accepted as the standard for information on the rarity and endangerment status of the California flora.

1A CNPS Priority List 1A: plant presumed extinct in CA.
1B CNPS Priority List 1B: plant Rare, Threatened, or Endangered in CA and elsewhere; eligible for state listing.
2 CNPS Priority List 2: plant rare, threatened, or Endangered in CA, but more common elsewhere; eligible for state listing.
3 CNPS Priority List 3: more information is needed about this species; some eligible for state listing.
4 CNPS Priority List 4: on watch list for plants of limited distribution.

The CNPS Threat Rank is an extension added onto the CNPS List and designates the level of endangerment by a 1 to 3 ranking as follows:

.1 - Seriously threatened in California (high degree/immediacy of threat)
.2 - Fairly threatened in California (moderate degree/immediacy of threat)
.3 - Not very threatened in California (low degree/immediacy of threats or no current threats known)

Other Organizations

ABC: Green list - The American Bird Conservancy Green List contains all the highest priority birds for conservation in the continental U.S. and Canada. It builds on the species assessments conducted for many years by Partners in Flight for land birds and expands it to include shorebirds, waterbirds, and waterfowl.

Audubon: WatchList (WL) species are those facing population declines and/or threats such as habitat loss on their breeding and wintering grounds, or with limited geographic ranges. The WatchList is a science-based system that focuses attention on at-risk bird species so that limited resources are spent where they are most needed. More information is available at: http://www.audubon.org/bird/watchlist/index.html.

BLM: S - Bureau of Land Management Sensitive. BLM Manual §6840 defines sensitive species as"…those species that are (1) under status review by the FWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing my become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats." Existing California-BLM policy concerning the designation of sensitive species identifies two conditions that must be met before a species may be considered as BLM sensitive: (1) a significant population of the species must occur on BLM-administered lands, and (2) the potential must exist for improvement of the species' condition through BLM management. The "Sensitive Species" designation is not meant in include federally listed species, proposed species, candidate species or State listed species. It is BLM policy to provide sensitive species with the same level of protection that is given federal candidate species.

FS: S – Forest Service: Sensitive: The USDA Forest Service defines sensitive species as those plant and animal species identified by a regional forester that are not listed or proposed for listing by the federal Endangered Species Act for which population viability is a concern, as evidenced by significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

FWS: BCC - Fish and Wildlife Service: Birds of Conservation Concern: The goal of the Birds of Conservation Concern 2002 report is to accurately identify the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent our highest conservation priorities and draw attention to species in need of conservation action.

IUCN - The World Conservation Union, through its Species Survival Commission assess, on a global scale, the conservation status of species, subspecies, varieties and even selected subpopulations in order to highlight taxa threatened with extinction, and therefore promote their conservation.

DD Data Deficient: inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status.
EN Endangered: faces very high risk of extinction in the wild
LC Least Concern: does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened.
LR/LC Lower Risk: has been evaluated and does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable.
Subcategory: Least Concern (taxa which do not qualify for Conservation Dependent or Near Threatened).
LR/NT Lower Risk: has been evaluated and does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable.
Subcategory: Near Threatened (taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable).
NT Near Threatened: is close to qualifying for or is likely to qualify for a threatened category in the near future.
VU Vulnerable: faces high risk of extinction in the wild.

There is an additional hierarchical alphanumeric system of criteria and subcriteria for those species that qualify as Threatened (eg.VU/B1+2c). Please refer to *The IUCN Red List of Threatened Species 2001 Categories and Criteria (v. 3.1)* for further details (http://www.redlist.org/).

USBC: The United States Bird Conservation Watch List (WL). Includes the Partners in Flight (PIF) Watch List, the United States Shorebird Conservation Plan Watch List, and the Waterbird Conservation for the Americas Watch List. This combined watch list is available through the American Bird Conservancy at: http://www.abcbirds.org/watchlist/index.htm. Information on Partners in Flight is available at: http://www.partnersinflight.org/. Information on the United States Shorebird Conservation Plan is available at: http://shorebirdplan.fws.gov/ . Information on the North American Waterbird Conservation Plan is available at: http://www.pwrc.usgs.gov/nacwcp/testarea/nacwcp/pubs/continentalplan.cfm .

WBWG - The Western Bat Working Group is comprised of agencies, organizations and individuals interested in bat research, management and conservation from the 13 western states and Provinces of British Columbia and Alberta, and Northern Mexico.

High (H) Priority: Species considered the highest priority for funding, planning, and conservation actions based on species distribution, status, ecology and known threats (Imperiled)

Medium (M) Priority: Species that warrant closer evaluation, more research, and conservation actions of both the species and possible threats, generally due to a lack of meaningful information about the species.

Low (L) Priority: Current information indicates that the population is stable and major changes in status in the near future are unlikely, although there may be localized concerns and conservation actions would still apply.

Xerces - The Xerces Society Red list of pollinators. The Xerces Society is an international non-profit organization dedicated to protecting biological diversity through invertebrate conservation.

CI Critically Imperiled: At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

Note: range designations for plant species in the species accounts follow the Jepson Manual designations.

Woven-spored Lichen

Texosporium sancti-jacobi

Presence Onsite: No. The habitat elements with which the species is typically associated with do not occur onsite.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: None
NatureServe: G3/S1.1

Description: This lichen forms a thin whitish to pale grayish crustose thallus on organic matter and organic soil. Patches of thalli with clusters of apothecia range in size from 0.5 to 3 cm in diameter. Apothecia are circular, from 0.5 to 1.5 mm in diameter, with a thalline margin (colored like the thallus). The centers of the apothecia are filled with a characteristic dark powdery spore mass ranging from blackish to olive green in color, and sometimes tinged with bright yellow. The spores are two-celled, which will be apparent only in the immature spores found at the base of the apothecium. As the spores mature, they become tightly wrapped with fungal hyphae that become progressively darker and thicker, thus obscuring the spore structure. Spore sizes including the fungal coat are about 36-44 x 20-26 microns, while the spores themselves are 19-26 x 10-14 microns
Communities: Found in arid to semi-arid grasslands, shrublands, or savannas. Parent materials are noncalcareous, including basalt, granite, and mixed noncalcareous allumivium. Soils developed on these parent materials vary greatly, from very fine textured soils on basalt to sandy loams, to soils with a very high content of fine or coarse sand. Soil depth varies greatly, from thin soils over bedrock to moderately thick soils but restricted by a caliche layer or deep alluvial soils. The southern occurrences (California) include A*denostoma fasciculatum, Festuca octoflora, Bromus* cf. *rubens, Eriogonum fasciculatum, and Pinus sabiniana*.
Distribution: West-central California, central Oregon, Washington, and southwestern Idaho.
Populations: The species is monotypic and known from about 15 extant occurrences.
Threats: The greatest threat to this lichen is loss of habitat. This can occur by conversion of rangelands to agriculture and suburban developments, invasion of weedy annual grasses, and overgrazing which can result in extensive destruction of the soil crust.
General Conservation Measures: It is restricted by its intolerance of calcareous, saline, and heavily disturbed sites; where it does occur, *T. sancti-jacobi* constitutes less than one percent of the biotic crust. Observations suggest *Texosporium* populations can recolonize areas following severe disturbance, albeit over a long period of time, and that it would respond favorably to improved management practices and habitat protection efforts

Information Sources:

NatureServe. 2008. NatureServe Explorer: An online encyclopedia of life [web application]. Version 5.0. NatureServe, Arlington, Virginia. Accessed on Dec. 20, 2008 from http://www.natureserve.org/explorer.

Ponzetti, J. 1999. *Texosporium sancti-jacobi* field guide. Washington Department of Natural Resources' Natural Heritage Program. Accessed on Dec. 20, 2008 from http://www1.dnr.wa.gov/nhp/refdesk/lists/plantrnk.html

Southern Tarplant

Centromadia parryi ssp. *australis*

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Also, the habitat with which the species is typically associated with does not occur onsite.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.1
NatureServe: G4T2/S2.1

Description: Southern tarplant is an annual herb with orange-yellow ray flowers and brown or black disk flowers that bloom from May to November. At maturity the densely glandular stem ranges from 4 to 30 inches in height. The leaves are generally puberulent, may be glandular, and are soft-haired or bristled. The lower leaves are deeply 1-to-2 divided and have a length between 2 and 8 inches. The upper leaves are linear with margins that are entire or few-toothed.
Communities: Marshes and Swamps, Valley and Foothill Grassland, Vernal Pools. Typically found in seasonally moist (alkaline) grasslands.
Distribution: Los Angeles, Orange, Santa Barbara, San Diego, and Ventura Counties; Baja California;
Populations: Found locally in U.S.G.S. Quad –Newbury Park. Nearest recorded occurrence is in 7 miles to the southeast of the site in Calabasas at Borchard Road.
Threats: Habitat loss due to urbanization, off-road vehicles, and foot traffic. Genetic isolation due to habitat fragmentation.
General Conservation Measures: Protection of existing sites and the hydrology that produces the necessary habitat.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Santa Susana Tarplant

Deinandra minthornii

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Also, the site lacks the rocky outcrops with which the species is typically associated.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: Rare
CNPS Status: 1B.1
NatureServe: G2/S2.2

Description: Santa Susana tarplant is a leafy perennial shrub growing to a height of 3 feet and spreading out to 12 feet in diameter. It is very resinous, fragrant, and has numerous stiff, straight leafy stems arising from the base. The stem and leaves are somewhat rough and covered with short bristly hairs. The small, crowded leaves are alternate, entire margined, linear and slightly thickened. The heads are mostly solitary at the ends of long peduncles. There are generally eight yellow ray flowers and 18-23 yellow staminate disk flowers. The yellow anthers are an easy way to differentiate this

species from *Deinandra fasciculata*, which has black anthers.
Communities: Chaparral and Coastal Scrub. Typically found in rocky terrain. Found at elevations that range from 920-2500 feet.
Distribution: Los Angeles and Ventura Counties
Populations: Found locally in U.S.G.S. Quads – Calabasas, Thousand Oaks, Point Dume. The nearest know population is 8 miles to the southeast of the site. Known from only a few locations in the Santa Susana and Santa Monica Mts.
Threats: Loss of suitable habitat due to residential development.
General Conservation Measures: Protection of known populations and suitable habitat within its known range.

Information sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Lyon's Pentachaeta

Pentachaeta lyonii

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Also, the site lacks the microhabitat elements (clay soils of volcanic origin; exposed soils that exhibit a microbiotic crust which may inhibit invasion by other plant competitors; and a mosaic of bare ground (>10%) patches in an area with less than 60 percent cover) that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: Endangered
State Status: Endangered
CNPS Status: 1B.1
NatureServe: G1/S1.1

Description: Lyon's pentachaeta is an herbaceous, annual plant in the sunflower family (Asteraceae). The plants are small, slender annuals with linear, entire, ciliate leaves, mostly yellow-rayed heads on long peduncles, and pappus bristles 8–12; phyllaries narrowly lanceolate, hirsuto-pilose; leaves 3–6 mm wide. Typically blooms from March to August.
Communities: The following is taken from the final rule designation for critical habitat for Lyon's pentachaeta:

The species tends to occur on rocky clay soils of volcanic origin. It has been recorded in areas with a large percentage of bare ground (>60%), a low proportion of vegetative cover (<25%), and it does not compete well with dense annual grasses or shrubs. *P. lyonii* will persist in stable populations without disturbance if site conditions such as exposed soils that exhibit a microbiotic crust inhibit invasion by shrubs and annual grasses, or it may require periodic disturbances to remove plant competitors.

Common species associated with chaparral communities in this region of California are chamise (*Adenostoma fasciculatum*), California lilacs (*Ceanothus* spp.), manzanitas (*Arctostaphylos* spp.), sages (*Salvia* spp.), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), sugar bush (*Rhus ovata*), and yucca (*Yucca whipplei*). Common species associated with coastal sage scrub are California sagebrush (*Artemisia californica*), sages, California buckwheat, lemonade berry (*Rhus*

integrifolia), encelia (*Encelia californica*), and goldenbush (*Isocoma menziesii*).

The pocket grasslands within these shrub communities that support *P. lyonii* are comprised of native and nonnative grasses including purple needlegrass (*Nassella pulchra*), wild oat (*Avena* spp.), and bromes (*Bromus* spp.); as well as a variety of herbs.

Based on the current knowledge of the life history, biology, and ecology of the species and the requirements of the habitat to sustain the essential life history functions of the species, it has been determined that the primary constituent elements for *Pentachaeta lyonii* are: (1) Clay soils of volcanic origin; (2) Exposed soils that exhibit a microbiotic crust which may inhibit invasion by other plant competitors; and (3) A mosaic of bare ground (>10%) patches in an area with less than 60 percent cover.

Distribution: Los Angeles and Ventura Counties.

Populations: Found locally in U.S.G.S. Quads –Thousand Oaks, Newbury Park, Simi. Known from fewer than twenty extant occurrences in Santa Monica Mtns. and western Simi Hills.

Threats: Threatened by development, alteration of fire regimes, trampling, vehicles, nonnative plants, and recreational activities.

General Conservation Measures: Protection of known populations and suitable habitat within its known range. No successful translocation attempts as of 1994.

Information sources:

California Native Plant Society (CNPS). 2006. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

California's Plants and Animals. 2008. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Department of the Interior: Fish and Wildlife Service. 2006. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Astragalus brauntonii and Pentachaeta lyonii; Final Rule. Federal Register: 71-219. Accessed on Dec. 20, 2008 from wais.access.gpo.gov

Nuttall. *Pentachaeta* Trans. Amer. Philos. Soc., n. s. 7: 336. 1840. Flora of North America. eFloras.org. Accessed on Dec. 20, 2008 from http://www.efloras.org

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from. http://ucjeps.berkeley.edu/interchange.html

White Rabbit Tobacco

Pseudognaphalium leucocephalum

Presence Onsite: Possible. Although the species was not observed during the surveys of the project site, or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site, the site does have the vegetation communities and habitat elements associated with the species in the sandy wash area in the northwest portion of the property.

Onsite Conservation Measures: See Mitigation Measure 4 in the Biological Resources Technical Report.

Federal Status: None
State Status: None
CNPS Status: 2.2
NatureServe: G4/S3.2

Description: Perennial rhizomatous forb to 60 cm; herbage densely white woolly. Leaves alternate, narrow, entire. Typical blooming period is from August to November.

Communities: Chaparral, Coastal Sage Scrub, Cismontane Woodland, Riparian Woodland; sandy, gravely soils. Found at elevations that range from 0 – 6,500 feet.
Distribution: Los Angeles, Orange, Riverside, Santa Barbara, San Diego, San Luis Obispo, Ventura Counties; Arizona, Baja California, New Mexico, Sonora - Mexico, Texas.
Populations: Found locally in U.S.G.S. Quads - Newbury Park
Threats: Loss of habitat due to urbanization.
General Conservation Measures: Many collections and records are historical. New field surveys needed to establish current range and populations of the species. Protection of known populations and suitable habitat within its range is necessary.

Information sources:

California Native Plant Society (CNPS). 2004. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

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Chaparral Ragwort

Senecio aphanactis

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the alkaline habitat element that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 2.2
NatureServe: G3?/S1.2
Description: A slender, upward-branched annual herb that ranges in height from 4 to 8 inches. The plant is glabrous except for the heads. The ¾ to 1-½ inches long leaves are linear to oblanceolate with sub-entire to lobed margins. The heads barely radiate with the few yellow to orange ray flowers having ligules that are slightly longer than the phyllaries. The yellowish disk flowers number less than 40. The flowers bloom from January to April.
Communities: Chaparral, Cismontane Woodland, Coastal Scrub. Typically found in flat alkaline areas within these habitats.
Distribution: Orange, Santa Barbara, Los Angeles, Riverside, San Diego, and Ventura Counties; Baja California. The plant is considered rare in Orange, Riverside, and Los Angeles Counties.
Populations: Found locally in U.S.G.S. Quads – Newbury Park, Camarillo.
Threats: Loss of suitable habitat due to urbanization and alteration of hydrology that produces the necessary alkaline habitat.
General Conservation Measures: Protection of suitable habitat and the hydrology that produces the alkaline soil.

Information sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

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Greata's Aster

Symphyotrichum greatae

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the vegetation communities that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.3
NatureServe: G2/S2.3
Description: A perennial herb with a sparsely hairy stem that ranges in height from 20 to 50 inches at maturity. The basal and cauline leaves range in size from 2 to 6 inches and are elliptic to ovate and hairy. The violet ray and yellow disk flowers are evident during its blooming period of June to October.
Communities: Broad-leafed Upland Forest, Chaparral, Cismontane Woodland, Lower Montane Coniferous Forest, and Riparian Woodland. This uncommon plant is typically found in damp locations in canyons. Found at elevations that range from 1000-6000 feet.
Distribution: Los Angeles County
Populations: Found locally in U.S.G.S. Quad – Piru
Threats: Loss of suitable habitat due to residential development and recreational activites.
General Conservation Measures: Protection of suitable habitat from development and protection of flowering plants from recreational activities.

Information sources:

California Native Plant Society (CNPS). 2004. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993 ed. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Blochman's Dudleya

Dudleya blochmaniae ssp. *blochmaniae*

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the habitat elements (open, rocky slopes, often serpentine or clay-dominated) that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.1
NatureServe: G2T2/S2.1

Description: The subspecies of *Dudleya blochmaniae* are succulent perennials that have a rosette of leaves that sprout from a corm. A member of the stonecrop family, plants produce white flowers with red or purple markings on short stalks. Blooms from April to June
Communities: Coastal Bluff Scrub, Chaparral, Coastal Scrub, Valley and Foothill Grassland. Open, rocky slopes, often serpentine or clay-dominated. Found at elevations ranging from 15-1,400 feets.

Distribution: Los Angeles, Orange, Santa Barbara, San Diego, San Luis Obispo, Ventura Counties. Known from fewer than twenty occurrences in California, and fewer than five in Baja California.
Populations: Found locally in U.S.G.S. Quads – Newbury Park, Camarillo
Threats: Seriously threatened by development.
General Conservation Measures: Protection of known populations and suitable habitat within its known range.

Information sources:
California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory
CPC National Plant Collection Profile. 2006. *Dudleya blochmaniae* ssp. *blochmaniae*. Center for Plant Conservation. Accessed on Dec. 20, 2008 from http://www.centerforplantconservation.org/
Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

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Agoura Hills Dudleya

Dudleya cymosa ssp. *agourensis*

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the vegetation communities that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: Threatened
State Status: None
CNPS Status: 1B.2
NatureServe: G5T1/S1.2

Description: A synonym of *Dudleya cymosa* ssp. *ovatifolia* in the *Jepson Manual*. A succulent perennial that has a rosette of leaves (oblong to elliptic to ovate) that sprout from a corm. The plant produces yellow flowers. Blooms from May to June.
Communities: Chaparral, Cismontane Woodland. Open, rocky volcanic slopes. Found at elevations ranging from 650-1,600 feet.
Distribution: Los Angeles and Ventura Counties. Known only from the western Santa Monica Mountains.
Populations: Found locally in U.S.G.S. Quad –Thousand Oaks.
Threats: Threatened by development.
General Conservation Measures: Protection of known populations and suitable habitat within its known range.

Information sources:
California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory
Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

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Marcescent Dudleya

Dudleya cymosa ssp. *marcescens*

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the vegetation communities that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: Threatened
State Status: Rare
CNPS Status: 1B.2
NatureServe: G5T2/S2.2

Description Marcescent dudleya is a succulent perennial in the stonecrop family (Crassulaceae) with a basal rosette of leaves. Its flowers are bright yellow and often marked with red. The plant produces yellow flowers. Blooms from April to July.
Communities: Chaparral. Found at elevations ranging from 400-1,700 feet meters.
Distribution: Los Angeles and Ventura Counties. Known only from eight occurrences in the Santa Monica Mountains.
Populations: Found locally in U.S.G.S. Quad –Newbury Park.
Threats: Threatened by development and foot traffic.
General Conservation Measures: Protection of known populations and suitable habitat within its known range.

Information sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Conejo Dudleya

Dudleya parva

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the habitat elements (north-facing volcanic cliffs, adjacent grasslands) that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: Threatened
State Status: None
CNPS Status: 1B.2
NatureServe: G2/S2.1

Description: This species occurs in a very unique habitat and is unique even among other species in the Dudleya genus. This species has a flowering stalk that grows from 5 to 18 cm in length, tipped with pale yellow flowers that are often flecked with red on the keel. Other local Dudleya species are evergreen, while the Conejo live-forever is vernal, with its rosette of linear leaves withering by early summer. Blooms from May to June.
Communities: Coastal Scrub, Foothill and Valley Grassland. North-facing volcanic cliffs, adjacent grasslands. Found at elevations ranging from 200-1,600 feet.
Distribution: Ventura County. Known from approximately ten occurrences from the western end of Simi Hills to Conejo Grade. Sites have from 25 to a few thousand individuals, with the majority containing numbers in the hundreds.

Populations: Found locally in U.S.G.S. Quads – Thousand Oaks, Newbury Park, Simi.
Threats: Threatened by horticultural collecting, recreation, vehicles, and urbanization.
General Conservation Measures: Habitat and population preservation. Populations may be undetectable during dry years and may be suppressed by nonnative species.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

CPC National Plant Collection Profile. 2006. *Dudleya parva*. Center for Plant Conservation. Accessed on Dec. 20, 2008 from http://www.centerforplantconservation.org/

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Verity's Dudleya

Dudleya verityi

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the habitat elements (north-facing volcanic outcrops) that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: Threatened
State Status: None
CNPS Status: 1B.2
NatureServe: G1/S1.1

Description: *Dudleya verityi* is unique among *Dudleya* taxa in that it forms multiple rosettes, as many as 100 to a colony. Rosette leaves are 0.8 to 2 inches long and 0.2 to 0.4 inches wide; floral stems are 2 to 5.9 inches tall; corollas are lemon-yellow with petal tips recurved up to 90 degrees.
Communities: Chaparral, Cismontane Woodland, Coastal Sage Scrub. North-facing volcanic outcrops. Found at elevations ranging from 200-500 feet elevation.
Distribution: *Dudleya verityi* is limited to three populations occurring in a narrow band 4 miles in length along the lower slopes of Conejo Mountain, from Long Grade Canyon to U.S. highway 101. The northernmost population consists of over a thousand individuals and another is considered abundant in the limited habitat it occupies.
Populations: Found locally in U.S.G.S. Quads – Newbury Park and Camarillo.
Threats: Historically, the lower slopes of Conejo Mountain have been the site for quarrying of construction-grade rock. The land is zoned for mineral extraction and there are abandoned, active, and proposed quarry operations within the distribution of *D. verityi*. The majority of the distribution of *D. verityi* is privately owned in a region with rapidly increasing development. Only a small portion of habitat is owned by a public agency (Ventura County Flood Control District).
General Conservation Measures:

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Thomas, Tim. Endangered and Threatened Wildlife and Plants: Determination of Endangered Status for Two Plants and Threatened Status for Four Plants From Southern California. Federal Register. Volume 62. Number 19. Page 4172-4183. US Fish and Wildlife Service. Accessed on Dec. 20, 2008 from http://www.gpoaccess.gov/fr/index.html

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Braunton's Milk-vetch

Astragalus brauntonii

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the habitat elements (limestone and other carboniferous soils) that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: Endangered
State Status: None
CNPS Status: 1B.1
NatureServe: G2/S2.1

Description: Braunton's milk-vetch is a robust, short-lived perennial with lilac flowers in the pea family (Fabaceae). It is one of the tallest members of the genus, reaching a height of 60 inches and is covered with woolly hairs. The species is readily distinguished from the only other perennial species of *Astragalus* in the area, *Astragalus trichopodus*, by being woolly as opposed to strigose (covered with sharp, stiff-appressed hairs) or glabrous (without hairs), by having two-chambered rather than one-chambered pods, and also by having purple rather than white to greenish flowers.

Communities: Closed-cone Coniferous Forests, Chaparral, Coastal Scrub, Valley and Foothill Grasslands. Apparently a limestone endemic.
Distribution: Los Angeles, Orange, and Ventura Counties. Known from only ten occurrences that are primarily on limestone outcrops.
Populations: Found locally in U.S.G.S. Quad – Thousand Oaks.
Threats: Threatened by development and alteration of local fire regimes.
General Conservation Measures: This species has a life span of 2 to 3 years, and depending on fire interval, a given population is visible only once in 20 to 50 years or longer. Fire is a natural requirement for the survival of this species. The natural frequency of fire in the habitat of *Astragalus brauntonii* is unknown, but estimates range between 20 years to over 100 years with an average of 70 year intervals. Increasing human populations in southern California have resulted in higher fire frequencies, mostly in the form of arson set fires. Higher frequency fires, especially when they occur in hot dry conditions, may be detrimental to Braunton's milk-vetch because the potential to eliminate viable seed in the soil is higher than in a naturally occurring fires. Prescribed burns in known Braunton's milk-vetch habitat may be beneficial to the species.

Information sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Thomas, Tim. Endangered and Threatened Wildlife and Plants: Determination of Endangered Status for Two Plants and Threatened Status for Four Plants From Southern California. Federal Register. Volume 62. Number 19. Page 4172. US Fish and Wildlife Service. Accessed on Dec. 20, 2008 from http://www.gpoaccess.gov/fr/index.html

Treatment from the Jepson Manual. 1993 ed. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Round-leaved Filaree

California macrophyllum

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the vegetation communities that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: List 2.1
NatureServe: G3/S3.1

Description: A small annual herb with small white flowers tinged in red or purple, which blooms from March to May. In southern California it is primarily found on friable clay soil in grasslands. Although the range of round-leaved filaree, also known as large-leaved filaree, is quite extensive throughout California, the number of populations in Southern California is quite low.
Communities: Cismontane Woodlands, Foothill and Valley Grasslands.
Distribution: Found throughout coastal California in suitable habitat.
Populations: Found locally in U.S.G.S. Quad – Simi, Thousand Oaks.
Threats: Urbanization of habitat suitable for round-leaved filaree.
General Conservation Measures: The very crumbly clay soil that round-leafed filaree is found in is quite rare in southern California and should be protected from further development.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory
Resier, Craig H. Rare Plants of San Diego County." San Diego Chapter-Rare Plants. May 1994. Sierra Club. Accessed on Dec. 20, 2008 from http://sandiego.sierraclub.org/rareplants
Treatment from the Jepson Manual. 1993 ed. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Ross' Pitcher Sage

Lepechinia rossii

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the vegetation communities that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.2
NatureServe: G1/S1.2

Description: *Lepechinia rossii* (Lamiaceae) is described as a new species narrowly endemic to the western Transverse Ranges of southern California. It is a member of section *Calycinae*, which includes four additional species endemic to California and adjacent Baja California, Mexico. *Lepechinia rossii* is most readily distinguished from other members of section *Calycinae* by geniculate inflorescence axes, bent at 60–90° angles relative to the

subtending stems, and by large, foliaceous inflorescence bracts which are generally equaling or exceeding their adjacent flowers in length, and little reduced distally. Typical blooming period is from May to September.
Communities: Chaparral. Found at elevations ranging from 1,000-2,300 feet.
Distribution: Los Angeles and Ventura Counties.
Populations: Found locally in U.S.G.S. Quad – Fillmore. At present, two populations are documented, one in the Liebre Mountains (Los Angeles County) and one in the Topatopa Mountains (Ventura County), both occurring in chaparral, on public lands administered by the U.S. Forest Service.
Threats: Conservation concerns include habitat degradation by off-highway vehicle activity, power line maintenance, petroleum exploration and extraction, and anthropogenic changes in fire frequency.
General Conservation Measure: Protection of known populations and suitable habitat.

Information Sources:

Boyd, S., Mistretta, O. 2006. *Lepechinia rossii* (Lamiaceae) A narrow endemic from the western Transverse Ranges of Southern California. Madrono 53: 77-84.

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Abrams' Oxytheca

Acanthoscyphus parishii var. *abramsii*

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the vegetation communities that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.2
NatureServe: G4?T2/S2.2

Description: Plants erect or spreading, 1-3 dm. Stems slender, 1-3(-7) cm. Leaf blades 1-3(-5) cm. Inflorescences: bracts (2-)3, triangular, awns 0.5-1.5 mm. Peduncles 0.8-2 cm. Involucres: awns 7-16, dark red, 3-4 mm. Blooms from June – August.
Communities: Chaparral; sandy or shale soils; Found at elevations ranging from 5,000-6,000 feet.
Distribution: Santa Barbara and Ventura Counties. Variety *abramsii* is known only from the San Rafael Mountains, Topatopa Mountain, and Mount Pinos.
Populations: Found locally in U.S.G.S. Quad –Topatopa Mountains.
Threats: Loss of populations and suitable habitat due to increased competition from nonnative plants.
General Conservation Measures: The remaining populations must be protected from further threats.

Information sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Reveal, Harvard Pap. Bot. 9: 144. 2004. Flora of North America. eFloras.org. Accessed on Dec. 20, 2008 from http://www.efloras.org

Conejo Buckwheat

Eriogonum crocatum

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the habitat elements (Conejo volcanic soil) that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: Rare
CNPS Status: 1B.2
NatureServe: G2/S2.1

Description: The Conejo buckwheat is a perennial shrub less than 0.5 m high by 0.5-1 m wide. Its foliage is a striking silvery green, with woolly leaves. The flowers are clusters of tiny bright, sulfur yellow flowers. It has no dormancy period. Blooms from April to July.
Communities: Chaparral, Coastal Sage Scrub. Primarily occurs on rocky slopes composed of Conejo volcanics. Found at elevations ranging from 150-1,700 feet.
Distribution: Los Angeles, Riverside, and San Bernardino Counties. Known from fewer than twenty occurrences.
Populations: Found locally in U.S.G.S. Quads – Thousand Oaks, Newbury Park.
Threats: Potentially threatened by development.
General Conservation Measures: Protection of known populations and associated habitats.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Dune Larkspur

Delphinium parryi ssp. *blochmaniae*

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the habitat elements (sandy soils) that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.2
NatureServe: G4T2/S2.2

Description: Stem 15–110 (generally < 80) cm, generally curled-puberulent, especially below; Leaves: basal generally 0 in flower; lobes of cauline 5–15; Inflorescence: flowers 3–60; pedicels 5–68 mm, 8–50 mm apart, ± ascending, generally puberulent; Flower: sepals generally reflexed, lateral 16–25 mm, spur 11–16 mm; lower petal blades 7–10 mm, paler than sepals. Blooms from April to May.
Communities: Chaparral, Coastal Dunes. Sandy soils. Found at elevations ranging from 0-6,500 feet.
Distribution: Los Angeles, Riverside, and San Bernardino Counties. Known from fewer than twenty occurrences.
Populations: Found locally in U.S.G.S. Quads – Thousand Oaks, Camarillo.
Threats: Threatened by development.
General Conservation Measures: Protection of known populations and associated habitats.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

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Umbrella Larkspur

Delphinium umbraculorum

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the vegetation communities that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.2
NatureServe: G2G3/S2S3.3

Description: Stems 40-70(-90) cm; base often reddish, glabrous or puberulent. Leaves usually present on proximal 1/5 of stem at anthesis; basal leaves 0-3 at anthesis; cauline leaves 3-7 at anthesis; petiole 0.8-12 cm. Leaf blade round to pentagonal, 1.5-4 × 2-6 cm, nearly glabrous; ultimate lobes 3-13, width 3-20 mm (basal), 1-8 mm (cauline). Inflorescences (5-)10-25(-45)-flowered, open, narrowly pyramidal; pedicel 0.5-3(-7) cm, glabrous to puberulent; bracteoles 3-7 mm from flowers, green, linear, 3-6 mm, puberulent. Flowers: sepals dark blue, puberulent, lateral sepals spreading, 9-16 × 4-7 mm, spurs gently upcurved, ascending 30-45° above horizontal, 8-14 mm; lower petal blades elevated, exposing stamens, 3.5-6 mm, clefts 0.5-1.5 mm; hairs densest near junction of blade and claw above base of cleft, centered or on inner lobes, white. Fruits 9-16(-19) mm, 2.5-3(-4) times longer than wide, puberulent. Seeds: seed coat cells brick-shaped, cell margins straight, surfaces smooth. Blooms from April to June.
Communities: Cismontane Woodland; slopes in oak woodlands. Found at elevations ranging from 1,000-2,000 feet.
Distribution: Monterey, Santa Barbara, San Luis Obispo, Ventura Counties.
Populations: Found locally in U.S.G.S. Quads – Santa Paula Peak.
Threats: Limited range makes any habitat loss significant.
General Conservation Measures: Protection of known populations and associated habitats.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

H. F. Lewis & Epling, Brittonia. 8: 19. 1954. Flora of North America. eFloras.org. Accessed on Dec. 20, 2008 from http://www.efloras.org

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

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Mesa Horkelia

Horkelia cuneata ssp. *puberula*

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the habitat elements (dry, sandy soils) that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.2
NatureServe: G4T2/S2.1

Description: Mesa horkelia is a small, matted, green to gray perennial shrub with white flowers that bloom from February to September. Open clusters of of several–many separate flowers or < 10-flowered clusters. Hairs are sparse and could be glandular.
Communities: Coastal Chaparral, Coastal Sage Scrub, Cismontane Woodland. Dry, sandy soils. Found at elevations ranging from 230-2,300 feet.
Distribution: Outer South Coast Ranges, South Coast (especially foothill edge of Los Angeles Basin). Many historical occurrences extirpated; need current information on status of occurrences.
Populations: Found locally in U.S.G.S. Quad – Simi.
Threats: Many of the historic locations of mesa horkelia have been lost due to urbanization.
General Conservation Measures: Habitat and population preservation.

Information Sources:

California Native Plants. 2004. *Horkelia cuneata puberula.* Las Pilitas Nursery. Accessed on Dec. 20, 2008 from http://www.laspilitas.com/plants/824.htm

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Plummer's Mariposa Lily

Calochortus plummerae

Presence Onsite: Possible. Although the species was not observed during the surveys of the project site, or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site, the site does have the vegetation communities and habitat elements associated with the species. Additionally, nine (9) occurrences of the species have been recorded in the CNDDB within 12 miles of the project site, with the nearest populations located approximately 4 miles to the east and 4 miles to the north.
Onsite Conservation Measures: See Mitigation Measure 4 in the Biological Resources Technical Report.

Federal Status: None
State Status: None
CNPS Status: 1B.2
NatureServe: G3/S3.2

Descriptions: A perennial bulbiferous herb that is 1 to 2 feet in height. Basal leaves appear withering and measure 4 to 8 inches in length. The cauline leaves are 1 to 17 inches long with the upper most leaves in-rolled. The inflorescence consists of 2 to 6 flowers that have leaf-like bracts. The flower is bell-shaped with pale-pink to rose colored petals that turn purple with age. A central band of long, yellow hairs is prominent on the inside of the flower.

Communities: Chaparral, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, Foothill and Valley Grassland. Plummer's Mariposa lily is typically found on arid, rocky slopes, areas of brush, and openings in chaparral.
Distribution: Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. Widespread but local in coastal southern California.
Populations: Found locally in U.S.G.S. Quads – Simi.
Threats: Habitat loss due to urbanization.
General Conservation Measures: Fire suppression in areas with a dominant cover of nonnative annuals may limit sexual reproduction; prescribed fires could increase numbers.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Carter, Michael L. Plummer's Mariposa Lily. Southern California Wildflowers and Other Plants. 2004. California Plant Names: Latin Name Meanings and Derivations and Southern California Wildflowers. Accessed on Dec. 20, 2008 from http://www.calflora.net/

Scott, Dr. Thomas. Plummer's Mariposa Lily. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. 2001. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

Late-flowered Mariposa Lily

Calochortus weedii var. *vestus*

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the vegetation communities that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.2
NatureServe: G3?T2/S2.2

Descriptions: A perennial bulbiferous herb that is 1 to 3 feet in height. Basal leaves appear withering and measure 10 to 15 inches in length. The upper cauline leaves are in-rolled. The inflorescence consists of 2 to 6 flowers. The flower is bell-shaped with squarish petals that are pale cream, purplish, or red-brown in color and also dark-hairy. The anthers are abruptly pointed. Blooms from June to August.
Communities: Chaparral, Cismontane Woodland, Riparian Woodland. Often found in serpentine soils. Found at elevations that range from 900-6,000 feet.
Distribution: Kern, Monterey, Santa Barbara, San Luis Obispo, Ventura Counties.
Populations: Found locally in U.S.G.S. Quads – Santa Paula Peak.
Threats: Threatened by grazing, development, and fire suppression.
General Conservation Measures: Fire suppression in areas with a dominant cover of nonnative annuals may limit sexual reproduction; prescribed fires could increase numbers.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993 ed. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Ojai Fritillary

Fritillaria ojaiensis

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the vegetation communities that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.2
NatureServe: G1/S1.2

Descriptions: A perennial bulbiferous herb that is 1.5 to 3 feet in height. Leaves are in 1–3 whorls of 3–5 below and alternate or opposite above; 2-6 inches, linear to narrowly lanceolate. **Flower** nodding; perianth parts 1.5–3 cm, widely lanceolate, dull greenish yellow below with scattered to profuse dark dots; nectary distinct or not, 1/3 perianth length, ± diamond-shaped to ovate, paler than rest of perianth part; style divided 1/2–2/3. Blooms from February to May.
Communities: Broad-leafed Upland Forest, Chaparral, Lower Montane Coniferous Forest. Often found in rocky soils. Found at elevations that range from 1,000-3,500 feet.
Distribution: Sonoma, Monterey, Santa Barbara, San Luis Obispo, Ventura Counties.
Populations: Found locally in U.S.G.S. Quads – Santa Paula Peak. Known from fewer than 20 occurrences.
Threats: Possibly threatened by road maintenance and recreational activities.
General Conservation Measures: Fire suppression in areas with a dominant cover of nonnative annuals may limit sexual reproduction; prescribed fires could increase numbers.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Treatment from the Jepson Manual. 1993 ed. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Vernal Barley

Hordeum intercedens

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the habitat elements (alkaline soils) that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 3.2
NatureServe: G3G4/S3S4

Descriptions: Plants annual; loosely tufted. Culms 5–40 cm, erect to geniculate; nodes usually pubescent. Sheaths with stripes of hairs; ligules 0.3–0.8 mm; auricles usually absent, shorter than 2 mm if present; blades to 9 cm long, to 4 mm wide, both surfaces sparsely to densely hairy, hairs spreading. Spikes 2.5–6.2 cm long, 4–6 mm wide, often partially enclosed at maturity, pale green. Glumes straight, usually slightly divergent at maturity. Central spikelets: glumes to 17 mm long, to 0.8 mm wide basally, distinctly flattened near the base; lemmas 4.5–7.5 mm, usually sparsely pubescent towards the base, glabrous distally, awned, awns 5.6–9.8 mm, often slightly divergent at maturity; anthers

0.6–1.2 mm. Lateral spikelets usually sterile; glumes to 17.5 mm, distinctly flattened near the base; lemmas 1.7–4.4 mm, blunt to acute, usually unawned, rarely awned, awns to 1.2 mm. Blooms from March to June.
Communities: Coastal Dunes, Coastal Sage Scrub, Foothill and Valley Grassland Saline (flats and depressions), Vernal Pools. Alkaline soils. Found at elevations that range from 15-3,500 feet.
Distribution: San Diego, Riverside, Los Angeles, Anacapa Island, Kings, Mono, Santa Barbara, San Benito, San Mateo, and Ventura Counties; Santa Barbara Island, San Clemente Island, Santa Cruz Island, Santa Catalina Island, San Nicolas Island, Santa Rosa Island; Baja California, Mexico.
Populations: Found Locally in U.S.G.S. Quads –Newbury Park.
Threats: Most mainland occurrences have been extirpated by development; others are threatened. This species and its habitat are threatened by urbanization, agricultural conversion, discing, trampling from livestock, channelization, and alteration of hydrology.
General Conservation Measures: Provisionally, it is recommended that all substantial populations in coastal Southern California be protected; significant portions of all smaller populations should also be protected.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Scott, Dr. Thomas. Vernal barley. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. 2001. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

Treatment from the Jepson Manual. 1993 ed. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Chaparral Nolina

Nolina cismontane

Presence Onsite: No. This large, conspicuous species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the habitat elements (sandstone, gabbro soils) that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CNPS Status: 1B.2
NatureServe: G1/S1.1

Description: Chaparral nolina is a large yucca-like perennial evergreen shrub that grows in xeric conditions. Long, wiry, upright or lax, leaves (19-55 inches x .5-1 inch) numbering between 30 and 90 form from a rosette. Woody stems are typically 1 foot in height, but may reach up to 5 feet. Inflorescences compound paniculate with minute white flowers and reddish-brown seeds. Flowering early to mid-spring.
Communities: Coastal Sage Scrub and Chaparral. Sandstone or gabbro soils. Found at elevations that range from 650-4,300 feet.
Distribution: Los Angeles, Orange, San Diego, and Ventura Counties.
Populations: Found locally in U.S.G.S. Quad – Thousand Oaks.
Threats: Residential development and agricultural expansion have led to the loss of populations and potential habitat.

General Conservation Measure: All substantial populations are recommended for protection; significant portions of smaller populations should be placed into natural open space preserves.

Information Sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

Resier, Craig H. Rare Plants of San Diego County. San Diego Chapter-Rare Plants. May 1994. Sierra Club. Accessed on Dec. 20, 2008 from http://sandiego.sierraclub.org/rareplants

California Orcutt Grass

Orcuttia californica

Presence Onsite: No. The species was not observed during the surveys of the project site or during the spring floristic surveys that were previously conducted on parcels in the vicinity of the project site that have similar habitat. Additionally, the site lacks the vegetation communities that the species is typically associated with.
Onsite Conservation Measures: None required.

Federal Status: Endangered
State Status: Endangered
CNPS Status: 1B.1
NatureServe: G2/S2.1

Description: A bright green, fragrant annual herb that has stems (2 to 6 inches in length) that are generally prostrate and may form mats. The sticky leaves measure $^1/_3$ to ¾ of an inch long and are very thin. The inflorescences are in spikelets crowded at the tip of the stem.
Communities: Vernal Pools

Distribution: Los Angeles, Riverside, San Diego, and Ventura Counties; Baja California. Extirpated from much of its historical range. Known from highly localized vernal pool habitats widely spread through southern California.
Populations: Found locally in U.S.G.S. Quad – Simi.
Threats: Loss of populations and suitable habitat due to urbanization, agricultural practices, alteration of hydrology that eliminates vernal conditions, competition from nonnative plants, grazing, and off-road vehicles.
General Conservation Measures: Protection of existing populations from threats and protection of the hydrological processes that produce vernal pools.

Information sources:

California Native Plant Society (CNPS). 2008. Inventory of Rare and Endangered Plants (online edition, v7-07d). Rare Plant Scientific Advisory Committee. California Native Plant Society. Sacramento, CA. Accessed on Dec. 20, 2008 from http://www.cnps.org/inventory

California Orcutt Grass. California's Plants and Animals. 2003. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Treatment from the Jepson Manual. 1993. University of California-Berkeley. Accessed on Dec. 20, 2008 from http://ucjeps.berkeley.edu/interchange.html

Riverside Fairy Shrimp
Streptocephalus woottoni

Presence Onsite: No. The species was not observed during the surveys of the project site and the habitat with which the species is typically associated with does not occur onsite.
Onsite Conservation Measures: None required.

Federal Status: Endangered
State Status: None
CDFG: None
NatureServe Rank: G1/S1
Other: IUCN: EN

Description: Small translucent-bodied crustacean.
Habitats: Seasonal vernal pools, vernal pool-like ephemeral ponds, and stock ponds.
Range: Riverside fairy shrimp is limited to southwestern California and northwestern Baja California. It occurs from Los Angeles County south through Orange and western Riverside Counties to coastal San Diego County and the vicinity of Baja Mar north of Ensenada in Baja California.
Food Sources: Non-selective feeder of detritus, bacteria, algal cells, and other microscopic items.
Threats: Urban, agricultural development, modified hydrology due to adjacent road construction, and illegal trash dumping. Unpredictable natural events such as drought or fire may extirpate the Riverside fairy shrimp due to its fragmented and restricted range.
General Conservation Measures:
Immediate protection of vernal pools and the hydrology that is associated with them.

Information Sources:
Scott, Dr. Thomas. 2001. Riverside Fairy Shrimp. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

Santa Monica Grasshopper
Trimerotropis occidentaloides

Presence Onsite: Unknown. Data for the species is limited and its natural history has not yet been fully described.
Onsite Conservation Measures: Unknown

Federal Status: None
State Status: None
CDFG: None
NatureServe Rank: G1G2S1S2
Other: IUCN: EN

Description: No information found.
Habitats: This species has been found on bare hillsides and along dirt trails in chaparral (Rentz and Weissman 1981).
Range: The Santa Monica Mountains grasshopper is known only from the western Santa Monica Mountains in Los Angeles and Ventura Counties.
Food Sources: No information found.
Threats: Two locations inhabited by this species have been destroyed by development.
General Conservation Measures:
Protection of the species' associated habitat.

Information Sources:
Nagano, C and K. Miller. Endangered and Threatened Wildlife and Plants; 90-Day and 12- Month Findings for Eleven Petitions to List Three Blind Harvestmen, Three Micro-blind Harvestmen, One Spider, Two Butterflies, One Moth, Two Crickets, Three Katydids, and Five Grasshoppers. Federal Register: November 22, 1994. Department of the Interior –Fish and Wildlife Services.

Arroyo Chub

Gila orcutti

Presence Onsite: No. The species was not observed during the surveys of the project site and the habitat with which the species is typically associated with does not occur onsite. The species is known to occur in the watershed that the project site is associated with.
Onsite Conservation Measures: See Mitigation Measure-3a, 3b, and 3c in the Biological Resources Technical Report for specific measures to limit downstream impacts.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe Rank: G2/S2
Other: USFS: S

Description: Small fish that can reach lengths of nearly 4.75 inches, but typical adult lengths range from 2.75 – 4 inches. Both sexes have chunky bodies, fairly large eyes, and small mouths. Body color is silver or gray to olive-green dorsally, white ventrally, and there usually is a dull gray lateral band. Males can be distinguished from females by their larger fins, and when breeding, by the prominent patch of tubercles on the upper surface of the pectoral fins.
Habitats: The arroyo chub is adapted to survive in the warm fluctuating streams of the Los Angeles Plain. They prefer slow moving or backwater sections of warm to cool streams with substrates of sand or mud. The depth of the stream is typically greater than 15 inches.
Range: The species is now absent from much of its historical native range and is now only abundant in the upper Santa Margarita River and its tributary De Luz Creek, Trabuco Creek below O'Neill Park and San Juan Creek (San Juan Creek drainage), Malibu Creek, and the West Fork of the upper San Gabriel River below Cogswell Reservoir as of 1991. They also occur, but are scarce, in: Big Tujunga Canyon, Pacoima Creek above Pacoima Reservoir, and in the Sepulveda Flood Control Basin, Los Angeles River drainage; and middle Santa Ana River tributaries between Riverside and the Orange County line, and in the Santa Clara River. Though not naturally occurring in the Santa Clara River, this population may be one of the few viable and genetically pure populations left.
Food Sources: The arroyo chub is omnivorous, feeding primarily on algae, but also consuming other plants, aquatic insects and their larvae, small crustaceans, and feeding extensively on the roots of floating water ferns infested with nematodes.
Threats: The species is threatened by impacts to rivers and streams, including channelization, water diversion, groundwater over drafting, sand and gravel mining, changes in the watershed that result in erosion and debris torrents, pollution, the establishment of introduced or nonnative fishes, and flood control activities.
General Conservation Measures: Management considerations should include preservation and management of key stream sections, as well as the elimination of introduced predatory fishes such as the green sunfish and largemouth bass. The preservation of refuges for this and other endemic species is a required step toward curbing present trends, which may lead to extinction. Native fish hatcheries may be a potential source for re-establishing fish populations.

Information Sources:

California's Plants and Animals. 2003. Arroyo Chub. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Scott, Dr. Thomas. 2001. Arroyo Chub. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

Santa Ana Sucker

Catostomus santaanae

Presence Onsite: No. The species does not occur in the Calleguas Creek watershed.
Onsite Conservation Measures: None required.

Federal Status: Threatened
State Status: None
CDFG: Species of Special Concern
NatureServe: G1S1
Other: IUCN: VU; USFS: S

Description: A fish that may grow to 10 inches long as an adult. It is silver on the belly and blotched or faintly striped on the back. The Santa Ana sucker has large lips with the upper lip covered with bumps and the lower lip with feelers that are used to taste the bottom of the stream as it searches for food.
Habitats: Streams that are generally small and shallow, that may be swift in canyons and sluggish in the bottomlands, but are subject to severe flooding during winter and spring rains. Santa Ana suckers appear to be most abundant where the water is cool (<72° Fahrenheit), unpolluted, and clear; although they can tolerate and survive in seasonally turbid water. Preferred substrates are generally coarse and consist of gravel, rubble, and boulder, but Santa Ana suckers are also found on sand/mud substrates.
Range: Found in the headwaters of the Los Angeles and San Gabriel River systems and in the lower sections of the Santa Ana River. In the Santa Clara River, the species is thought to have been introduced. In the lower portions of that river system they have hybridized with *Catostomus fumeiventris*.
Food Sources: Mostly algae, diatoms, and detritus scraped from rocks and other hard substrates. Aquatic insects may comprise a small part of their diet.
Threats: The alteration or loss of suitable stream course habitat, the alteration of stream flows due to flood control measures, pollution, and the introduction of nonnative species.
General Conservation Measures: Immediate steps, such as setting up refuges, are needed to protect the remaining native habitats. The introduction of trout for fishing purposes needs to cease in Santa Ana sucker habitat. The hydrology that contributes to the necessary riparian habitat also needs to be protected.

Information Sources:

California's Plants and Animals. 2003. Santa Ana Sucker. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Endangered and Threatened Wildlife and Plants: Threatened Status for the Santa Ana Sucker. Federal Register. Volume 65, Number 71, Page 19686. US Fish and Wildlife Service. Accessed on Dec. 20, 2008 from http://www.gpoaccess.gov/fr/index.html

Southern Steelhead

Oncorhynchus mykiss irideus

Presence Onsite: No. The species is not currently found in the Calleguas Creek watershed.
Onsite Conservation Measures: None required.

Federal Status: Endangered
State Status: None
CDFG: Species of Special Concern
NatureServe: G5/T2/Q
Other: None

Description: Southern steelhead is a sea-run rainbow trout that has a large mouth with well-developed teeth on both upper and lower jaws. Gill rakers number 16-22 and branchiostegal rays, 9-13. There are 10-12 dorsal fin rays, 8-12 anal fin rays, 9-10 pelvic fin rays, and 11-17 pectoral fin rays. The caudal fin is forked. Scales are small, with 18-35 rows above the lateral line and 14-29 below. The 100-160 lateral line scales are pored.

Habitats: The southern steelhead is an anadromous fish that spawns in freshwater streams and rivers on the coast. The offspring then return to the ocean to mature before returning to its birthplace to spawn.
Range: Virtually every coastal stream in Monterey, San Luis Obispo and Santa Barbara counties north of Point Conception within the last ten years. Southern steelhead evidently once utilized most of the major coastal streams in southern California as well. They still occur in Malibu Creek, Ventura River, Santa Clara River, and Santa Ynez River, although in greatly reduced numbers.
Food sources: Omnivorous.
Threats: Habitat loss, including loss of water flows, and the failure to protect the runs due to inadequate regulatory measures have been the major, or at least the most conspicuous, causes of the decline of southern steelhead.
General Conservation Measures:
Preservation of southern steelhead will require immediate protection and rebuilding of existing spawning runs, and reestablishment of runs in streams and rivers that historically were highly productive.

Information Sources:
California's Plants and Animals. 2003. Southern Steelhead. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Western Spadefoot

Spea hammondii

Presence Onsite: Possible. Although the species was not observed during the surveys of the project site, the species has been recorded in the Arroyo Simi watershed and water flow in the unnamed wash on the northwest corner of the site could establish pools that the species could use for breeding. The species would not be active except during a season of exceptional rainfall that allowed temporary pools to persist for 3 to 6 weeks. Additionally, three (3) occurrences of the species have been recorded in the CNDDB within 8 miles of the project site, with the nearest located approximately 3.5 miles to the northeast.
Onsite Conservation Measures: See Mitigation Measure 8a and 8b in the Environmental Impacts and Mitigation Measures section of the Biological Resources Technical Report. See Mitigation Measure-3a, 3b, and 3c in the Biological Resources Technical Report for specific measures to limit downstream impacts.

Federal Status: Species of Concern
State Status: None
CDFG: Species of Special Concern
NatureServe Rank: G3/S3
Other: BLM: S; IUCN: NT

Description: Relatively smooth-skinned toad with a green or gray dorsum, orange-tipped skin tubercle, and venters that are whitish colored. The eyes are pale gold with vertical pupil. The species name is derived from the wedge-shaped black spade on both hind feet. The species typically spends eight to ten months of the year underground, emerging during winter when warm temperatures and rainfall occurs.
Habitats: During most of the year the western spadefoot can primarily be found in grasslands, coastal sage scrub, and chaparral habitats, but may also occur in oak woodlands. Breeding occurs in primarily in rain pools (although observations of breeding in riparian habitats have been made) that persist for at least three weeks and have water temperatures between 50 and 90 degrees Fahrenheit.
Range: North-central California south through the Central Valley and foothills into northern Baja California. Since 1990, there have been reports from Alameda, Butte, Calaveras, Fresno, Kern, Kings, Los Angeles, Madera, Merced, Monterey, Orange, Placer, Riverside, Sacramento, San Benito, San Diego, San Joaquin, San Luis Obispo, Santa Barbara, Stanislaus, Tulare,

Ventura and Yolo counties. Apparently extinct throughout much of lowland southern California but the species still persists in coastal Los Angeles County, Orange County to western Riverside County, and cismontane San Diego County.
Food Sources: Adult western spadefoot toads will forage on a variety of insects, worms, and other invertebrates (including grasshoppers, true bugs, moths, ground beetles, predaceous diving beetles, ladybird beetles, click beetles, flies, ants, and earthworms).
Threats: Habitat destruction due to off-road vehicles, grazing, development, grazing, and projects that impact fluvial processes. Also the introduction of mosquito fish and bullfrogs to pools used for breeding pools threatens some populations.
General Conservation Measures: Habitat protection is the primary strategy for conserving the western spadefoot toad. To complete its life cycle, the species needs appropriate aquatic habitats as well as adjacent upland habitats.

Information Sources:

Sacramento Fish and Wildlife Species Account. 2004. Western Spadefoot Toad. U.S. Fish and Wildlife Service. Accessed on Dec. 20, 2008 from http://sacramento.fws.gov/es/spp_info.htm

Scott, Dr. Thomas. 2001. Western Spadefoot. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

Stebbins, Robert C. Western Reptiles and Amphibians. New York: Houghton Mifflin Company. 2003.

Sierra Madre Yellow-legged Frog

Rana muscosa

Presence Onsite: No. The species was not observed during the surveys of the project site and the habitat with which the species is typically associated with does not occur onsite. The species does not occur in the Calleguas Creek watershed.
Onsite Conservation Measures: None required.

Federal Status: Endangered
State Status: None
CDFG: Species of Special Concern
NatureServe: G1/S1
Other: IUCN: VU; USFS: S

Description: A medium-sized (~1½-3¼ inch) frog that typically has a brown and yellow coloration, but may also include gray, red, or green-brown. Some individuals may be dark brown with little pattern. The dorsal pattern is composed of variable sized and numbered dark spots. Dorsolateral folds are present, but not usually prominent. The throat is white or yellow and sometimes with mottled with dark pigment. The belly and undersurfaces of the high limbs are yellow, which ranges in hue from pale lemon yellow to an intense sun yellow. The irises are gold with a horizontal, black stripe.
Habitats: In southern California, the species appears to be restricted to streams and small pools in ponderosa pine, montane hardwood-conifer, and montane riparian habitat types. Stagnant pools with a scum of floating algae appear to be avoided, while large clear pools up to 3 feet deep are favored. In the fall they often converge in streams in which only a trickle of water flows and the pools are only a few inches deep and one or two feet across. Adults usually overwinter in water under ice.
Range: Found in the Sierra Nevada, San Gabriel, San Bernardino, and San Jacinto mountains. Typically found at elevations from 4,500 to 12,000 feet. Locally the species was found in five (5) small stream systems within the San Gabriel Mountains and four stream systems in the San Jacinto Mountains.

Food Sources: The larvae of the species forage on algae and diatoms within the substrate. The juveniles and adults forage primarily on aquatic and terrestrial insects, especially beetles, flies, ants, bees, wasps, and true bugs. It may also resort to cannibalism and eating toads.
Threats: Introduction of nonnative fish (for game purposes) and bullfrogs. Accidental introduction of pathogens by humans (researchers and outdoor enthusiasts) may be behind increased mortality and reduced reproduction.
General Conservation Measures: Removal of introduced fish from viable habitat and the reconnection of existing populations to in increase genetic variety.

Information Sources:

California's Plants and Animals. 2003. Mountain Yellow-legged Frog. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Southern California Distinct Vertebrate Population Segment of the Mountain Yellow-legged Frog (*Rana muscosa*). Federal Register. Volume 67, Number 127, Page 44382. 2 July 2002. US Fish and Wildlife Service. Accessed on Dec. 20, 2008 from http://www.gpoaccess.gov/fr/index.html

Scott, Dr. Thomas. 2001. Mountain Yellow-legged Frog. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

California Red-legged Frog

Rana aurora draytonii

Presence Onsite: No. The species was not observed during the surveys of the project site, the habitat with which the species is typically associated with does not occur onsite, and the highly disturbed condition of the site makes the species highly unlikely to occur onsite. The species does not occur in the Calleguas Creek watershed.
Onsite Conservation Measures: None required.

Federal Status: Threatened
State Status: None
CDFG: Species of Special Concern
NatureServe Rank: G4T2T3/S2S3
Other: IUCN: NT

Description: This species is the largest native frog in the western United States, ranging from 1 ½ to 5 inches in length. The undersides of the abdomen and hind legs of adults are mostly red. The back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Tadpoles range from ½ to 6 inches in length and are dark brown and yellow with dark spots.
Habitats: Characterized by deep (>2 feet), still or slow moving water and associated dense, shrubby riparian vegetation such as arroyo willow, cattails, and bulrushes. The species probably cannot be maintained in streams in which the surface water disappears. Juvenile frogs favor open, shallow aquatic habitats with dense submerged vegetation.
Range: The historical ranges was along the coast from Mendocino County in northern California south to northern Baja California, and inland through the northern Sacramento Valley into the foothills of the Sierra Nevada mountains, south to Tulare county, and possibly Kern county. The present distribution ranges from Sonoma and Butte Counties in the north to Riverside County in the south, primarily in the western counties. They are known to occur in about 238 streams or drainages in 23 counties.
Food Sources: Tadpoles primarily eat algae and other vegetation. Adults eat insects, smaller frogs, fish, and mice.

Threats: Initial decline was due to the harvesting of the species for the consumption of frog legs in the late 19th and early 20th century. The introduction of the bullfrog, which preys on the red-legged frog, has probably eliminated the species from the southern Sierra Nevada Mountains. Habitat destruction is currently the most serious threat to the species with most of its critical habitat eliminated since the early part of this century. The ongoing drought in California combined with the limited available habitat will probably cause the extirpation of the species in many localities in the near future.
General Conservation Measures: Protecting existing populations by reducing threats, restoring and creating habitat that will be protected and managed in perpetuity, surveying and monitoring populations and conducting research on the biology and threats of the species, and re-establishing populations of the species within the historic range.

Information Sources:

California Herps. 2004. *Rana aurora draytoni*- California Red-legged Frog. California Reptile and Amphibians. Accessed on Dec. 20, 2008 from http://www.californiaherps.com/index.html

Scott, Dr. Thomas. "Red-legged Frog." Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. 2001. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

Southwestern Pond Turtle

Actinemys marmorata pallida

Presence Onsite: No. The species was not observed during the surveys of the project site and the habitat with which the species is typically associated with does not occur onsite. The species is known to occur in the watershed that the project site is associated with.

Onsite Conservation Measures: See Mitigation Measure-3a, 3b, and 3c in the Biological Resources Technical Report for specific measures to limit downstream impacts.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe Rank: G4T2T3/S2S3
Other: BLM: S; IUCN: VU

Description: A medium-sized (4 ¾ - 8 ¼ inch) turtle with a plain brown or khaki coloration. The species lacks prominent markings on its carapace. Males can be distinguished from females at maturity by a light unmarked throat and lower facial area. The plastron of the species varies from dark and light markings to a solid dark or light color. The iris of the turtle is golden-colored with a brown eyestripe.
Habitats: The southwestern pond turtle inhabits slow moving, permanent or intermittent streams, small ponds, small lakes, reservoirs, abandoned gravel pits, permanent and ephemeral shallow wetlands, stock ponds, and sewage treatment lagoons.
Range: Currently, it ranges south of San Francisco Bay to northern Baja California, Mexico. There are 10 known viable populations within Los Angeles County.
Food Sources: The species is an omnivorous feeder that typically scavenges, but is also an opportunistic predator. Adults ingest plants as part of their diet, which provides nutrients when live prey is unobtainable, but tend to prefer live or dead animal food instead of plant material.
Threats: Loss and alteration of aquatic habitat is the greatest threat to the southwestern pond turtle. Over 90% of wetland habitat within its historic California range has been eliminated by agricultural development, flood control, water diversion projects, and urbanization. Additional threats include predation on young by introduced aquatic species, collection for pets, urban-related predation pressures, and competition with nonnative turtles.

General Conservation Measures:
Conservation management of aquatic turtles should include not only protection of aquatic habitat, but also preservation and restoration of dispersal corridors and adjacent terrestrial habitat (potentially 1800 feet or more from the wetland boundary) for nesting, hibernation, and aestivation.

Information Sources:
California's Plants and Animals. 2003. Southwestern Pond Turtle. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Scott, Dr. Thomas. 2001. Southwestern Pond Turtle. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

Stebbins, Robert C. Western Reptiles and Amphibians. New York: Houghton Mifflin Company. 2003.

Coast (San Diego) Horned Lizard

Phrynosoma coronatum blainvillei

Presence Onsite: Possible. Although the species was not observed during the surveys of the project site, the species may possible occur in the in the unnamed wash on the northwest corner of the site. The species has 12 recorded occurrences (CNDDB 2008) within the vicinity of the project site. The closest record is approximately 4 miles to the northeast of the site in similar habitat.
Onsite Conservation Measures: See Mitigation Measure 8a and 8b in the Environmental Impacts and Mitigation Measures section of the Biological Resources Technical Report.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe Rank: G4G5/S3S4
Other: BLM: S

Description: Note - Brattstrom (1997) found *Phrynosoma coronatum blainvillei* and *Phrynosoma coronatum frontale* to be synonyms of *Phrynosoma coronatum*. The subspecies are no longer recognized in the scientific domain, but are listed separate in this report to be in concurrence with the CDFG's listing of both species.
A flat-bodied lizard with a large crown of spines on head; the two center spines are longest. Large dark spots are found on the sides of the neck. Two rows of pointed scales fringe trunk. The back is reddish-brown, yellow, or gray with dark blotches. The belly scales are smooth. The winter hibernation begins between August and October and ends in March. Adults are active aboveground in April through July, after which most adults begin summer hibernation. The adults then become active again for a short period before returning to their over-wintering sites.
Habitats: The preferred habitat of the coast horned lizard is open sandy areas within coastal sage or chaparral communities as well as in dry washes and along roads.
Range: In California the species ranges from the Transverse Ranges south to the Mexican border west of the deserts, with the exception of scattered sites along the extreme western desert slope of the Peninsular Ranges. The known elevation range of this species is from 30 feet at the El Segundo dunes (Los Angeles County) to approximately 7000 feet at Tahquitz Meadow, on San Jacinto Mountain, in Riverside County.
Food Sources: Up to 90% of the diet of the species consists of native harvester ants (*Pogonomyrmex* spp.), but does not appear to eat nonnative Argentine ants that have replaced native ants in much of southern California. Other slow moving insects, such as beetles, flies, and caterpillars are consumed opportunistically when encountered.

Threats: Commercial collecting, habitat loss due to agricultural practices, and urbanization are the main reasons cited for the decline of this species. However, one of the growing threats to the species is the continued elimination of its food base by exotic ants.
General Conservation Measures: Protection of suitable habitat and food sources.

Information Sources:

Brattstrom, B.H. 1997. Status of the Subspecies of the Coast Horned Lizard, *Phrynosoma coronatum*. Journal of Herpetology 31: 434-436.

California's Plants and Animals. 2003. San Diego Horned Lizard. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Scott, Dr. Thomas. 2001. San Diego Coast Horned Lizard. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

Stebbins, Robert C. Western Reptiles and Amphibians. New York: Houghton Mifflin Company. 2003.

Coast (California) Horned Lizard

Phrynosoma coronatum frontale

Presence on the Piute Ponds Project Site: Possible. Although the species was not observed during the surveys of the project site, the species may possible occur in the in the unnamed wash on the northwest corner of the site. Additionally, one (1) occurrence of the species have been recorded in the CNDDB within 5 miles to the east of the project site in similar habitat.

Onsite Conservation Measures: See Mitigation Measure 8a and 8b in the Environmental Impacts and Mitigation Measures section of the Biological Resources Technical Report.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe Rank: G4G5/S3S4
Other: BLM: S

Description: Note - Brattstrom (1997) found *Phrynosoma coronatum blainvillei* and *Phrynosoma coronatum frontale* to be synonyms of *Phrynosoma coronatum*. The subspecies are no longer recognized in the scientific domain, but are listed separate in this report to be in concurrence with the CDFG's listing of both species.
A large, dorsoventrally flattened lizard with five (four large, lateral, sometimes curved, and one moderate-sized, median) backwardly projecting head spines; a large shelf above each eye terminating a backwardly projecting, spine-like, scale (postrictal); small, pointed rugose scales on the forehead (frontals); and two parallel rows of pointed scales fringing each side the side of the body. No stripes radiate from the eyes. The dorsal color is highly variable, but typically gray, tan, reddish-brown, or whitish, and usually resembles the prevailing soil color. The venter is yellow to white with discrete, dark spots. The iris is black.
Habitats: The California horned lizard seems to occur in several habitat types, ranging from areas with an exposed gravelly-sandy substrate containing scattered shrubs, to clearings in riparian woodlands, to dry uniform chamise chaparral to annual grassland with scattered perennial seepweed or saltbush.
Range: This California endemic originally had a spotty distribution from Kennett (now under Lake Shasta, Shasta County) southward along the edges of the Sacramento Valley into much of the South Coast Ranges, San Joaquin Valley, and Sierra Nevada foothills to northern Los

Angeles, Santa Barbara, and Ventura Counties.
Food Sources: California horned lizards are recorded as preying on beetles and ants, but probably take many other insects which are seasonally abundant.
Threats: *P. c. frontale* has disappeared from approximately 35% of its range in central and northern California and extant populations are becoming increasingly fragmented with continued development of the region. The negative effects of human disturbance are not limited to the immediate vicinity of land disturbance or human habitation, sometimes effects are manifest at considerable distances (e.g., domestic cats have been observed to eliminate horned lizards within a several km² area from a cat's home base.
General Conservation Measures: Greater effort needs to be directed at preservation of remaining native plant community fragments, especially in the San Joaquin drainage basin, that contain habitat that has never undergone significant substrate disturbance.

Information Sources:
Brattstrom, B.H. 1997. Status of the Subspecies of the Coast Horned Lizard, *Phrynosoma coronatum*. Journal of Herpetology 31: 434-436.
California Horned Lizard. 1994. California's Plants and Animals. California Department of Fish and Game-Wildlife Branch. Accessed on June 2008 from http://www.dfg.ca.gov/habcon/.
Stebbins, Robert C. Western Reptiles and Amphibians. New York: Houghton Mifflin Company. 2003.

Coastal Western Whiptail
Aspidoscelis tigris stejnegeri

Presence Onsite: Possible. Although the species was not observed during the surveys of the project site, the species may possible occur in the in the unnamed wash on the northwest corner of the site. The species has four recorded occurrence (CNDDB 2008) within the vicinity of the project site. The closest record is approximately 5 miles to the east of the site in similar habitat.
Onsite Conservation Measures: See Mitigation Measure 8a and 8b in the Environmental Impacts and Mitigation Measures section of the Biological Resources Technical Report.

Federal Status: None
State Status: None
CDFG: None
NatureServe Rank: G5T3T4/S2S3
Other: None

Description: Coastal western whiptails exhibit a wide morphological variation of within the species. They can reach a size of 8 to 12 inches and have 8 ill-defined lateral stripes. The stripes on the sides are less defined than those of the California whiptail, and the species tends to have frequent large dark spots on the throat.
Habitats: Open and often rocky areas with little vegetation or sunny microhabitats within shrub or grassland associations.
Range: The western whiptail ranges through the semiarid and arid desert lowlands of southern California, southern Arizona, adjacent areas of Mexico and western Baja California, Mexico.
Food Sources: Prey items of the western whiptail include termites, scorpions, cockroaches, various insect eggs, larvae, and pupae.
Threats: Habitat loss due to development, widespread use of insecticides, off-road vehicle use, and genetic isolation.
General Conservation Measures: Habitat preservation.
Information Sources:
Scott, Dr. Thomas. 2001. Coastal Western Whiptail. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu
Stebbins, Robert C. Western Reptiles and Amphibians. New York: Houghton Mifflin Company. 2003.

Two-striped Garter Snake

Thamnophis hammondii

Presence Onsite: No. The species was not observed during the surveys of the project site and the habitat with which the species is typically associated with does not occur onsite. The species is known to occur in the watershed that the project site is associated with.
Onsite Conservation Measures: See Mitigation Measure-3a, 3b, and 3c in the Biological Resources Technical Report for specific measures to limit downstream impacts.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe Rank: G3/S2
Other: BLM: S; IUCN: DD; USFS: S

Description: Garter snake with no back stripe, but it may have a faint spot on back of neck. The middle of the back is plain olive, brown, or grayish, with yellowish side stripes usually present and bordered with dark spots. The side stripe occupies 2nd and 3rd scale rows.
Habitats: This species is considered one of the most aquatic of the garter snakes. It is closely associated with streams that have rocky beds and that are bordered by willows; also ponds, lakes, wetlands, and vernal pools. It also occurs in mixed oak, oak woodlands, and chaparral on coastal slopes of mountains and foothills to sea level, but it is rarely found far from water.
Range: From Monterey, California to Baja California.
Food Sources: Adults prey upon tadpoles, frogs, toads, small fish, fish eggs, and earthworms.
Threats: Loss of habitat due to urbanization, disturbances due to recreational activities, alteration of hydrology of habitat, and genetic isolation due to habitat fragmentation of range.

General Conservation Measures:
Protection of suitable habitat and its associated hydrology.

Information Sources:
California's Plants and Animals. 2003. Two-striped Garter Snake. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html
Scott, Dr. Thomas. 2001. Two-striped Garter Snake. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu
Stebbins, Robert C. Western Reptiles and Amphibians. New York: Houghton Mifflin Company. 2003.

California Condor

Gymnogyps californianus

Presence Onsite: No. The species was not observed during the surveys of the project site and the nesting habitat with which the species is typically associated with does not occur onsite.
Onsite Conservation Measures: None required.

Federal Status: Endangered
State Status: Endangered
CDFG: None
NatureServe: G1/S1
Other: ABC: GL; Audubon: WL; CDF: S; IUCN: CR; USBC: WL
Description: North America's largest land bird with a wingspan that measures between 8 ½ and 9 ½ feet at maturity. When perched the bird has a height 45 to 55 inches. The species has a black coloration except for white wing linings, pale feet, and a reddish-orange head (blackish for juveniles).

Habitats: Nests are found on high sandstone cliffs within caves, crevices, behind rock slabs, or on ledges, and are usually surrounded by dense brush. No nesting material is used; the egg is laid on bare ground.
Range: Native, wild California condors were reduced to 6 birds in 1985 before it was decided by the USFWS that all the remaining birds were to be captured and placed in intensive captive breeding programs. Now the condor has been reintroduced into the mountains of southern California north of the Los Angeles basin, in the Big Sur vicinity of the central California coast, near the Grand Canyon in Arizona and Baja California, Mexico. As of July 1st, 2004 there are 47 wild condors in California and 20 of those have been seen soaring in the mountains north of the Los Angeles basin, primarily in the Los Padres National Forest.
Seasonality: Year-round resident of California with some movement north in the summer and returning to the south in the fall.
Food Sources: Feeds only by scavenging; deceased cattle are the primary food source. May also scavenge from the carcasses of sheep, deer, ground squirrels, and other mammals. After gorging itself the condor may go several days without feeding. Carcasses must be in open areas to enable take-off and landing by the large bird.
Threats: Collisions with power and telephone lines, lead poisoning from scavenging from the carcasses of game animals, and poisoning from various chemical pollutants.
General Conservation Measures: Federal and state programs have been developed to re-establish California condor populations within the state of California and Arizona.

Information Sources:

California's Plants and Animals. 2003. California Condor. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Enature. 2008. California Condor. National Wildlife Federation. Accessed on Dec. 20, 2008. http://www.enature.com/

Hopper Mountain National Wildlife Refuge Complex –California Condor. 2006. US Fish and Wildlife Service-Pacific Region. US Fish and Wildlife Service. Accessed on Dec. 20, 2008 from http://hoppermountain.fws.gov/cacondor/

Polite, C. B116-California Condor. California Wildlife Habitat Relationship System. California Department of Fish and Game-California Interagency Wildlife Task Group. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

White-tailed Kite (nesting)

Elanus leucurus

Presence Onsite: Possibly occurs as a Transient. The white-tailed kite may forage over the site as a transient, but it is unlikely to nest onsite due to a lack of appropriate habitat.
Onsite Conservation Measure: None required. There are no reasonable conservation measures to reduce the loss of potential foraging area on the site.

Federal Status: None
State Status: None
CDFG: FP
Other: None

Description: A raptor with a profile similar to a gull that has a white head, tail, and undersides. The back and wings are pale gray, with black shoulders and black patch on the underwings. The white-tailed kite hovers over prey with raised wings and drops straight down. Prefers open grasslands with a woodland edge or fringe.
Communities: Open grasslands, savannah-like habitats, agricultural areas, wetlands, and oak woodlands

Range: Resident in coastal and interior California, Arizona, and southern Texas. Also in Central and South America. Found in appropriate habitat throughout its range.
Seasonality: A common to uncommon resident with nomadic tendencies during the winter that expands the range of the species.
Food Sources: Its diet consists primarily of small mammals such as rodents, but may also prey on birds, insects, reptiles, and amphibians.
Threats: Loss of nesting and foraging habitat.
General Conservation Measures: The preservation of the habitat that the prey of the white-tailed kite inhabits would ensure a food source for the kite.

Information Sources:

Scott, Dr. Thomas. 2001. White-tailed kite. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregions.ucr.edu

Enature. 2008. White-tailed kite. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com

Sharp-shinned Hawk (nesting)

Accipiter striatus

Presence Onsite: Occurs as a Transient. The species was observed foraging over the site during surveys; however, the lack of dense riparian woodland habitat makes it very unlikely that the species would nest onsite.
Onsite Conservation Measures: None required. There are no reasonable conservation measures to reduce the loss of potential foraging area on the site.

Federal Status: None
State Status: None
CDFG: Watch List
NatureServe Rank: G5/S3
Other: IUCN: LC

Descriptions: A jay-sized, fast-flying hawk with a long, narrow, square-tipped tail and short rounded wings. Adult are slate-gray above, pale below, with fine rust-colored barring on chest. Sharp-shinned is generally smaller than Cooper's hawk.
Communities: Ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine forests. The species uses dense stands in close proximity to open areas. North-facing slopes with prey plucking perches are a critical habitat requirement. Although sharp-shinned hawks apparently demonstrate significant site fidelity in the short-term, pairs do not occupy a particular site for more than two consecutive years.
Range: In California, the sharp-shinned hawk is a fairly common migrant and winter resident throughout California, except in areas with deep snow. Breeding distribution of the species is poorly documented.
Seasonality: In southern California the species is a winter resident, and migrates through the area in the fall and spring.
Food Sources: The species feeds almost entirely on small birds that are typically no larger than jay-size. Although rare, it may prey upon small mammals, reptiles, amphibians, and insects.
Threats: Suburban development has led to the loss of historic and potential nesting habitat. Sharp-shinned hawks are still being shot in Latin American wintering grounds. Timber harvesting and exposure to pesticides also negatively affects the species.
General Conservation Measures: Preservation of breeding habitats and protection from hunting in other countries.

Information Sources:

Scott, Dr. Thomas. 2001. Sharp-shinned Hawk. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregions.ucr.edu

Sibley, D. A. 2000. The Sibley Guide to Birds. National Audubon Society. New York: Chanticleer Press, Inc.

Cooper's Hawk (nesting)

Accipiter cooperii

Presence Onsite: Occurs as a Transient. The species was observed foraging over the site during surveys; however, the lack of dense woodland habitat makes it unlikely that the species would nest onsite.
Onsite Conservation Measures: None required. There are no reasonable conservation measures to reduce the loss of potential foraging area.

Federal Status: None
State Status: None
CDFG: Watch List
NatureServe Rank: G5/S3
Other: IUCN: LC

Description: Medium sized hawk from 14 to 20 inches in length. Adult Cooper's hawks have a dark blackish crown that is noticeably set off from a lighter nape. The wings are short and rounded. The back is blue gray, and the long tail is crossed by several dark bands and has a distinct white band at the tip. The tip of the tail is rounded, not squared. Immature Cooper's hawk are brown above and whitish below with fine streaks on the breast.
Habitats: The Cooper's hawk breeds primarily in riparian areas and oak woodlands with dense stands that have moderate crown-depths. For foraging it frequents landscapes where wooded areas occur in patches and groves and often uses patchy woodlands and edges with snags for perching. Dense stands with moderate crown-depths are usually used for nesting. Occasionally found in residential settings in mature ornamental vegetation.
Range: In California, the Cooper's hawk is a breeding resident throughout most of the wooded portion of the state. It breeds in the southern Sierra Nevada foothills, New York Mountains, Owens Valley, and other local areas in southern California. Though rare, it may be found throughout Los Angeles County in appropriate habitat. The species has begun to breed in suburban areas with mature trees.
Seasonality: Although the Cooper's hawk breeds in southern California and has a year-round resident population, it also occurs in the region as a migrant and as a winter resident.
Food Sources: In general the species primarily preys upon other birds with some taking of fish, small mammals, reptiles, and amphibians.
Threats: Habitat loss in lowland riparian areas is probably the most important current reason for the declining population. Direct or indirect human disturbance at nest sites also has a negative effect on the success of breeding. In the past the use of environmentally persistent pesticides reduced egg viability and nesting success.
General Conservation Measures: Protect the necessary riparian and other woodland habitat while also limiting the taking of nestlings for the use in falconry. Also maintain ban on persistent pesticides.

Information Sources:

California's Plants and Animals. 2008. Cooper's Hawk. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/hcpb/species/ssc/ssc.shtml.

Cooper's Hawk. Enature.com. 2008. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com.

Polite, C. 2004. B116-Cooper's Hawk. California Wildlife Habitat Relationship System. California Department of Fish and Game-California Interagency Wildlife Task Group. J Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/whdab/html/B116.html.

Golden Eagle

Aquila chrysaetos

Presence Onsite: Possibly occurs as a Transient. The golden eagle may forage over the site as a transient, but it is unlikely to nest onsite due to a lack of appropriate habitat.
Onsite Conservation Measures: None required. There are no reasonable conservation measures to reduce the loss of potential foraging area.

Federal Status: None
State Status: None
CDFG: Fully Protected/Species of Special Concern
NatureServe Rank: G5/S3
Other: BLM: S; CDF: S; IUCN: LC; USFWS: BCC

Description: Large (30-41 inches), all-dark eagle with a pale golden nape. The bill is smaller and darker than that of bald eagle. In young birds, tail white at base, black at tip; white patches on undersides of wings.
Habitats: Grasslands, Brushlands, Deserts, Oak Savannas, Open Coniferous Forests, and Montane Valleys. Uses rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops. Nesting is primarily restricted to rugged, mountainous country.
Range: The golden eagle breeds from Alaska east across northern Canada south to Mexico, Canadian prairie provinces, and Labrador. Winters in southern part of breeding range and in much of the United States, except the Southeast. Also found in Eurasia. Found in appropriate habitat throughout its range.
Seasonality: Primarily a year-round resident of southern California with elevation changes depending upon the season. Some fall and spring migrants, as well as winter residents have been observed.
Food Sources: The golden eagle eats primarily rabbits and rodents, but it may prey upon other small mammals, birds, reptiles, and occasionally carrion.
Threats: Loss of suitable hunting habitat due to development, human disturbance of nest areas, poaching, and electrocution from high-tension wires.
General Conservation Measures: The species requires a large expanse for foraging and suitable nest sites in the form of cliffs or large trees.

Information Sources:

Golden Eagle. Enature.com 2008. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com
Scott, Dr. Thomas. 2001. Golden Eagle. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

Western yellow-billed Cuckoo

Coccyzus americanus occidentalis

Presence Onsite: No. The species was not observed during the surveys of the project site and the habitat with which the species is typically associated with does not occur onsite.
Onsite Conservation Measures: None required.

Federal Status: Candidate
State Status: Endangered
CDFG: None
NatureServe: G5T3Q/S1
Other: IUCN: LC; USFS: S; USFWS: BCC

Description: A jay-sized bird (10.5 – 12.5 inches) with clean white underparts and rufous-colored primaries. Long tail has contrasting dark and white spots. Bill is mostly yellow with some black on top
Habitats: Riparian Willow Woodland.

Range: Within California: upper Sacramento Valley portion of the Sacramento River, the Feather River in Sutter County, the south fork of the Kern River in Kern County, and along the Santa Ana, Amargosa, and lower Colorado Rivers. The rare local populations in southern California typically occur in the Prado Basin, Santa Ana River areas, on Camp Pendleton, and in the Tijuana River system.
Seasonality: Rare summer resident.
Food Sources: Feeds primarily on large insect such as grasshoppers, cicadas, and caterpillars. May also eat small frogs, arboreal lizards, eggs, and young birds.
Threats: Destruction and alteration of necessary habitat for breeding.
General Conservation Measures: Restoration of riparian habitats and elimination of pesticide spraying in orchards adjacent to riparian areas can protect known populations.

Information Sources:

California's Plants and Animals. 2003. Western yellow-billed Cuckoo. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://ecos.fws.gov/ecos

Enature. 2008. Western yellow-billed Cuckoo. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com

Gaines, D. B259- Western yellow-billed Cuckoo. California Wildlife Habitat Relationship System. California Department of Fish and Game-California Interagency Wildlife Task Group. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Scott, Dr. Thomas. 2001. Western yellow-billed Cuckoo. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu/

Burrowing Owl

Athene cunicularia hypugaea

Presence Onsite: No. The species was not observed during the surveys of the project site and the nesting habitat with which the species is typically associated with does not occur onsite.
Onsite Conservation Measures: None required.

Federal Status: Species of Concern
State Status: None
CDFG: Species of Special Concern
NatureServe Rank: G4/S2
Other: BLM: S; IUCN: LC; USFWS: BCC

Description: Robin-sized (9 inches) terrestrial owl with a short tail and long legs. When close to its burrow the species tends to run for safety when startled instead of flying. The eyes are bright yellow and are set in a brown face that is bordered in white. Nests in long underground burrows lined with grasses, roots, and dung. Burrows tend to be abandoned ground squirrel burrows, but may be from other species as well. The owl will modify an adopted burrow.
Habitats: Shortgrass Prairies, Grasslands, Lowland Scrub, Agricultural Lands, Coastal Dunes, Desert Floors, and other open areas.
Range: In California, burrowing owls are restricted to low lying areas including the Central Valley extending from Redding south to the Grapevine, east through the Mojave Desert and west to San Jose, the San Francisco Bay area, the outer coastal foothills area which extend from Monterey south to San Diego, and the Sonoran desert. The largest population is found in agricultural areas in the vicinity of El Centro. Found in appropriate habitat throughout southern California.
Seasonality: Year-round resident $^{and}/_{or}$ migratory.
Food Sources: Diet includes invertebrates and small vertebrates that are hunted by using short flights, running along the ground, hovering, or by using an elevated perch for spotting prey.

Threats: The loss and alteration of habitat due to agricultural practices or urbanization, predation by native and nonnative species, collisions with vehicles, and pesticides/poisoning of ground squirrels.
General Conservation Measures: The necessary habitat of the burrowing owl and their primary food sources need to be protected. Nesting areas need to be protected from human disturbances during breeding season.

Information Sources:

Enature.com 2008. Burrowing Owl. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com

Scott, Dr. Thomas. Burrowing Owl. 2001. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu/

Allen's Hummingbird (nesting)

Selasphorus sasin

Presence Onsite: Occurs. The species was observed on the project site during the surveys and habitat is available onsite for nesting.
Onsite Conservation Measures: See Mitigation Measure 7a and 7b in the Environmental Impacts and Mitigation Measures section of the Biological Resources Technical Report.

Federal Status: None
State Status: None
CDFG: None
NatureServe Rank: G5/SNR
Other: Audubon: Watch List; IUCN: LC; USBC: WL

Description: Male has mostly rufous underparts except for the upper breast, which forms a white bib. Tail feathers are reddish with black tips and the gorget is a bright copper-red. The upperparts are mostly green with the exception of red on the topside of the tail feathers and along the sides of the head. A metallic whine is emitted from the male's wings when in flight.
Habitats: The restricted range (see below) Allen's Hummingbird subspecies (*S. s. sedentarius*) inhabits chaparral and riparian woodlands below 1000 feet in elevation. The more widely distributed subspecies (*S. s. sasin*) inhabits mixed evergreen forests, riparian woodlands, eucalyptus and cypress groves, oak woodlands, and coastal scrub areas in breeding season. Males maintain territories that overlook open coastal scrub or riparian shrubs where they perch in conspicuous places. Females choose nest sites in areas where there is more tree cover.
Range: Allen's have one of the smallest breeding ranges of all U.S. hummingbirds. They breed in a narrow strip along the Pacific coast from southwest Oregon to southern California. Within this range, two subspecies have been identified that have different migratory patterns. *Selasphorus sasin sasin* breeds across this range and migrates to central Mexico in the states of Mexico, Morelos, and Puebla. *S. s. sedentarius* is a year-round resident of 6 of the Channel Islands off the southern coast of California and also on the mainland in the Los Angeles vicinity, spreading a short distance in all directions.
Seasonality: A year-round resident and a transient during migration.
Food Sources: The species diet consists of floral nectar and small insects taken from the air or from vegetation.
Threats: The restricted breeding and wintering range makes the species more susceptible to natural disasters, diseases, or land use changes that could wipe out significant portions of the population, especially the residents on the Channel Islands.
General Conservation Measures: Preservation of native habitats and the vegetation that composes it is most important.

Information Sources:

Mitchell, D. E. 2000. Allen's Hummingbird (*Selasphorus sasin*). The Birds of North America, No. 501(A. Poole and F. Gill, eds.). Philadelphia: The Academy of Natural Sciences; Washington, D.C.: The American Ornithologists' Union.

Sibley, D. A. 2000. The Sibley Guide to Birds. National Audubon Society. New York: Chanticleer Press, Inc.

The 2002 Audubon Watchlist. 2002. Allen's hummingbird. National Audubon Society, Inc. Accessed on Dec. 20, 2008 from http://audubon2.org/webapp/watchlist/viewWatchlist.jsp

Least Bell's Vireo

Vireo bellii pusillus

Presence Onsite: No. The species was not observed during the surveys of the project site and the habitat with which the species is typically associated with does not occur onsite.
Onsite Conservation Measures: None required.

Federal Status: Endangered
State Status: Endangered
CDFG: None
NatureServe Rank: G5T2/S2
Other: ABC: GL; Audubon: WL; IUCN: NT; USBC: WL; USFWS: BBC

Description: A small bird (4.75 – 5 inches) that is a dull olive-gray above and whitish below. Eye ring is a faint white and wing bars are a less visible white. Prefers dense covered riparian habitat.
Habitats: Southern Willow Scrub, Cottonwood Forest, Mule Fat scrub, Sycamore Alluvial Woodland, Coast Live Oak Riparian Forest, Arroyo Willow Riparian Forest
Range: Restricted to southern California south of the Tehachapi Mountains and north of northwestern Baja California. Found locally in suitable habitat throughout its range
Seasonality: Rare local summer resident.
Food sources: Forages most of the year in stands of willows and other riparian vegetation. Later in the breeding season it may expand its territory into Chaparral and Oak Woodlands
Threats: The decline of the species is related to the widespread removal suitable habitat in southern California. In addition, the brown-headed cowbird has been a major contributor to this decline due to brood paratism.
General Conservation Measures: Riparian habitat conservation and cowbird trapping are the most important conservation measures for this species. The jurisdictional waters permitting process administered by the CDFG and USACE usually drive both of these measures.

Information Sources:

California's Plants and Animals. 2003. Least Bell's Vireo. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Enature. 2008. Least Bell's Vireo. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com/

Gaines, D. 2003. B413- Least Bell's Vireo. California Wildlife Habitat Relationship System. California Department of Fish and Game-California Interagency Wildlife Task Group. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Scott, Dr. Thomas. Least Bell's Vireo. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. 2001. University of California-Riverside. http://ecoregion.ucr.edu

California Horned Lark

Eremophila alpestris actia

Presence Onsite: No.
Onsite Conservation Measures: The species was not observed during the surveys of the project site and the habitat with which the species is typically associated with does not occur onsite.

Federal Status: None
State Status: None
CDFG: WL
NatureServe Rank: G5T3Q/S3
Other: IUCN: LC

Descriptions: The species is a small (6-8 inches) songbird with a pale brown back, black chest patch, black face patch, yellow or pale throat, and small "horns" on top of head.
Habitats: The horned lark is a common to abundant resident in a variety of open habitats, usually where trees and large shrubs are absent. In the Midwest, the species has been characterized as the most abundant species in row-crop fields Range-wide, California horned larks breed in level or gently sloping shortgrass prairie, montane meadows, bald hills , opens coastal plains , fallow grain fields, and alkali flats (Grinnell and Miller 1944). Within southern California, California horned larks breed on the ground primarily in open fields, grasslands, and rangelands. Grasses, shrubs, forbs , rocks, litter , clods of soil, and other surface irregularities provide cover .
Range: The species breeds and resides in the coastal region of California from Sonoma County southeast to the United States/Mexican border, including most of the San Joaquin Valley, and eastward to the foothills of the Sierra Nevada Mountains.
Food Sources: The species feeds primarily on grains and other seeds and shift to mostly insects in the summer months. Individuals forage on the ground in either bare areas or in agricultural fields with short vegetation. It mostly eats insects, snails, and spiders during breeding season; it adds grass and forb seeds and other plant matter to the diet at other seasons.
Threats: The habitat of the species is easily converted to other landscapes and human uses. Pesticides, specifically Carbofuran and Fenthion, have been shown to poison and kill horned larks. A total of 44% of nest failures have been attributed to mowing in airport grasslands occupied by horned larks.
General Conservation Measures: Because of the species use of agricultural fields , the effects of pesticides have been identified as a necessary component of the management of this species. Rangeland alteration activities (removal of shrubs and planting of wheatgrass) in southern Oregon resulted in increased numbers of horned larks after an initial one-year time lag response.

Information Sources:

Beason, R. C. 1995. Horned Lark (*Eremophila alpestris*). In The Birds of North America, No. 195 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists Union, Washington, D.C.

NatureServe. 2008. NatureServe Explorer: An online encyclopedia of life [web application]. Version 5.0. NatureServe, Arlington, Virginia. Accessed on Dec. 20, 2008 from http://www.natureserve.org/explorer.

Scott, Dr. Thomas. Least Bell's Vireo. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. 2001. University of California-Riverside. http://ecoregion.ucr.edu

Bank Swallow

Riparia riparia

Presence Onsite: No. The species was not observed during the surveys of the project site and the habitat with which the species is typically associated with does not occur onsite.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: Threatened
CDFG: None
NatureServe Rank: G5/S2S3
Other: IUCN: LC

Descriptions: Small slender songbird; white underneath and brown on top; dark band across chest, extending down middle of chest; small bill; long wings. Size: 12-14 cm (5-6 in); wingspan: 25-29 cm (10-11 in); weight: 10-19 g (0.35-0.67 ounces)
Habitats: Open and partly open situations, frequently near flowing water. Nests in steep sand, dirt, or gravel banks, in a burrow dug near the top of the bank, along the edge of inland water or along the coast, or in gravel pits, road embankments, etc. Both sexes construct the nest burrow. Usually digs a new burrow each year, but sometimes uses old bank swallow burrows or abandoned cavities of the belted kingfisher. Tends to return to same nesting area in successive years, though may move several kilometers away, especially if nesting was unsuccessful the previous year; yearlings often return to the natal area or nearby
Range: Breeding: in North America from western and central Alaska east to Newfoundland, south to central California, western Nevada, Utah, northern New Mexico, Kansas, northeastern Oklahoma, Tennessee, northern Alabama, central West Virginia, eastern Virginia, casually to south-central South Carolina; non-breeding: in the Americas mainly from eastern Panama southward, east of the Andes, to northern Argentina, Paraguay, and northern Chile, casually north to southern California.
Food Sources: Feeds primarily on flying insects (e.g., beetles, mosquitoes, winged ants, flies, moths). Catches insects in the air over fields, wetlands, water, etc. If necessary, may forage up to several kilometers from nesting area, but usually closer.
Threats: Decline in California has been due to human disturbance and channelization and stream bank modifications for flood control and bank stabilization. Riprapping of natural stream banks is the most serious threat to long-term survival in California
General Conservation Measures: In California, improvements of natural habitat and construction of artificial banks have been undertaken to mitigate for habitat loss to riprapping. However, it is doubtful that these techniques will provide a long-term solution. Quarry managers should be encouraged to create seasonal sand piles from April until July.

Information Sources:

NatureServe. 2008. NatureServe Explorer: An online encyclopedia of life [web application]. Version 5.0. NatureServe, Arlington, Virginia. Accessed on Dec. 20, 2008 from http://www.natureserve.org/explorer.

Coastal California Gnatcatcher

Polioptila californica californica

Presence Onsite: Possible. Although the species was not observed during the surveys of the project site, coastal sage scrub dominated by California sagebrush does occur onsite that could be utilized by the species. Four (4) occurrences of the species have been recorded in the CNDDB within 10 miles of the project site, with the nearest occurrences located approximately 1.5 miles to the east. Additionally, the USFWS has designated several units of critical habitat for the species that are within 2.5 miles of the site.
Onsite Conservation Measures: See Mitigation Measure 6a and 6b in the Environmental Impacts and Mitigation Measures section of the Biological Resources Technical Report.

Federal Status: Threatened
State Status: None
CDFG: Species of Special Concern
NatureServe Rank: G3T2/S2
Other: Other: ABC: GL; Audubon: WL; IUCN: LC; USBC: WL;

Description: The species is a small, slender, gray, songbird having a long, black tail with white tips and fine white edging. A black cap is present in the plumage of breeding males and non-breeding males have a black line over the eye. Males are mostly gray with darker upperparts. Females have more of a brown tone on back, flanks, and belly. The species makes a kitten-like mewing that distinguishes it from the black-tailed gnatcatcher (*Polioptila melanura*). The species can also be distinguished from the back-tailed by its darker underparts and less white on its tail. The other gnatcatchers within the range of the California gnatcather, blue-gray (*Polioptila caerulea*) and black-capped (*Polioptila nigriceps*), are larger and have more white on the outer retrices.

Habitats: Venturan coastal sage scrub, Diegan Coastal sage scrub, maritime succulent scrub, Riversidean sage scrub, Riversidean alluvial fan sage scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub. Generally prefers open sage scrub with California sagebrush (*Artemisia californica*) as a dominant or co-dominant species. Prefers nesting in areas with less than 40 percent slope gradient. Gullies and drainages, when available within its territory, are preferred as nest sites. The species occurs from sea level to 1,600 feet, with most core populations in coastal counties occurring below 1,000 feet.

Range: The species occurs north of 30°N in northwest Baja California, Mexico to Ventura County. It is limited to lower elevations (<1,600 feet) south and west of Transverse and Peninsular Ranges. Highest densities of the species occur in coastal areas of Orange and San Diego counties. Lower densities occur in western Riverside and southwestern San Bernardino counties and inland San Diego County. Small, now disjunct populations documented for Ventura and Los Angeles counties.

Seasonality: The species does not migrate and is a year-round resident in southwestern California.

Food Sources: The diet consists primarily of leaf and plant hoppers and spiders. Also consumed are true bugs, wasps, bees, and ants. Most of its water is obtained through its diet.

Threats: Disturbances that reduce shrub cover, such as frequent fire, mechanical disruption, livestock grazing, off-highway vehicle use, and military training activities appear to reduce habitat suitability for the species.

General Conservation Measures: Fire frequency and the invasion of exotic vegetation, especially grasses and annual forbs, interact to pose potentially serious threats to suitable gnatcatcher habitat. In much of coastal southern California, where these exotic plants are well-established, and where the irreversible conversion of shrublands to grasslands is likely, fire frequency and burn size should be kept low. Where possible, flammable exotics should be removed or reduced in shrubland habitats.

Information Sources:

Atwood, J. L. and D. R. Bontrager. 2001. California Gnatcatcher (Polioptila californica). In The Birds of North America, No. 574 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and the American Ornithologists' Union, Washington, D.C.

Salata, Larry. 1993. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Coastal California Gnatcatcher. Division of Endangered Species. U.S. Fish and Wildlife Service. Accessed on Dec. 20, 2008 from http://endangered.fws.gov/r/fr93496.html

Mock, P. 2004. California Gnatcatcher (*Polioptila californica*). The Coastal Scrub and Chaparral Bird Conservation Plan: a strategy for protecting and managing coastal scrub and chaparral habitats and associated birds in California. California Partners in Flight. Accessed on Dec. 20, 2008 from http://www.prbo.org/calpif/htmldocs/scrub.html

Scott, Dr. Thomas. 2001. Coastal California Gnatcatcher. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu/

The 2002 Audubon Watchlist. 2002. California Gnatcatcher. National Audubon Society, Inc. Accessed on Dec. 20, 2008 from http://audubon2.org/webapp/watchlist/viewWatchlist.jsp

Southern California Rufous-crowned Sparrow

Aimophila ruficeps canescens

Presence Onsite: Occurs. The species was observed on the project site during the surveys and habitat is available onsite for nesting.
Onsite Conservation Measures: See Mitigation Measure 7a and 7b in the Environmental Impacts and Mitigation Measures section of the Biological Resources Technical Report.

Federal Status: None
State Status: None
CDFG: Watch List
NatureServe Rank: G5T2T4/S2S3
Other: IUCN: LC

Description: A small bird (5-6 inches) with a rufous colored crown and eye stripe on a gray head. Whisker marks on cheeks are obvious and the gray mantle is streaked with rufous stripes. Underparts are primarily unstreaked gray.
Habitats: Coastal sage scrub and chaparral.
Range: Limited to a narrow belt of semiarid coastal sage scrub and sparse chaparral from Santa Barbara south to the northwestern corner of Baja California.
Seasonality: Year-round resident of southern California.
Food Sources: Gleans from the ground and low foliage of shrubs, and occasionally from the leaves of oaks. During the breeding season insects dominate the diet, while seeds, grasses, and forb shoots are consumed the remainder of the year.
Threats: The loss of coastal sage scrub for agriculture and urban development has reduced the available habitat.
General Conservation Measures: Southern California rufous-crowned sparrows would benefit from steep slope preservation and maintenance, by the use of prescribed burns, of open edge conditions of coastal sage scrub that perpetuate herbaceous elements for foraging.

Information Sources:

Enature. 2008. Southern California Rufus-crowned Sparrow. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com

Scott, Dr. Thomas. 2001. Southern California Rufus-crowned Sparrow. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. J Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

Lark Sparrow (nesting)

Chondestes grammacus

Presence Onsite: Occurs. The species was observed on the project site during the surveys and habitat is available onsite for nesting.
Onsite Conservation Measures: See Mitigation Measure 7a and 7b in the Environmental Impacts and Mitigation Measures section of the Biological Resources Technical Report.

Federal Status: None
State Status: None
CDFG: None
NatureServe Rank: G5/SNR
Other: None

Description: The species has a chestnut ear patches, with a chestnut crown stripe divided by central white stripe. Facial marks include black malar stripes, with white stripe above, buffy and white stripe above eye, Black line through eye, and a white ring around the eye. Its flanks are buffy, with buffy wingbars and black stripes on back.
The sexes alike, but the males are slightly larger. Juveniles have brown streaks on chest and their face patterns are more obscure with browns instead of chestnut and black, and dirty white stripes. First winter birds have adult pattern, but colors are duller on face.
Habitats: The species breeds in open habitats, where grass adjoins scattered trees and shrubs, especially in poor or sandy soils. Park-like woodlands, mesquite grasslands, fallow fields with brushy edges, sagebrush.
Range: Breeds from southern central Canada southward to northern Mexico, westward to California coast and eastward to Mississippi River and western Indiana. Irregular breeder eastward to Ohio and North Carolina. Winters primarily in California and from Texas southward through Mexico. Scattered individuals found throughout United States and on East Coast.
Seasonality: Year-round and wintering resident of southern California.
Food Sources: Seeds and insects
Threats: Breeding bird survey data show a nationwide decrease in populations, especially in the eastern portion of its range.
General Conservation Measures:

Information Sources:

Enature. 2008. Lark Sparrow. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com
Martin, J. W., and J. R. Parrish. 2000. Lark Sparrow (*Chondestes grammacus*). In The Birds of North America, No. 488 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
Sibley, D. A. 2000. The Sibley Guide to Birds. National Audubon Society. New York: Chanticleer Press, Inc.

Hoary Bat

Lasiurus cinereus

Presence Onsite: Possibly occurs as a Transient. The species was not observed roosting onsite and the typical roosting habitat does not occur, so it is unlikely. It is possible for the species to forage on the site due to the occurrence of roosting habitat in the vicinity of the project site.
Onsite Conservation Measures: None required. There is no reasonable measure to offset the loss of a small amount of potential foraging habitat other than the proposed preservation of open space on the project site.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe: G5/S4?
Other: IUCN: VU; WBWG: H

Description: A large bat; ears short, rounded, and with black rims; dorsal surface of membrane between hind legs and feet densely furred; upperparts grayish or brownish, heavily frosted with white; membranes brownish black except along forearm where they are yellowish. Not easily confused with any other North American bat. External measurements average: total length, 136 mm; tail, 57 mm; foot, 12 mm; ear, 18 mm; forearm, 52 mm. Weight 20-35 g.
Communities: This bat is migratory and moves northward in spring and southward in winter. Like its relative the red bat, with which it frequently associates, the hoary bat is more or less solitary and frequents wooded areas where it roosts in the open by hanging from a branch or twig. It is a strong flier, and in association with other bats it is readily recognized by its large size and swift, erratic flight. This bat usually emerges rather late in the evening, but during migration it frequently is observed in daylight hours.
Range: The most widespread of all American bats, the hoary bat occurs widely across most of North America from north-central Canada, south into southern Mexico. May be found at any location in California, although distribution patchy in southeastern deserts.
Food sources: The chief food is moths, although they are known to also eat beetles, flies, grasshoppers, termites, dragonflies, and wasps.
Threats: The loss of habitat due to urbanization. Also the use of insecticides has reduced their food sources.
General Conservation Measures: None known at this time.

Information Sources:

Harris, J. 2003. M034 – Hoary Bat. California Wildlife Habitat Relationship System. California Department of Fish and Game-California Interagency Wildlife Task Group. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

The Mammals of Texas- Online Edition. 2008. Hoary Bat. Texas Tech University. Accessed on Dec. 20, 2008 from http://www.nsrl.ttu.edu/tmot1/Default.htm.

Western Small-footed Myotis

Myotis ciliolabrum

Presence Onsite: Possibly occurs as a Transient. The species was not observed roosting in the abandoned structure onsite. It is possible for the species to forage on the site due to the occurrence of roosting habitat in the vicinity of the project site.
Onsite Conservation Measures: None required. There is no reasonable measure to offset the loss of a small amount of potential foraging habitat other than the proposed preservation of open space on the project site.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe: G5/S2S3
Other: BLM: S; IUCN: VU; WBWG: H

Description: A small *Myotis* with small feet, short ears, and relatively long tail; ratio of tail to head and body about 95; ratio of foot to tibia 40-45; upperparts light buff to warm buff, with slight tricolor effect; individual hairs blackish basally, succeeded by pale intermediate section and flaxen tips; underparts pale buff to nearly white; muzzle, chin, ears, and tragus blackish; sides of face from muzzle to ears blackish brown. Most easily confused with the small-footed *M. californicus*. Dental formula as in *M. californicus*. External measurements average: total length, 79 mm; tail, 37 mm; foot, 7 mm; ear, 13 mm; forearm, 33 mm. Weight, 4-5 g.
Communities: In the western United States, these bats are inhabitants of the deserts, semi-deserts, and desert mountains. Their daytime roosts may be in crevices and cracks in canyon walls, caves, mine tunnels,

behind loose tree bark, or in abandoned houses. These bats hibernate in suitable caves or mine tunnels within the range occupied in summer.
Range: The species is found from southwestern Canada, south to Mexico and distributed over the United States except along the north pacific coast, the south eastern states, and the center strip of the U.S. the species is found throughout its range in appropriate habitat.
Food sources: Western small-footed myotis appear to have similar feeding and foraging habits as the California myotis, but their specific food habits have not been recorded. They may feed over water and close to the ground over desert chaparral vegetation.
Threats: The loss of habitat due to urbanization. Also the use of insecticides has reduced their food sources.
General Conservation Measures: None known at this time.

Information Sources:

The Mammals of Texas- Online Edition. 2008. Western small-footed myotis. Texas Tech University. J Accessed on Dec. 20, 2008 from http://www.nsrl.ttu.edu/tmot1/Default.htm.

Pallid Bat

Antrozous pallidus

Presence Onsite: Possibly occurs as a Transient. The species was not observed roosting in the abandoned structure onsite. It is possible for the species to forage on the site due to the occurrence of roosting habitat in the vicinity of the project site.
Onsite Conservation Measures: None required. There is no reasonable measure to offset the loss of a small amount of potential foraging habitat other than the proposed preservation of open space on the project site.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe: G5/S3
Other: BLM: S; IUCN: LC; USFS: S; WBWG: H

Description: A rather large, pale, yellowish-brown bat. Ears about 2.5 cm long, broad, naked, and crossed by nine or 11 transverse lines; bases of hairs light (nearly white), tips dusky; large light spot between shoulders; underparts paler and lacking dusky-tipped hairs; membranes nearly naked and brownish; nostrils surrounded by a glandular ridge producing a blunt snout; feet relatively large and strong. External measurements average: total length, 113 mm; tail, 46 mm; foot, 12 mm; ear, 28 mm; forearm, 48 mm. Weight, 12-17 g.
Communities: A wide variety of habitats is occupied, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. Pallid bats inhabit rocky, outcrop areas where they commonly roost in rock crevices, caves, and mine tunnels but they also roost in the attics of houses, under the eaves of barns, behind signs, in hollow trees, and in abandoned adobe buildings.
Range: Throughout the arid areas of the United States in appropriate habitat. The pallid bat is a locally common species of low elevations in California. It occurs throughout California except for the high Sierra Nevada from Shasta to Kern cos., and the northwestern corner of the state from Del Norte and western Siskiyou cos. to northern Mendocino Co. A yearlong resident in most of the range.
Food sources: They have been observed flying, apparently at random, over an area at levels of 15-90 cm above the ground. When prey (Jerusalem crickets, scorpions, and other flightless arthropods) is located, presumably by sight, the bat abruptly drops to the ground, searches briefly, grabs its victim in its mouth, and takes off. Pallid bats also eat moths, froghoppers and leafhoppers, June beetles, and grasshoppers.

Threats: The loss of habitat due to urbanization. The use of insecticides has also reduced their food sources.
General Conservation Measures: None known at this time.

Information Sources:
Harris, J. M038– Pallid Bat. 2003. California Wildlife Habitat Relationship System. California Department of Fish and Game-California Interagency Wildlife Task Group. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

The Mammals of Texas- Online Edition. 2008. Pallid Bat. Texas Tech University. Accessed on Dec. 20, 2008 from http://www.nsrl.ttu.edu/tmot1/Default.htm.

Western Mastiff Bat

Eumops perotis californicus

Presence Onsite: Possibly occurs as a Transient. The species was not observed roosting in the abandoned structure onsite. Other appropriate roosting habitat does not occur onsite, so it is unlikely the species roosts there. It is possible for the species to forage on the site due to the occurrence of roosting habitat in the vicinity of the project site.
Onsite Conservation Measures: None required. There is no reasonable measure to offset the loss of a small amount of potential foraging habitat other than the proposed preservation of open space on the project site.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe: G5T4/S3?
Other: BLM: S; IUCN: VU; WBWG: H

Description: The largest bat in North America has a thinly, dark brown furred body. Its large ears are connected at their base and project over the forehead. Prefers to roost in caves but will use crevices or buildings when no other roost sites are available.
Communities: The species roosts in crevices of rocky cliff and canyon areas. It also roosts in buildings.
Range: Southern California, extreme southern Nevada, southern Arizona, extreme southwestern New Mexico, and the Big Bend area of Texas. Found in coastal lowlands along the California coast.
Food sources: Moths comprise 80 percent of its diet, but it also eats ground-dwelling crickets and grasshoppers.
Threats: The extensive loss of habitat due to urbanization of coastal basins, marsh drainage, and cultivation of major foraging areas. Also the use of insecticides has reduced their food sources.
General Conservation Measures: None known at this time.
Information Sources:
California's Plants and Animals. 2003. Western Mastiff Bat. California Department of Fish and Game-Habitat Conservation Planning Branch. Accessed on Dec. 20, 2008 from http://www.dfg.ca.gov/about/wildlife.html

Enature. 2008. Western Mastiff Bat. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com

San Diego Desert Woodrat

Neotoma lepida intermedia

Presence Onsite: No. The species and its associated diagnostic sign (middens) were not observed during the surveys of the project site and the habitat elements (rocky outcrops or cactus patches) with which the species is typically associated with does not occur onsite.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe Rank: G5T3?/S3?
Other: IUCN: DD

Description: Woodrats are pale buff, gray or reddish brown, usually with white undersides and feet. They have relatively large ears and, normally, hairy tails. They range in length from 8 to 20 inches, including their 3- to 9-inch tail.
Habitats: Riversidean sage scrub, coastal sage scrub, and chaparral. The species is typically found in areas with rock outcrops, boulder fields, or areas with cactus patches where the species can take refuge.
Range: The San Diego desert woodrat occurs in coastal California from San Luis Obispo south through the Transverse and Peninsular Ranges into Baja California. Historic locations of the species on and adjacent to National Forest System lands have been recorded from San Luis Obispo near Los Padres National Forest, San Fernando near Angeles National Forest, Redlands and the San Bernardino Mountains on and near the San Bernardino National Forest, and Julian near the Cleveland National Forest. Found throughout its range in suitable habitat.
Food sources: Desert woodrats primarily are herbivorous, and their diet may include leaves, seeds, berries, parts of flowers, and yucca shoots. Woodrat foraging behavior entails venturing from a sheltered area or den to a plant, usually within 3 meters of the den, clipping the vegetation, and then returning to the sheltered area or den to consume the food morsel.
Threats: General loss of coastal sage scrub habitat to agricultural and urban development. Also, disking of vacant land for farming and weed abatement and cattle and sheep grazing may destroy or degrade woodrat habitat. A potential long-term threat to the species is isolation and fragmentation of habitat.

General Conservation Measures:
Preservation of suitable habitat and corridors between existing populations to promote genetic exchange.

Information Sources:
Enature. 2008. San Diego Desert Woodrat. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com/
Scott, Dr. Thomas. 2001. San Diego Desert Woodrat. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu/

American Badger
Taxidea taxus

Presence Onsite: No. The species and its associated diagnostic sign (burrows and dugout rodent burrows) were not observed during the surveys of the project site. Areas occupied by ground squirrels were thoroughly examined.
Onsite Conservation Measures: None required.

Federal Status: None
State Status: None
CDFG: Species of Special Concern
NatureServe: G5/S4
Other: IUCN: LC

Description: A rather large, robust, short-legged "weasel"; body broad and squat; tail short, thick and bushy. Pelage is long and shaggy, especially on back and sides and the upperparts are grizzled grayish-yellow in color. A distinct white stripe runs from near the tip of nose back over top of head to shoulder area, also a white crescent on each side of face just back of eye and another at anterior base of ear. Badger sign is very diagnostic, consisting of burrows and holes that are generally horizontally elliptic. The earth thrown out of the excavation frequently consists of large clods. The claw

marks left by digging are frequently horizontal and found on the sides of the hole.

Communities: The principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated ground. Grasslands, savannas, and mountain meadows near timberline are preferred. Found locally in lower elevation grasslands and coastal sage with inhabited open ground composed of fine sands.

Range: American Badgers occur from northern Alberta southward to central Mexico. They range from the Pacific Coast eastward through Ohio. Locally the species is, or was, historically found in the Los Angeles Basin, from approximately Burbank and San Fernando on the northwest to San Bernardino on the northeast, and Cabazon, Hemet, and Aguanga on the east and southeast. Their geographic limits on the southwest are not clear, but probably lie somewhere near the Hollywood Hills. Little is known on the current number of populations, but remaining numbers are probably isolated due to urbanization of historic habitat. Badger populations have declined drastically in California within the last century and the species has been extirpated from many areas in southern California.

Food sources: The chief food of the badger is ground squirrels, but it also preys upon other burrowing rodents depending on availability. They also eat lizards, birds, eggs, insects, and occasionally carrion.

Threats: Deliberate killing probably has been a major factor in the decline of badger populations, as well as habitat loss due to cultivation practices and urbanization. Rodent and predator poisoning pose double threats through direct and secondary poisoning of Badgers and elimination of the food upon which badgers are dependent.

General Conservation Measures: The preservation of large open areas would protect nesting and foraging habitats of this species. Also corridors need to be created or maintained between populations that are, or at risk of being, isolated.

Information Sources:

Enature. 2008. American Badger. National Wildlife Federation. Accessed on Dec. 20, 2008 from http://www.enature.com

Scott, Dr. Thomas. 2001. Los Angeles Pocket Mouse. Understanding the Plants and Animals of Riverside County Multiple Species Habitat Conservation Plan. University of California-Riverside. Accessed on Dec. 20, 2008 from http://ecoregion.ucr.edu

APPENDIX C
Tree Report

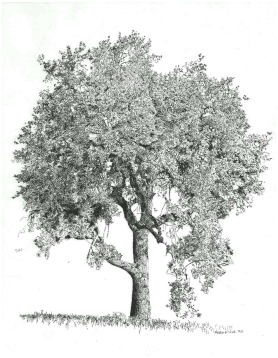
TREE REPORT

SUBJECT
Vesting Tentative Tract Map No. 5847
Moorpark

PREPARED FOR
Moorpark Property 67, LLC
26500 West Agoura Road #652
Calabasas, CA 91302

PREPARED BY

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Date: October 24, 2016
Revised Date: June 30, 2021
LNDG Project No.: 200-834

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OBJECTIVES

The objective of this report is to qualify the present condition of the site's trees and to discuss the potential encroachments to them. This involved:

1. Determining the physiological condition of each tree;
2. Ascertaining the encroachments that will occur due to grading (see site plan/**TREE LOCATION MAP)**;

METHODS OF STUDY

Qualification of this site's trees was accomplished using our standard visual survey, as completed by L. NEWMAN DESIGN GROUP, INC. (**LNDG**) in October of 2016. In June of 2021, the trees were reviewed on site to assess the current condition of the trees. In the course of the fieldwork, we performed the following:

1. Tree trunks were measured at 4½' above mean natural grade;
2. The trees were tagged with numbered, metal tags. These tags were affixed to the sides of the trees and correspond to the numbers on the **TREE LOCATION MAP**;
3. All of the inventoried trees were located by LNDG on a topographic map/site plan (scale: 1" = 40') prepared by Delane Engineering. Refer to the **TREE LOCATION MAP** included herein for the approximate tree locations.

TREE SPECIES

There are 3 coast live oak trees that appear to have started growing since the fire that burned this area several years ago. The rest of the trees were either planted by the previous owner as part of the ornamental landscape or are Peruvian pepper trees that have naturalized. The species of trees present on the site are:

Qty	Species	Common Name
6	*Cupaniopsis anacardioides*	Carrotwood
1	*Eucalyptus globulus*	Blue gum
2	*Fraxinus uhdei*	Ash tree
1	*Grevillea robusta*	Silk oak
7	*Pinus canariensis*	Canary Island pine
6	*Pinus halepensis*	Aleppo pine
1	*Pinus pinea*	Stone pine
3	*Quercus agrifolia*	Coast live oak
1	*Sambucus mexicana*	Elderberry
56	*Schinus molle*	Peruvian pepper tree
12	*Syagrus romanzoffiana*	Queen palm
92	*Washingtonia robusta*	Mexican fan palm
188		

TREE PROTECTION GUIDELINES

The City of Moorpark Zoning Ordinance provides for the protection of certain species of trees, defined as "Protected Trees": in Ordinance 101, Chapter 14.09 - Preservation, Cutting, and Removal of Historical Trees, Native Oak Trees and Mature Trees; and in Ordinance 102, Chapter 14.08 - Planting and Maintenance of Trees, Shrubs and Plants.

Ordinance 101, Section 14.09.101 - Intent and Purpose - It is the determination of the Moorpark City Council that proper and necessary steps should be taken in order to protect and preserve, to the greatest extent possible, mature trees, native Oak trees and historic trees, especially where such trees are associated with proposals for urban development, as such trees are a significant, historical, aesthetic and valuable ecological resource. It is the intent to maintain and enhance the general health, safety and welfare of the citizens of the City by assisting in counteracting air pollution, by minimizing soil erosion and other related environmental damage and by enhancing the aesthetic environment of the City.

Ordinance 102, Section 14.08.101 - Intent and Purpose - Consistent with Chapter 14.09 regulating the preservation, cutting and removal of historic trees, native Oak trees and mature trees and Resolution No. 88-520 setting forth Guidelines for a Master Tree Plan, it shall be the City's policy to utilize whatever techniques, methods and procedures are required to preserve, whenever feasible, all trees in the City including, but not limited to, trees which are creating damage to surface improvements or underground facilities or which are diseased, or located where construction is being considered or will occur.

TREES OF CONCERN

Historical Tree - Any tree or group of trees identified by the City as a landmark, or identified on the Federal or California Historic Resources Inventory to be of historical or cultural significance or identified as contributing to a site or structure of historical or cultural significance.

Mature Tree - All trunks of any tree shall be measured at 4½'. If the trunk of any oak tree trunk exceeds 4 inches in diameter or if the trunk of any other tree species exceeds 9½ inches in diameter, it is to be included in the inventory. Regrowing stumps are not to be included.

Native Oak Tree - Is any living tree of the genus *Quercus* and of the species *agrifolia*, *berberidifolia*, *dumosa*, *lobata* or hybrids thereof.

RESULTS OF STUDY

1. **Physiological Condition of the Trees**

    a. The physiological condition of each tree is shown in the **FIELD OBSERVATION SHEETS**. Nearly all the trees were damaged in the fire that swept through this area within the last 10 years. Many appear to have been burned to the ground and have re-sprouted from the stump. Most of the trees, including the 200 to 300 young, multiple-trunk trees, are Peruvian pepper trees that have become naturalized in southern California. Although they are good ornamental trees in cultivated landscapes, they are considered invasive species in the native landscape.

    b. As of June 2021, the trees have remained in the same condition. The trees are surviving with no tree care and are not thriving with minimal water.

2. **Summary of Data/Plan Review**

    a. Verification of the accuracy of the report was done by spot-checking 10 percent of the trees, viewing the trees, and comparing what was observed in 2016 compared with 2021. No significant changes were observed. Increase in trunk size of a fraction of an inch, for example, were not considered significant. It is our opinion that none of the trees changed significantly.

b. According to the site grading plan, 142 trees are proposed to be removed of the 188 mature trees that are growing on the site.

c. A circle for each tree is shown on the **TREE LOCATION MAP** to graphically represent its approximate crown spread. The trees were not precisely land surveyed but were accurately located by LNDG based on the topographic survey plan.

d. 3 oak trees were found on this site. Only 1 oak tree is proposed to be removed.

3. **Tree Appraisals**

a. LNDG determined replacement value of each inventoried tree based on the 10th Edition of the *Guide for Plant Appraisal* that was prepared for the International Society of Arboriculture by the Council of Tree and Landscape Appraisers.

b. Refer to the appendix for the appraised value of each tree using the trunk formula technique (TFT) including, as factors, trunk diameter, tree species, health, aesthetics, and location.

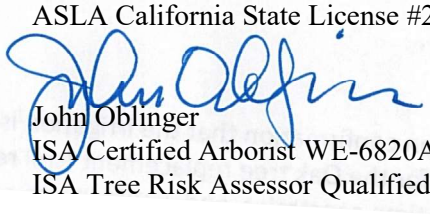
c. The total value of all the trees as of the date of this report is $436,816.

NOTICE OF DISCLAIMER:

This report represents the independent opinion of the signatory consultant (L. NEWMAN DESIGN GROUP, INC.). The tree(s) discussed herein was/were generally reviewed for physical, biological function and aesthetic conditions. This examination was conducted in accordance with presently accepted industry procedures, which are a ground-plane macro-visual observation only. No extensive micro-biological, soil-root excavations, upper crown examination nor internal tree investigations were conducted and therefore, the reporting herein reflects the overall visual appearance of the tree(s) on the date reviewed and no warranty is implied as to the potential failure, health or demise of any part or of whole of any tree described in the report. Records may not remain accurate after our inspection due to unknown causes of changeable deterioration of the reviewed site.

Respectfully submitted,

L. NEWMAN DESIGN GROUP, INC.
ASLA California State License #2464



John Oblinger
ISA Certified Arborist WE-6820A
ISA Tree Risk Assessor Qualified

SUMMARY of FIELD OBSERVATIONS

INSPECTION NOTICE

The following information was observed on the date(s) indicated herein, and should only be considered true at the time of field inspection.

SUMMARY OF FIELD OBSERVATIONS

	TREE NUMBER	1901		1902		1903		1904		1905		1906		1907		1908		1909		1910	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis			X		X		X		X											
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle											X		X		X					
	Syagrus romanzoffiana																				
	Washingtonia robusta	X																X		X	
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	14"		13"		14"		15"		9.5"		8" 8"		10" multi		12" multi		18"		20"	
	TREE HEIGHT (APPROX)	25'		35'		35'		35'		20'		25'		20'		18'		50'		45'	
RATING	CROWN SPREAD	6'		15'		15'		18'		10'		30'		30'		25'		12'		12'	
	HEALTH	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	D	NOTES:	B	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:
	AESTHETICS/COMFORMITY	C		C		C		C		D		D		B		C		C		C	

	TREE NUMBER	1911		1912		1913		1914		1915		1916		1917		1918		1919		1920	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia			X																	
	Sambucus mexicana																				
	Schinus molle																				
	Syagrus romanzoffiana																				
	Washingtonia robusta	X				X		X		X		X		X		X		X		X	
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	15"		8" 7"		15"		12"		12"		13"		11"		12"		12"		13" 10"	
	TREE HEIGHT (APPROX)	20'		18'		25'		25'		15'		18'		18'		18'		18'		18'	
RATING	CROWN SPREAD	6'		18'		8'		8'		6'		6'		8'		6'		6'		6'	
	HEALTH	C	NOTES:	B	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:
	AESTHETICS/COMFORMITY	C		B		C		C		C		C		C		C		C		C	

SUMMARY OF FIELD OBSERVATIONS

	TREE NUMBER	1921		1922		1923		1924		1925		1926		1927		1928		1929		1930	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle																				
	Syagrus romanzoffiana																				
	Washingtonia robusta	X		X		X		X		X		X		X		X		X		X	
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	13"		10"		12"		15"		14"		13"		13"		13"		12"		13"	
	TREE HEIGHT (APPROX)	15'		9'		15'		18'		18'		10'		15'		15'		15'		8'	
RATING	CROWN SPREAD	6'		4'		6'		6'		6'		4'		4'		4'		4'		4'	
	HEALTH	C	NOTES:	C-	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C-	NOTES:
	AESTHETICS/COMFORMITY	C		C-		C		C		C		C		C		C		C		C-	

	TREE NUMBER	1931		1932		1933		1934		1935		1936		1937		1938		1939		1940	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle																				
	Syagrus romanzoffiana																				
	Washingtonia robusta	X		X		X		X		X		X		X		X		X		X	
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	13"		13"		14"		13" 8"		14" 12"		14" 10"		15"		14"		15"		15"	
	TREE HEIGHT (APPROX)	25'		20'		18'		15'		18'		20'		25'		25'		18'		25'	
RATING	CROWN SPREAD	6'		4'		4'		8'		10'		10'		6'		6'		6'		6'	
	HEALTH	C	NOTES:	C-	NOTES:	C-	NOTES:	C-	NOTES:	C-	NOTES:	C-	NOTES:	C-	NOTES:	C-	NOTES:	C-	NOTES:	C-	NOTES:
	AESTHETICS/COMFORMITY	C		C-		C-		C-		C-		C-		C-		C-		C-		C-	

SUMMARY OF FIELD OBSERVATIONS

	TREE NUMBER	1941		1942		1943		1944		1945		1946		1947		1948		1949		1950	
FORM	*Cupaniopsis anacardioides*											X						X			
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle					X		X		X				X		X				X	
	Syagrus romanzoffiana																				
	Washingtonia robusta	X		X																	
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	15"		15"		12"		9.5" 7"		9.5" 6"		11"		9.5" 9"		10" 8"		11"		10" 2 x 9" 8" 7"	
	TREE HEIGHT (APPROX)	25'		25'		18'		18'		20'		20'		18'		15'		20'		25'	
RATING	CROWN SPREAD	6'		8'		25'		25'		25'		25'		25'		25'		30'		30'	
	HEALTH	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	B	NOTES:	B	NOTES:	C	NOTES:	B	NOTES:
	AESTHETICS/COMFORMITY	C		C		C		C		C		C		B		B		C-		B	

	TREE NUMBER	1951		1952		1953		1954		1955		1956		1957		1958		1959		1960	
FORM	*Cupaniopsis anacardioides*	X		X																	
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																	X		X	
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle					X															
	Syagrus romanzoffiana																				
	Washingtonia robusta							X		X		X		X		X					
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	11"		12"		16"		13" 12" 10" 10"		13" 12" 10"		13" 12" 11" 10"		13"		14"		18"		14"	
	TREE HEIGHT (APPROX)	25'		20'		18'		15'		18'		18'		35'		35'		35'		30'	
RATING	CROWN SPREAD	25'		25'		30'		12'		12'		12'		12'		12'		30'		15'	
	HEALTH	C	NOTES:	C	NOTES:	C-	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	B	NOTES:	B	NOTES:	C	NOTES:	C	NOTES:
	AESTHETICS/COMFORMITY	C		C		C-		C		C		C		B		B		C-		C	

SUMMARY OF FIELD OBSERVATIONS

	TREE NUMBER	1961		1962		1963		1964		1965		1966		1967		1968		1969		1970	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis	X																			
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle											X		X		X		X		X	
	Syagrus romanzoffiana																				
	Washingtonia robusta			X		X		X		X											
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	16"		14"		14"		13"		12"		9.5" 9" 7" 5"		10" 8" 7" 7"		9.5" 8" 7" 6"/4"		9.5" 8" 3 x 7"		9.5" 2 x 9" 7" 6"	
	TREE HEIGHT (APPROX)	30'		25'		30'		20'		20'		25'		25'		20'		20'		30'	
RATING	CROWN SPREAD	16'		6'		10'		6'		8'		40'		40'		30'		25'		35'	
	HEALTH	B	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:
	AESTHETICS/COMFORMITY	B		C		C		C		C		C		C		B		B		B	

	TREE NUMBER	1971		1972		1973		1974		1975		1976		1977		1978		1979		1980	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis							X		X		X		X		X					
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana					X															
	Schinus molle	X		X																	
	Syagrus romanzoffiana																	X		X	
	Washingtonia robusta																				
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	9.5" 8"		12"		9.5" 2 x 7" 6" 5"		10"		25"		18"		16"		16" 13" 10"		10"		10"	
	TREE HEIGHT (APPROX)	18'		20'		15'		30'		50'		45'		50'		40'		15'		15'	
RATING	CROWN SPREAD	25'		30'		35'		30'		30'		20'		25'		35'		12'		12'	
	HEALTH	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	C	NOTES:	C	NOTES:
	AESTHETICS/COMFORMITY	B		B		C		B		B		B		B		B		C		C	

SUMMARY OF FIELD OBSERVATIONS

	TREE NUMBER	1981		1982		1983		1984		1985		1986		1987		1988		1989		1990	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle																				
	Syagrus romanzoffiana	X		X		X		X													
	Washingtonia robusta									X		X		X		X		X		X	
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	11"		13"		13"		9.5"		14" 11"		14" 12"		12"		12"		13"		13"	
	TREE HEIGHT (APPROX)	20'		20'		18'		10'		12'		20'		30'		30'		30'		30'	
RATING	CROWN SPREAD	15'		10'		10'		8'		8'		10'		8'		6'		6'		6'	
	HEALTH	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:
	AESTHETICS/COMFORMITY	C		C		C		C		C		C		C		C		C		C	

	TREE NUMBER	1991		1992		1993		1994		1995		1996		1997		1998		1999		2000	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle																				
	Syagrus romanzoffiana																				
	Washingtonia robusta	X		X		X		X		X		X		X		X		X		X	
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	14" 12" 12"		14"		14"		14"		15"		13" 12"		12"		13"		14"		14"	
	TREE HEIGHT (APPROX)	25'		25'		18'		18'		25'		25'		10'		20'		20'		20'	
RATING	CROWN SPREAD	10'		6'		6'		6'		10'		6'		6'		6'		6'		6'	
	HEALTH	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:
	AESTHETICS/COMFORMITY	C		C		C		C		C		C		C		C		C		C	

SUMMARY OF FIELD OBSERVATIONS

	TREE NUMBER	2001		2002		2003		2004		2005		2006		2007		2008		2009		2010	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle																				
	Syagrus romanzoffiana																				
	Washingtonia robusta	X		X		X		X		X		X		X		X		X		X	
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	14"		15"		14"		10"		12"		13"		12" 9"		13"		13"		12"	
	TREE HEIGHT (APPROX)	20'		15'		20'		10'		25'		20'		20'		10'		15'		15'	
RATING	CROWN SPREAD	8'		6'		6'		4'		6'		6'		8'		6'		8'		6'	
	HEALTH	C	NOTES:	C	NOTES:	C	NOTES:	C-	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C-	NOTES:	C	NOTES:	C	NOTES:
	AESTHETICS/COMFORMITY	C		C		C		C-		C		C		C		C-		C		C	

	TREE NUMBER	2011		2012		2013		2014		2015		2016		2017		2018		2019		2020	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle	X		X		X								X							
	Syagrus romanzoffiana							X		X		X				X		X		X	
	Washingtonia robusta																				
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	9.5" 8" 7" 2 x 6"		9.5" 8" 8" 4"		10" 7" 5"		12"		13"		14"		10" 2 x 6" 4" 3"		12"		12"		13"	
	TREE HEIGHT (APPROX)	12'		20'		20'		25'		25'		25'		20'		20'		20'		20'	
RATING	CROWN SPREAD	25'		20'		25'		15'		15'		20'		30'		15'		12'		12'	
	HEALTH	B	NOTES:	B	NOTES:	B	NOTES:	C-	NOTES:	C-	NOTES:	C-	NOTES:	B	NOTES:	C-	NOTES:	C-	NOTES:	C-	NOTES:
	AESTHETICS/COMFORMITY	C		C		B		C-		C-		C-		B		C-		C-		C-	

SUMMARY OF FIELD OBSERVATIONS

	TREE NUMBER	2021		2022		2023		2024		2025		2026		2027		2028		2029		2030	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis	X																			
	Pinus pinea											X									
	Quercus agrifolia													X		X					
	Sambucus mexicana																				
	Schinus molle																				
	Syagrus romanzoffiana																				
	Washingtonia robusta					X		X		X								X		X	
	Grevillea robusta			X																	
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	14"		11" 10"		10"		12"		13"		12" 10"		6" 3" 3"		9"		14"		13"	
	TREE HEIGHT (APPROX)	30'		30'		10'		20'		20'		30'		18'		18'		18'		20'	
RATING	CROWN SPREAD	30'		20'		4'		6'		6'		35'		12'		16'		6'		6'	
	HEALTH	C-	NOTES:	D	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:
	AESTHETICS/COMFORMITY	C-		D		C		C		C		B		C		C		C		C	

	TREE NUMBER	2031		2032		2033		2034		2035		2036		2037		2038		2039		2040	
FORM	*Cupaniopsis anacardioides*	X																			
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle			X		X		X		X				X						X	
	Syagrus romanzoffiana																				
	Washingtonia robusta											X				X		X			
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	11"		15" 6" 5"		15" 6" 3"		11" 9"		10" 6"		14"		36"		14"		18"		10"	
	TREE HEIGHT (APPROX)	18'		25'		25'		20'		18'		15'		30'		30'		50'		25'	
RATING	CROWN SPREAD	25'		35'		30'		30'		25'		4'		40'		10'		12'		20'	
	HEALTH	C	NOTES:	B	NOTES:	B	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	B	NOTES:	B	NOTES:	C	NOTES:	B	NOTES:
	AESTHETICS/COMFORMITY	C		B		C		C		C		C		A		B		C		C	

SUMMARY OF FIELD OBSERVATIONS

	TREE NUMBER	2041		2042		2043		2044		2045		2046		2047		2048		2049		2050	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle	X		X		X		X		X		X									
	Syagrus romanzoffiana																				
	Washingtonia robusta													X		X		X		X	
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	13" 5"		11" 7" 6" 4"		10" 8" 5"		9.5" 6"		9.5"		12"		10"		11"		9.5"		11"	
	TREE HEIGHT (APPROX)	18'		18'		15'		15'		12'		12'		12'		12'		12'		15'	
RATING	CROWN SPREAD	25'		25'		20'		15'		15'		20'		4'		4'		6'		10'	
	HEALTH	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	C	NOTES:	C	NOTES:	B	NOTES:	B	NOTES:
	AESTHETICS/COMFORMITY	B		B		B		B		B		B		C		C		B		B	

	TREE NUMBER	2051		2052		2053		2054		2055		2056		2057		2058		2059		2060	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle									X										X	
	Syagrus romanzoffiana																				
	Washingtonia robusta	X		X		X		X				X		X		X		X			
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	13"		13"		11"		9.5"		9.5" 9"		9.5"		10"		11"		13"		12" 7"	
	TREE HEIGHT (APPROX)	20'		12'		20'		12'		25'		12'		25'		25'		25'		30'	
RATING	CROWN SPREAD	10'		10'		8'		6'		30'		6'		8'		10'		10'		35'	
	HEALTH	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:
	AESTHETICS/COMFORMITY	B		B		B		B		B		B		B		B		B		B	

SUMMARY OF FIELD OBSERVATIONS

	TREE NUMBER	2061		2062		2063		2064		2065		2066		2067		2068		2069		2070	
FORM	*Cupaniopsis anacardioides*																	X			
	Eucalyptus globulus																				
	Fraxinus uhdei													X							
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle					X				X		X								X	
	Syagrus romanzoffiana																				
	Washingtonia robusta	X		X				X								X					
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	10"		13"		15"		15"		10"		10"		9.5"		14"		9.5"		11"	
						9"		9"		5"		7"		8"						10"	
														8"						7"	
	TREE HEIGHT (APPROX)	18'		25'		25'		30'		25'		25'		30'		35'		20'		25'	
RATING	CROWN SPREAD	10'		10'		35'		12'		20'		20'		25'		10'		25'		20'	
	HEALTH	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	C	NOTES:	C	NOTES:	B	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:
	AESTHETICS/COMFORMITY	B		B		B		B		C		C		B		C		C		C	

	TREE NUMBER	2071		2072		2073		2074		2075		2076		2077		2078		2079		2080	
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus																				
	Fraxinus uhdei											X									
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle	X		X		X		X		X				X		X		X		X	
	Syagrus romanzoffiana																				
	Washingtonia robusta																				
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	2 x 12'		10"		12"		10"		15"		9.5"		9.5"		14"		2 x 22'		27"	
		9"		6"				8"		9"				9"		11"		21"		22"	
		6"						8"						4"				2 x 16'			
		5"						7										14"			
	TREE HEIGHT (APPROX)	30'		25'		25'		25'		18'		30'		20'		30'		50'		40'	
RATING	CROWN SPREAD	35'		20'		25'		35'		25'		20'		20'		50'		60'		60'	
	HEALTH	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	C	NOTES:	B	NOTES:	C	NOTES:	B	NOTES:
	AESTHETICS/COMFORMITY	C		C		C		C		C		C		C		B		C		B	

SUMMARY OF FIELD OBSERVATIONS

	TREE NUMBER	2081		2082		2083		2084		2085		2086		2087		2088					
FORM	*Cupaniopsis anacardioides*																				
	Eucalyptus globulus											X									
	Fraxinus uhdei																				
	Pinus canariensis																				
	Pinus halepensis																				
	Pinus pinea																				
	Quercus agrifolia																				
	Sambucus mexicana																				
	Schinus molle	X		X		X		X		X				X		X					
	Syagrus romanzoffiana																				
	Washingtonia robusta																				
	DIAMETER OF TRUNKS AT 4.5' ABOVE EXISTING GRADE (DBH)	12" 12" 10"		25"		30"		9.5" 9" 5"		16" 15" 10" 9"		36"		10" 7" 4 x 6"		10" 2X8" 7" 3X5"					
	TREE HEIGHT (APPROX)	30'		30'		30'		20'		30'		35'		25'		20'					
RATING	CROWN SPREAD	40'		40'		35'		25'		40'		25'		50'		45'					
	HEALTH	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	B	NOTES:	C	NOTES:	B	NOTES:		NOTES:		
	AESTHETICS/COMFORMITY	B		B		B		B		A		B		C		B					NOTES:

TREE VALUATIONS

Tree Appraisals

Tree #	Values
1901	$1,237.50
1902	$2,543.00
1903	$2,949.00
1904	$3,386.00
1905	$905.00
1906	$624.00
1907	$1,658.00
1908	$1,685.00
1909	$2,475.00
1910	$2,227.50
1911	$990.00
1912	$2,677.00
1913	$1,237.50
1914	$1,237.50
1915	$742.50
1916	$891.00
1917	$891.00
1918	$891.00
1919	$891.00
1920	$891.00
1921	$742.50
1922	$445.50
1923	$742.50
1924	$891.00
1925	$891.00
1926	$495.00
1927	$742.50
1928	$742.50
1929	$742.50
1930	$396.00
1931	$1,237.50
1932	$990.00
1933	$891.00
1934	$742.50
1935	$891.00
1936	$990.00
1937	$1,237.50
1938	$1,237.50
1940	$1,237.50
1941	$1,237.50
1942	$1,237.50
1943	$1,685.00
1944	$1,630.00
1945	$1,478.00
1946	$1,012.00
1947	$2,840.00
1948	$1,658.00
1949	$446.00
1950	$6,218.00

Tree Appraisals

Tree #	Values
1951	$1,012
1952	$1,204
1953	$2,247
1954	$743
1955	$891
1956	$891
1957	$1,733
1958	$1,733
1959	$4,063
1960	$2,949
1961	$5,458
1962	$1,238
1963	$1,513
1964	$990
1965	$990
1966	$3,349
1967	$3,578
1968	$4,232
1969	$4,995
1970	$5,592
1971	$2,558
1972	$2,388
1973	$2,431
1974	$1,658
1975	$10,363
1976	$5,372
1977	$4,245
1978	$8,705
1979	$743
1980	$743
1981	$990
1982	$990
1983	$891
1984	$495
1985	$594
1986	$990
1987	$1,485
1988	$1,485
1990	$1,485
1991	$1,238
1992	$1,238
1993	$891
1994	$891
1995	$1,238
1996	$1,238
1997	$495
1998	$990
1999	$990
2000	$990

Tree Appraisals

Tree #	Values
2001	$990
2002	$743
2003	$990
2004	$495
2005	$1,238
2006	$990
2007	$990
2008	$495
2009	$743
2010	$743
2011	$3,759
2012	$3,199
2013	$2,885
2014	$1,238
2015	$1,238
2016	$1,238
2017	$3,266
2018	$990
2019	$990
2020	$990
2021	$1,721
2022	$338
2023	$495
2024	$990
2025	$990
2026	$2,913
2027	$903
2028	$1,354
2029	$891
2030	$990
2031	$1,012
2032	$4,742
2033	$3,687
2034	$2,364
2035	$1,592
2036	$743
2037	$22,753
2038	$1,485
2040	$1,366
2041	$3,217
2042	$3,681
2043	$3,134
2044	$2,093
2045	$1,496
2046	$2,388
2047	$594
2048	$594
2049	$594
2050	$743

Tree Appraisals

Tree #	Values
2051	$990
2052	$594
2053	$990
2054	$594
2055	$2,840
2056	$594
2057	$1,238
2058	$1,238
2059	$1,238
2060	$3,200
2061	$891
2062	$1,238
2063	$5,074
2064	$1,485
2065	$1,463
2066	$1,744
2067	$1,893
2068	$1,733
2069	$755
2070	$3,160
2071	$5,033
2072	$1,592
2073	$1,685
2074	$3,242
2075	$3,582
2076	$755
2077	$2,192
2078	$5,256
2079	$24,778
2080	$20,113
2081	$6,433
2082	$10,363
2083	$14,923
2084	$3,254
2085	$11,622
2086	$6,745
2087	$3,429
2088	$5,837
TOTAL	**$436,816**

GLOSSARY OF TERMS

GLOSSARY

INTRODUCTION

Familiarity with the following definitions is necessary to the basic understanding of the tree ordinance, this tree report, and of the procedures used to evaluate the trees and the site conditions. There are numerous diseases and insects that frequently attack trees. A long discourse in plant pathology or entomology is not a prerequisite to develop a basic understanding of the effects of disease and insects upon living plant tissue but a basic knowledge of disease and insects should include an understanding of the following definitions:

SPECIES/DIMENSIONS

1. **Tree Number** - each protected tree in the field has been assigned a number that corresponds to a tree location on the Tree Location Map.

2. **Species** - is the type of tree that is being evaluated.

3. **Trunk Diameter** - as measured at 4½' above mean natural grade or, traditionally, DBH (diameter at breast height). This may be altered if the measurement cannot be made at 4½' feet or if makes sense to measure above or below that point.

4. **Tree Height** - is the approximate height of each assessed tree.

5. **Crown Spread** - is the approximate, average diameter of the crown or canopy.

6. **Lean Direction** - is the direction the tree is inclined from the natural vertical position.

PHYSICAL CONDITION

1. **Vigor** - is the capacity of a tree for growth and survival. Below are the ratings:

   Low - Little new tip growth; poor leaf color; abnormal bark; much dead wood; significantly thinning foliage.
   Normal - New tip growth; good leaf color; some insect damage and twig dieback; no significant dieback;
   High - New tip growth; good leaf color; dense foliage; usually found in younger trees;

   A vigorous tree will more easily ward off disease and/or insect attacks, and should recover from impacts more quickly than a less vigorous tree.

2. **Trunk Cavity/Damage** - A cavity is a hollow area in the trunk, usually due to fire or wood decay. Damage is a damaged area on the trunk, usually due to an external (abiotic) force on the tree.

3. **Water Pocket** - pockets formed at branch crotches that can hold water and possibly weaken the tree's structure (possible hazard).

4. **Trunk Sap Ooze** - the exudation of liquid, usually from wounds; trunk sap ooze.

5. **Codominance** – equal in size and importance, usually associated with either trunks/stems or scaffold limbs/branches in the crown. Often can and should be corrected by pruning.

6. **Included Bark** - bark that is embedded between a branch and its parent stem or between codominant stems causing a weak attachment.

7. **Buried Root Collar** - the root collar is the transition area between the bark and the trunk. Burying the root collar may lead to fungal infection.

8. **Fungal Disease** - diseases that attack live tissue/external signs (i.e. mushrooms, conks) of internal wood decay.

GLOSSARY

9. **Insect Damage** - is some form of damage to the parts of the tree caused by insects or mites (e.g. scale, caterpillars, weevils, borers, mites, etc.).

10. **Mainstem Dieback** - death of healthy mainstems from the growing tip back.

11. **Twig/Branch Dieback** - death of twigs from the growing tip back.

12. **Thin Foliage** - defoliation and twig dieback throughout the canopy.

13. **Weak Attachments** - poorly formed branch connection at a crotch.

14. **Branch Cavities** - hollow areas in the limbs in the crown, usually due to the decay of wood.

15. **Over-extended Branch** - a large branch usually growing horizontally that may have excessive end weight and that exerts tremendous stress on its attachment. Can be corrected with reduction pruning.

16. **Epicormic Growth** - growth from adventitious buds along trunk and/or main limbs, rather than on twigs usually due to stress or poor pruning.

17. **Terrain** - refers to the general topography of the land where the tree is found.

RATING

1. **Heritage** - can vary in definition by agency but generally indicates a tree of significant size and age.

2. The **Health** of the trees was visually determined from a macroscopic inspection of signs and symptoms of disease. The following describes our rating system:

   A - Outstanding - A healthy and vigorous tree characteristic of its species and free of any significant visible signs of disease or insect damage;
   B - Above Average - A healthy and vigorous tree. However, there are minor visible signs of disease and insect damage;
   C - Average - Although healthy in overall appearance, there is a normal amount of disease and/or insect damage;
   D - Below Average/Poor* - This tree is characterized by exhibiting a greater degree of disease and/or insect damage or loss of structural integrity than normal and appears to be in a state of decline. This tree also exhibits extensive signs of dieback;
   F - Dead* - This tree exhibits no signs of life at the time of field evaluation.
   *A tree rating of "D" and lower is in a low stage of vigor and naturally a meaningful level of recovery is doubtful. Removal should be considered if it is within the proposed project development.

3. The **Aesthetic/Conformity** quality of the trees was visually determined from an overall inspection of appearance. The following describes our system:

   A. **Outstanding** - The tree is visually symmetrical, having the ideal form and appearance for the species;
   B. **Above Average** - The tree, though may not be perfectly symmetrical, has a nearly ideal form for the species with very little dieback of foliage or twigs and branches;
   C. **Average** - The tree has some asymmetry for the species with some defects that can be corrected and/or has some dieback of foliage and twigs and branches;
   D. **Poor** - The tree has few positive characteristics that probably cannot be corrected and may detract from the beauty of the landscape.

GLOSSARY

REMARKS (Some other terms that may be used)

1. **Bark Beetle Frass** – are wood fragments (dust) mixed in the insect's excrement produced by boring.
2. **Basal Growth** – is leaf growth generated from the base of the trunk.
3. **Cable/Brace** – provides support to relieve stress on a weak part of the tree (e.g. where two trunks form a "V" crotch.
4. **Cankers** – are rough swellings with depressed centers resulting in death of tissue that later cracks open and exposes the wood underneath in twigs, branches, and/or trunks. May be a sign of fungal damage.
5. **Chlorotic Leaves** – leaf veins remain normally green but the tissue between veins becomes yellow. Usually caused by nutrient deficiencies.
6. **Compartmentalization** – Physiological process in trees that creates the chemical and physical boundaries that act to limit the spread of disease and the decay organisms. Often seen where branches have been pruned properly.
7. **Crown** – parts of the tree above the trunk, including leaves, branches, and scaffold branches.
8. **Crown-clean pruning** – removal of dead, dying, diseased, rubbing, and structurally unsound branches, etc.
9. **Crown reduction pruning** – Removal of large branches and/or cutting back to large laterals to reduce the height or spread of the crown; sometimes referred to as “drop crotch” pruning or “natural pruning.”
10. **Exfoliating Bark** – the flaking off of bark from trunk, branches and/or twigs.
11. **Exposed Buttress Roots** – when soil is absent at the base of the tree exposing large roots at trunk flare.
12. **Fire Damage** – each tree may berated on the amount of burn it has received.
13. **Heart Rot** – decay in the center of the tree (heartwood).
14. **Lion-tailing** – an improper pruning technique where internal foliage and branches are removed, leaving twigs and foliage concentrated at the branch ends.
15. **Mistletoe** – is a leafy evergreen, perennial parasite with dark green leathery leaves.
16. **Multiple stems/branches** – single location where several branches are attached often creating weak attachments.
17. **Powdery Mildew** – a white powdery fungus on leaves often found when new growth becomes wet for long periods of time; leaves may be distorted, stunted and drop prematurely.
18. **Reduction cuts** – cutting a branch back to a live lateral branch which will take over as the new end of that branch.
19. **Removal cuts** – a thinning cut back to the trunk or the parent stem (branch) that preserves the branch collar.
20. **Scaffold limb** – A primary structural branch of the crown.
21. **Stub cuts** – an improper pruning technique that leaves a stub that may lead to structural defects.
22. **Topping** – the improper pruning of large limbs, usually growing vertically, to reduce the height of a tree.
23. **Witches Broom** – is an abnormal growth cluster of twigs that may be caused by pruning, insects, mites, fungus, etc.

APPENDIX D
Jurisdictional Delineation

JURISDICTIONAL DELINEATION

MOORPARK 67 / NORTH RANCH RESIDENTIAL DEVELOPMENT PROJECT

City of Moorpark

APNs 5110-190-285 & -305

Prepared for:

WEST POINT HOMES
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August 2021

SECTION		PAGE
1.0	INTRODUCTION	1
2.0	METHODS	3
3.0	SITE CONDITIONS	5
4.0	JURISDICTIONAL WATERS AND HABITAT	7
5.0	REGULATORY FRAMEWORK	12
6.0	IMPACT ANALYSIS	14
7.0	COMPENSATORY MITIGATION	17

FIGURES

Figure 1	Regional Location Map	2
Figure 2	Soils Map	6
Figure 3	Jurisdictional Delineation Map	8
Figure 4	Jurisdictional Delineation Impacts Map	15

TABLES

Table 1	Jurisdictional Features in Project Site	7
Table 2	Project Impacts to Jurisdictional Features	16

PLATES

Plate 1	Representative Photos of the Unnamed Blueline Stream	9
Plate 2	Representative Photos of the Ephemeral Drainage	11

APPENDIX

Appendix 1	Wetland Delineation Forms
Appendix 2	Conceptual Grading, Drainage, & Utility Plan

1.0 INTRODUCTION

Envicom Corporation has prepared this Jurisdictional Delineation for the West Point Homes' Baher Property Project (Project) located in the City of Moorpark within the County of Ventura (See **Figure 1, Regional Location Map**). The project site consists of two (2) privately owned parcels (APNs 5110-190-285 and -305), which total approximately 67.96 acres. The project site is within Section 6, Township 2N, Range 19W of the USGS 7.5' Moorpark topographic quadrangle map.

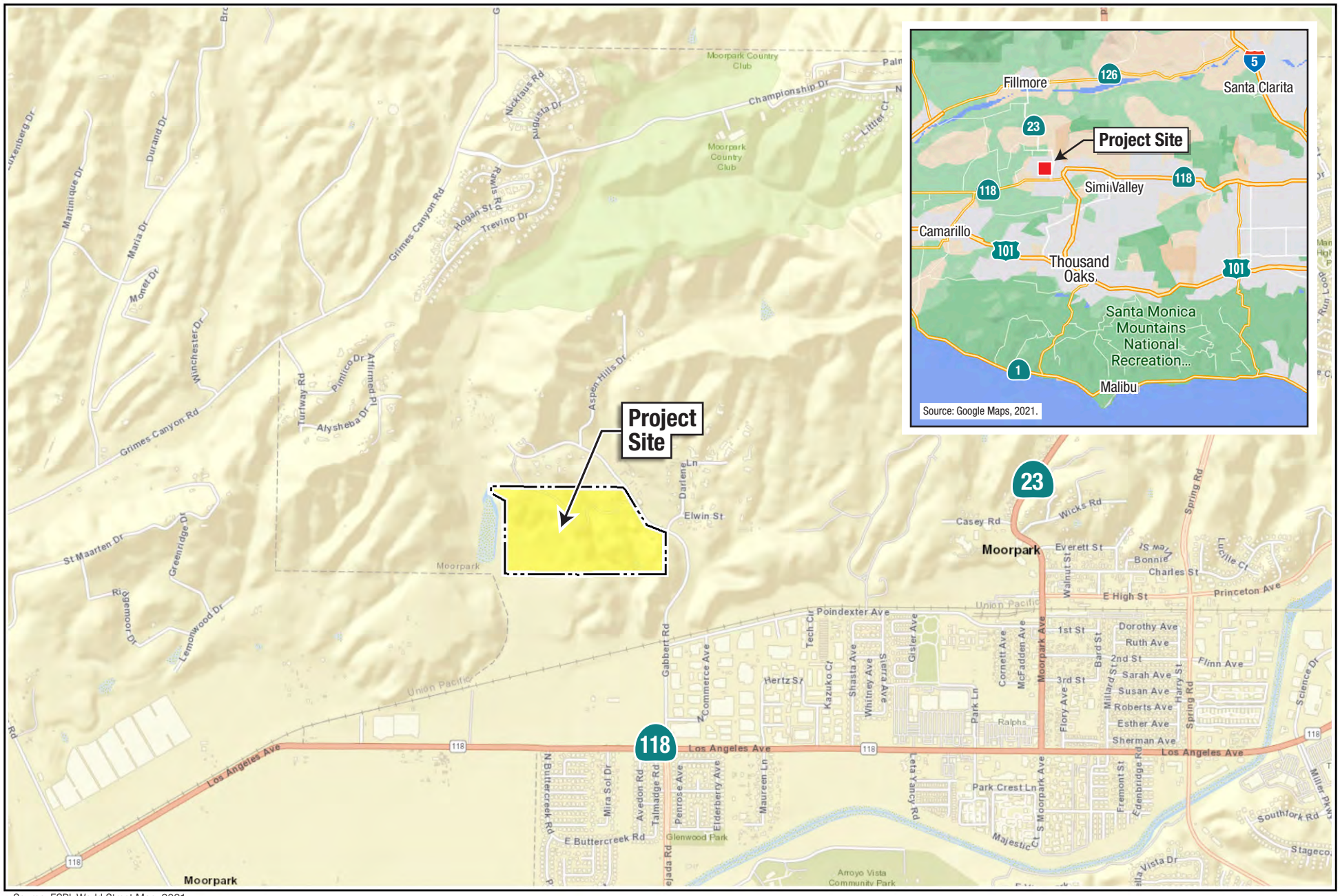
The project site is located at 5979 Gabbert Road, City of Moorpark, Ventura County, California (see Figure 1). Geographically the site is located on the northern edge of the Little Simi Valley on the southern flank of Oak Ridge. It is currently developed and undeveloped vacant land and surrounded by single-family residential development, a business park, and a private ranch. Approximately 55.42 acres of the 71.85 acre site will be developed. The proposed Project would involve development of 138 residential lots. The project design includes internal streets and associated infrastructure. This project includes North Hills Parkway, which will run along the southern boundary of the project site.

This report provides the methods and results of a delineation of areas at the project site under the jurisdiction of the Regional Water Quality Control Board (RWQCB) and the California Department of Fish and Wildlife (CDFW). There are no waters of the United States under jurisdiction of the Army Corps of Engineers (ACOE) at the site. Maps and representative photographs of jurisdictional waters and habitat are provided. The existing conditions discussion is followed by an evaluation of the Project's impacts to jurisdictional areas and proposed mitigation to compensate for impacts. Also, a separate *Biological Resources Technical Report Update* (Envicom Corporation, July 29, 2021) has been prepared for the Project.

Contact information for the Applicant, the Applicant's Representative, and the Biologist are as follows:

Applicant:
West Pointe Homes, Inc.
26500 West Agoura Road, Suite 652
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Contact: Ms. Makenzie Rasmussen

Biologist:
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4165 E. Thousand Oaks Blvd., Suite 290
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(818) 879-4700
Contact: Ms. Erin Roberts, Staff Biologist



Source: ESRI, World Street Map, 2021.

MOORPARK 67 / NORTH RANCH RESIDENTIAL DEVELOPMENT PROJECT – JURISDICTIONAL DELINEATION

envicom

Regional Location Map

FEET 0 1,000 2,000

FIGURE 1

2.0 METHODS

Background Review

Prior to conducting delineation fieldwork, the following literature and materials were reviewed:

- Aerial photographs (Google Maps) of the project site at a scale of 1:2400 to determine the potential locations of jurisdictional waters or wetlands;
- USGS topographic quad map to determine the presence of any "blue line" drainages or other mapped water features;
- USFWS NWI maps to identify areas mapped as wetland features; and
- USDA NRCS soil mapping data.

The project site was plotted over high-resolution, true-color, geo-rectified aerial photographs for use during the field delineation. Potential jurisdictional resources within 100 feet of the project footprint were identified and delineated during field exercises. Aerial photo interpretation in ArcGIS was used to extend the delineated boundaries in areas that were inaccessible during field review.

2.2 Field Delineation

A field delineation was conducted by Ms. Courtney McCammon, on-call biologist at Envicom Corporation, on the following date and in the following conditions:

- August 11, 2021 between the hours of 06:55 a.m. and 12:03 p.m. in hot and clear conditions (mid-70s to mid-80s °F) with winds of 0 to 5 m.p.h.

2.2.1 Non-wetland Waters and Riparian Areas

Non-wetland WUS were delineated according to the methods outlined in A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (United States Army Corps of Engineers, 2008a). The extent of WUS was determined based on indicators of an OHWM including scouring, shelving, and sediment sorting. The OHWM width was measured as an average within stream reaches of similar geomorphology and recorded in the field. Culvert inlets and outlets were identified where visible to understand hydrologic connectivity.

During the field exercises, the extent of CDFW jurisdiction within 100 feet of project boundaries, was delineated. CDFW jurisdiction was defined by bank-to-bank extent in channels with defined bed and bank, or the outer extent of riparian vegetation where present. Riparian communities were evaluated for the predominance of hydrophytic vegetation, or where trees were identified as directly associated with the stream channel (i.e. root zone hydrologically connected to the stream channel). GPS data was collected at the outer extent of the riparian canopy where accessible and extrapolated using aerial photo interpretation in inaccessible areas.

Wetlands

Field evaluation for federally regulated wetlands were conducted using routine delineation methods. Data was recorded at Sample Point locations to determine if an area fulfilled the United States Army Corps of Engineers (ACOE) three-parameter wetland definition. An explanation of each criteria is provided below:

- **Hydrophytic Vegetation**. The hydrophytic vegetation criterion is satisfied at a location if greater than 50% of all the dominant species present within the vegetation unit have a wetland indicator status of obligate (OBL), facultative wetland (FACW), or facultative (FAC) (ACOE 2008b). An OBL indicator status refers to plants that have a 99% probability of occurring in wetlands under

natural conditions. A FACW indicator status refers to plants that usually occur in wetlands (67 to 99% probability) but are occasionally found in non-wetlands. A FAC indicator status refers to plants that are equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66% for each). Other wetland indicator statuses include upland (UPL) which refers to plants that have <1% probability of occurring in wetlands, no indicator status where there is insufficient information to determine status and plants that do not occur in wetlands. The wetland indicator status used for this report follows the National Wetland Plant List (Arid West Region) (Lichvar, et. al. 2014).

- **Hydric Soils**. The hydric soil criterion is satisfied at a location if soils in the area can be inferred or observed to have a high groundwater table, if there is evidence of prolonged soil saturation, or if there are any indicators suggesting a long-term reducing environment in the upper 18 inches of the soil profile. Reducing conditions are most easily assessed using soil color. Soil colors were evaluated using the Munsell Soil Color Charts (Gretag/Macbeth 2000).
- **Wetland Hydrology**. The wetland hydrology criterion is satisfied at a location based upon an area having a high probability of being inundated or saturated (flooded, ponded, or tidally influenced) long enough during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (ACOE 1987 and 2008b). Wetland data forms were completed at each bridge location to document vegetation, soil, and hydrology characteristics. Wetland data forms are included in **Appendix 1, Wetland Determination Forms**.

Office Mapping and Analysis

Data collected in the field was exported to geographic information system (GIS) software and overlaid onto orthorectified aerial photographs for representation and analysis. Ms. McCammon performed data clean-up when she returned to the office to correct any data collection errors and to incorporate data from inaccessible portions of the project site.

3.0 SITE CONDITIONS

The project site is along the northern edge of the Little Simi Valley and along the south flank of Oak Ridge and is a part of the Calleguas Watershed Unit. The topography of the site is generally defined by three rolling, broad-topped ridges with basins in between, and a relatively flat area in the southwest corner. Elevations range from approximately 574 to 652 feet. The site is underlain by Quaternary alluvium. A Natural Resources Conservation Service (NRCS) map of the site is provided as **Figure 2, Soils Map.** The soils onsite have primarily been mapped as five (5) types of sandy or gravelly loam, with a small portion consisting of sandy alluvial soil in the wash in northwest corner. The region experiences a Mediterranean climate characterized by hot dry summers, and cool, mild winters, with precipitation occurring in the winter months. The area is within the climatic transition zone from the moister coastal region to the more arid inland regions of southern California. The average summer high temperature is 98ºF and the average winter low temperature is 33ºF. The rainy season occurs from October to April, though most precipitation falls in winter with an average of 9 inches annually. The vegetation at the site consists generally of coastal sage scrub and ruderal areas as well as a few small patches of mule fat and southern alluvial fan scrub.

The site is within the Calleguas Watershed, which is a large, closed basin with no regional outflow of surface water. The unnamed stream is a part of a larger system that eventually connects with Calleguas Creek. It flows in an east to west direction across the site, and ultimately discharges into the Pacific Ocean at Mugu Lagoon. There is also one (1) ephemeral drainage at the site, which drains upland areas or receives runoff from the single-family homes, horse stables and orchard operations to the north. These drainages all discharge ultimately to the Arroyo Simi/Arroyo Las Posas System and Calleguas Creek.

The site is mostly undeveloped vacant land and surrounded by single-family residential development, retail shopping, and two schools. The developed portions of the project site comprise 3.63 acres (5.05%) of the project site, which includes three (3) buildings that are still present onsite: a single-family residential home and a garage in the northeast corner, and a large storage shed in the northwest section. Two (2) concrete pads, a tennis court, long, winding driveways, and four (4) transmission line towers are also located on the project site. Trash and debris were observed along the dirt road and in the drainage that bisects the site. Off-road vehicle use appears to be common at the site as well as people traversing the site on foot and horseback.



Aerial Source: Valtus Imagery Services: Hexagon Imagery Program (HxIP), 2020. Source: NRCS Soils: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

Legend

- - — Property Boundary

Soils

- ChD2 — Chesterton coarse sandy loam, 5 to 15 percent slopes, eroded
- CkE3 — Chesterton sandy loam, 9 to 30 percent slopes, severely eroded
- MeC — Metz loamy sand, 2 to 9 percent slopes
- SbF — San Andreas sandy loam, 30 to 50 percent slopes
- Sd — Sandy alluvial land
- SvF2 — Soper gravelly loam, 30 to 50 percent slopes, eroded, MLRA 20

Soils Map

FEET 0 150 300

FIGURE 2

4.0 JURISDICTIONAL WATERS AND HABITAT

The jurisdictional features within the delineation project site include an unnamed blueline stream and a smaller ephemeral drainage. The jurisdictional features within the project site are shown on **Figure 3, Jurisdictional Delineation Map**.

Unnamed Blueline Stream

The unnamed stream in the northwest corner is the largest feature at the site, and it is reported to be intermittent. It has a distinct bed, bank, and channel with riparian vegetation. The stream flows into a retention basin that is just west of the project site and then is directed into a concrete flood control channel. The channel continues for approximately 1.5 miles to the southeast until it connects with the Arroyo Simi/Arroyo Las Posas system. These systems then connect with Calleguas Creek, which flows into the Pacific Ocean (a navigable water of the United States) at Mugu Lagoon. The vegetation includes a mix of wetland and upland indicators including native and non-native species such as mulefat (*Baccharis salicifolia*), cockbur (*Xanthium strumarium*), scalebroom (*Lepidospartum squamatum*), prickly pear cactus (*Opuntia littoralis*), and giant reed (*Arundo donax*). Otherwise, the middle portion of the stream is a sandy bottom that is generally barren and sparsely vegetated. While there was observed vegetation drift deposits, sandy soils examined at the test pit did not exhibit hydric indicators or indicators of anaerobic conditions. This stream section in the project site is classified as Riverine, Intermittent Non-Wetland Waters. Representative photos of this jurisdictional feature are provided on **Plate 1, Representative Photos of the Unnamed Blueline Stream**.

The stream is not jurisdictional waters of the United States as they are part of an isolated, intrastate watershed without any surface water related commerce. This finding remains consistent with the recent modifications to the definition of waters of the United States set forth in *The Navigable Waters Protection Rule: Definition of Waters of the United States* in April 2020. Therefore, the stream and drainage at the project site are not jurisdictional waters of the United States and are not subject to Section 404 permitting.

The unnamed stream is waters of the State under jurisdiction of RWQCB as well as streambed and riparian habitat under jurisdiction of CDFW. There is no jurisdictional habitat beyond the stream's banks on the eastern side but does extend beyond the banks on the western side (outside of the project boundary). The acreage of linear footage of jurisdictional waters and habitat for unnamed blueline stream within the project site is provided in **Table 1, Jurisdictional Features in Project Site**.

Table 1
Jurisdictional Features in Project Site

Jurisdictional Feature	RWQCB Waters of the State / CDFW Streambed (Acres / Linear Feet)	CDFW Riparian Habitat (Acres / Linear Feet)
Unnamed Blueline Stream	0.43 / 220	0.16 / 220
Ephemeral Drainage	0.28 / 1,630	0.00 / 0
TOTALS	**0.71 / 1,850**	**0.16 / 220**

Ephemeral Drainage

There is also one (1) smaller ephemeral drainage within the project site, which drains upland areas or receives runoff from streets within the adjacent residential developments. The second drainage feature runs from north to south in the middle of the property. The source of water for this system is natural runoff from a watershed that drains a small area north and the eastern portion of the site. Nuisance water from the single-family homes,



Aerial Source: Valtus Imagery Services: Hexagon Imagery Program (HxIP), 2020.

Legend

- Property Boundary
- # Test Pit

Jurisdictional Features

CDFW Jurisdiction
- RWQCB (Waters of the State)
- CDFW (Riparian)

envicom

Jurisdictional Delineation Map

FEET 0 150 300

FIGURE 3



Photo 1A: View to the north showing the stream in the northwest portion of the project site.



Photo 1B: View to the northeast showing the vegetation profile in the stream in the northwest portion of the site.



Photo 1C: View to the southwest showing the stream as it continues south into the basin.

horse stables, and orchard operations to the north of the site also contribute to the system. The incised channel terminates just south of the project site, with water continuing as sheet-flow. The smaller ephemeral drainage with the incised channel consists of swales and erosional features (e.g., gullies, small volume, infrequent, or short duration flow). There are two steel pipes as a part of the drainage, one that runs underneath the paved road in the northern portion and another that runs underneath the dirt road in the southern portion of the site.

The drainage supports riparian vegetation covering more of the channel in certain areas while other areas are more barren. Mulefat (*Baccharis salicifolia*) is the dominant plant species along the entire course of the drainage with blue elderberry (*Sambucus mexicana*), black mustard (*Brassica nigra*), and Peruvian pepper-tree (*Schinus molle*). Mulefat is listed as FAC, meaning that it is equally likely to occur in wetlands as non-wetlands. There is no jurisdictional habitat beyond their banks. Representative photos of this jurisdictional feature are provided on **Plate 2, Representative Photos of the Ephemeral Drainage**.

For the same reasons discussed above for the unnamed stream, these features are not jurisdictional waters of the United States. Furthermore, ephemeral tributaries are not considered jurisdictional waters of the United States under the current Navigable Waters Protection Rule. The ephemeral drainage is, however, subject to RWQCB and CDFW jurisdiction. The acreage and linear footage of jurisdictional waters and habitat for these features are provided in Table 1.



Photo 2A: View looking northeast at the southernmost edge of the drainage feature on the project site.



Photo 2B: View looking south at the definable bed and bank of the drainage feature on the project site.



Photo 2C: View looking south at the culvert pipe outlet that allows the water to flow underneath a dirt road.



Photo 2D: View looking southeast at the culvert inlet that receives runoff from the residential developments north of the site.



Photo 2E: View looking southeast showing the vegetation profile of the drainage feature consisting mostly of mule fat.

Representative Photos of the Ephemeral Drainage

5.0 REGULATORY FRAMEWORK

Federal

Clean Water Act of 1977, Section 404 and Section 401

The ACOE and the U.S. Environmental Protection Agency regulate the discharge of dredged or fill material into "waters of the U.S.," including wetlands, under Section 404 of the CWA, 33 U.S.C. Section 1344. "Waters of the U.S." are defined as "rivers, creeks, streams, and lakes extending to their headwaters and any associated wetlands." Wetlands are defined as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions." Activities in "waters of the U.S." regulated under Section 404 include fill for development, water resource projects (such as dams and levees), infrastructure developments (such as highways and airports) and mining projects. Section 404 of the CWA requires a permit before dredged or fill material may be discharged into "waters of the U.S.," unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities).

Section 401 of the CWA, 33 U.S.C. Section 1341, requires an Applicant for a Federal license or permit to conduct any activity that may result in a discharge of a pollutant into "waters of the U.S." to obtain a certification from the state in which the discharge originates or would originate that the discharge will comply with the applicable effluent limitations and water quality standards. In California, before the ACOE will issue a CWA Section 404 permit, an Applicant must obtain a "water quality certification" under Section 401 from the State Water Resources Control Board (SWRCB) or one (1) of the nine (9) RWQCBs.

The definition of waters of the U.S. was recently revised with the publication of *The Navigable Waters Protection Rule: Definition of Waters of the United States* in April 2020. This rule is currently in effect as of June 2020 in 49 States, including California.

State

California Fish and Game Code

The Fish and Game Code Section 1602 requires a Streambed Alteration Agreement for any activity that may "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, wastes or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake". Typical activities that require a Streambed Alteration Agreement include excavation or fill placed within a channel, vegetation clearing, structures for diversion of water, installation of culverts and bridge supports, cofferdams for construction dewatering, and bank reinforcement. A Streambed Alteration Agreement includes measures to protect the affected resource.

The term "stream," which includes creeks and rivers, is defined in the California Code of Regulations as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 Cal. Code of Regulations, § 1.72). In addition, the term "stream" can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. "Riparian" is defined as "on, or pertaining to, the banks of a stream;" therefore, riparian vegetation is defined as "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself."

The extent of CDFW jurisdiction with respect to streams is defined as from the top of bank to the opposite top of bank and, if applicable, outside the stream banks to the canopy edge of riparian vegetation.

Porter-Cologne Water Quality Control Act

In 1969, the California Legislature enacted the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) to preserve, enhance and restore the quality of the State's water resources. The Act established the SWRCB and nine RWQCBs as the principal state agencies with the responsibility for controlling water quality in California. "Waters of the State" are defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." This is broadly construed to include all waters within the state's boundaries, whether private or public, including waters in both natural and artificial channels. "Waters of the State" include all "waters of the United States," all surface waters that are not "waters of the United States, e.g., non-jurisdictional wetlands, groundwater, and the territorial seas. The RWQCB protects all waters in its regulatory scope but has special responsibility for isolated wetlands and headwaters. These water bodies have high resource value, are vulnerable to filling, and may not be regulated by other programs, such as Section 404 of the CWA. "Waters of the State" are regulated by the RWQCB under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the CWA and the Porter-Cologne Act. Projects that require an ACOE permit, or fall under other federal jurisdiction, and have the potential to impact waters of the State are required to comply with the terms of the Water Quality Certification Program. If a project does not require a federal license or permit but does involve activities that may result in a discharge of harmful substances to waters of the State, the RWQCB has the option to regulate such activities under its State authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements.

6.0 IMPACTS ANALYSIS

PROJECT DESCRIPTION

The proposed project development consists of 138 residential lots. The project design includes internal streets and associated infrastructure. Adjacent to the south of the project site is the approved North Hills Industrial Park, which is currently under construction. This project includes North Hills Parkway, which will run along the southern boundary of the project site. The proposed North Village Drive, part of a proposed mixed-use development to the northwest of the project (A.P.N. 510-0180-110 and 510-0-190-120), would run along and within the western boundary of the project site. The small, ephemeral drainage, which runs from north to south in the middle of the property, would be impacted. The grading plans for the current project design would impact the southern portion of this system. The drainage supports 0.28 acre of mule fat scrub, which the CDFW considers a high priority for inventory in the CNDDB. Approximately 0.24 acre will be impacted by grading under the current project design. and could be impacted further in the future due to the need for fuel modification for wildfire safety (in accordance with the City of Moorpark or County of Ventura's standards) and/or landscaping around the estate lots

PROJECT IMPACTS TO JURISDICTIONAL WATERS AND HABITAT

This impact analysis relies on the Conceptual Grading, Drainage, & Utility Plan prepared by Delane Engineering, which is provided as **Appendix 2, Conceptual Grading, Drainage, & Utility Plan**. The proposed limits of grading and fuel modification are shown overlaid on the site's vegetation on **Figure 4, Jurisdictional Delineation Impacts Map**. The limits of grading are inclusive of all proposed ground and vegetation disturbance associated with development of the Project, as well as the anticipated fuel modification impacts that are anticipated to remain within the proposed grading footprint. Approximately 0.24 acre of the 0.28 acre of Mulefat scrub comprising the RWQCB Waters of the State / CDFW Streambed within the ephemeral drainage are proposed to be permanently impacted by development. No impacts to the unnamed stream in the northwest corner of the project site are being proposed at this time.



Aerial Source: Valtus Imagery Services: Hexagon Imagery Program (HxIP), 2020.

Legend

- Property Boundary
- Fuel Modification Zone (100-Ft.)
- Grading Footprint
- # Test Pit
- Impacted Jurisdictional Areas

Jurisdictional Features

CDFW Jurisdiction
- RWQCB (Waters of the State)
- CDFW (Riparian)

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Jurisdictional Delineation Impact Map

FEET 0 150 300

FIGURE 4

The proposed residential development would permanently impact 0.24 acre (1,155 linear feet) of RWQCB jurisdictional waters of the State / CDFW jurisdictional habitat (**Table 2, Project Impacts to Onsite Jurisdictional Features)**. The 0.24 acre of RWQCB Waters of the State / CDFW Streambed that would be removed by Project development is located within the ephemeral drainage and primarily comprises Mulefat (*Baccharis salicifolia*) scrub. Potential fuel modification clearing activities will occur within the limits of grading, therefore no additional impacts to jurisdictional habitat from fuel modification activities are anticipated. The proposed limits of grading and anticipated fuel modification activities based on the standard Ventura County requirements of at least 100-feet from structures (Ventura County Fire Protection District Fire Prevention Bureau, Standard 515, Chapter 1.4) are shown overlaid on Figure 4. There are no anticipated impacts to the unnamed blueline stream in the northwestern edge of the project site.

Table 2
Project Impacts to Onsite Jurisdictional Features

Jurisdictional Feature	Project Impacts	
	RWQCB Waters of the State / CDFW Streambed (Acres / Linear Feet)	CDFW Riparian Habitat (Acres / Linear Feet)
Unnamed Blueline Stream	0.00 / 0	0.00 / 0
Ephemeral Drainage	0.24 / 1,155	0.00 / 0
TOTALS	**0.24 / 1,155**	**0.00 / 00**

7.0 COMPENSATORY MITIGATION

MM-1 Prior to issuance of the grading permit, the Applicant shall prepare and submit a Streambed Alteration Notification package to the CDFW for alterations to CDFW jurisdictional streambed and habitat. A Streambed Alteration Agreement shall be entered into with the CDFW under Section 1602 of the California Fish and Game Code, and the Applicant shall comply with the associated conditions. Prior to issuance of the grading permit, the Applicant shall also consult with RWQCB and ACOE to determine if permits are required from those agencies. If required, the appropriate permits shall be obtained from the RWQCB and/or ACOE, and the Applicant shall comply the permit conditions. The Applicant shall provide evidence to VCDRP that the required permits have been obtained prior to issuance of a grading permit. Mitigation for unavoidable impacts to jurisdictional waters and habitat shall be provided through implementation of the Habitat Mitigation and Monitoring Plan as required by MM-2.

MM-2 Habitat Mitigation and Monitoring Plan

The Project shall implement the requirements of a final approved Habitat Mitigation and Monitoring Plan, which shall mitigate for permanent grading impacts to 0.24 acre (1,155 linear feet) of RWQCB waters of the State / CDFW streambed at a 2:1 ratio. The Habitat Mitigation and Monitoring Plan shall mitigate for the permanent impacts to jurisdictional areas via an acceptable mitigation approach that involves one or a combination of the onsite or offsite enhancement of degraded in-kind habitats subject to the approval of the City of Moorpark, CDFW, and RWQCB (if applicable). The preferred mitigation approach is enhancement of on-site or off-site habitats within the ephemeral drainage, including plantings of appropriate native species and weed removals. The final Habitat Mitigation and Monitoring Plan shall be developed by a qualified biologist, restoration ecologist or resource specialist and submitted to and approved by the City of Moorpark, CDFW, and RWQCB prior to issuance of a grading permit for the Project. In broad terms, this Program shall at a minimum include:

- Description of the Project/impact and mitigation sites;
- Specific objectives;
- Success criteria;
- Plant palette;
- Implementation plan;
- Maintenance activities;
- Monitoring plan; and
- Contingency measures.

Success criteria shall at a minimum be evaluated based on appropriate survival rates and percent cover of planted native species, which shall be determined by examining reference sites, as well as eradication and control of invasive species within the restoration or enhancement area.

The target species and native plant palette, as well as the specific methods for evaluating whether the Project has been successful at meeting the above-mentioned success criteria shall be determined by the qualified biologist, restoration ecologist, or resource specialist and included in the mitigation plan.

The mitigation project shall be initiated prior to development of the Project. The mitigation project shall be implemented over a five-year period and shall incorporate an iterative process of annual monitoring and evaluation of progress and allow for adjustments to the program, as necessary, to achieve desired outcomes and meet success criteria. Annual reports discussing the implementation, monitoring, and management of the mitigation project shall be submitted to the City of Moorpark, RWQCB, and CDFW. Five years after Project start, a final report shall be submitted to the City of Moorpark, RWQCB, and CDFW, which shall at a minimum discuss the implementation, monitoring and management of the mitigation project over the five-year period, and indicate whether the mitigation project has been successful based on established success criteria. The annual reports and the final report shall include as-built plans submitted as an appendix to the report. Restoration or enhancement will be considered successful after the success criteria have been met for a period of at least 2 years without any maintenance or remediation activities other than invasive species control. The mitigation project shall be extended if success criteria have not been met at the end of the five-year period to the satisfaction of the City of Moorpark, RWQCB, and CDFW.

Appendix 1
Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moorpark 67 City/County: Moorpark, Ventura County Sampling Date: 8/11/21

Applicant/Owner: West Point Homes State: CA Sampling Point:

Investigator(s): Courtney McCammon Section, Township, Range: Section 6, Township 2N, Range 19W

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%):

Subregion (LRR): LRR C Lat: 34.28959 Long: -118.90963 Datum:

Soil Map Unit Name: Sd—Sandy alluvial land NWI classification: R4SBC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Mulefat (Baccharis salicifolia)	20%	X	FAC
2. Scalebroom (Lepidospartum squamatum)	15%	X	FACU
3. giant reed (Arundo donax)	25%	X	FACW
4. Prickly pear cactus (Opuntia littoralis)	2%		FACU
5. Coyote bush (Baccharis pilularis)	25%	X	FACU
Total Cover:	87%		
Herb Stratum			
1. Black mustard (Brassica nigra)	10%		FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	97%		

% Bare Ground in Herb Stratum 50% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	20	x 3 =	60
FACU species	52	x 4 =	208
UPL species	0	x 5 =	0
Column Totals:	253 (A)		318 (B)

Prevalence Index = B/A = 1.26

Hydrophytic Vegetation Indicators:

+ Dominance Test is >50%

+ Prevalence Index is ≤3.0[1]

- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

Sampled entire area since amount of unnamed stream within project site is small.

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6 inches	2.5YR 5/2	100%						sand
20 inches	2.5YR 5/3	100%						sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

NONE

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- + Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Moorpark 67 City/County: Moorpark, Ventura County Sampling Date: 8/11/21

Applicant/Owner: West Point Homes State: CA Sampling Point: _____

Investigator(s): Courtney McCammon Section, Township, Range: Section 6, Township 2N, Range 19W

Landform (hillslope, terrace, etc.): incised channel Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR): LRR C Lat: 34.28827 Long: -118.90455 Datum: _____

Soil Map Unit Name: CkE3 - Chesterton sandy loam, 9 to 30 percent slopes, severely eroded NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Mulefat (Baccharis salicifolia)	80%	X	FAC
2. Blue elderberry (Sambucus mexicana)	20%		FACU
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Black mustard (Brassica nigra)	20%		FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 50% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	120 (A)		400 (B)

Prevalence Index = B/A = 3.33

Hydrophytic Vegetation Indicators:

+ Dominance Test is >50%

- Prevalence Index is ≤3.0[1]

- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6 inches	10YR 3/2	100%						loamy sand
20 inches	10YR 3/3	100%						loamy sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

NONE

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

NONE

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

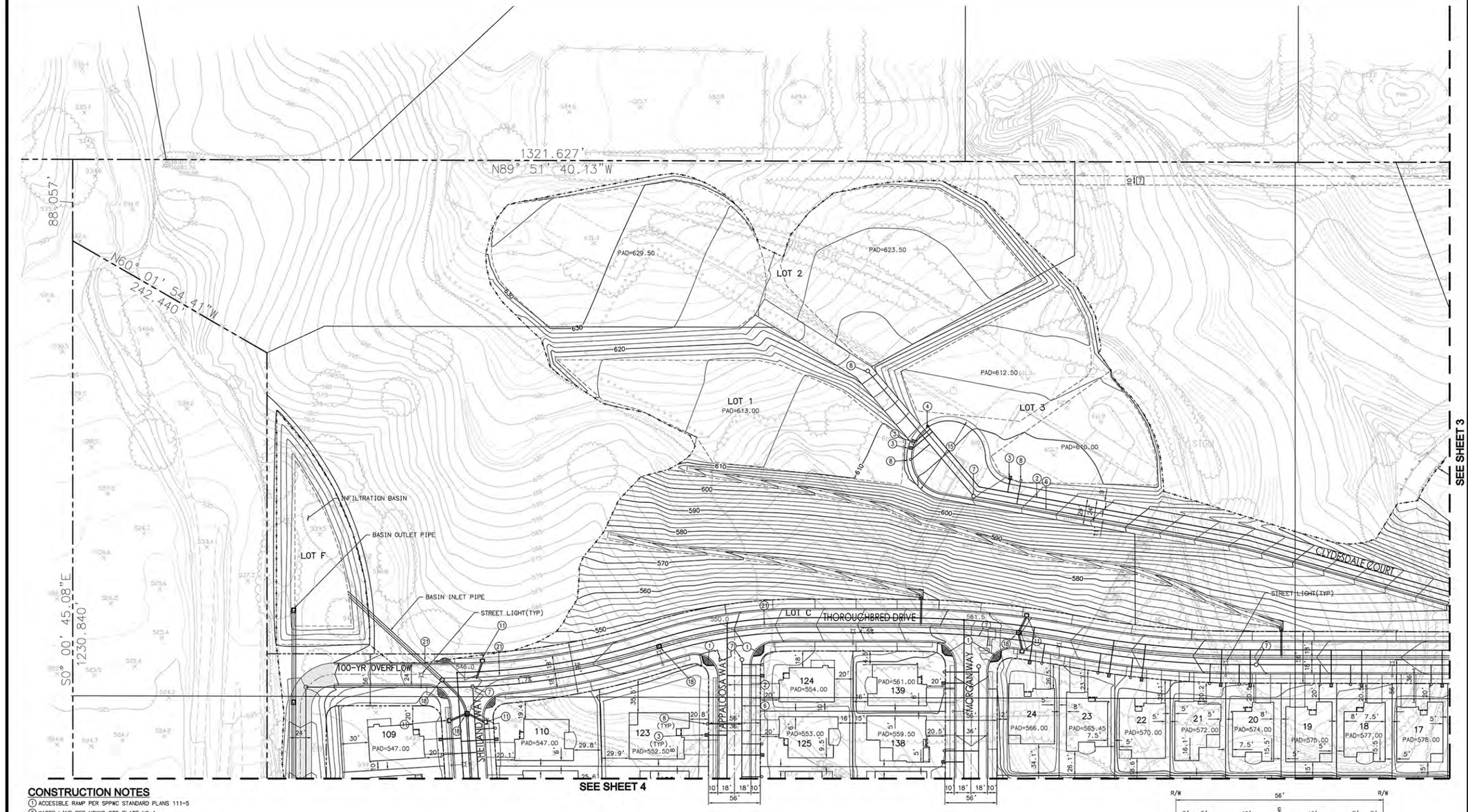
Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

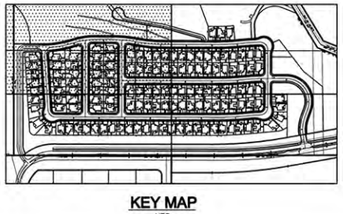
Remarks:

APPENDIX 2
Conceptual Grading, Drainage, & Utility Plan

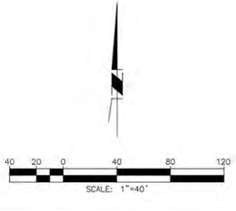


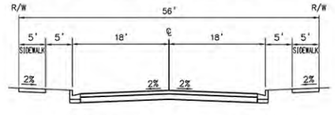
CONSTRUCTION NOTES

1. ACCESIBLE RAMP PER SPPWC STANDARD PLANS 111-5
2. WATER LINE PER VCWWD STD PLATE NO 1
3. DOMESTIC WATER SERVICE AND MATER PER VCWWD STD PLATE NO 6
4. FIRE HYDRANT PER VCWWD STD PLATE NO 8
5. IRRIGATION SERVICE METER AND BACKFLOW
6. SEWER MAIN PER VCWWD STD PLATE 30
7. SEWER MANHOLE PER SPPWC STD PLAN 200-1
8. SANITARY SEWER SERVICE LATERAL AND CLEANOUT PER VCWWD STD PLATE 33
9. 4" THICK CONCRETE SIDEWALK
10. LANDSCAPE
11. CURB OPENING CATCH BASIN & LOCAL DEPRESSION PER SPPWC STD PLAN 300-3 & 313-3
12. ALL WEATHER ACCESS ROAD
13. PAVED PRIVATE DRIVEWAY
14. CURB AND GUTTER PER SPPWC STD PLAN 120-2
15. CUL-DE-SAC PER COUNTY OF VENTURA ROADWAY STD, TYPE III
16. CUL-DE-SAC PER VENTURA COUNTY ROADWAY STD TYPE 1
17. STORMWATER BMP - PROPRIETARY PRODUCT CURB OPENING TYPE BIOFILTER
18. STORM DRAIN MANHOLE PER SPPWC STD PLAN 320-2
19. RETAINING WALL, H= (SEE PLAN)
20. STORM DRAIN HEADWALL AND TRASH RACK PER SPPWC STD PLAN 361-2
21. STORM DRAIN PIPE (RCP)
22. GRATED INLET
23. RAISED LANDSCAPED MEDIAN
24. STORM DRAIN OUTLET STRUCTURE PER SPPWC STD PLAN 384-3



KEY MAP
NTS





TYPICAL INTERIOR STREETS
NTS
PRIVATE STREETS - LOT C

VESTING TENTATIVE TRACT MAP

VTTM NO. 5847

CONCEPTUAL GRADING, DRAINAGE & UTILITY PLAN

REGISTERED PROFESSIONAL ENGINEER — No C 72391 — CIVIL — STATE OF CALIFORNIA

PREPARED BY
DELANE ENGINEERING
2812 SANTA MONICA BLVD, SUITE 206
SANTA MONICA, CA 90404
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OWNER/SUBDIVIDER
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RASMUSSEN DEVELOPMENT
26500 WEST AGOURA ROAD #652
CALABASAS, CA 91302 OFFICE:
805.370.0075 FAX:
805.370.0165
JAMES RASMUSSEN

SHEET 2 OF 8 SHEETS

PLOT DATE: 5/21/20 1:48 PM FILE NAME: N:\PROJECTS\VENTURA\VENTURA COUNTY\105-25-02\DWG\VESTING TENTATIVE MAP.DWG

SAVE DATE: 5/21/20 STEVEDOWNS

CONSTRUCTION NOTES

1. ACCESIBLE RAMP PER SPPWC STANDARD PLANS 111-5
2. WATER LINE PER VCWWD STD PLATE NO 1
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7. SEWER MANHOLE PER SPPWC STD PLAN 200-1
8. SANITARY SEWER SERVICE LATERAL AND CLEANOUT PER VCWWD STD PLATE 33
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APN: 511-0-190-215

APN: 511-0-190-205

APN: 511-0-190-305

APN: 511-0-190-295

N89° 58' 40.76"E
687.338'

S31° 26' 00.00"E

GABBERT ROAD

S31° 26' 00.00"E
626.800'

635.189'

PROPOSED DOMESTIC WATER CONNECTION TO VCWWD 12" ACP GABBERT ROAD WATER MAIN (DWG NO 105168)

EXISTING 8" ACP GABBERT ROAD TRANSMISSION LINE (DWG NO 38695)

313.770'
N68° 37' 10.00"W
314.121'
N68° 37' 10.00"W
99.730'

LOT 4

LOT 5

LOT E

ACCESS RD

THOROUGHBRED DRIVE

PAD=590.00

PAD=578.00

PAD=578.80

PAD=577.80

PAD=577.00

PAD=578.50

PAD=578.85

PAD=578.25

PAD=577.67

PAD=577.10

PAD=577.00

PAD=576.50

PAD=574.90

572.8

STREET LIGHT(TYP)

SEE SHEET 2

SEE SHEET 5

SCALE: 1"=40'

KEY MAP
NTS

VESTING TENTATIVE TRACT MAP

VTTM NO. 5847

CONCEPTUAL GRADING, DRAINAGE & UTILITY PLAN

PREPARED BY
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REGISTERED PROFESSIONAL ENGINEER — DELANE JAMES — No C 72391 — CIVIL — STATE OF CALIFORNIA

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SHEET 3 OF 8 SHEETS

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SAVE DATE: 5/31/20 STEVEDOWNS

SEE SHEET 2

SEE SHEET 5

SECONDARY ACCESS ROAD

PROPOSED STORM DRAIN DISCHARGE POINT TO VCWPD GABBERT CANYON CHANNEL

24' WIDE ACCESS ROAD

SHELAND WAY

APPALOOSA WAY

MORGAN WAY

TENNESSEE WALKER DRIVE

NORTH RANCH DRIVE

LOT A

LOT C

PROPOSED SEWER MAIN

PROPOSED WATER MAIN

NORTH HILLS PARKWAY (PUBLIC)

NORTH HILLS PARKWAY CENTERLINE

STREET LIGHT(TYP)

VARIABLE SLOPE 2:1 TO 3:1

T54

P.M.B. 14-43

PARCEL B

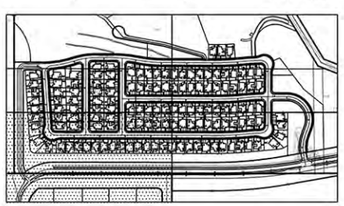
(PER TITLE REPORT)

3 M.R. 41

PARCEL B

CONSTRUCTION NOTES

1. ACCESIBLE RAMP PER SPPWC STANDARD PLANS 111-5
2. WATER LINE PER VCWWD STD PLATE NO 1
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7. SEWER MANHOLE PER SPPWC STD PLAN 200-1
8. SANITARY SEWER SERVICE LATERAL AND CLEANOUT PER VCWWD STD PLATE 33
9. 4" THICK CONCRETE SIDEWALK
10. LANDSCAPE
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22. GRATED INLET
23. RAISED LANDSCAPED MEDIAN
24. STORM DRAIN OUTLET STRUCTURE PER SPPWC STD PLAN 384-3



KEY MAP
NTS

40 20 0 40 80 120
SCALE: 1"=40'



NORTH HILLS PARKWAY
STA 51+30 TO 68+65
NTS

VESTING TENTATIVE TRACT MAP

VTTM NO. 5847

CONCEPTUAL GRADING, DRAINAGE & UTILITY PLAN

REGISTERED PROFESSIONAL ENGINEER — ROBIN C. DELANE — No C 72391 — CIVIL — STATE OF CALIFORNIA

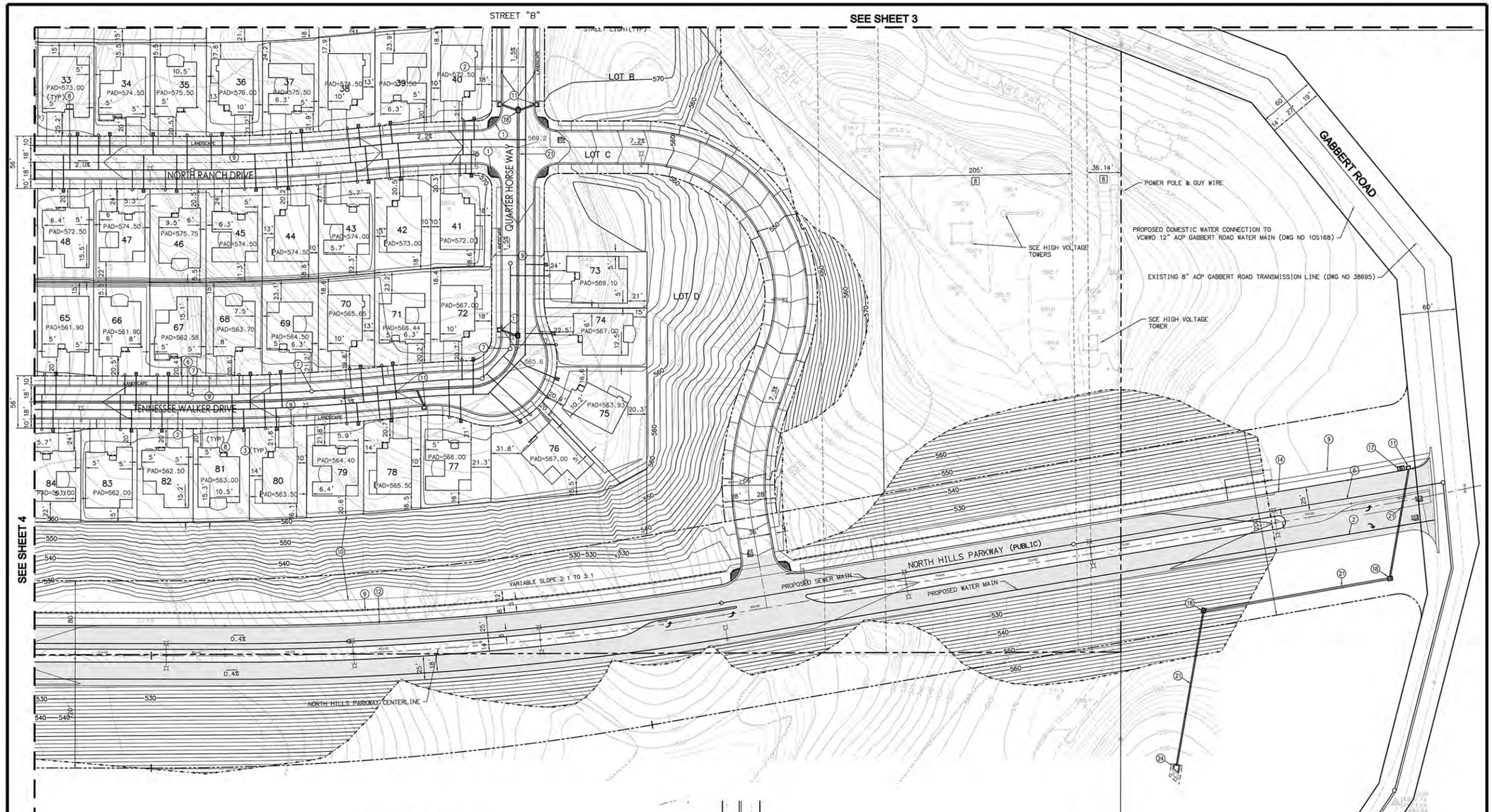
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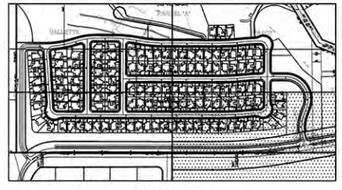
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805.370.0165
JAMES RASMUSSEN

SHEET 4 OF 8 SHEETS

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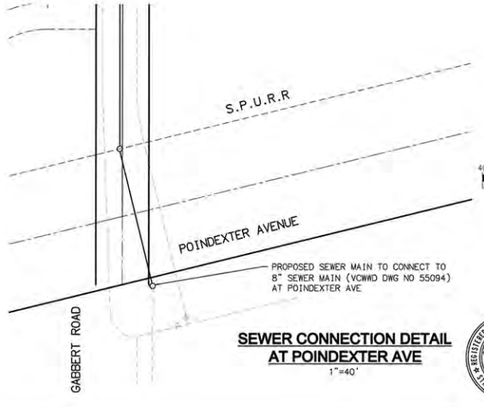




KEY MAP
NTS

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24. STORM DRAIN OUTLET STRUCTURE PER SPPWC STD PLAN 384-3



SEWER CONNECTION DETAIL AT POINDEXTER AVE
1"=40'

REGISTERED PROFESSIONAL ENGINEER — JOHN C. DELANE — No C 72391 — CIVIL — STATE OF CALIFORNIA

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VESTING TENTATIVE TRACT MAP

VTTM NO. 5847

CONCEPTUAL GRADING, DRAINAGE & UTILITY PLAN

SHEET 5 OF 8 SHEETS

PLOT DATE: 6/10/20 1:57 PM FILE NAME: H:\WORK\PDATA\01\01915\DATA\ENGR\EXT\TM\115-09-02.DWG

SAVE DATE: 5/21/20 STEVEDOWNS

APPENDIX E
Focused Coastal California Gnatcatcher Survey

TW Biological Services
1717 Meander Drive, Simi Valley, CA 93065
(949) 463-3497

June 15, 2022 ENV-01-22

Mr. Travis Cullen
Envicom Corporation
4165 E. Thousand Oaks Blvd., Suite 290
Westlake Village, CA 91362

Subject: ***Presence/Absence Surveys for Coastal California Gnatcatcher on the Moorpark 67/North Ranch Residential Development Project, Ventura County, California. Permit Number TE-19843C-0***

Dear Mr. Cullen:

A focused coastal California gnatcatcher (*Polioptila californica californica*) survey was conducted by TW Biological Services wildlife biologist Jennifer Sexton, permit number TE-19843C-0, for the Moorpark 67/North Ranch Residential Development Project site between 3 April and 23 May, 2022. The survey consisted of six presence/absence surveys within suitable habitat on the property.

The coastal California gnatcatcher is a California Department of Fish and Game (CDFG) species of special concern and a federally-listed threatened species. It is a non-migratory species that prefers sage scrub habitat with California sagebrush (*Artemisia californica*) as its dominant or codominant species. It is also known to utilize chaparral, grassland and riparian habitats bordered by sage scrub for foraging or dispersal. It typically nests at elevations below 950 feet on slopes less than 40 percent but may occur in areas of higher elevation and steeper terrain. The species is threatened primarily by loss, degradation, and fragmentation of sage scrub habitat and is also impacted by brown-headed cowbird parasitism.

PROJECT LOCATION AND DESCRIPTION

The Moorpark 67/North Ranch Residential Development Project site consists of approximately 70-acre undeveloped property located in the hills above the north side of Little Simi Valley in the City of Moorpark, Ventura County, California (see attached Figure 1). The property is bordered on the east by Gabbert Road, on the north by large residential lots, on the west by an abandoned reservoir, and on the south by open space. The site is located in the northeast quarter of Section 6, Township 2N, Range 19W of the USGS 7.5' Moorpark topographic quadrangle map.

The site is characterized by low, grass-covered hills with elevations ranging between 510 feet above mean sea level (AMSL) in the southwestern portion of the site to 590 feet AMSL in the northeastern portion of the site. A prominent drainage extends from north to south across roughly the center-eastern part of the property.

General Existing Conditions and Vegetation

Limited areas of development are present on the site, including paved and dirt roads, and isolated building pads. Most of the building pads are vacant, with the exception of one that has a remaining structure and another with an old tennis court. The remainder of the site is covered primarily by ruderal grassland with scattered concentrations of California sagebrush scrub of varying density. Exceptions include landscaping in the northeast corner, California sagebrush scrub along the eastern edge and in northwest corner, scale broom scrub in the extreme northwest corner, and mulefat scrub present along a prominent north to south drainage. A detailed map of the vegetation communities onsite prepared by Envicom Corporation was provided for our use in this report and is included here as Attachment 3 (Envicom, 2021).

METHODS

The focused survey for coastal California gnatcatcher was conducted on the Moorpark 67/North Ranch Residential Development Project site between 3 April and 23 May 2022 by TW Biological Services wildlife biologist Jennifer Sexton (*Table 1*). Ms. Sexton holds a federal permit (TE-19843C-0) to conduct surveys for the California gnatcatcher. The survey was conducted following the currently accepted protocol of the U.S. Fish and Wildlife Service and the Scientific Review Panel for areas outside NCCP enrollments (USFWS, 1997). The survey included six surveys of the project area at approximately weekly intervals. In particular, areas of coastal sage scrub vegetation were visited during each survey. The route used to survey the habitat varied little and was arranged to ensure complete coverage of the habitat and site. Binoculars (10 x 40) were used to aid in detecting and identifying bird species. The weather conditions were generally mild as shown in the table below. A tape of recorded vocalizations was used as necessary in order to elicit responses from the species. The tape was played approximately every 100 feet or more frequently if it appeared that there was sound attenuation due to topography.

TABLE 1
Moorpark 67/North Ranch Residential Development Survey Dates and Conditions

Date	Time	Temperature (°F)	Wind (MPH)	Cloud Cover (%)
4/3/22	0645-1030	58-62	0-5	0
4/10/22	0710-1035	65-74	0-3	0
4/18/22	0700-1030	57-63	0-1	0
5/4/22	0715-1030	57-65	0-0	100
5/14/22	0600-0910	63-75	0-0	0
5/23/22	0610-0900	55-56	2-2	100

RESULTS

No gnatcatchers were detected during the survey. Survey conditions and level of effort were appropriate for detection of this species.

Survey routes are included on *Figure 2*. Other wildlife detected are included in the Appendix.

If you have any questions or comments, please do not hesitate to contact me at (949) 463-3497.

Very truly yours,



Jennifer Sexton
Principal /Senior Wildlife Biologist
TW Biological Services

Att. *Figures 1 – 2, Attachment 3*
cc: *Chris Kofron, USFWS Ventura*

REFERENCES

Envicom Corporation. 2021. Moorpark 67/North Ranch Residential Development Biological Resources Technical Report Update, July 29, 2021

U.S. Fish and Wildlife Service (USFWS). 1997. Coastal California Gnatcatcher (Polioptila californica californica) Presence/Absence Survey Guidelines. February 28, 1997.

BIRDS

CATHARTIDAE - NEW WORLD VULTURES
Cathartes aura - turkey vulture

ACCIPITRIDAE – HAWKS
Accipiter cooperii - Cooper's hawk

CHARADRIIDAE - PLOVERS
Charadrius vociferus - killdeer

PHASIANIDAE - PHEASANTS & QUAILS
Callipepla californica - California quail

COLUMBIDAE - PIGEONS & DOVES
Zenaida macroura - mourning dove

CUCULIDAE - CUCKOOS & ROADRUNNERS
Geococcyx californianus - greater roadrunner

APODIDAE - SWIFTS
Aeronautes saxatalis - white-throated swift

TROCHILIDAE - HUMMINGBIRDS
Calypte anna - Anna's hummingbird

PICIDAE - WOODPECKERS
Picoides nuttallii - Nuttall's woodpecker

TYRANNIDAE - TYRANT FLYCATCHERS
Sayornis nigricans - black phoebe
Tyrannus vociferans - Cassin's kingbird

HIRUNDINIDAE - SWALLOWS
Stelgidopteryx serripennis - northern rough-winged swallow
Petrochelidon pyrrhonota - cliff swallow

CORVIDAE - JAYS & CROWS

Aphelocoma californica - western scrub-jay
Corvus brachyrhynchos - American crow
Corvus corax - common raven

AEGITHALIDAE - BUSHTITS

Psaltriparus minimus - bushtit

TROGLODYTIDAE - WRENS

Thryomanes bewickii - Bewick's wren
Troglodytes aedon - house wren

SYLVIIDAE - GNATCATCHERS

Polioptila caerulea - blue-gray gnatcatcher

TIMALIIDAE - LAUGHINGTHRUSH AND WRENTIT

Chamaea fasciata – wrentit

MIMIDAE - THRASHERS

Mimus polyglottos - northern mockingbird
Toxostoma redivivum - California thrasher

PTILOGONATIDAE - SILKY-FLYCATCHERS

Phainopepla nitens – phainopepla

PARULIDAE - WOOD WARBLERS

Dendroica coronata - yellow-rumped warbler
Wilsonia pusilla - Wilson's warbler

EMBERIZIDAE - BUNTINGS & SPARROWS

Pipilo crissalis - California towhee
Pipilo maculatus - spotted towhee
Zonotrichia leucophrys - white-crowned sparrow

ICTERIDAE - BLACKBIRDS & ORIOLES

Icterus cucullatus - hooded orio

FRINGILLIDAE - FINCHES

Carpodacus mexicanus - house finch
Carduelis psaltria - lesser goldfinch

PASSERIDAE - OLD WORLD SPARROWS

* *Passer domesticus* - house sparrow

MAMMALS

LEPORIDAE - HARES & RABBITS

Sylvilagus audubonii - desert cottontail

SCIURIDAE - SQUIRRELS

Spermophilus beecheyi - California ground squirrel

CANIDAE - WOLVES & FOXES

Canis latrans - coyote

REPTILES

IGUANIDAE - IGUANID LIZARDS

Uta stansburiana – side-blotched lizard

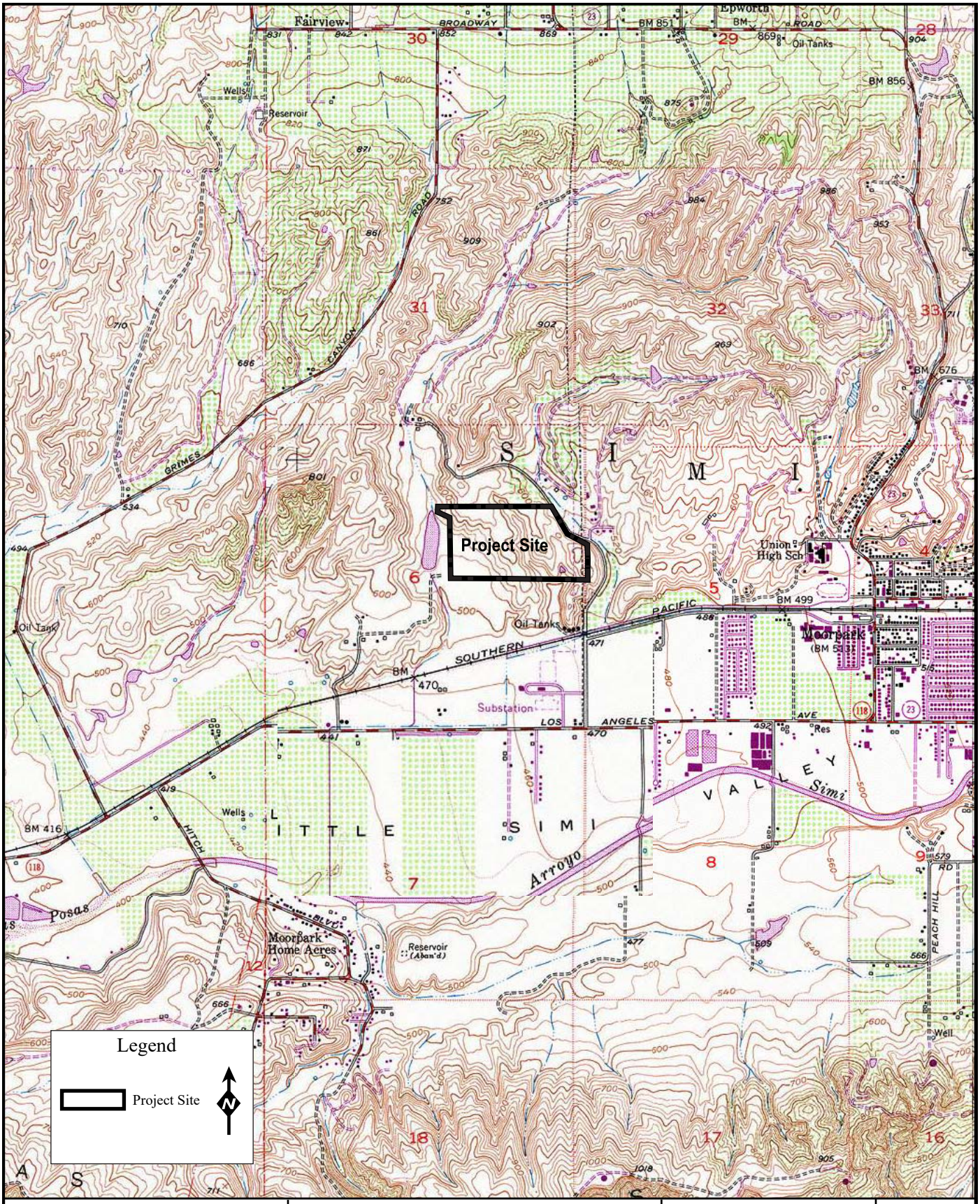
BUTTERFLIES AND MOTHS

PIERIDAE - WHITES AND SULFURS

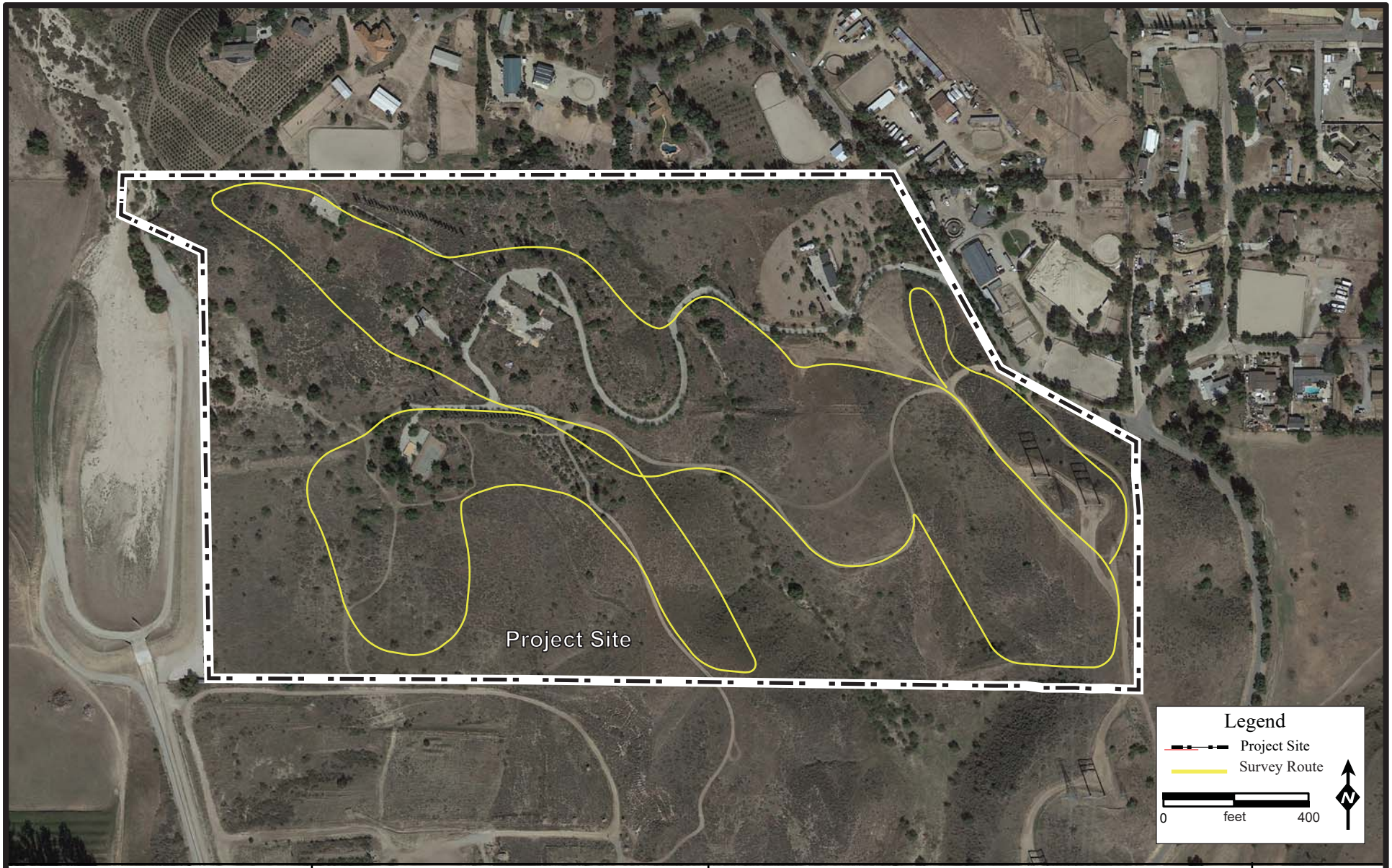
Pieris rapae rapae - cabbage butterfly

NYMPHALIDAE - BRUSH-FOOTED BUTTERFLIES

Danaus plexippus – monarch



TW Biological Services	MOORPARK 67/ NORTH RANCH RESIDENTIAL DEVELOPMENT PROJECT CALIFORNIA GNATCATCHER SURVEY Project No: ENV-01-22	Project Site Source: USGS 7.5 Minute Quadrangle Moorpark	FIGURE 1



TW Biological Services

MOORPARK 67/NORTH RANCH
RESIDENTIAL DEVELOPMENT PROJECT

CALIFORNIA GNATCATCHER SURVEY

Project No: ENV-01-22

Aerial Photograph of Project Site and Survey Route

Aerial Source: Google Earth Pro May 2022

FIGURE

2



Aerial Source: Valtus Imagery Services: Hexagon Imagery Program (HxIP), 2020.

Legend

- Property Boundary
- Fuel Modification Zone (100-Ft.)
- Grading Footprint
- Ec — California Brittle Bush Scrub (*Encelia californica*)
- Ac — California Sagebrush Scrub (*Artemisia californica*)
- RG — Ruderal Grassland
- L — Landscaping
- RCL — Ruderal Grassland with CSS and Landscaping
- CR — CSS with Ruderal Grassland
- RC — Ruderal Grassland with CSS
- Bs — Mulefat Scrub (*Baccharis salicifolia*)
- Ls — Scalebroom Scrub (*Lepidospartum squamatum*)
- D — Developed

Special-Status Plant Species

- White rabbit-tabacco (*Pseudognaphalium leucocephalum*) [CRPR 2B.2]

Biological Resources & Project Impacts Map

FEET 0 150 300

Attachment 3

APPENDIX F
Cultural Resources Phase I Assessment Report

February 10, 2022

West Pointe Homes, Inc.
26500 West Agoura Road #652
Calabasas, California 91301

Attn: Ms. Makenzie Rasmussen

Subj: Addendum to the 2015 Dudek Cultural Resources Phase I Report for the North Ranch/Moorpark 67 Residential Development Project
(*Envicom Project #2021-112-01*)

Dear Ms. Rasmussen,

The current North Ranch/Moorpark 67 Residential Subdivision Project (Project) is roughly 67.96 acres in size and is located on APNs 5110-190-285 and 5110-190-305 within the boundary of the City of Moorpark, California (City) (**Figure 1** and **Figure 2**). The project will involve the subdivision of the subject property into 138 individual lots for residential development, with associated landscaping, utilities, and road access. The general location of the Project is as follows:

United States Geological Survey 7.5' Quadrangles: Moorpark
Township: 2 North Range: 20 West
Latitude: 34° 17'19.99"North Longitude: 118°54'22.27"West

David Stone and Heather McDaniel of Dudek completed a cultural resources Phase I survey report for the Project in 2015 titled *Archaeological Survey Report Moorpark-2 Gabbert Road, Moorpark Ventura County, California*. This survey report did not locate any cultural resources within the Project property and did not recommend any mitigation measures or regulatory compliance actions other than an archaeologist be brought on site in the case of the discovery of cultural resources during grading (Stone and McDaniel 2015). The 2015 cultural resource report is provided in **Appendix A** of this document.

The 2015 Dudek report was reviewed by Chambers Group, Inc. (Chambers) for the City, with five comments presented to the Applicant in the form of a peer review comment matrix (**Appendix B**). As part of the renewal of the Project in 2021, Envicom addressed the comments in the Chambers comment matrix, with the supplemental findings presented in this addendum report to the original 2015 Dudek report. The 2021 Envicom letter report is, therefore, intended to be an update document and relies on the original report to provide the reader with primary Project cultural resource context information. Envicom responses to each matrix comment are also provided in the comment matrix and will be addressed further in this addendum document (see Appendix B).

As part of the addendum process, Envicom submitted new records search requests to the South Central Coastal Information Center (SCCIC) and to the Native American Heritage Commission (NAHC) to determine if any new cultural resources or Tribal Cultural Resources (TCRs) had been recorded since the completion of the original 2015 Dudek study. Both record searches examined the Project site plus a 0.25-mile area ("study area") around the Project property (see Figure 1). This study area was determined to be adequate for determining whether any new cultural resources or TCRs had been recorded since the completion of the 2015 Dudek Report, which may be relevant for determining current Project impacts. The original 2015 record search, conducted at a 0.5-mile radius, should still be relied upon (with the Envicom findings) in providing a cultural resource context for the Project.

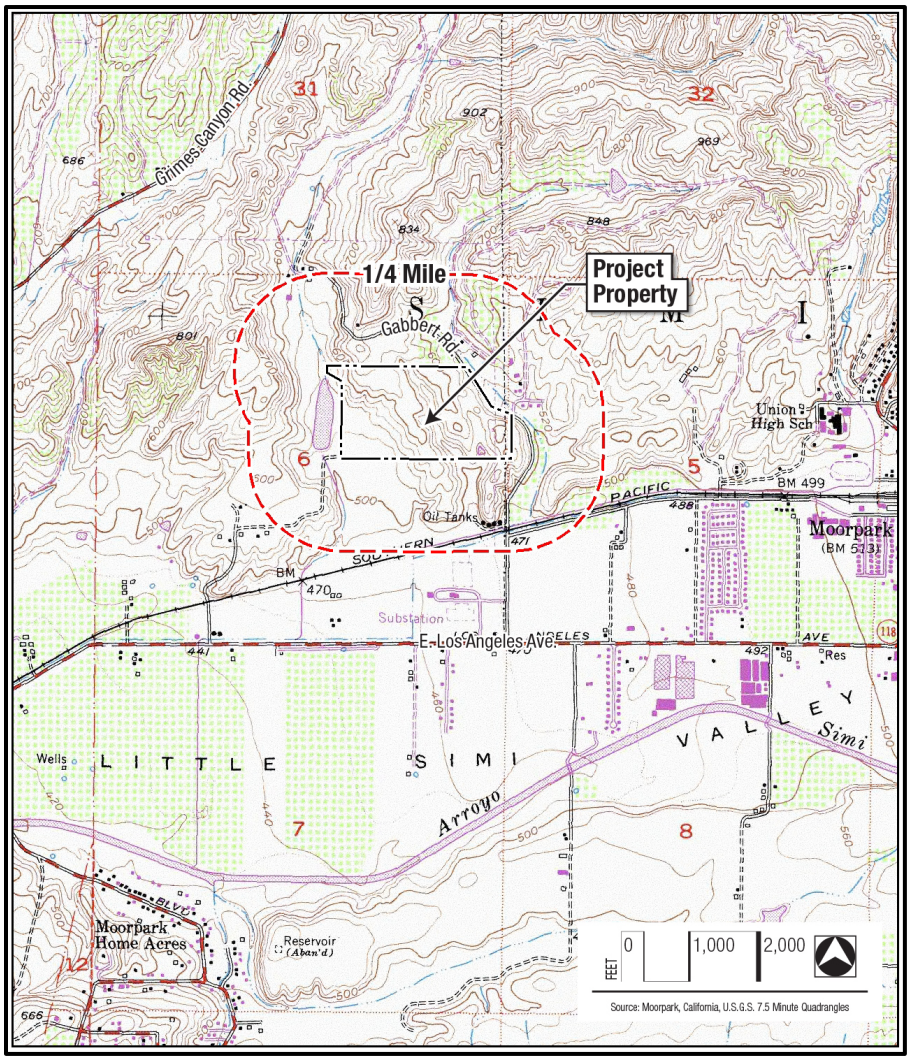


Figure 1: The Project location in Ventura County, California, with the 0.25-mile study area shown (1951 Moorpark Quadrangle Topographic Map, updated in 1974).



Figure 2: The Project property, showing the current conditions (2017 Google Earth Image).

RESPONSES TO CHAMBERS COMMENTS

This addendum report addressed the five Chambers comments with the findings from the SCCIC and NAHC record searches, and from other documentary sources. This section presents each of the five Chambers comments, followed by the Envicom matrix response. New information, if appropriate, will then be presented to address the comment along with a discussions of the findings.

Comment #1: "The report does not discuss the earlier settlement of the project site denoted on Figure 4. The geotechnical report states that it dates to the 1940's thereby increasing the likelihood of archaeological deposits. There is also no discussion or evaluation of the historic-era development of the property. This historic site needs to be properly documented and evaluated if impacts cannot be avoided.

Envicom Response: "Envicom agrees that the Dudek report does not address the history of the Project property. Envicom will provide more information on the historic development of the property in an addendum to the Dudek report."

Additional Information to Address Comment #1:

Envicom examined historic documents in order to describe the history of the Project property from roughly 1900 through present. Most of this site history comes from the examination of historic United States Geological Survey (USGS) and regional maps, which date to between 1903 and 1979. Unfortunately, several of the older maps were poorly orthorectified, which can be seen in some of the provided images. This has been adjusted for in the figures where the site boundary is provided. Historic aerial photographs from University of California Santa Barbara (UCSB) Library Historic Aerial Image Database and from the *historicaerials.com* website. The primary questions of concern for this study was whether historic structures existed on site prior to 1950, and when the historic foundations and features known to be on the Project property were first constructed.

The 1903 Camulos USGS map shows no development within the Project property (**Figure 3**). Regional development is sparse, with most of the local development taking place south of the Southern Pacific Railroad located just south of the Project property. Two residential buildings are located off the property to the northwest outside of the Project property. The 1921 Piru USGS map shows the same conditions, with some additional regional development, but no buildings within the Project property (**Figure 4**).

The oldest aerial photograph in the UCSB Library historic aerial photography database is from 1929 (**Figure 5**). This photo shows the Project property as mostly undeveloped, except for orchards in the western third of the property. Local roads and additional orchards are located around the property in all directions. Gabbert Road is shown for the first time, indicating that the road dated to 1921 to 1929. A single structure appears to have been located on the northeast side of Gabbert Road on the original property, but which is no longer part of the current Project property. The purpose of this structure is unknown.

The 1941 Piru USGS map shows the property as completely undeveloped again except for orchards in the western third (**Figure 6**). There is no structure on the property noted in the map, suggesting that the structure in the 1929 image was a support structure and not a residence. The route of Gabbert Road is also shown on maps for the first time. An exceptionally clear aerial photograph from 1945 again shows orchards dominating the west side of the property, but no buildings or structures anywhere on the property (**Figure 7**). An additional aerial photograph from 1947 shows the same conditions (historicaerials.com). The 1951 Moorpark USGS map shows the same conditions as described above, with no structures located on the Project property and with the western third of the property being used for orchards (**Figure 8**). A 1961 aerial photograph of the property shows no change (UCSB Historic Aerial Image Database). The 1969 Moorpark USGS map shows the large barrow pit just outside of the Project property to the west for the first time, but no additional development on the Project property itself. An aerial photograph from 1969 also shows the same conditions (historicaerials.com).

The 1974 Moorpark USGS map also shows no development on the property. A 1978 aerial photograph shows some additional grading associated with the large barrow pit at the west end of the property, but no buildings or structures on the Project property (historicaerials.com). A 1980 aerial photograph shows similar conditions (historicaerials.com).

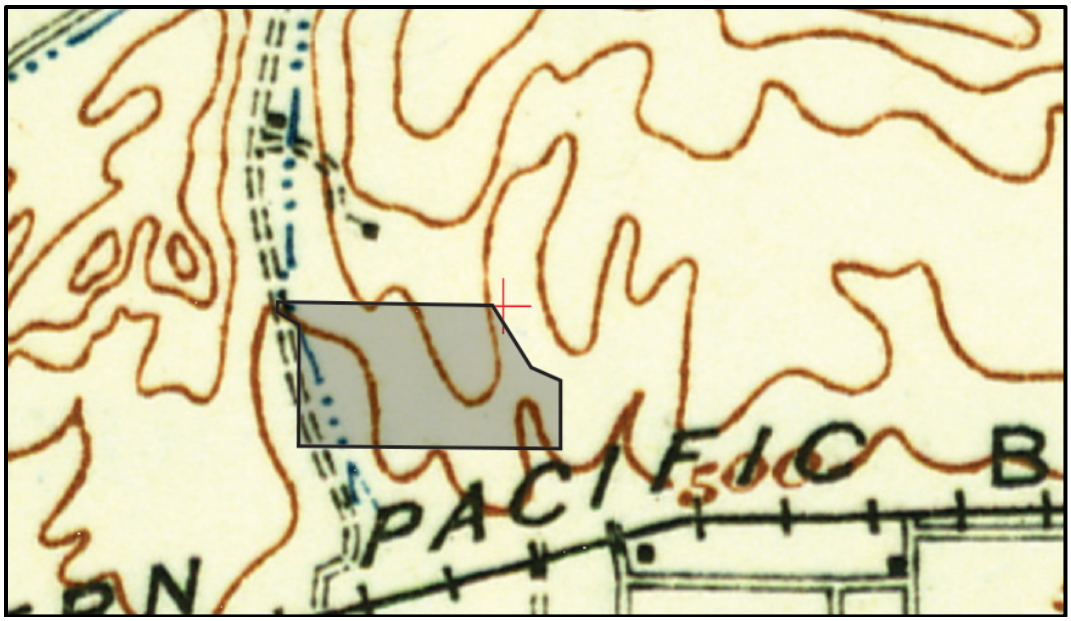


Figure 3: The 1903 Camulos USGS Map, showing a residence in the property at upper-left of center off the property (the red cross marks the general Project location and demonstrates the poor orthorectification for the older maps, which has been adjusted for in the figure).

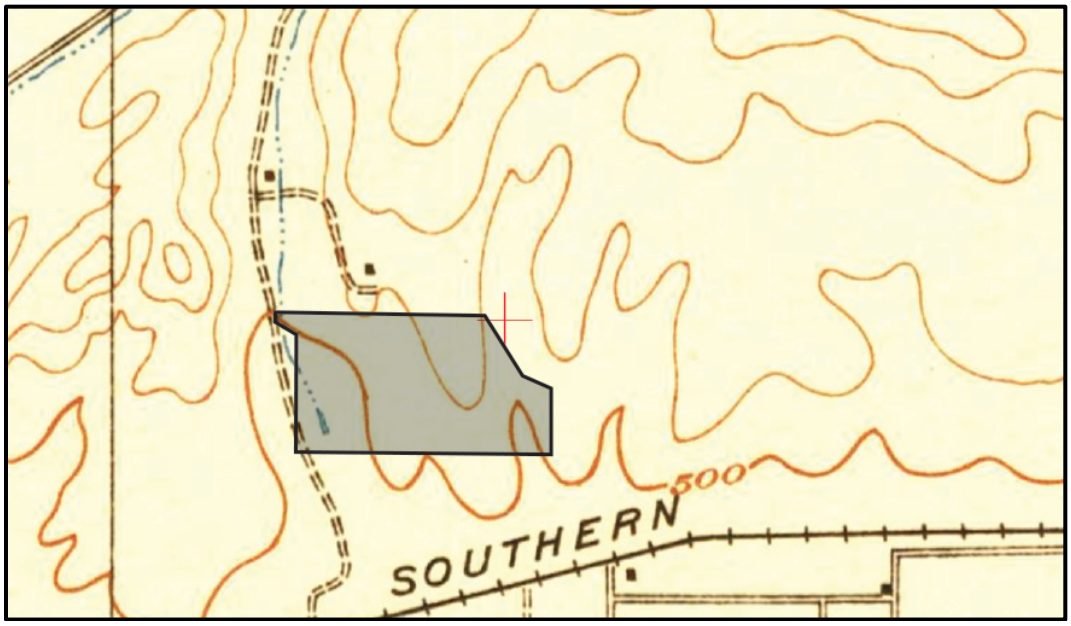


Figure 4: The 1921 Piru USGS Map, again showing the residence at upper-left of center off the Project property.

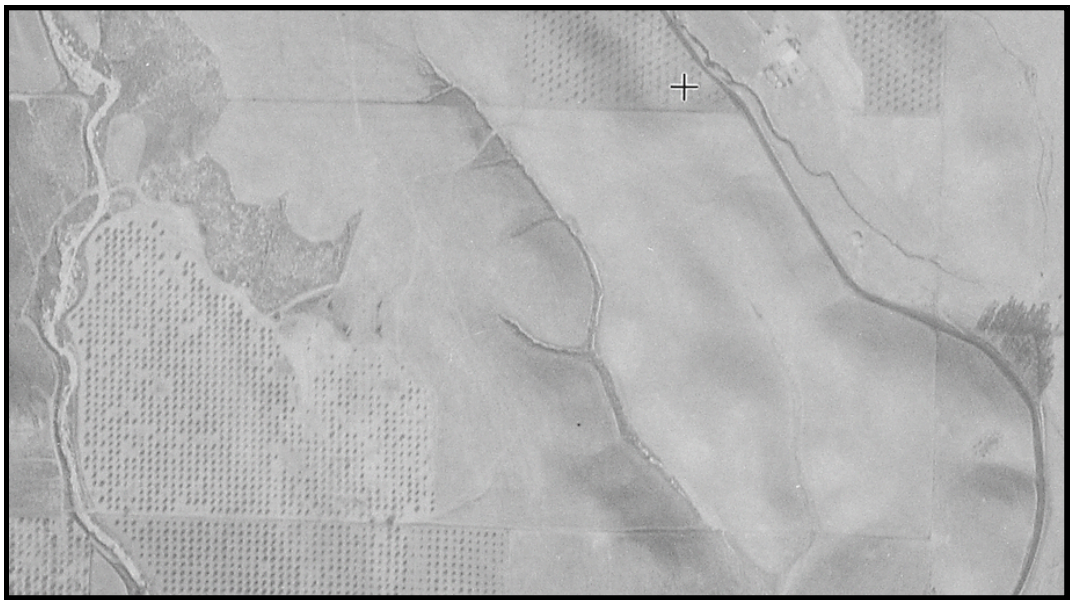


Figure 5: The Project area in 1929 image (the property boundary is outlined by fencing and terrain changes in the photo); a structure appears northeast of Gabbert Road (far right of center) on a parcel no longer part of the Project property (UCSB Historic Aerial Image Database).



Figure 6: The 1941 Piru USGS Map (red cross marks the general Project location).

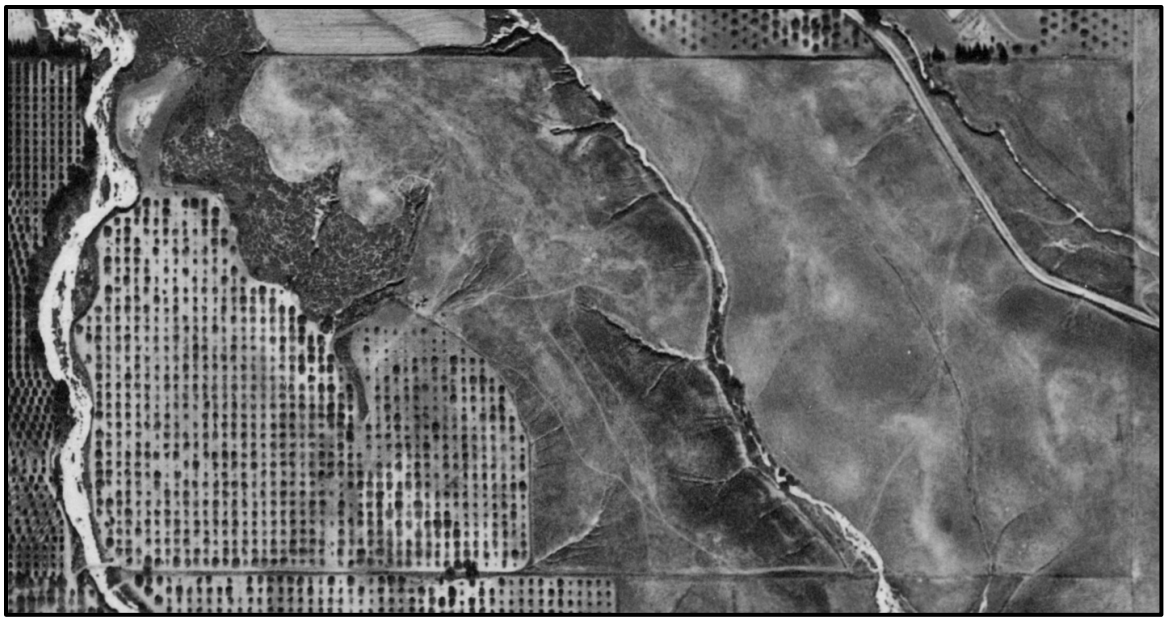


Figure 7: The Project property in 1945 image showing orchards on the western part of the property but no structures (UCSB Historic Aerial Image Database).

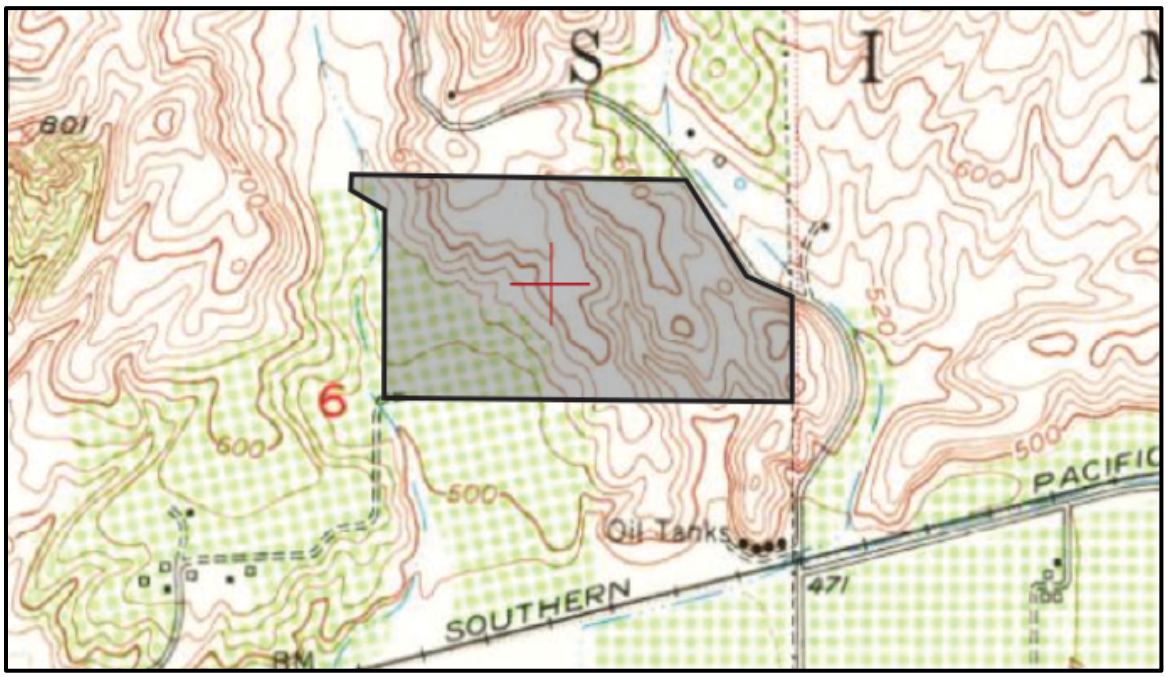


Figure 8: The 1951 Moorpark USGS Map, showing no development on the Project property except for orchards (red cross marks the general Project location).

Historic Google Earth satellite images date back to 1985, but the first clear image dates to 1994. This image shows a number of cleared areas with new roads on the property, which therefore would have been made between 1980 and 1994 (**Figure 9**). A historic aerial photo from 1994 shows the same conditions, with multiple cleared areas on the property (historicaerials.com). Also present is a house in the northeast third of the property and several outbuildings in the middle of the property, with a large tennis court in the southwest third of the property. No orchard trees are visible, however, ornamental plantings appear in many of the cleared areas and along the road paths.

There is no evidence, therefore, of structures on the property that predate the 1980s, and especially not before the 1950s. Historic development did take place as far back as the 1920s, however, this appears to have been limited to the planting of citrus groves. No support structures for this industry were identified on the property except possibly for a structure northeast of Gabbert Road and outside of the current Project property. This reduces the likelihood of older historic artifacts or features being encountered associated with the early orchard development of the Moorpark region.

The modern cleared areas, structures, and the single residential building on the property appear to date to between 1980 and 1994, with all of the features being constructed at roughly the same time period. No aerial photograph or satellite image was found that reduced this date range any further. The differentiation of ages shown in the Dudek 2015 report (Figure 4), therefore, appears to be describing a lack of maintenance or use of the property features compared to the residential structure rather than a true temporal difference for the construction of the identified structures on the property.



Figure 9: The 1994 satellite image, showing the cleared areas for the first time, a residence in the northeast part of the property, and several outbuildings (Google Earth 1994).

Comment #2: "The geotechnical report recommends removal of all alluvial sediments to a minimum depth of 10 feet - down to as much as 70 feet below the ground surface. The alluvial sediments were depositing during the Holocene and could have covered over archaeological deposits.

Envicom Response: "Envicom recommends adding spot-check monitoring as a regulatory compliance recommendation to address this concern."

Envicom will add a spot-check archaeological monitoring regulatory compliance recommendation to the Dudek Project recommendations. The entitlement team can then decide whether to make this regulatory compliance recommendation a Project Mitigation Measure or a Conditional Use Permit (CUP) requirement. The spot-check monitoring recommendation will be further expanded upon under Comment #5 in this report.

Comment #3: "Since the report was completed in 2015 (and the records search was completed in 2014), an updated records search should be conducted at the least. In addition, a cultural survey of the site would assist in confirming the results of the 2015 study, and to ensure that no new resources are visible. We noted that 68.04 acres were surveyed in 2015, so we'll want to make sure the area of disturbance is the same."

Envicom Response: "SCCIC record search completed by Envicom 2021 at a 0.25-mile extent to determine whether new resources were located on or near the Project. No new findings. A new intensive pedestrian site survey completed by Envicom 2021 with no new resources identified. The disturbance area is confirmed to be the same, with minor variations."

SCCIC and NAHC Record Searches

On May 26, 2021, Envicom submitted a request to the SCCIC to conduct a search of their database for cultural resources located within the Project property, and within the surrounding study area (defined as the Project property, plus a 0.25-mile buffer area) to determine if any new cultural resources had been recorded within or near the Project since the 2015 Dudek cultural resource survey, which may be negatively impacted by Project activities (see Figure 1). The record search included a request for all complete site records for cultural resources within or adjacent to the Project property, as well as copies of all cultural resource technical reports that intersected with all or part of the Project property. Envicom also contacted the NAHC on May 26, 2021, with a similar record search request.

Envicom received the cultural resource records search results from the SCCIC on June 28, 2021. The SCCIC record search indicated that no cultural resources were located within the Project property; but identified one (1) cultural resource within the 0.25-mile project study area (archaeological site P-56-100196). This cultural resource will be described in more detail below under Chambers Comment #4. The SCCIC further identified that six (6) cultural resource reports involved the Project property. A cultural report titled *An Archaeological Survey of 2500 Acres for a Proposed Oil Exploration Project by Neaves Petroleum Development in the Vicinity of Moorpark, Ventura County, California* was written in 1977 by Robert Lopez. This report did not find any cultural resources.

The second report titled *Cultural Resources Survey and Impact Assessment for Parcel B of Lot 53 on Gabbert Road in the City of Moorpark, Ventura County, California*, written by C. A. Singer & Associates in 1994, also did not locate any cultural resources, but recommended that if any cultural resources were discovered during grading, then an Archaeologist was to be brought to the site for further assessment of the discovery.

W. S. Consultants wrote two reports that dealt with part of the Project property. The first from 1994 is titled *Phase 1 Archaeological Survey and Cultural Resources Assessment for the Levy Specific Plan Study Area, Ventura County, California*. This report recommended that an archaeologist be present (monitoring) during grading within the center of the survey area, however, closer examination of the 1994 Project area places their project property outside of the Project to the east and south. The second report by W. S. Consultants, completed in 2003 and titled *Phase 1 Archaeological Survey of Hitch Ranch, Moorpark, Ventura County, California*, involved the same property as was examined in 1994.

Mooney, Jones & Stokes wrote a report in 2006 titled *Archaeological Survey Report for the Southern California Edison Company Replacement of 30 Deteriorated Poles Private and Public Inholdings, Ventura, Los Angeles, and Santa Barbara Counties, California*. This report did not locate any cultural resources but included recommendations that if any cultural resource was discovered then an Archaeologist was to be brought to the site. The last report provided by the SCCIC was the 2015 Dudek Project report (see Appendix A). The SCCIC additionally identified ten (10) additional cultural reports that involved the 0.25-mile study area. Examination of these reports did not indicate any cultural resource issues of relevance for the Project. All cultural resource reports provided by the SCCIC are summarized in **Appendix C** of this report.

The results from the 2021 NAHC record search of their Sacred Lands Files were received on June 10, 2021, with negative findings. The findings of the SCCIC and the NAHC were, therefore, ***negative for cultural resources within the Project property.***

If the Lead/Permitting Agency for the Project is required to perform an Assembly Bill (AB)-52 process, the NAHC letter should be made a part of the Native American consultation record. Any findings from the SCCIC as to the physical location of cultural resources, except for public-knowledge built environment resources, is considered confidential by state law and are, therefore, not included in this report. Copies of the request letter to the SCCIC, NAHC, and NHM are included in **Appendix D** of this report, as are the response letters from the NAHC and NHM. The Principal Author's resume is provided in **Appendix E**.

Field Survey Results

Envicom staff visited the Project property on May 27, 2021. The Project property has two APNs: 5110-190-285 and 5110-190-305. The property has been developed with roads, bridges, gardens, four concrete foundations and a tennis court which appear to date to the 1980s. The property also has roads running through it with powerlines and towers on the east side of the parcel. The project property was covered with modern trash and seemed to be used as a trash dump and for hiking tail by surrounding residents (**Figure 10**, **Figure 11**, **Figure 12**, **Figure 13**, **Figure 14**, and **Figure 15**). Ground visibility was moderate to poor, with most of the landscape surface being covered in vegetation and trash. No early historic or prehistoric artifacts or features were observed on the surface. The findings were, therefore, ***negative for cultural resources within the Project property.***



Figure 10: Overview of one of the large modern foundations on site, located in the northern part of the property.



Figure 11: Overview of a second modern foundation.



Figure 12: Overview of a third modern foundation.



Figure 13: Overview of the modern tennis court.



Figure 14: Overview of the southern part of the Project property.



Figure 15: Overview of part of the garden area.

Comment #4: "One previously recorded site, P-56-100196, was located during the record search, however there is no description of the site. Please provide more detail on the site."

Envicom Response: "Envicom will provide more information on this site in the addendum report."

Envicom on Wednesday, September 22nd, 2021, requested the site form for P-56-100196 from the SCCIC, however, no communication has been received from the SCCIC by the publication of this addendum report (September 30, 2021). Given that the SCCIC is exceptionally backed up on requested record searches due to the state information center response to Covid-19, Envicom does not anticipate receiving this site form for at least another month (end of October or early November, 2021).

However, Envicom did find information on site P-56-100196 in an Environmental Impact Report (EIR) titled *Moorpark-Newbury 66 kV Subtransmission Line Project (A.13-10-021),* published in 2015 by ESA and prepared for the California Public Utilities Commission (CPUC) by Southern California Edison (SCE). This document referenced and summarized the original SCE project cultural resource survey report by James Schmidt of Compass Rose in 2007. The report that described this survey work is titled *Archaeological Survey Report, Southern California Edison Moorpark-Newbury 66kV New Source Line Project*.

The Phase I survey was followed by an extended (subsurface) Phase I survey conducted in 2008 on site P-56-100196 and other sites for SCE by James Schmidt, June Schmidt, and Gwen Romani, also of Compass Rose. This earlier report is titled *Results of Extended Phase I Investigations at Sites P56-100196 (SCE MN-1), P56-001797 (CA-VEN-1797; SCE MN-2), and P56-100197 (SCE MN-3), for the Southern California Edison Moorpark-Newbury 66kV New Source Line Project (WO 4605-2104; JO 6042-0468)*. A supplemental cultural resource survey was conducted by Robert Ramirez and Kevin Hunt of Rincon Consultants for SCE that included site P-56-100196, which is titled *Southern California Edison Moorpark-Newbury 66 kV Subtransmission Line Project: Archaeological Survey Report*. All of these documents were used in the cultural resource summary provided by the SCE subtransmission line project EIR in 2015.

The SCE EIR noted that P-56-100196 was a prehistoric lithic scatter that was first recorded by the 2007 survey. That survey report noted that the archaeological site had been negatively impacted by previous SCE activities. The 2008 extended Phase I work at P-56-100196 included the excavation of surface scrapes and shovel test pits and the detailed mapping of the cultural resource (Schmidt et al., 2008). P-56-100196 was summarized in the project EIR as follows:

> "Resource P56-100196 (MN-1) was recorded as a sparse flake scatter with a few fragments of marine shell (Schmidt, 2007). The Extended Phase I investigation found that the site was disturbed and did not contain a subsurface component (Schmidt et al., 2008). As such, the site was recommended not eligible for inclusion in the CRHR or local registers and is not considered a historical resource or unique archaeological resource under CEQA."

Since cultural resource P-56-100196 is a prehistoric lithic scatter located in the Project study area, but not on the Project property, and the cultural resource was determined to not be eligible for the CRHR by Rincon in 2008 and concurred with by the CPUC, this site is of limited value for better understanding the prehistoric cultural context of the current Project. However, the site does support that Native Americans occupied the Project region prior to the historic period and encountering similar prehistoric cultural resources during Project grading activities is a possibility. Regulatory compliance recommendations to cover the unanticipated discovery of prehistoric (or older historic) cultural resources are, therefore, warranted.

Comment #5: "Under recommendations, it is stated that no mitigation measures are required due to the low likelihood of cultural resources on site. Based on the updated records search, we may want to reconsider if mitigation measures may make sense."

Envicom Response: "Based on the negative findings of the new record search and site survey, Envicom does not recommend new mitigation measures/regulatory compliance recommendations. However, archaeological spot-check monitoring is recommended to address reviewer concerns about potential buried cultural horizons under alluvial material."

The following regulatory recommendation would be added to the Dudek recommendation that a a qualified archaeologist should be notified immediately to assess the significance of a discovered cultural resource. Since the Dudek recommendation did not have protocol language, the discovery protocol provided in the below additional regulatory recommendation should be followed.

Envicom Additional Compliance Recommendation: Spot-check Archaeological Monitoring

A qualified archaeological monitor will periodically spot-check monitor Project ground disturbance activities to ensure that sensitive archaeological artifacts, features, or deposits are not being encountered. Spot-check monitoring will take place three (3) times a week for the duration of the Project grading and subsurface disturbance within native soils. Daily monitoring reports will be generated and submitted to the Lead Agency at the end of ground disturbance as proof of compliance. If prehistoric or older historic (pre-1950s) archaeological material or features are discovered, either by the archaeological monitor or by the construction team when the monitor is not present, then a project "discovery" protocol will be followed. The discovery of material will also trigger the increasing of monitoring to full-time until no more cultural material is being encountered by the construction team, at which point spot-check monitoring will resume.

Cultural Resource Discovery Protocol

If potentially significant intact deposits are encountered within an undisturbed context, then the cultural resource "discovery" protocol will be followed. If older historic or prehistoric features, artifact concentrations, or larger significant artifacts that cannot be moved from the site are encountered during Project grading within native soils or original context, then all work in that area shall be halted or diverted away from the discovery to a distance of 30-feet until a qualified Principal archaeologist can evaluate the nature and/or significance of the find(s). If the Principal archaeologist (not the field monitor) confirms that the discovery is potentially significant, then the Lead Agency will be contacted and informed of the discovery.

Construction will not resume in the locality of the discovery until consultation between the Principal archaeologist, the owner's Project manager, the Lead Agency, and any other concerned parties (such as additional regulatory agencies), takes place and reaches a conclusion approved by the Lead Agency. If a significant cultural resource is discovered during earth-moving, complete avoidance of the find is preferred. However, if the discovery cannot be avoided, further survey work, evaluation tasks, or data recovery of the significant resource may be required by the Lead Agency. The Lead Agency may also require changes to site monitoring, based on the discovery. All individual reports generated from the discovery will be submitted to the SCCIC at the conclusion of the Project.

REFERENCES

No Author. *Moorpark-Newbury 66 kV Subtransmission Line Project 5.5-1 ESA / 207584.15 (A.13-10-021) Draft Environmental Impact Report* Prepared for Southern California by ESA, June 2015

Ramirez, Robert, and Kevin Hunt. *Southern California Edison Moorpark-Newbury 66 kV Subtransmission Line Project: Archaeological Survey Report*. Prepared for Southern California Edison by Rincon Consultants, January 2015.

Schmidt, James, 2007. *Archaeological Survey Report, Southern California Edison Moorpark-Newbury 66kV New Source Line Project*, prepared by Compass Rose for Southern California Edison, 2007.

Schmidt, James, June Schmidt, and Gwen Romani, 2008. *Results of Extended Phase I Investigations at Sites P56-100196 (SCE MN-1), P56-001797 (CA-VEN-1797; SCE MN-2), and P56-100197 (SCE MN-3), for the Southern California Edison Moorpark-Newbury 66kV New Source Line Project (WO 4605-2104; JO 6042-0468), Ventura County, California.* Prepared by Compass Rose for Southern California Edison, 2008.

Stone, David and Heather McDaniel. *Archaeological Survey Report Moorpark-2 Gabbert Road, Moorpark Ventura County, California*. Dudek, February, 2015.

Sincerely,

Dr. Wayne Bischoff,
Envicom Director of Cultural Resources

ATTACHMENTS:

Appendix A: The 2015 Dudek Cultural Resource Survey Report
Appendix B: The Chambers Comment Matrix with Envicom Responses
Appendix C: The 2021 SCCIC List of Project and Study Area Reports
Appendix D: The 2021 SCCIC and NAHC Request Letters, and the NAHC response letter
Appendix E: Resume of Dr. Wayne Bischoff (Envicom Principal)

APPENDIX A
The 2015 Dudek Cultural Resource Survey Report

ARCHAEOLOGICAL SURVEY REPORT

MOORPARK - 2
GABBERT ROAD, MOORPARK
VENTURA COUNTY, CALIFORNIA

Prepared by:

David Stone, M.A., RPA

Heather McDaniel, M.A., RPA

DUDEK
621 Chapala Street
Santa Barbara, CA 93101
Tel. (805) 963-0651

Prepared for:

Ms. Martha Aldana
City Ventures Homebuilding Inc.
2300 Knoll Drive #A
Ventura, CA 93003

USGS Moorpark, California 7.5 Minute Quadrangles

68.04 Acres Surveyed

February 2015

TABLE OF CONTENTS

Section **Page No.**

SUMMARY OF FINDINGS iii

1.0 INTRODUCTION 1

2.0 PROJECT LOCATION AND DESCRIPTION 1

3.0 SOURCES CONSULTED 5
3.1 Cultural Resources Records Search 5
3.2 Native American Consultation 7

4.0 BACKGROUND 8
4.1 Environment 8
4.2 Prehistory 9
4.3 Ethnohistory 10
4.4 Historic Setting 11

5.0 FIELD METHODS 13

6.0 STUDY FINDINGS AND CONCLUSIONS 15

7.0 RECOMMENDATIONS 16

8.0 REFERENCES 17

LIST OF FIGURES AND TABLES

Figure 1 Regional Vicinity 2
Figure 2 Project Vicinity (USGS Quad Map) 3
Figure 3 Area of Potential Effect (Aerial Photo) 4
Figure 4 Aerial Map of Area of Potential Effect 14

Table 1 Previous Investigations within the Project APE 6

LIST OF APPENDICES

Appendix A Cultural Resources Records Search (Confidential, Bound Separately)
Appendix B Native American Consultation

SUMMARY OF FINDINGS

City Ventures Homebuilding Inc. proposes to construct a single-family and multi-family residential project on 68.04 acres in the City of Moorpark, within the County of Ventura. This report presents an evaluation of potential archaeological resources within the aforementioned project area located on Gabbert Road 0.5 miles north of Poindexter Avenue in the City of Moorpark, Ventura County, California (see Figure 1). This Phase 1 archaeological investigation included background research and an intensive, systematic surface survey of the proposed project site.

An archaeological literature and records search was conducted at the California Historical Resources Information System (CHRIS), South Central Coastal Information Center (SCCIC), California State University, Fullerton for the proposed Project on December 29, 2014. The SCCIC records indicate that 28 investigations have been undertaken within 0.5 miles of the project site, while only two investigations have occurred within the northerly portions of the Project APE. No previously recorded archaeological sites exist within the Project Site; the only cultural resource within 0.5 miles of the APE is located over 360 meters (1,200 feet) to the south.

The proposed 68.04-acre Project APE was the subject of an intensive archaeological survey by Dudek staff archaeologists on January 23, 2015 using 5-10-meter (16-32 foot) meandering transect intervals based on terrain, ground surface visibility, and structural obstructions. The intensive archaeological surface survey of the proposed project site was characterized by a wide range (poor to excellent) of ground surface visibility; periodic shovel scrapes were used to remove non-native vegetation in areas of relatively poor ground surface visibility. No prehistoric or historic archaeological resources were identified within the Project APE. Given the survey conditions and the strategies taken to address the areas of relatively poor ground surface visibility, these results are considered very reliable. The lack of discovery of any prehistoric or historic materials within the Moorpark 2 Project APE indicates that any potential development of the proposed project site will not have any impacts on cultural resources.

1.0 INTRODUCTION

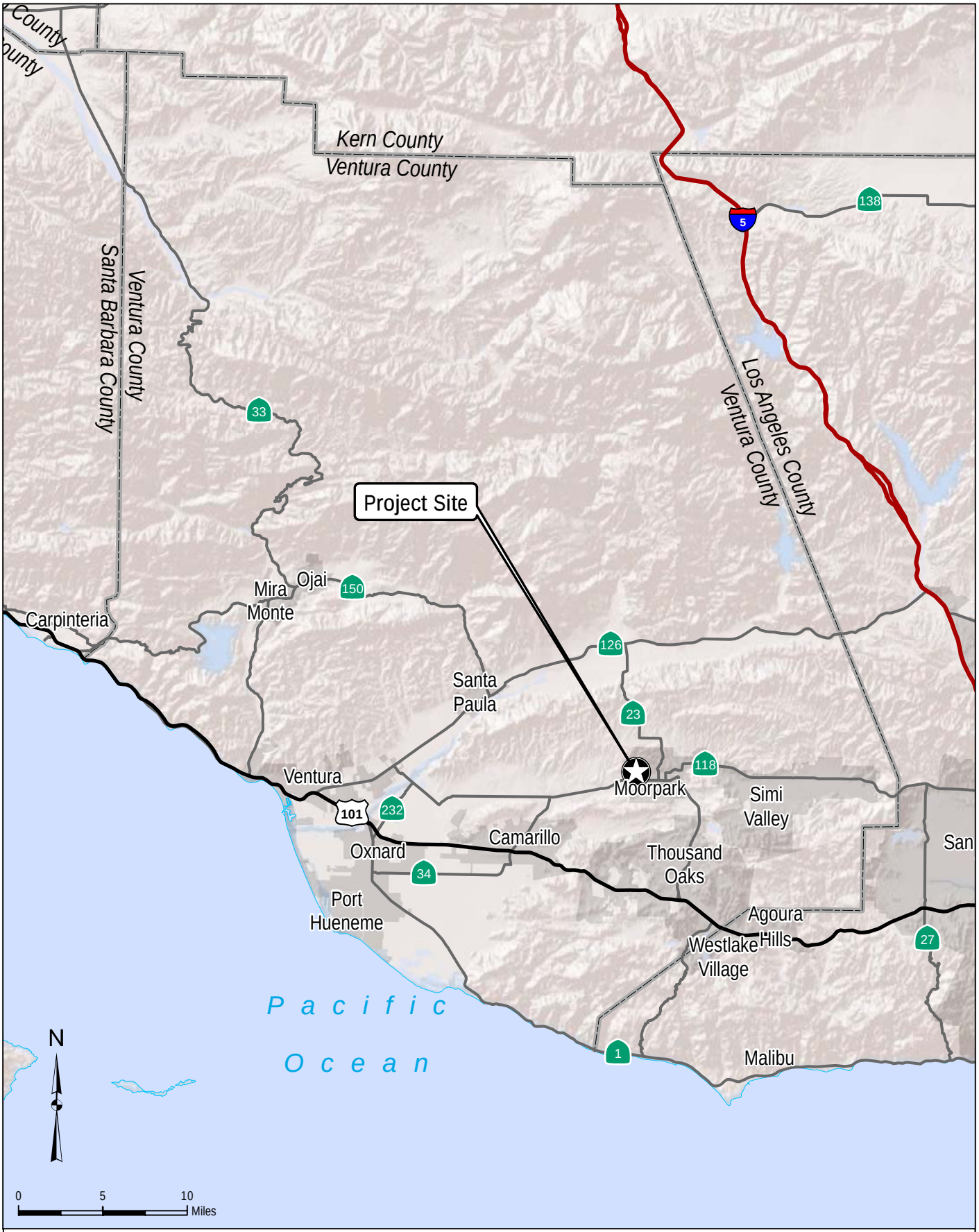
City Ventures Homebuilding Inc. proposes to construct a single-family and multi-family residential project on 68.04 acres in the City of Moorpark, in the County of Ventura (see Figures 1 and 2). The proposed Project Area of Potential Effects (APE) incorporating all temporary construction and permanent impacts (see Figure 3) includes the entire Project site.

This report documents the background research, Native American consultation, and archaeological survey conducted for the proposed Project. The report was prepared by Dudek archaeologists David Stone, M.A., RPA and Heather McDaniel, M.A., RPA. Mr. Stone has over 30 years' experience in central and southern California and Ms. McDaniel has over 8 years' experience.

2.0 PROJECT LOCATION AND DESCRIPTION

The proposed Project site is located in Sections 5 and 6 of Township 2 North, Range 19 West of the Moorpark, California U.S. Geological Service (USGS) 7.5' topographic quadrangles, in the City of Moorpark, within the County of Ventura (see Figure 2) on the north side of Poindexter Avenue, adjacent to the east side of the Gabbert Road. The existing plans for development include the following: demolition and removal of existing structures cement foundations, sidewalks, and driveways and asphalt roads; construction of 145 residential units (single-family and multi-family); new internal access roads and driveways; and installation of utilities including wastewater, water, gas, and electricity (see Figure 3).

The 68.04-acre parcel is considered the Project Area of Potential Effects (APE) in which all permanent areas of ground disturbance, as well as temporary areas of construction activity including project laydown areas and equipment storage would occur.



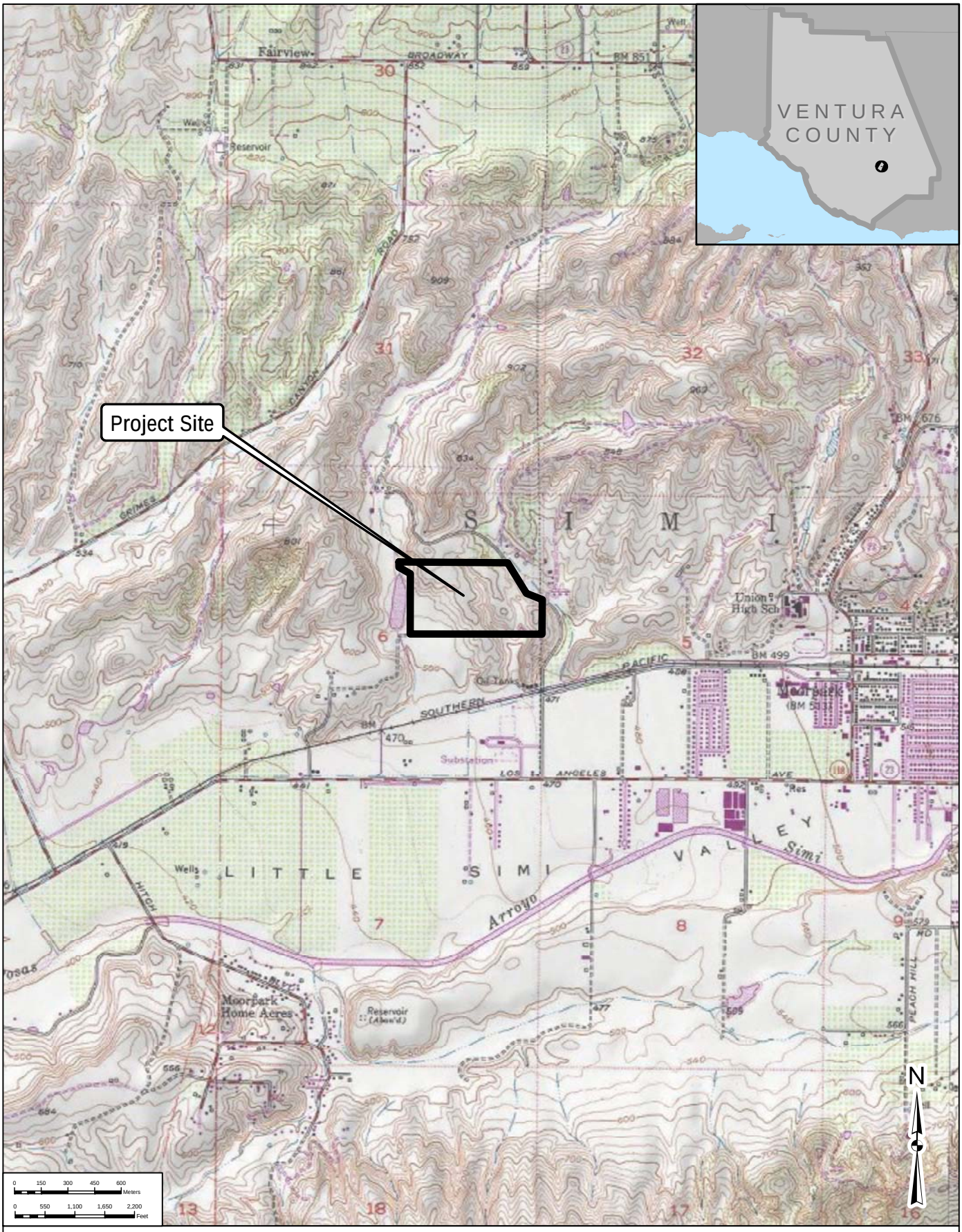
SOURCE: World Shaded Relief 2014

DUDEK

FIGURE 1

Regional Map

Moorpark 2 Archaeological Investigation



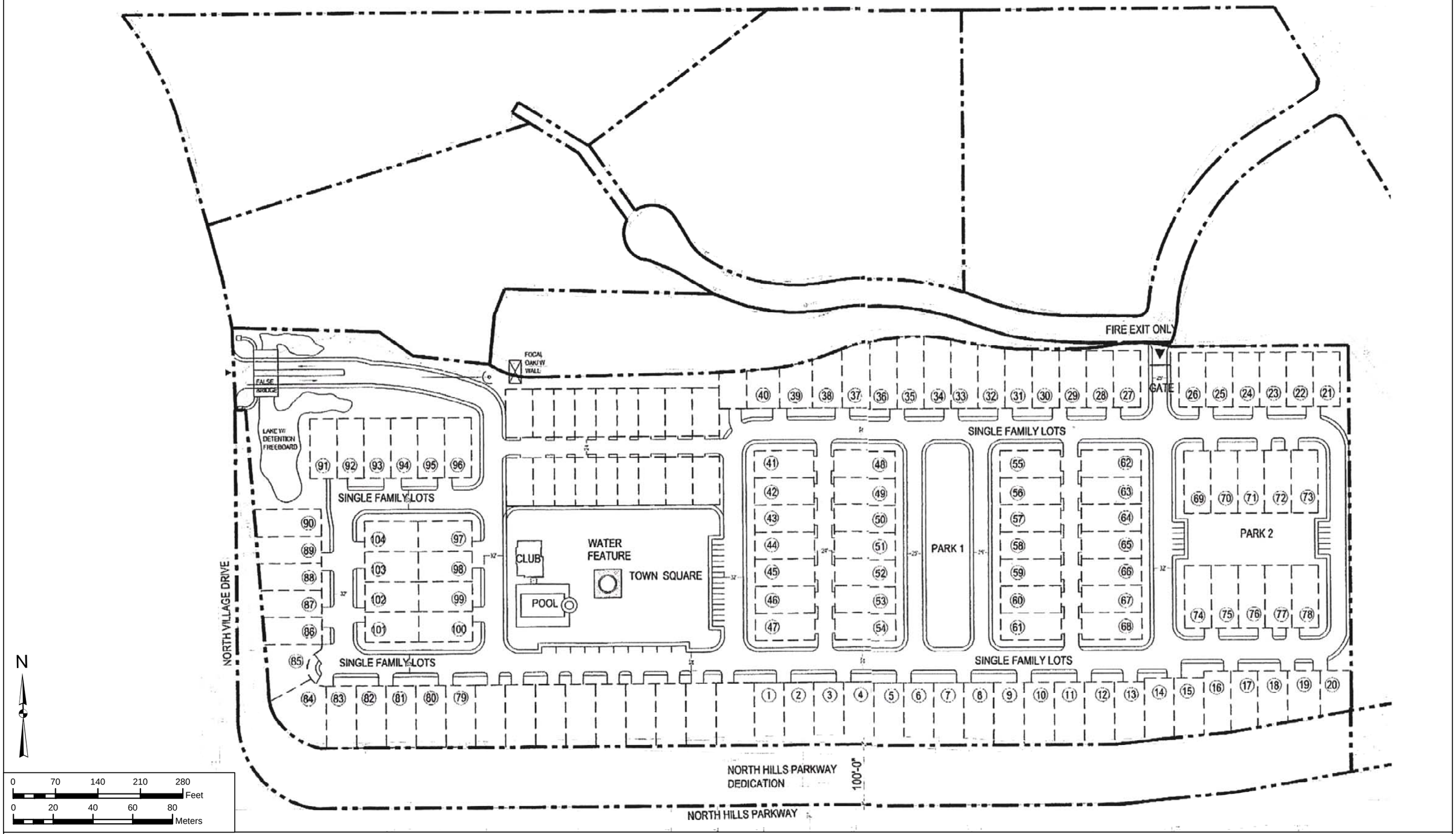
SOURCE: USGS Topo 7.5 Minute Series - Moorpark Quadrangle
Township 2N/Range 19W/Section 5 & 6

DUDEK

FIGURE 2

Vicinity Map

Moorpark 2 Archaeological Investigation



SOURCE: City Ventures

DUDEK

FIGURE 3

Area of Potential Effect

Moorpark 2 Archaeological Investigation

3.0 SOURCES CONSULTED

This section describes the methods and results of the archaeological records search conducted at the California Historical Resources Information System (CHRIS) for the proposed Project APE, and summarizes the consultation with the California State Native American Heritage Commission (NAHC) regarding the proposed Project.

3.1 Cultural Resources Records Search

An archaeological site records and literature search at the SCCIC, California State University, Fullerton, was conducted on January 6, 2015, by Michelle Galaz, SCCIC Associate Coordinator, to identify all previous cultural resource investigations, recorded archaeological sites and, built architectural resources within the proposed Project APE and a 0.5-mile vicinity (see Appendix A). The records search identified all known archaeological sites, historic resources, and previous cultural resource surveys within this distance. The SCCIC records indicate that 28 investigations have been undertaken within 0.5 miles of the APE. According to these investigations, no previously recorded archaeological sites exist within the Project Site.

Two investigations have occurred within the northerly portions of the Project APE. One investigation partially located within the Project APE (Singer and Atwood 1991) evaluated a 5-acre parcel located along the northern boundary of the Project APE and overlapping approximately 80 meters along the northern APE property line. No cultural resources were identified and no measures were recommended. A second investigation (Lopez 1977) encompassed 2,500 acres of property located to the north of the Project site, but overlapped the most northerly 100 meters (330 feet) within the Project APE. A “controlled intuitive survey” (Lopez 1977) was used during the survey that likely was not as rigorous as that considered acceptable by contemporary professional standards. No surface evidence of archaeological resources was identified.

One cultural resource, P-56-100196, was identified along the Southern Pacific Railroad, approximately 360 meters (1,200 feet) south of the APE (Singer and Atwood 1981). The fact that only one cultural resource was discovered as a result of 28 separate investigations representing approximately 80% of the area immediately (0.5 mile radius) surrounding the Project APE demonstrates that the distribution of cultural resources in the area surrounding

the Project APE is extremely low.

Table 1. Previous Investigations within Project APE (0.5 mile radius)

Date	Author	Title (Area)	SCIC Report No.
1979	Lopez, Robert	Archaeological Assessment for Pm-3192 Moorpark, Ventura, California	VN-00213
1979	Lopez, Robert	Archaeological Assessment for Pm-3244 Moorpark, Ventura California 93003	VN-00233
1981	Singer, Clay	Cultural Resource Survey and Impact Assessment for Tentative Tract No. 3319 in Moorpark, Ventura County, California	VN-00399
1980	Callison, Sheila	Cultural Resource Survey for Tr-3270	VN-00560
1988	Dames and Moore	Phase 1 Cultural Resources Survey Fiber Optic Cable Project, Burbank to Santa Barbara, California for US Sprint Communications Company	VN-00572
1988	Lopez, Robert	An Archaeological Reconnaissance of the Areas Involved in the Proposed Swepi Well Locations and Pipeline Routes Oxnard Plain, Ventura County, California	VN-00575
1977	Lopez, Robert	An Archaeological Survey of 2,500 Acres for a Proposed Oil Exploration Project by Neaves Petroleum Developments in the Vicinity of Moorpark, Ventura County, California	VN-00607
1989	Lopez, Robert	An Archaeological Reconnaissance of the Area Involved in Jemco Properties Proposed Industrial Development Moorpark, Ventura County, California	VN-00775
1989	Lopez, Robert	Archaeological Reconnaissance for Pm-4318	VN-00776
1991	Singer, Clay A. and Atwood, John E.	Cultural Resources Survey and Impact Assessment for Parcel B of Lot 53 on Gabbert Road in the City of Moorpark, Ventura County, California	VN-01059
1991	Peak and Associates, Inc.	Class 3 Cultural Resource Assessment of the Proposed Carpinteria and Southern Reroutes, Santa Barbara, Ventura, and Los Angeles Counties, California	VN-01153
1992	Reed, L. W.	Consolidated Report: Cultural Resources Studies for the Proposed Pacific Pipeline Project	VN-01265
1993	Whitley, David S. and Simon, Joseph M.	Phase 1 Archaeological Survey and Cultural Resources Assessment for the Moorpark Golf Course Project, Ventura County, California	VN-01274
1994	Whitley, David S. and Simon, Joseph M.	Phase 1 Archaeological Survey and Cultural Resource Assessment for the Levy Specific Plan Study Area, Ventura County, California	VN-01329
1977	Lopez, Robert	Archaeological Survey of a Proposed New Well Within The Area of the Winchester Development in the Vicinity of Moorpark, Ventura County, Ca	VN-01589
1998	Horne, Stephen	Report of Phase 1 Archaeological Investigation Westpointe Moorpark Tentative Tract No. 4620 Moorpark, California	VN-01656
1999	Whitley, David S. and Simon, Joseph M.	Phase 1 Archaeological Survey of the Triliad Development Study Area, Moorpark, Ventura County, California	VN-02054

2003	Whitley, David S. and Simon, Joseph M.	Phase 1 Archaeological Survey of Hitch Ranch, Moorpark, Ventura County, California	VN-02314
2006	Jordon, Stacy C. and Patterson, Joshua D.	Archaeological Survey Report for the Southern California Edison Company Replacement of 71 Deteriorated Poles on the Patricia 16kv, Thacher 16kv, Tico kv, Seaquit 4kv, Maguire 16kv, Galahad 16kv, Brennan B4 16kvm, Strathern Kv, Gabbert kv	VN-02386
2006	Jordon, Stacy C. and Patterson, Joshua D.	Archaeological Survey Report for the Southern California Edison Company Replacement of 30 Deteriorated Poles Private and Public Inholdings, Ventura, Los Angeles, and Santa Barbara Counties, California	VN-02390
2006	Arrington, Cindy and Sikes, Nancy	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project State of California: Volumes I and II	VN-02504
2007	Schmidt, James J.	Archaeological Survey Report, Southern California Edison, Moorpark-Newbury Park 66kv New Source Line Project, Wo 4605-2104: Jo 6042-0468	VN-02617
2008	Schmidt, James; Schmidt, June and Romani, Gwen	Results of Extended Phase I Investigations at Sites P56-100196 (SCE MN-1_, P56-001797 (CA-VEN-1797; SCE MN-2), and P56-100197 (SCE MN-3), for the Southern California Edison Moorpark-Newbury Park 66kv New Source Line Project, Ventura County, California	VN-02810
2006	Jordon, Stacy C. and Patterson, Joshua D.	Archaeological Survey Report for the Southern California Edison Company Replacement of Seven Deteriorated Poles on the Morganstein 16kv and Brennan 16kv Circuits, Private Inholdings in Ventura County, California	VN-02847
2009	Fortier, Jana	TEA-21 Rural Roadside Inventory: Native American Consultants and Ethnographic Study for Caltrans District 7, Ventura County	VN-02872
2009	Fortier, Jana	(also LA 10578) TEA-21 Rural Roadside Inventory: Native American Consultants and Ethnographic Study for Caltrans District 7, Ventura County	VN-02873
2002	Foster, John A.	Historic Resource Evaluation Report – Mason Avenue At-Grade Crossing and Safety Improvements Project, Los Angeles City, California	VN-03094

3.2 Native American Consultation

A search of the Native American Heritage Commission's (NAHC's) Sacred Land File was requested on December 29, 2014, and was conducted on January 12, 2015 (Katy Sanchez, NAHC Associate Government Program Analyst) to determine the presence of any Native American cultural resources within the proposed Project site (see Appendix B). The NAHC indicated that no known Native American heritage resources are identified within the proposed Project site.

4.0 BACKGROUND

4.1 Environment

The Project APE is situated in the northwest portion of the City of Moorpark approximately 0.5-mile north of New Los Angeles Avenue (SH 118). The APE is bound by residences and accommodations for horses to the north, open and undeveloped land to the south, mixed-grove agricultural land to the east, and Gabbert Road running adjacent to the western boundary. The APE has historically been used for cattle grazing; within the last several decades, it was developed as a single-family residential estate. The APE has gradually been surrounded by a moderately to dense suburban environment comprised of residential, commercial, and municipal buildings dating from the late nineteenth century through the present.

The site lies south of the Santa Clara River Valley, South Mountain and Oak Ridge, and Grimes Canyon and west of Long Canyon, all of which belong to the Transverse Ranges of the Pacific Coast Ranges. The Project APE is situated within the "Little Simi Valley", which is drained by the Arroyo Simi/Arroyo Las Posas and separates the southern portion of Oak Ridge from the Las Posas Hills. The Project APE lies very near the base of the Las Posas upland area, an expansive elevated region that slopes gently to the south. The area of "Little Simi Valley" flanking the eastern boundary of the Las Posas Valley has historically been used as ranch land and in more recent times as single family residences on multi-acre parcels. The Project APE is located on an alluvial fan with an elevation of 500-600 feet above mean sea level and has been determined to have sediments mainly derived from the Pliocene-Pleistocene Saugus Formation (Loyd, 2000). According to the United States Department of Agriculture Soil Conservation Service (1970), soils in the proposed project site are characterized as belonging to two major soil zones: Mocho loam and Sorrento loam. Based on a geological and geotechnical study conducted by the California Department of Conservation Division of Mines and Geology (Loyd, 2000), borehole log data indicate that alluvial sediments deposited in Project APE have existed from the Pleistocene (2,588,000 to 11,700 years ago) to the present. Therefore the Project APE geological landscape has remained nearly unmodified since before known human habitation. The vegetation existent in the Project APE includes both introduced plants such as ice plant, pepper and palm trees and

various grasses and well as indigenous species such as sage, prickly pear cactus, milkweed, and sages.

4.2 Prehistory

The local prehistoric chronology is divided into four major periods – Paleoindian, Early Period, Middle Period, and Late Period.

Paleoindian

It is generally accepted that humans entered the New World during the latter part of the Wisconsin glaciation between 40,000 and 20,000 years before present (B.P.). The earliest unquestioned evidence of human occupation in southern Santa Barbara and Ventura counties is dated to between 10,000 to 8,000 B.P. (Erlandson and Colten 1991). Paleoindian groups during this time focused on hunting Pleistocene megafauna, including mammoth and bison. Plants and smaller animals were undoubtedly part of the Paleoindian diet as well, and when the availability of large game was reduced by climatic shifts near the end of the Pleistocene, the subsistence strategy changed to a greater reliance on these resources.

Early Period

Post-Pleistocene changes in climate and environment are reflected in the local archaeological record by approximately 8,000 B.P., the beginning of the Early Period, as defined by Chester King (1981). The Early Period of the Chumash cultural sphere was originally defined by Rogers (1929), who called it the "Oak Grove" Period. The diagnostic feature of this period is the mano and metate milling stones, which were used to grind hard seeds such as sage for consumption. Toward the end of the Early Period, sea mammal hunting appears to have supplemented subsistence strategies (Glassow et al. 1990).

Middle Period

The Middle Period (3,350 to 800 B.P.) is characterized by larger and more permanent settlements, related to a generally wetter environment. Materials from Middle Period sites reflect a greater reliance on marine resources and include marine shells, fish remains, and fishhooks. A major shift in vegetable food exploitation occurred, as the mano and metate milling stones were replaced by stone mortars and pestles. This indicates a transition from

seed gathering to oak tree acorn gathering and processing, a result of cooler temperatures and more expansive oak woodland habitats. Toward the end of this period, the plank canoe was developed, making ocean fishing and trade with the Channel Islands safer and more efficient (Arnold 1987). Terrestrial resources continued to be exploited as evidenced by the presence of contracting-stemmed and corner-notched projectile points from Middle Period sites (Bamforth 1984).

Late Period

The Late Period (800 to 150 B.P. or approximately A.D. 1150 to 1800) was a time of increased social and economic complexity. The increased number of permanent and semi-permanent villages clustered along the coastline of the Santa Barbara Channel south past Ventura and on the Channel Islands, and the diversity of environmental site settings in which sites have been identified, indicates a substantial increase in prehistoric population. Intensification of terrestrial as well as marine resources occurred. Acorns continued to be processed, and land mammals were hunted with the bow and arrow, rather than exclusively by spear. Trade networks, probably controlled by village chiefs, expanded and played an important part in local Chumash culture, reinforcing status differences and encouraging craft specialization. Shell beads, found throughout the Early and Middle Periods, increased in number and variety, related to status and social value.

4.3 Ethnohistory

The “Little Simi Valley” area falls within the territory occupied by the Ventureño Chumash, the southernmost group of the Chumashan speaking Indians (Kroeber 1953, Heizer 1978, King 1990). Archaeological research demonstrates that ancestors of the modern Ventureño peoples began inhabiting the coastal regions of central and southern California over 9,000 years ago. Based on radiocarbon dates, the interior valleys, including the area of the Project APE, were more than likely inhabited soon after. According to Mission records, the Simi Valley (including Moorpark) possessed three Chumash settlements: *Shimiyi* (located in the eastern portion of Simi Valley and for which the current town’s name is derived), *Ta’apu* (located in present-day Tapo Canyon near the geographical center of the Simi Valley), and *Kimishax* (located in the Happy Camp Canyon west of Moorpark College) (Johnson, 1997). Based on mission baptismal records, it appears that the *Ta’apu* village was the largest of the three interior settlements.

The Spanish expedition led by Gaspar de Portolà from 1769-1770 was the first European exploration of the area. The expedition traveled through the Simi Valley sometime between January 13-14, 1770 as they traversed from the San Fernando Valley to the Conejo Valley (Bolton, 1927). The everyday lives and cultural experience of Chumash peoples living within the project area vicinity changed dramatically with the establishment of the San Buenaventura Mission in 1782 and later the San Fernando Mission in 1797, two of five missions located within the Chumash territory. Chumash population estimates vary considerably, but all agree that the population declined dramatically after European contact.

4.4 Historic Setting

The historic occupation of the project vicinity can be divided into three settlement periods: the Mission Period (A.D. 1769 – 1830), the Rancho Period (ca. A.D. 1830 -1865), and the American Period (ca. A.D. 1865 – 1915). Construction of the Spanish Missions in the Chumash inhabited area from 1772 (Mission San Luis Obispo de Tolosa) to 1804 (Mission Santa Iñes) and especially in the case of the Simi Valley area the 1797 establishment of the Mission San Fernando Rey de España, altered both the physical and cultural landscape of the region. The missions were the center of Spanish influence in the region and affected native patterns of settlement, culture, trade, industry, and agriculture. In 1821, California became part of the country of Mexico as a result of Mexico's successful fight for independence from the Spanish Empire. Secularization of the Missions by the Mexican Government was soon to follow occurring between 1834 and 1836. in 1821, California became part of the Republic of Mexico. Mission properties and goods were now controlled by appointed government agents.

Secularization of lands and a focus on cattle raising marked the Rancho Period, where large land grants of Mission lands were ceded to wealthy, prominent Spanish families. Rancho Simi, also known as Rancho San Joše Nuestra Senora de Altagarcia y Simi, included 113,009 acres and encompassed both present-day cities of Simi Valley and Mooprark. This Spanish land grant, given to Francisco Javier Pico and his two brothers, Patricio Pico and Miguel Pico in 1795 by Governor Diego de Borica, was the earliest of its kind within the Ventura and Santa Barbara Counties. A Captain at the Santa Barbara Presidio, Joše de la Guerra y Noriega, began purchasing large amounts of land in southern California in order to raise cattle; one of

his acquisitions was Rancho Simi in 1842 from the Pico family. Native Americans continued to work as laborers on ranchos during this period. With California gaining statehood in 1850 and the advent of the American Period, farming and more intensive land uses steadily replaced cattle stock ranching. Contrary to the romanticized perception of the Rancho Period, ranching life was arduous and unpredictable and much more complex than what has been portrayed in film and literature. Cattle ranching was substantially curtailed by a prolonged drought in the 1860s causing rancheros to lose their lands or being compelled to sell to the growing American population. As a result, Rancho Simi, was again sold in 1858, shortly after de la Guerra's death, to the Philadelphia and California Petroleum Company owned by the Pennsylvania Railroad. When no significant amount of oil was discovered, the land was sold once again to the Simi Land and Water Company in 1887.

The sale of Rancho Simi to the Philadelphia and California Petroleum Company marked the arrival of the first Americans into the area bringing small residential communities, railroad depot sometime in the late ninetieth century, and the first post office in 1900. Soon after completion of the 7,369 foot tunnel through the Santa Susana Mountains in 1904, the town of Moorpark began to grow steadily. The town boasted a stop on the Southern Pacific Railroad, for which the aforementioned tunnel was built; the railroad depot continued until 1965. Robert Poindexter, secretary of the Simi Land and Water Company, was instrumental in the annexing of the town of Moorpark in 1887 and is responsible for having both plotted and mapped the town. Just south of the Project APE exists what is considered "Old Town Moorpark" along High Street and is considered the historic center of the city. Further south are the Peach Hill and Mountain Meadow neighborhoods where a vast majority of the more recent residential areas of Moorpark exist.

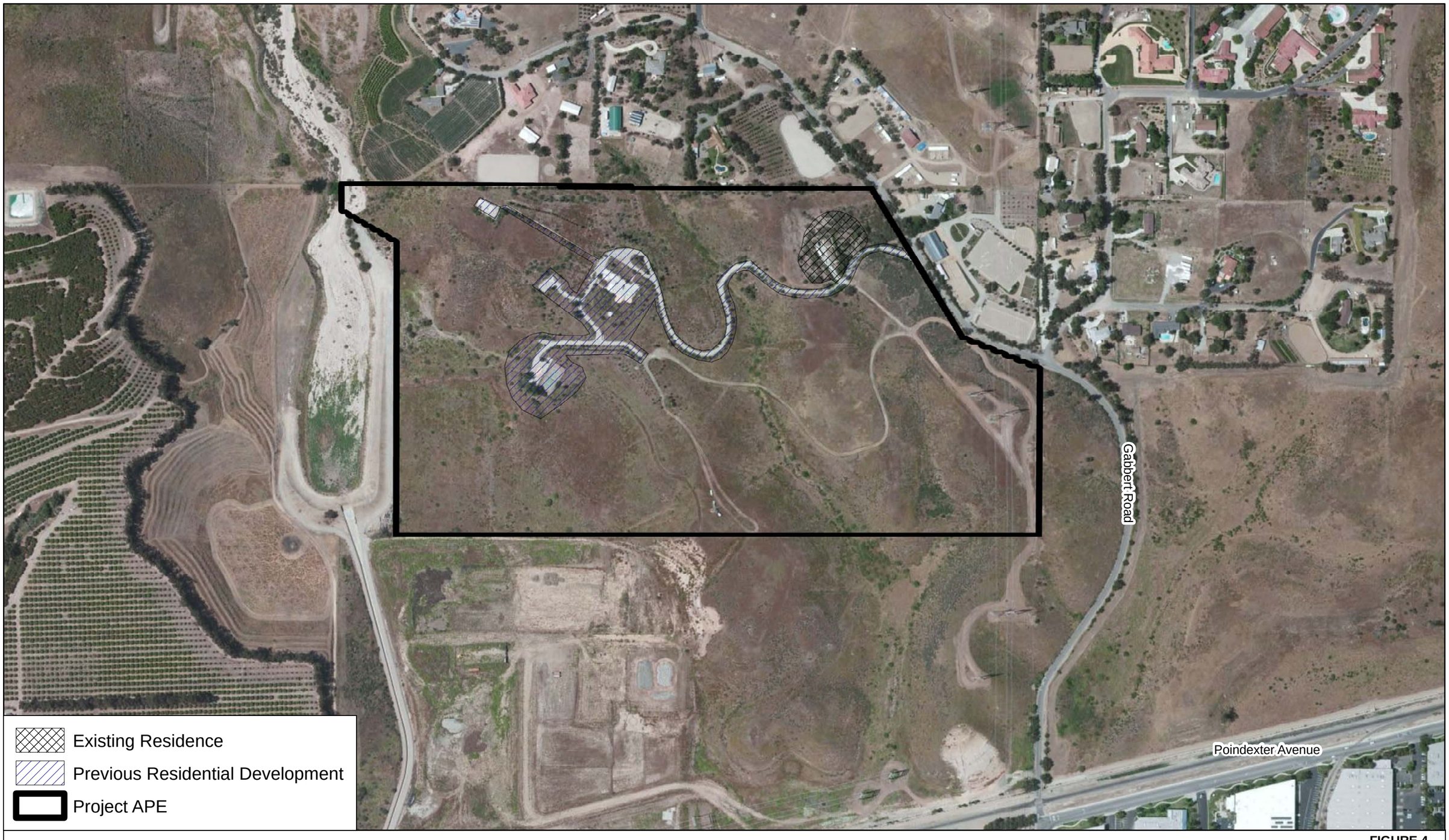
Change to the vicinity in which the project area is situated came relatively slow despite the consistent growth experienced in other areas of Moorpark allowing it to remain relatively undeveloped land until now. Since statehood in 1850, major forces of regional change during the last 150 years have been railroads, maritime shipping, agribusiness concerns, the oil industry, and the military.

5.0 FIELD METHODS

The APE incorporates all 67.96 acres of the proposed Project site. An intensive archaeological survey of the proposed Moorpark 2 APE was completed on January 23, 2015 by Heather McDaniel, RPA, and Lucas Nichols, B.A., Dudek Staff Archaeologist. All exposed ground surfaces were walked in 8-meter (25-foot) parallel transects where structural obstructions such as buildings, pavement and remnant foundations were not present. The proposed APE consists of mainly undeveloped land; a dirt road traversed the property and accessed remote areas and high-power utility lines located in the southeastern corner of the property (see Figure 4 on following page). Areas of previous residential development located in the northern-central portion and the northwestern corner of the property covered approximately 6 acres and included:

- a total of four cement residential structure foundations adjacent to a tennis court, partially filled swimming pool, ornamental water fountain, numerous paved and bordered/graveled walk ways, and sections of landscaping;
- a paved driveway running from west to east ending at the remnants of a large residential compound (primary residence) located in the center of the property;
- one small residential compound (possibly service quarters) located in the northwestern corner of the property;
- one large storage shed, and
- a graded depression (possibly a reservoir) near the southern-central APE boundary.

Project topography includes gently sloping to moderately sloping alluvial fans orientated from northwest to southeast throughout almost all the property. The southwestern corner is relatively flat, and one-seasonal (non-blue line) drainage extends northwest to southeast through the property. The natural vegetation is characterized as a mixed chaparral community (mainly coastal sage with scattered areas of hard chaparral), with a majority of the property being covered in annual grasses and forbs, especially among the higher elevations to the north and southeast and minimal riparian vegetation along the seasonal drainage. This variance in ground vegetation presented a challenge concerning ground surface visibility; for



SOURCE: Bing and Official County of Ventura Parcel Layer

APN: 511-0-190-285 & 511-0-190-305 TOTAL ACREAGE: 67.96

DUDEK

FIGURE 4

Aerial Map of Area of Potential Effect

Moorpark 2 Archaeological Investigation

instance, in sloped areas covered in annual grasses the visibility was poor (0-30%), whereas the flat terrain possessing minimal chaparral the visibility was excellent (80-100%). In areas of relatively poor ground surface visibility (0-30%), intervals between transects were reduced, ground scrapes were performed to periodically clear away non-native vegetation, and rocks were intensively observed for signs of human modification. The seasonal drainage was dry at the time of the survey. The drainage banks extending between 2 and 4 feet in height were clear of vegetation, providing excellent surface visibility (100 percent). They were examined for any evidence of cultural resources that may have been exposed due to wind and water erosion. Soils observed in the proposed APE were light-gray to dark-gray, silty-clay loam extending from the surface to at least 48 inches, as identified on the eroded drainage banks, generally consistent with the Mocho loam and Sorrento loam designations (USDA/SCS 1970).

No prehistoric or historic cultural materials were identified during the survey. Evidence of relatively recent refuse disposal was identified along the dirt access road including large automobile parts, home appliances, furniture, lumber, landscaping items, and metal implements. All of these items appeared to be no less than 20 to 30 years old.

Given the generally good ground surface visibility in portions of the Project APE and the strategies employed to increase visibility where vegetation was denser, the results of this intensive archaeological survey are considered very reliable.

6.0 STUDY FINDINGS AND CONCLUSIONS

Based on the lack of evidence of any cultural resources within the proposed Moorpark 2 APE, the generally good ground surface visibility, and the obvious signs of previous disturbance in areas of previous residential development (listed in section 5.0 and illustrated in Figure 4), the current intensive archaeological surface survey results are considered very reliable. Due to the absence of any prehistoric or historic remains identified during the survey as well as by two previous investigations, both overlapping along the northern property boundary of the Moorpark 2 project, and the extremely low distribution of cultural resources within the 0.5 mile radius of the Project APE, the potential for prehistoric and/or historic archaeological resources within the proposed project site is considered low.

7.0 RECOMMMENDATIONS

As no potentially significant resources as defined by CEQA Guidelines were identified within the proposed Moorpark 2 project site, future development within the proposed project site would not have the potential to result in a significant impact on cultural resources as defined by CEQA Guidelines Section 15064.5(c)(4). As a result, no mitigation measures are required. In the highly unlikely event that isolated cultural resources are encountered during future excavations, a qualified archaeologist should be notified immediately to assess the significance of the find. This standard discovery process would ensure that the potential for impacts to cultural resources during project construction activities would remain less than significant.

8.0 REFERENCES

Arnold, J.E.

1987. Craft Specialization in the Prehistoric Channel Islands, California. *University of California Publications in Anthropology*, No. 18. Berkeley.

Bamforth, D.B.

1984. Analysis of Chipped Stone Artifacts. In *Archaeological Investigations on the San Antonio Terrace, Vandenberg Air Force Base, California, in Connection with MX Facilities Construction*. Chambers Consultants and Planners. Submitted to U.S. Army Corps of Engineers, Los Angeles District.

Bolton, Herbert.

1927. *Fray Juan Crespi: Missionary Explorer on the Pacific Coast, 1769-1774*. HathiTrust Digital Library. Pp. 267-268. Retrieved January 28 2015.

Erlandson, Jon M., and Roger Colten.

1991. Hunter-Gatherers of Early Holocene Coastal California. *Perspectives in California Archaeology, Volume I*. Edited by Jon M. Erlandson and Roger Colten. Institute of Archaeology, University of California, Los Angeles.

Glassow, M.A., with contributions by Jeanne E. Arnold, G.A. Batchelder, D.T. Fitzgerald, B. Glenn, D.A. Guthrie, D.L. Johnson, and P.L. Walker.

1990. *Archaeological Investigations on Vandenberg Air Force Base in Connection with the Development of Space Transportation System Facilities, Volume I*.

Heitzer, Robert F.

1969. History of Research. In *Handbook of North American Indians*, edited by Robert Heizer, pp.6-15. Smithsonian Institution, Washington D.C.

Johnson, John R.

1997. Chumash Indians in Simi Valley. In *Simi Valley: A Journey Through Time*, edited by Patricia Havens, pp. 8-9. Simi Valley Historical Society. Simi Valley, California.

King, Chester.

1990. *The Evolution of Chumash Society: A Comparative Study of Artifacts Used in Social System Maintenance in the Santa Barbara Channel Region before A.D. 1804*. Garland Publishing. New York, New York.

Kroeber, Alfred L.

1953. *Handbook of the Indians of California*. California Book Co. Ltd., Berkeley

Lopez, Robert.

1977. *An Archaeological Survey of 2,500 acres for a Proposed Oil Exploration Project by Neaves Petroleum Developments in the Vicinity of Mooprark, Ventura County, California*. Prepared for Legters Realty Company. Report on file at the South Central California Information Center (SCCIC #VN 00607).

Loyd, Ralph C.

2000. Liquifaction Report: Liquifaction Zones in the Moorpark 7.5-Minute Quadrangle, Ventura County, California. In *Seismic Hazard Evaluation of the Moorpark 7.5-Minute Quadrangle. Ventura County, California*. Open-file report for the Department of Conservation Division of Mines and Geology. Sacramento, California.

Rogers, David Banks. 1929. *Prehistoric Man of the Santa Barbara Coast*. Santa Barbara Museum of Natural History.

Singer, Clay A and John E. Atwood.

1991. *Cultural Resources Survey and Impact Assessment for the Parcel B of Lot 53 on Gabbert Road in the City of Moorpark, Ventura County, California*. Prepared for Rev. James Nelesen of Moorpark Lutheran Church. Report on file at the South Central California Information Center (SCCIC #VN 01059)

U.S. Dept. of Agriculture. Soil Conservation Service.

1970. *Guide for soil map compilation on photobase map sheets*. U.S. Govt. Print. Off. Washington, DC.

APPENDIX A

Cultural Resources Records Search

(CONFIDENTIAL, BOUND SEPARATELY)

APPENDIX B

Native American Consultation

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

January 12, 2015

Heather McDaniel
Dudek
621 Chapala Street
Santa Barbara, CA 93101

Sent by Fax: (805) 963-2074
Number of Pages: 4

Re: Moorpark 2 Archaeological Investigation, Ventura County.

Dear Ms. McDaniel,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file 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.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. 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 or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Government Program Analyst

Native American Contacts
Ventura County
January 8, 2015

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Chief Mark Steven Vigil
1030 Ritchie Road
Grover Beach CA 93433
(805) 481-2461
(805) 474-4729 Fax
Chumash

Santa Ynez Band of Mission Indians
Vincent Armenta, Chairperson
P.O. Box 517
Santa Ynez , CA 93460
varmenta@santaynezchumash.
(805) 688-7997
(805) 686-9578 Fax
Chumash

Owl Clan
Qun-tan Shup
48825 Sapaque Road
Bradley , CA 93426
mupaka@gmail.com
(805) 472-9536 Voice/Fax
(805) 835-2382 Cell
Chumash

Barbareno/Ventureno Band of Mission Indians
Julie Lynn Tumamait-Stennslie, Chair
365 North Poli Ave
Ojai , CA 93023
jtumamait@hotmail.com
(805) 646-6214
Chumash

Stephen William Miller
189 Cartagena
Camarillo , CA 93010
(805) 484-2439
Chumash

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the 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 locative Americans with regard to cultural resources for the proposed Moorpark 2 Archaeological Investigation, Ventura County.

Native American Contacts
Ventura County
January 8, 2015

Santa Ynez Tribal Elders Council
Adelina Alva-Padilla, Chair Woman
P.O. Box 365 Chumash
Santa Ynez , CA 93460
elders@santaynezchumash.org
(805) 688-8446
(805) 693-1768 Fax

Richard Angulo
P.O. Box 935 Chumash
Salome , AZ 85348

Randy Guzman - Folkes
4676 Walnut Avenue Chumash
Simi Valley , CA 93063 Fernandeño
ndnRandy@yahoo.com Tataviam
(805) 905-1675 Cell Shoshone Paiute
(805) 520-5915 Fax Yaqui

Santa Ynez Band of Mission Indians
Tribal Admin/Counsel Sam Cohen
P.O. Box 517 Chumash
Santa Ynez , CA 93460
info@santaynezchumash.org
(805) 688-7997
(805) 686-9578 Fax

Coastal Band of the Chumash Nation
Michael Cordero, Chairperson
P.O. Box 4464 Chumash
Santa Barbara CA 93140
CbcnTRIBALCHAIR@gmail.com
(805) 689-9528

Carol A. Pulido
165 Mountainview Street Chumash
Oak View , CA 93022

Charles S. Parra
P.O. Box 6612 Chumash
Oxnard , CA 93031
(805) 340-3134 Cell
(805) 488-0481 Home

Melissa M. Parra-Hernandez
119 North Balsam Street Chumash
Oxnard , CA 93030
envyy36@yahoo.com
(805) 983-7964
(805) 248-8463 Cell

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This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed Moorpark 2 Archaeological Investigation, Ventura County.

Native American Contacts
Ventura County
January 8, 2015

Frank Arredondo
P.O. Box 161 Chumash
Santa Barbara CA 93102
ksen_sku_mu@yahoo.com

Coastal Band of the Chumash Nation
Janet Darlene Garcia
P.O. Box 4464 Chumash
Santa Barbara CA 93140
(805) 689-9528

Santa Ynez Tribal Elders Council
Freddie Romero, Cultural Preservation Conslnt
P.O. Box 365 Chumash
Santa Ynez , CA 93460
freddyromero1959@yahoo.com
(805) 688-7997, Ext 37

Coastal Band of the Chumash Nation
Crystal Baker
P.O. Box 723 Chumash
Atascadero , CA 93423
(805) 466-8406

Barbareno/Ventureno Band of Mission Indians
Kathleen Pappo
2762 Vista Mesa Drive Chumash
Rancho Pales Verdes CA 90275
(310) 831-5295

PeuYoKo Perez
5501Stanford Street Chumash
Ventura , CA 93003
grndowl4U@yahoo.com
(805) 231 -0229 Cell

Barbareno/Ventureno Band of Mission Indians
Raudel Joe Banuelos, Jr.
331 Mira Flores Court Chumash
Camarillo , CA 93012
(805) 987-5314

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the 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 locative Americans with regard to cultural resources for the proposed Moorpark 2 Archaeological Investigation, Ventura County.

APPENDIX B
The Chambers Comment Matrix with Envicom Responses

Comments for North Ranch Residential Development Peer Review

Comment No.	Report Type	Page	Comment: 1	Applicant Response: 1	Comment: 2
1	Cultural Resources	General	The report does not discuss the earier settlement of the project site denoted on Figure 4. The geotechnical report states that it dates to the 1940's thereby increasing the likelihood of archaeological deposits. There is also no discussion or evaluation of the historic-era development of the property. This historic site needs to be properly documented and evaluated if impacts cannot be avoided.	Envicom agrees that the Dudek report does not address the history of the Project property. Envicom will provide more information on the historic development of the property in an addendum to the Dudek report.	Comment addressed language added to help clarify some confusion around the potential presence of a building within the Project area. However, the Project boundaries are not illustrated on addendum's corresponding figures, which then are unable to support changes to the narrative. The early 15' USGS maps (1903 Camulos, and 1921 Piru) are not accurately georeferenced and must be adjusted approximately 190 m east, and 170 m north. With this correction the spur road trending southeasterly from the drainage road, later becoming Gabbert Road, and the associated buildings on the map, are properly located outside the Project area. This would be most clear with a Project area boundary located on the Figure maps and aerials.
2		General	The geotechnical report recommends removal of all alluvial sediments to a minimum depth of 10 feet - down to as much as 70 feet below the ground surface. The alluvial sediments were depositing during the Holocene and could have covered over archaeological deposits.	Envicom recommends adding spot-check monitoring as a regulatory compliance recommendation to address this concern.	Comment addressed
			Since the report was completed in 2015 (and the records search was completed in 2014), an updated records search should be conducted at the least. In addition, a cultural survey of the site would assist in confirming the results of the 2015 study, and to ensure that no new resources are visible. We noted that 68.04 acres were surveyed in 2015, so we'll want to make sure the area of disturbance is the same.	SCCIC record search completed by Envicom 2021 at a 0.25-mile extent to determine whether new resources were located on or near the Project. No new findings. A new intensive pedestrian site survey completed by Envicom 2021 with no new resources identified. The disturbance area is confirmed to be the same, with minor variations.	Comment addressed
3	Cultural Resources Archaeological Survey Report	5	One previously recorded site, P-56-100196, was located during the record search, however there is no description of the site. Please provide more detail on the site.	Envicom will provide more information on this site in the addendum report.	Comment addressed
			Under recommendations, it is stated that no mitigation measures are required due to the low likelihood of cultural resources on site. Based on the updated records search, we may want to reconsider if mitigation measures may make sense.	Based on the negative findings of the new record search and site survey, Envicom does not recommend new mitigation measures/regulatory compliance recommendations. However, archaeological spot-check monitoring is recommended to address reviewer concerns about potential buried cultural horizons under alluvial material.	Comment addressed; However, it is recommended that "senior qualified archaeologist" be replaced with Principal Investigator, or simply qualified archaeologist, as there is no metric presented to identify what a "senior" archaeologist is or how one is qualified as such. A qualified archaeologist may be determined by City requirements, County regs, Secretary of the Interior Professional Qualification Standards, or some other metric.

APPENDIX C
The 2021 SCCIC List of Project and Study Area Reports

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
VN-00213		1979	Lopez, Robert	Archaeological Assessment for Pm-3192 Moorpark, Ventura County California.		
VN-00572		1988	Dames and Moore	Phase 1 Cultural Resources Survey Fiber Optic Cable Project, Burbank to Santa Barbara, California for Us Sprint Communications Company	Dames & Moore	56-000027, 56-000196, 56-000202, 56-000240, 56-000241, 56-000341, 56-000342, 56-000550, 56-000643, 56-000644, 56-000655, 56-000729, 56-000789, 56-000895, 56-000896, 56-000916, 56-000917, 56-000918
VN-00575		1988	Lopez, Robert	An Archaeological Reconnaissance of the Areas Involved in the Proposed Swepi Well Locations and Pipeline Routes Oxnard Plain, Ventura County, California	Robert Lopez, Archaeological Consultant	56-000631, 56-000665, 56-000666
VN-00607		1977	Lopez, Robert	An Archaeological Survey of 2500 Acres for a Proposed Oil Exploration Project by Neaves Petroleum Developments in the Vicinity of Moorpark, Ventura County, California	Robert Lopez, Archaeological Consultant	
VN-01059		1991	Singer, Clay A. and John E. Atwood	Cultural Resources Survey and Impact Assessment for Parcel B of Lot 53 on Gabbert Road in the City of Moorpark, Ventura County, California.	C.A. Singer & Associates, Inc.	
VN-01153		1991	Peak and Associates, Inc.	Class 3 Cultural Resource Assessment of the Proposed Carpinteria and Southern Reroutes, Santa Barbara, Ventura, and Los Angeles Counties, California	Peak & Associates	56-001089
VN-01265		1992	Reed, L.W.	Consolidated Report: Cultural Resources Studies for the Proposed Pacific Pipeline Project	Peak and Associates	19-000007, 19-000021, 19-000034, 19-000089, 19-000251, 19-000357, 19-000385, 19-000389, 19-000390, 19-000407, 19-000409, 19-000668, 19-000781, 19-000830, 19-000887, 19-000901, 19-000963, 19-001097, 19-001112, 19-001124, 19-001575, 19-001620
VN-01329		1994	Whitley, David S. and Joseph M. Simon	Phase 1 Archaeological Survey and Cultural Resources Assessment for the Levy Specific Plan Study Area, Ventura County, California	W & S Consultants	
VN-01589		1977	Lopez, Robert	Archaeological Survey of a Proposed New Well Site Within The Area of the Winchester Development in the Vicinity of Moorpark, Ventura County, Ca.	Rober Lopez	
VN-02314		2003	Whitley, David S. and Joseph M. Simon	Phase I Archaeological Survey of Hitch Ranch, Moorpark, Ventura County, California	W & S Consultants	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
VN-02386		2006	Jordon, Stacey C. and Patterson, Joshua D.	Archaeological Survery Report for the Southern California Edison Company Replacement of 71 Deteriorated Poles on the Patricia 16kv, Thacher 16kv, Matilda 16kv, Tico 16kv, Seaquit 4kv, Maguire 16kv, Galahad 16kv, Brennan B4 16kvm Strathern 16kv, Gabbert B2	Mooney, Jones & Stokes	19-001041, 19-001402, 19-002075, 19-002076, 19-120027, 56-000137, 56-000140, 56-000192, 56-000193, 56-001109, 56-001265, 56-001266, 56-100048, 56-100049, 56-152750
VN-02390		2006	Jordan, Stacey C. and Patterson, Joshua D.	Archaeological Survey Report for the Southern California Edison Company Replacement of 30 Deteriorated Poles Private and Public Inholdings, Ventura, Los Angeles, and Santa Barbara Counties, California	Mooney, Jones & Stokes	19-000729, 19-000730, 19-000731, 19-001266, 56-000141, 56-000550, 56-000562, 56-000901, 56-000902, 56-000980, 56-001110, 56-001124, 56-001125
VN-02504		2006	Arrington, Cindy and Nancy Sikes	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project State of California: Volumes I and Ii	SWCA Environmental Consultants, Inc.	
VN-02617		2007	Schmidt, James J.	Archaeological Survey Report, Southern California Edison, Moorpark-newbury 66kv New Source Line Project, Wo 4605-2104: Jo 6042-0468	Compass Rose Archaeological, Inc.	56-000449, 56-000454, 56-001031, 56-001032, 56-001036
VN-03094		2002	Foster, John A.	Historic Resource Evaluation Report- Mason Avenue At-Grade Crossing and Safety Improvements Project, Los Angeles City, California	Greenwood and Associates	
VN-03263		2015	Stone, David and Heather McDaniel	ARCHAEOLOGICAL SURVEY REPORT MOORPARK - 2 GABBERT ROAD, MOORPARK VENTURA COUNTY, CALIFORNIA	DUDEK	

APPENDIX D
The 2021 SCCIC and NAHC Request Letters, and the NAHC response letter

California Historical Resources Information System

CHRIS Data Request Form

ACCESS AND USE AGREEMENT NO.: _____ **IC FILE NO.:** _____

To: Information Center

Print Name: Samantha Renta Date: 5/26/21

Affiliation: Envicom Corporation

Address: 4165 E. Thousand Oaks Blvd

City: Westlake Village State: CA Zip: 91362

Phone: 818-879-4700 Fax: _____ Email: srenta@envicomcorporation.com

Billing Address (if different than above): _____

Billing Email: wbischoff@envicomcorporation.com Billing Phone: 818-879-4700

Project Name / Reference: Moorpark 67/North Ranch Project, #2021-112-01

Project Street Address: _____

County or Counties: Ventura

Township/Range/UTMs: T 2N, R 20W, 34.17'19.99"N, 118.54'22.27"W

USGS 7.5' Quad(s): Moorpark

PRIORITY RESPONSE (Additional Fee): yes ☐ / no ☐

TOTAL FEE NOT TO EXCEED: $_____
(If blank, the Information Center will contact you if the fee is expected to exceed $1,000.00)

Special Instructions:

Information Center Use Only

Date of CHRIS Data Provided for this Request: _____

Confidential Data Included in Response: yes ☐ / no ☐

Notes: _____

CHRIS Data Request Form

Mark the request form as needed. Attach a PDF of your project area (with the radius if applicable) mapped on a 7.5' USGS topographic quadrangle to scale 1:24000 ratio 1:1 neither enlarged nor reduced and include a shapefile of your project area, if available. Shapefiles are the current CHRIS standard for submitting digital spatial data for your project area or radius. **Check with the appropriate IC for current availability of digital data products.**

- Documents will be provided in PDF format. Paper copies will only be provided if PDFs are not available at the time of the request or under specially arranged circumstances.
- Location information will be provided as a digital map product (Custom Maps or GIS data) unless the area has not yet been digitized. In such circumstances, the IC may provide hand drawn maps.
- In addition to the $150/hr. staff time fee, client will be charged the Custom Map fee when GIS is required to complete the request [e.g., a map printout or map image/PDF is requested and no GIS Data is requested, or an electronic product is requested (derived from GIS data) but no mapping is requested].

For product fees, see the CHRIS IC Fee Structure on the OHP website.

1. Map Format Choice:

Select One: Custom GIS Maps ☐ GIS Data ☑ Custom GIS Maps **and** GIS Data ☐ No Maps ☐

Any selection below left unmarked will be considered a "no. "

Location Information:

	Within project area	Within 0.25 mi. radius
ARCHAEOLOGICAL Resource Locations[1]	yes ☑ / no ☐	yes ☑ / no ☐
NON-ARCHAEOLOGICAL Resource Locations	yes ☑ / no ☐	yes ☑ / no ☐
Report Locations[1]	yes ☑ / no ☐	yes ☑ / no ☐
"Other" Report Locations[2]	yes ☐ / no ☐	yes ☐ / no ☐

3. Database Information:
(contact the IC for product examples, or visit the SSJVIC website for examples)

	Within project area	Within 0.25 mi. radius
ARCHAEOLOGICAL Resource Database[1]		
List (PDF format)	yes ☑ / no ☐	yes ☑ / no ☐
Detail (PDF format)	yes ☑ / no ☐	yes ☑ / no ☐
Excel Spreadsheet	yes ☐ / no ☑	yes ☐ / no ☑
NON-ARCHAEOLOGICAL Resource Database		
List (PDF format)	yes ☑ / no ☐	yes ☐ / no ☑
Detail (PDF format)	yes ☑ / no ☐	yes ☐ / no ☑
Excel Spreadsheet	yes ☐ / no ☑	yes ☐ / no ☐
Report Database[1]		
List (PDF format)	yes ☑ / no ☐	yes ☑ / no ☐
Detail (PDF format)	yes ☑ / no ☐	yes ☑ / no ☐
Excel Spreadsheet	yes ☐ / no ☑	yes ☐ / no ☑
Include "Other" Reports [2]	yes ☐ / no ☑	yes ☐ / no ☑

4. Document PDFs (paper copy only upon request)**:**

	Within project area	Within 0.25 mi. radius
ARCHAEOLOGICAL Resource Records[1]	yes ☑ / no ☐	yes ☐ / no ☑
NON-ARCHAEOLOGICAL Resource Records	yes ☑ / no ☐	yes ☐ / no ☑
Reports[1]	yes ☑ / no ☐	yes ☐ / no ☑
"Other" Reports[2]	yes ☑ / no ☐	yes ☐ / no ☑

CHRIS Data Request Form

5. Eligibility Listings and Documentation:

	Within project area	Within 0.25 mi. radius
OHP Built Environment Resources Directory[3]:		
Directory listing only (Excel format)	yes ☐ / no ☑	yes ☐ / no ☑
Associated documentation[4]	yes ☐ / no ☑	yes ☐ / no ☑
OHP Archaeological Resources Directory[1,5]:		
Directory listing only (Excel format)	yes ☑ / no ☐	yes ☐ / no ☑
Associated documentation[4]	yes ☑ / no ☐	yes ☐ / no ☑
***California Inventory of Historic Resources* (1976):**		
Directory listing only (PDF format)	yes ☑ / no ☐	yes ☑ / no ☐
Associated documentation[4]	yes ☑ / no ☐	yes ☑ / no ☐

6. Additional Information:

The following sources of information may be available through the Information Center. However, several of these sources are now available on the OHP website and can be accessed directly. The Office of Historic Preservation makes no guarantees about the availability, completeness, or accuracy of the information provided through these sources. Indicate below if the Information Center should review and provide documentation (if available) of any of the following sources as part of this request.

Caltrans Bridge Survey	yes ☑ / no ☐
Ethnographic Information	yes ☑ / no ☐
Historical Literature	yes ☑ / no ☐
Historical Maps	yes ☐ / no ☑
Local Inventories	yes ☑ / no ☐
GLO and/or Rancho Plat Maps	yes ☑ / no ☐
Shipwreck Inventory	yes ☐ / no ☑
Soil Survey Maps	yes ☐ / no ☑

---

[1] In order to receive archaeological information, requestor must meet qualifications as specified in Section III of the current version of the California Historical Resources Information System Information Center Rules of Operation Manual and be identified as an Authorized User or Conditional User under an active CHRIS Access and Use Agreement.

[2] "Other" Reports GIS layer consists of report study areas for which the report content is almost entirely non-fieldwork related (e.g., local/regional history, or overview) and/or for which the presentation of the study area boundary may or may not add value to a record search.

[3] Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Includes, but not limited to, information regarding National Register of Historic Places, California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and historic building surveys. Previously known as the HRI and then as the HPD, it is now known as the Built Environment Resources Directory (BERD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.

[4] Associated documentation will vary by resource. Contact the IC for further details.

[5] Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Previously known as the Archaeological Determinations of Eligibility, now it is known as the Archaeological Resources Directory (ARD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.

May 26, 2021

Native American Heritage Commission
1550 Harbor Boulevard, Room 100
West Sacramento, CA 95691

Subj: Cultural Resources Phase I Assessment for Moorpark 67/North Ranch Project
(Envicom Project #2021-112-01)

To Whom It May Concern,

Envicom Corporation (Envicom) is requesting a record review of the Native American Heritage Commission (NAHC) records of cultural resources for the Project site, plus a **0.25-mile study area**. We also request a list of Tribal Group representatives for the area in the event we need to contact their offices. The Project site is located at:

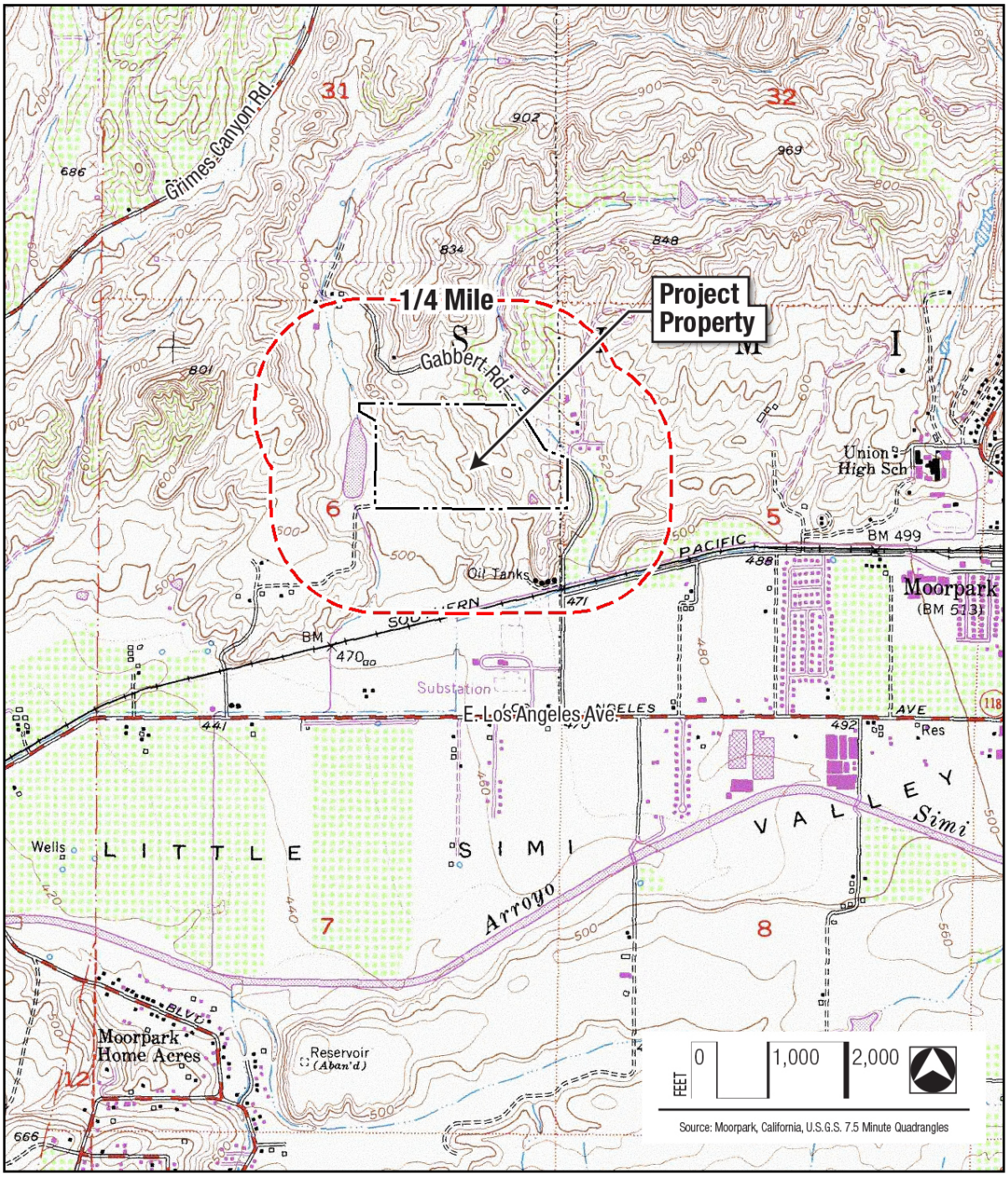
United States Geological Survey 7.5' Quadrangles: Moorpark
Township: 2 North Range: 20 West
Latitude: 34° 17'19.99"North Longitude: 118°54'22.27"West
County: Ventura

Envicom appreciates the NAHC's help with this request. For correspondence or questions regarding this Project, please contact Wayne Bischoff at 818-879-4700 (wbischoff@envicomcorporation.com).

Sincerely,

Wayne Bischoff
Director of Cultural Resources

Attachment:
Project vicinity map on 1:24,000 topographic map


1/4 Mile
Project Property
Gabbert Rd
Grimes Canyon Rd
E. Los Angeles Ave.
Moorpark
(BM 513)
Union High Sch
BM 499
Oil Tanks
Substation
BM 470
PACIFIC
SOUTHERN
Wells
LITTLE SIMI
VALLEY
Simi
Arroyo
Moorpark Home Acres
Reservoir (Aban'd)
31
32
6
5
7
8
12
FEET
0
1,000
2,000
Source: Moorpark, California, U.S.G.S. 7.5 Minute Quadrangles

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

June 10, 2021

Wayne Bischoff, Director of Cultural Resources
Envicom Corp.

Via Email to: wbischoff@envicomcorporation.com

Re: Cultural Resources Phase I Assessment for Moorpark 67/North Ranch (Envicom Project # 2021-112-01) Project, Ventura County

Dear Dr. Bischoff:

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: Sarah.Fonseca@nahc.ca.gov.

Sincerely,

Sarah Fonseca
Cultural Resources Analyst

Attachment

APPENDIX E
Resume of Dr. Wayne Bischoff (Envicom Principal)

WAYNE BISCHOFF, PH.D.

Professional Resume
Registered Professional Archaeologist (RPA #32450562)
HAZWOPER 24-hour Certification

Education

2000 - Ph.D. in Anthropology, Michigan State University, East Lansing, MI. Dr. Bischoff is proficient in prehistoric and historic archaeology; lithic, groundstone, faunal, and marine shell analysis; historic ceramic and glass analysis; feature analysis, and human osteology.

1991 - Bachelor of Arts (Anthropology, Education, and U.S. History), Purdue University, West Lafayette, IN.

Professional Summary

- **Over 25 Years' Experience Managing Projects.** Projects completed under the California Environmental Quality Act (CEQA), Section 106 and 110 of the National Historic Preservation Act (NHPA), the National Environmental Protection Act (NEPA), as well as numerous other federal and state laws and permit regulations regarding cultural resources.
- **Successful Performance History.** Dr. Bischoff has managed up to 60 professional staff in multiple offices covering several states. He has completed challenged projects, developed successful cultural resource teams, and is experienced with budgeting and scoping projects, successful proposal writing, client and agency relationships, and large project management.
- **Numerous Market Sectors.** Dr. Bischoff has completed projects involving solar, wind, geothermal, and electric transmission lines; defense, public works, education, residential, and commercial development; telecommunication, mining, transportation, parks and trails, and water resources; and storm and sewer lines, industrial sites, and railroads.
- **Planning and Compliance Document Author.** Dr. Bischoff has been an author on Environmental Impact Reports (EIR), Mitigated Negative Declarations (MND), Environmental Impact Statements (EIS), Environmental Assessments (EA), Programmatic Agreements (PA), Memorandum of Agreements (MOA), Initial Studies (IS), ACOE permits, and Memorandum of Understanding (MOU).
- **Extensive Experience with Federal, State, County, and Local Agencies.** SHPOs, FHA, NPS, and CALTRANS. Multiple Bureau of Land Management districts (Barstow, Bishop, Moreno Valley, Needles, El Centro, Nevada). The Army and National Guard, Marine Corps, Navy, and Air Force. The GSA, the USDA, Forest Service, California Coastal Commission, and several USCOE districts, LACDPW, LADWP, and many regional water districts. Fish and Wildlife, the CPUC, and the Counties of Los Angeles, San Bernardino, Riverside, Ventura, Imperial, Kern, Santa Clara, Inyo, Mono, Santa Barbara, San Diego, and Orange. Many port authorities, state agencies, and local governments.
- **Consultation and Communication with Many Tribal Groups.** Tribal groups include the Chumash, Gabrielino, Tongva, Washo, Piute, Quechan, Cahuilla, Tataviam, San Manuel, Morongo, and Luiseno. ***I am a professional expert in AB-52 compliance and Tribal consultation.***
- **Over 500 Cultural Resource Projects Completed in Eleven States**. Including hundreds of Phase I Surveys, Phase II Evaluations, Phase III Data Recoveries, and Monitoring Projects. I have authored cultural resource Monitoring Plans, Evaluation Plans, Data Recovery Plans, PRIMPs, Construction Phase Management Plans, WEAPs, Feasibility Studies, and National Register and National Landmark nominations. Reports have included Cultural, Paleontological, and Built Environment resources.

- **Historic Architecture Project Management.** Including built environment surveys and inventories, building assessments and evaluations, HABS/HAER mitigation reports, landscape studies, and indirect effects reports for residential and commercial buildings, roads, canals, and power lines.

Professional Experience

Cultural Resources Director, Envicom Inc., Westlake Village, CA
February, 2014 – Current

As Cultural Resources Director at Envicom, I complete all cultural resource, archaeological, and paleontological phase I studies, all cultural resource evaluations and data recoveries, Native American consultation and ethnographic reports, authored cultural resource sections of permitting and planning documents including MNDs and EIRs, and produced NEPA/Section 106 cultural resource and built environment assessments. Project area includes Ventura, Santa Barbara, Los Angles, Riverside, Kern, Imperial, San Diego, and San Bernardino Counties. I oversee cultural staff and work with planning teams on larger projects. I am also responsible for business development and project management tasks. I write proposals, oversee quality control, develop agency relationships, write technical reports, and manage and develop project budgets.

Projects:

- **Archaeological and Paleontological Monitoring for "The Angel" Project, Los Angeles County, CA.** Principal and Project Manager for this archaeological and paleontological monitoring project. (Upcoming).
- **Phase I Survey of the Pepperdine University Alumni Park Development Project, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this university development project, which included an SCCIC, NAHC, and NHM record searches and a site visit. (Upcoming).
- **Archaeological and Paleontological Monitoring of the Twin Lakes Water Tank Construction for the Las Virgenes Water District, Porter Ranch, CA.** Principal and Project Manager for this archaeological and paleontological monitoring project. (Upcoming).
- **Paleontological Monitoring of 15353 Camarillo, Sherman Oaks, CA (with Samantha Renta).** Principal and Project Manager for this paleontological monitoring project. (Upcoming).
- **Paleontological Monitoring of the Citrus Commons Project, Sherman Oaks, CA (with Samantha Renta).** Principal and Project Manager for this paleontological monitoring project. (Upcoming).
- **1413 Michigan Avenue, NEPA Environmental Assessment (EA) for a HUD housing project located in Santa Monica, California.** Cultural Resource consultant for the project, which involved a local historic landmark – the Nikkei Hall – and authoring a Negative Impact letter for SHPO. (October 2021 – Current).
- **Archaeological Monitoring for the Sagebrush Battery Storage Project, Terra Gen Windfarms, Kern County, CA.** Principal and Project Manager for this monitoring project, which included a final monitoring report. (September 2021 – Current).
- **Phase I Survey of a Parcel at 40th Street and Avenue L in Lancaster, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this residential development project, which included an SCCIC, NAHC, and NHM record searches and a site visit. Additional tasks included a paleontological survey of the property (September 2021 – Current).

- **Phase I Survey of a Parcel at 30th Street and Avenue I in Lancaster, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this residential development project, which included an SCCIC, NAHC, and NHM record searches and a site visit. Additional tasks included a paleontological survey of the property and the recordation of a large 1930s/1940s residential archaeological site (September 2021 – Current).
- **Phase I Survey of 11480 Sulphur Mountain Road, Unincorporated Ventura County, CA.** Principal and Project Manager for this commercial development project, which included a SCCIC and NAHC record search and a site visit (September 2021 – Current).
- **Phase I Survey of 710 West Harvard, Santa Paula, Ventura County, CA.** This is a NEPA/Section 106 project. Principal and Project Manager for this mixed-use development project, which included an SCCIC and NAHC record searches and a site visit. (August 2021 – Current).
- **Phase I Survey of the Barrera Hacienda Heights Residential Project, Unincorporated Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this 12-acre residential development project, which included an SCCIC, NAHC, and NHM record searches and a site visit. (August 2021 – Current).
- **Phase I Survey of 325 and 391 Hampshire, Thousand Oaks, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this mixed-use development project, which included an SCCIC, NAHC, and NHM record searches and a site visit. (August 2021 – Current).
- **Phase I Survey of the Bixby Villas Development Project, Long Beach, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this residential development project, which included an SCCIC and NAHC record searches and a site visit. (July 2021 – Current).
- **Archaeological and Paleontological Monitoring for the San Pedro High School Upgrade Project for LAUSD, Long Beach, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this large archaeological and paleontological monitoring project. (June 2021 – Current).
- **Oakmont Senior Living Historic and Archaeological Display Production, Agoura Hills, Los Angeles County, CA (with Samantha Renta).** Project Manager for this historical interpretation display project (October 2020 – Current).
- **Arts District Archaeological Monitoring Project, Los Angeles, CA.** Principal and Project Manager for this archaeological monitoring project. (October 2020 – Current).
- **Oakmont Senior Housing Archaeological, Paleontological, and Native American Monitoring Project, Agoura Hills, CA (with Samantha Renta).** Principal and Project Manager for this archaeological, paleontological, and Native American monitoring project. (January 2020 – Current).
- **Los Angeles Unified School District (LAUSD) Environmental On-Call for Archaeological and Paleontological tasks, Los Angeles County, CA.** Principal, Project Manager, and cultural resource task completion as needed. Envicom is one of three selected vendors for one year, with four potential renewable years in the contract. (February 2019 – Current).
- **Los Angeles Community College District Environmental On-Call (including cultural resources), Los Angeles County, CA.** Principal, Project Manager, and cultural resource consultant as needed. (February 2018 – Current).
- **Los Angeles Unified Schools Department (LAUSD) Environmental On-Call (including cultural resources), City of Los Angeles, Los Angeles County, CA.** Principal, Project Manager, and cultural resource consultant as needed. Envicom was one of 15 companies to be awarded this large on-call contract. (February 2017 – Current).

- **CA-LAN-320 Phased Evaluation Project, Agoura Hills, Los Angeles County, CA.** Principal and Project Manager for the phased evaluation (Phase II) of CA-LAN-320 in response to potential impacts from the construction of the Conrad N. Hilton Foundation Phase 2 Campus Building. The site is a prehistoric Chumash residential and ceremonial center of over 80-acres in size and that was used by prehistoric Native Americans from 300 B.C. to the late 1700s. Dozens of test units, hundreds of shovel test pits, surface collection, and surface feature mapping have been completed to date planned. (August 2015 – Current).
- **Phase I Survey of the Dorothy Drive Residential Development Project, Agoura Hills, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this 9-acre residential development project, which included an SCCIC, NHM, and NAHC record searches and a site visit. (August 2021 – September 2021).
- **Archaeological, Paleontological, and Native American Monitoring for the JPA/Las Virgenes Water District Solar Farm Expansion, Calabasas, CA.** Principal and Project Manager for this monitoring project. This project encountered a prehistoric lithic scatter at depth, which included lithic material, a point fragment, and groundstone artifacts. An older historic hearth was also discovered. The project concluded with a prehistoric site form and a small display at the Las Virgenes Water District headquarters (April 2020 – September 2021).
- **Phase I Survey of the Agoura Yard Development Project, Agoura Hills, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this mixed-use development project, which included an SCCIC and NAHC record searches and a site visit. (July 2021 – September 2021).
- **Cultural Resource Monitoring for the Oasis Windmill Farm Phase II, Kern County, CA (with Samantha Renta).** Project manager for the monitoring of impacts to cultural resources as part of the Oasis Windmill Farm Phase II upgrade. Project including updating numerous cultural resources and the recordation of one new prehistoric site with bedrock milling and other surface features (March 2021 – August 2021).
- **Archaeological Monitoring at the Sakioka Business Park, Oxnard, Ventura County, CA (with Samantha Renta).** Project Manager for this large archaeological monitoring project, which included the recordation of a significant early historic cultural resource (1860s through 1920s) and the processing of hundreds of older historic artifacts. (October 2020 – August 2021).
- **Ferro Ditch Biological and Archaeological Monitoring, County of Ventura Public Works Osteology, Somis, Ventura County, CA.** Principal Archaeologist and Project Osteologist for this public improvement project. This project also involved the field analysis of excavated bones as being non-human. (January 2021 – July 2021).
- **Phase I Survey of "The Malibu Club" Project, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this commercial development project, which included an SCCIC, NAHC, and NHM record searches and a site visit. (June 2021 – July 2021).
- **Updated Phase I Survey of the Moorpark 67 Residential Development Project, Moorpark, Ventura County, CA.** Principal and Project Manager for this 67-acre project, which included an SCCIC, NAHC, and NHM record searches and a site visit. (May 2021 – July 2021).
- **Review of Technical Documents, Cultural Resource Consultant for the City of Agoura Hills, and EIR Cultural Section Writing for "The Agoura Village Expansion" project, Agoura Hills, Los Angeles County, CA.** Professional review of project cultural resource documents and authoring of cultural resource section of MND for this large mixed-use project. The primary challenge is that the entire development is located on a CRHR-eligible prehistoric Native American cultural resource. (January 2018 – June 2021).

- **Phase I Survey of the Agoura Kanan Village Project; Additional Project Areas to be Impacted, Agoura Hills, Los Angeles County, CA**. Principal and Project Manager for this project, which involved the survey of additional project areas and the recordation and updating of two previously known prehistoric cultural resources. (April 2021 – May 2021).
- **Phase I Survey of 22825 West Roscoe, West Hills, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC and NAHC record searches and a site visit. (April 2021 – May 2021).
- **Phase I Survey of 23755 Newhall Avenue, Santa Clarita, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC and NAHC record searches and a site visit. The discovery of an older historic cultural resource also resulted in the recordation of a cultural resource on State of California DPR forms. A paleontological survey report was also completed by PaleoWest as per the NHM findings (March 2021 – May 2021).
- **Phase I Survey of a property on Giles Road, Lake Sherwood, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC and NHAC record search and a site visit. Exploration of all rock shelters and cache openings on the property for historic artifacts was part of this project. A pre-construction survey was also completed for the project. (July 2020 – May 2021).
- **Phase I Survey of 12772 San Fernando Road, Sylmar, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC and NAHC record searches and a site visit. (March 2021 – May 2021).
- **Phase I Survey of a large parcel located off of West Avenue I in the Antelope Valley, Lancaster, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC, NHM, and NAHC record searches and a site visit. The discovery of an older historic cultural resource also resulted in the recordation of a cultural resource on State of California DPR forms. A paleontological survey report was also completed by PaleoWest as per the NHM findings (March 2021 – April 2021).
- **Phase I Survey of a Large Agricultural Parcel near Somis, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC and NAHC record searches and a site visit. (February 2021 – April 2021).
- **Phase I Survey of 3870 Puerco Canyon Road (Lot 1), Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (February 2021 – April 2021).
- **Phase I Survey of 3870 Puerco Canyon Road (Lot 2), Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (February 2021 – April 2021).
- **Phase I Survey of the Ladyface Vista project, Agoura Hills, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included SCCIC, NAHC, and NHM record searches and a site visit. This large project had complex paleontological issues, which Envicom addressed with the NHM report and an excellent geotechnical report (February 2021 – March 2021).
- **Phase I Survey of the Central Plaza Shopping Center Project, Camarillo, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included SCCIC, NAHC, and NHM record searches and a site visit. (February 2021 – March 2021).
- **Phase I Survey of 3426 Serra Road, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (January 2021 – March 2021).

- **Oakmont Senior Living Historic and Archaeological Display Production, Simi Valley, Ventura County, CA (with Samantha Renta).** Project Manager for this historical interpretation display project (with the Strathearn Historic Park and Museum) (September 2020 – February 2021).
- **Cultural Resource Monitoring for the Oasis Windmill Farm, Kern County, CA.** Project manager for the monitoring of impacts in six cultural resources as part of the Oasis Windmill Farm upgrade (August 2020 – February 2021).
- **Archaeological Monitoring at the Arctic Cold Industrial Project Site, Oxnard, Ventura County, CA (with Samantha Renta).** Project Manager for this large archaeological and Native American monitoring project. (November 2020 – February 2021).
- **Phase Ib (subsurface) Survey 239 Oak Glen Avenue, Ojai, Ventura County, CA.** Principal and Project Manager for this City-requested Phase Ib survey, which included the excavation of six shovel test pits and a comprehensive site assessment to supplement work completed in 2020 as the "Rancho Ojai" project. (February 2021 – February 2021).
- **Entitlement Phase Cultural Resource Tasks, Arrowhead Estate Residential Development, Banning, Riverside County, CA.** Project Manager for all cultural tasks, which included HAER documentation of the Gilman House Channel, team meetings, and the development of a construction phase Monitoring Plan that incorporated the history of the St. Boniface Indian School. (January 2021 – February 2021).
- **Phase I Survey of a Proposed Little Rock Mobile Home Park, Unincorporated Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. The recordation of a large early 20th Century residential and farm complex on State of California DPR forms was also completed as part of this project. A paleontological survey report was also completed by PaleoWest as per the NHM findings (November 2020 – February 2021).
- **Phase I survey of the Chadwick School Development Project, Palos Verdes, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (December 2020 – February 2021).
- **Phase I Survey of 3142 Subida Circle, Santa Rosa, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC and NAHC record search and a site survey. (August 2020 – February 2021).
- **Keyes Porsche Archaeological, Paleontological, and Native American Monitoring Project, Woodland Hills, CA (with Samantha Renta).** Principal and Project Manager for this archaeological, paleontological, and Native American monitoring project. (August 2020 – February 2021).
- **Conrad N. Hilton Foundation Phase Ib of Proposed Phase II Building Locations, Agoura Hills, California.** This project involved the excavation of 48 shovel test pits within the western periphery of cultural resource CA-LAN-320 on Foundation property. (January 2020 – January 2021).
- **Phase I Survey of the Sandefer Residential Project, Unincorporated Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC and NAHC record search and a site survey. (August 2020 – January 2021).
- **Phase I Survey of 122 acres of the Canyon Ostara residential development project, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC and NAHC record search and a site survey. (August 2020 – January 2021).
- **Summit View Apartments Project Paleontological Monitoring for this Veterans Housing Project, City of Los Angeles, CA (with Samantha Renta).** Principal and Project Manager for this paleontological monitoring project. (February 2020 – January 2021).

- **Native American Monitoring at the Los Angeles International Airport (LAX), City of Los Angeles, Los Angeles County, CA.** Project Manager for this long term Native American monitoring project, which includes a Discovery Plan and a final Monitoring Report. (October 2020 – December 2020).
- **18800 Gale Avenue Archaeological, Biological, and Paleontological Monitoring Project, Rowland Heights, CA.** Principal and Project Manager for this archaeological, biological, and paleontological monitoring project. (November 2019 – December 2020).
- **Phase I survey of 410 Tico Road, Ojai, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (November 2020 – December 2020).
- **Phase I Survey of a property within the Rancho Ojai subdivision, Ojai, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (October 2020 – November 2020).
- **Fillmore Terrace Phase I and Native American Consultation, Fillmore, Venture County, CA (with Samantha Renta).** Principal and Project Manager for this large low-income housing project, which included an SCCIC record search, site visit, and Native American consultation on behalf of the City. (September 2020 – October 2020).
- **Phase I Survey of 730 South Vermont, City of Los Angeles, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC, NAHC, and NHM record searches and a site visit. (June 2020 – October 2020).
- **Phase I Survey of the Reconstruction of the Brookview Ranch Riding and Event Venue, School of Management Building, County of Los Angeles, CA (with Samantha Whittington).** Principal and Project Manager for this riding venue rebuild and expansion. Project included a SCCIC/NAHC record search and a site visit. One of the challenges has been integrating a prehistoric cultural resource immediately north of the project development, but on the project property, into the assessment recommendations (July 2019 – September 2020).
- **Phase I Survey of 715 Del Oro Drive, Ojai, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (June 2020 – August 2020).
- **Phase I Survey of 604 Gridley Road, Ojai, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (July 2020 – August 2020).
- **Phase I Survey of the Sagebrush Battery Storage Project, Terra Gen Windfarms, Kern County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included a Bakersfield record search and a site survey. (July 2020 – August 2020).
- **Phase I Survey of the 5041 Lankershim Hotel Property, North Hollywood, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC, NHM, NAHC record searches and a site visit. (May 2020 – July 2020).
- **Phase II Evaluation of CA-LAN-41 within the Boundary of the Agoura Village project, City of Agoura Hills, Los Angeles County, CA.** Principal and Project Manager for the completion of an Evaluation (Phase II) of a complex prehistoric cultural resource within the boundary of the Agoura Village project. The Phase II involved the excavation of ten test units, dozens of shovel test pits, as well as more detailed mapping of the site. (January 2019 – July 2020).
- **Phase I Survey of 6544 Wandermere Road, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (June 2020 – July 2020).
- **Phase I Survey of 5841 Busch Drive, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (May 2020 – July 2020).

- **Archaeological and Paleontological Monitoring for the Agoura Landmark Development Project, Agoura Hills, CA.** Principal and Project Manager for this monitoring project. A positive findings report was also completed and submitted to the City after the discovery of a small lithic scatter within the development footprint (January 2019 – July 2020).
- **Phase I Survey 505 Centre Street, City of Los Angeles, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC, NAHC, and NHM record searches and a site visit. This complex project had multiple built environment concerns, including the adjacent San Pedro Commercial Historic District (April 2020 – June 2020).
- **Paleontological Phase I Survey of an Agricultural Development Parcel in Balcom Canyon, City of Somis, Ventura County, CA.** Author for this project, which included a detailed geological and paleontological statement for the proposed project. (June 2020).
- **Cultural Resource Discovery Plan for the Oasis and Point Wind Windmill Farm, Kern County, CA.** Author of the discovery plan for upgrades to two large windmill farms for Terra Gen. (March – April 2020).
- **Phase II Evaluation of Six Native American Archaeological Sites for the Terra Gen Oasis Windmill Farm, Kern County, CA.** Principal and Project Manager for this archaeological evaluation project, which utilized shovel test pits and test units to evaluate six prehistoric Native American cultural resources that would be impacted by future windfarm development. (March 2020 – April 2020).
- **Phase I Survey of The Emerald Residential Project, Lancaster, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this approximately 5-acre housing project, which included an SCCIC/NAHC/NHM record searches and a site visit. (February 2020 – April 2020).
- **Phase I Survey of The West Palmdale Residential Complex Project, Palmdale, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this approximately 35-acre housing project, which included an SCCIC/NAHC/NHM record searches and a site visit. (February 2020 – April 2020).
- **Conrad N. Hilton Foundation Geotech Boring Archaeological and Paleontological Monitoring, Agoura Hills, California.** This project involved the monitoring of geotech trench and drilling sites within Foundation and Las Virgenes Water District properties within the City of Agoura Hills. (January 2020 – April 2020).
- **Phase I Survey of 4510 Via Vienta, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (January 2020 – April 2020).
- **Phase I Survey of the Proposed California Lutheran University, School of Management Building, Thousand Oaks, CA (with Samantha Renta).** Principal and Project Manager for this university project. Project included a SCCIC/NAHC record search and a site visit. (December 2019 – April 2020).
- **Phase I Survey of the Twin Lakes Water Tank Project, Porter Ranch, Los Angeles County, CA (with Samantha Renta)**Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for the Los Virgenes Municipal Water District. (October 2019 – April 2020).
- **Phase I Survey of the Castaic Apartments Project, Town of Castaic, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this large 105-acre mixed use development project, which included an SCCIC/NAHC record search, an NHM record search, and a site visit. The cultural survey discovered two complex older historic sites, which required extensive recordation and evaluation (July 2019 – April 2020).

- **Sierra West Assisted Living Project, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this group residential project. Project included NHM/SCCIC/NAHC record searches, and a site visit. A project challenge was addressing historic early 20th Century structures, including an early stagecoach station, which once were located on the property, as well as the proximity of the parcel to a historic (1880s) cemetery. (October 2019 – April 2020).
- **Phase I Survey of 1175 Camille Drive, Ojai, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC/NAHC record search and a site visit. (January 2020 – February 2020).
- **Vineland and Cleon Self Storage Project Phase I Cultural Survey, Burbank, CA (with Samantha Renta).** Principal and Project Manager for this commercial project. Project included NHM/SCCIC/NAHC record searches, but no site visit due to extensive urbanization. (December 2019 – January 2020).
- **Phase I Survey of 5617 Busch Drive, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (December 2019 – January 2020).
- **Cultural Resource Monitoring of the 21110 Oxnard Hotel project, Woodland Hills, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this monitoring project. (August 2019 – January 2020).
- **Phase I Survey of the Riverwalk II Mixed-Use Project, Santa Clarita, CA.** Principal and Project Manager for this commercial and Residential Project. Project included a SCCIC/NAHC record search and a site visit. (December 2019 – December 2019).
- **Phase I Survey of 5814 Philip Road, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (October 2019 – December 2019).
- **Phase I Survey of Improvements to the Coronado Golf Course, San Diego, San Diego County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC record search only. (October 2019 – November 2019).
- **Phase I Survey of 6208 Tapia Drive, Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (October 2019 – November 2019).
- **Phase I Survey of 6711 Wandermere Road, Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (September 2019 – October 2019).
- **Phase I Survey of 5820 Foxview Drive, Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for residential project, which included an SCCIC/NAHC record search, an NHM record search, and a site visit. (September 2019 – October 2019).
- **Phase I Survey of the new Keyes Porsche Auto Dealership, Woodland Hills, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC/NHM record search, a site visit, and the production of a separate Ethnographic Assessment Report for the project. Envicom also supported the Lead Agency in AB-52 consultation with the Tataviam and Tongva Tribal Groups. (August 2019 – October 2019).
- **Cultural Resource Monitoring of the 21121 Van Owen development project, Canoga Park, Los Angeles County, CA.** Principal and Project Manager for this monitoring project. (September 2019).

- **Phase I Survey of the Avenue 34 Mixed-Use Development Project, City of Los Angeles, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC record search and a site visit. (August 2019 – September 2019).
- **Phase I Survey of the Faith Lutheran Senior Living Project, City of Inglewood, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC record search and a site visit. (August 2019 – September 2019).
- **Phase II Evaluation of Cultural Resource CA-LAN-513 within the Boundary of 6282 Sea Star Estates Residential Development within the City of Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this Phase II evaluation, which involved surface examination only due to plowed field conditions. No evidence of a cultural resource was found. (September 2019).
- **Phase I Survey of an Agricultural Development Parcel in Balcom Canyon, City of Somis, Ventura County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC record search, a site visit, and the recordation of a prehistoric site at the edge of the project boundary. (July 2019 – August 2019).
- **Phase I Survey of 31215 Bailard Road, City of Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (July 2019 – August 2019).
- **Phase II Evaluation of the Proposed Location of the Printz Colony House within the Strathearn Historic Park, City of Simi Hills, Ventura County, CA (with Samantha Whittington).** Principal and Project Manager for this Phase II evaluation of part of the 1880s Strathearn Farmstead. Evaluation tasks included the excavation of shovel test pits and a single test unit, construction monitoring, and a combined report for the Rancho Simi Recreation and Parks District (June 2019 – July 2019).
- **Phase I Survey of the Parks LA project, City of Los Angeles, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC/NHM record search, a site visit, and a Natural History Museum paleontological assessment. (June 2019 – July 2019).
- **Phase I Survey of the Rancho Malibu residential development project, City of Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC/NHM record search, a site visit, and a Natural History Museum paleontological assessment. (June 2019 – July 2019).
- **Phase I Survey of 380 South Rosemead, City of Los Angeles, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this development project, which included an SCCIC/NAHC/NHM record search, a site visit, and a Natural History Museum paleontological assessment. (May 2019 – June 2019).
- **Phase II Evaluation of CA-LAN-129 and CA-LAN-129a, two prehistoric sites, and CA-LAN-4363H, an early historic site located in Calabasas, CA.** Principal and Project Manager for the evaluation of these three sites as part of permitting with the Corps of Engineers. The evaluation was written to NRHP/SHPO standards. (May 2019 – June 2019).
- **Phase I Survey of 1160 Sulphur Mountain Road, City of Ojai, Ventura County, CA.** Principal and Project Manager for this residential development project, which included a SCCIC/NAHC record search and a site visit (May 2019 – May 2019).
- **Phase I Survey of the Cal Grow Farms Project, City of Perris, Riverside County, CA.** Principal and Project Manager for this agricultural development project, which included a SCCIC/NAHC/NHM record search and a site visit. (March 2019 – May 2019).

- **Phase I Survey of the Riverwalk Mixed-Use Project, Santa Clarita, CA.** Principal and Project Manager for this commercial and Residential Project. Project included a SCCIC/NAHC record search and a site visit. (March 2019 – May 2019).
- **Phase I Survey of the West Village Project, Calabasas, CA.** Principal and Project Manager for this Army Corps of Engineers (ACOE) permitting project. Project included a SCCIC/NAHC/NHM record search and a site visit, as well as SHPO review of the final report. (March 2019 – May 2019).
- **Phase I Survey of the Belvedere Middle School Improvements Project, City of Los Angeles, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search and NAHC record search request for LAUSD. (November 2018 – April 2019).
- **Phase I Survey "The Angel" Project, Los Angeles County, CA.** Principal and Project Manager for this low income housing project in the San Fernando Valley. Project included a SCCIC/NAHC record search and a site visit. (January 2019 – March 2019).
- **Fourth and Hewitt, City of Los Angeles, Los Angeles County, CA.** Principal and Project Manager for a cultural resource record search for the development of a new office building within a commercial urban environment. Project also included a paleontological assessment of the property due to an extensively deep planned parking garage and Native American concerns. Also completed with an Ethnographic Report to meet AB-52 criteria. Another key issue was determining whether a historic built environment assessment was needed. (February 2017 – March 2019).
- **Phase I Survey of the Deer Lake Water Tank Project, Porter Ranch, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for the Los Virgenes Municipal Water District. (November 2018 – March 2019).
- **Phase I Survey of the Sherwood Development Corporation, Tract 4409, Ventura County, CA.** Principal and Project Manager for this Army Corps of Engineers (ACOE) permitting project. Project included a SCCIC/NAHC record search and a site visit, as well as SHPO review. (January 2019 – February 2019).
- **City of Thousand Oaks Environmental On-Call (Including Cultural Resources), Los Angeles County, CA.** Envicom was selected as one of a limited number of on-call environmental firms for the City. (June 2015 – December 2018).
- **Phase II Evaluation of Cultural Resource CA-LAN-513 within the Boundary of 6361 Sea Star Estates Residential Development within the City of Malibu, Los Angeles County, CA.** Principal and Project Manager for this Phase II evaluation, which involved limited shovel test pits and surface examination. No evidence of a cultural resource was found. (November 2018 – December 2018).
- **Phase I Survey for the Massilia Spa Project, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. Project also includes an inventory and initial assessment of over a dozen 1930 through 1990 structures on the property (June 2018 – December 2018).
- **Phase I Survey of the Conejo Creek Park, City of Thousand Oaks, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (August 2018 – November 2018).
- **Phase I Survey of the Butler Ranch, in Ventura County near west Simi Valley, California.** Principal and Project Manager for the completion of a Phase I record search, NAHC record search request, and a site survey of this 332-acre low density residential development project. (May 2018 – October 2018).

- **Valencia Travel Village, Valencia, Los Angeles County, CA.** Principal and Project Manager for the completion of a Phase I for trailer park and recreation center. (August 2018 – October 2018).
- **Phase I Survey of the JPA Solar Farm, Calabasas, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for the Los Virgenes Municipal Water District. This 20-acre solar project also addressed a large prehistoric Native American site located next to and partially on the property. Project included Native American consultation with the Lead Agency and the Tatatviam and the recordation of two prehistoric petroglyphs (August 2018 – October 2018).
- **Simi BMX Course Phase I Survey, Simi Valley, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (July 2018 – August 2018).
- **Phase I Paleontological Survey of the 3467 Camino de la Cumbre Property in Sherman Oaks, Los Angeles County, CA.** Principal and Project Manager for the completion of a Natural History Museum record search and paleo report. (August 2018).
- **Phase I Survey of the proposed 113-133 West Plymouth Street multiple unit residential development, Inglewood, Los Angeles County, CA (with Samantha Whittington, Debbie Balam, and Charlie Fazzone).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, paleontological record search, NAHC record search request, and a site survey. Additional tasks included writing for the cultural section of the MND document (April 2018 – August 2018).
- **Phase I Survey for the 17-acre Olivas Park Extension commercial development project in Ventura, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey, followed by limited monitoring. (January 2018 – June 2018).
- **Phase I(b) Survey of the proposed Forrest Club 50-acre private club development, Los Angeles County, CA (with Samantha Whittington and Charlie Fazzone).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. In addition, 24 shovel test pits were excavated across the locations of two 1920s historic cabins. No further work was required. (April 2018 – June 2018).
- **Phase I Survey for the Ascension Lutheran Church Master Plan and MND, Thousand Oaks, California, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (May 2018 – June 2018).
- **Cultural, Paleo, and Native American Monitoring for the Agoura Hills Marriott Development Project, Agoura Hills, CA.** Principal and Project Manager for this monitoring project. During monitoring, a prehistoric Chumash cultural resource was discovered (number not yet assigned), which led to artifact collection, analysis, and a final report of findings that was submitted to the City (January 2018 – June 2018).
- **Phase I Survey for the Mulholland Senior Living Project, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (May 2018 – May 2018).
- **Phase I Survey of the proposed Tapo at Alamo EIR for a mixed-use development project, Simi Valley, Ventura County, CA (with Samantha Whittington and Debbie Balam).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (March 2018 – May 2018).
- **Phase I Survey of the Upper Bailey Road tract, Sylmar, Los Angeles County, CA (with Samantha Whittington and Debbie Balam).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (December 2017 – April 2018).

- **Phase I Survey of the Lower Bailey Road tract, Sylmar, Los Angeles County, CA (with Samantha Whittington and Debbie Balam).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (December 2017 – April 2018).
- **Historic Structure Evaluation of Blythe Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. (February 2018 – April 2018).
- **Historic Structure Evaluation of Robert Hill Lane Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. (February 2018 – April 2018).
- **Historic Structure Evaluation of James Madison Middle School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. School was found eligible for the CRHR. (February 2018 – April 2018).
- **Historic Structure Evaluation of 54th Street Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. School was found eligible for the CRHR. (February 2018 – April 2018).
- **Historic Structure Evaluation of Chapman Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. (February 2018 – April 2018).
- **Historic Structure Evaluation of Dena Street Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. (February 2018 – April 2018).
- **Historic Structure Evaluation of Patrick Henry Middle School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. School was found eligible for the CRHR. (February 2018 – April 2018).
- **Historic Structure Evaluation of Richland Avenue Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. (February 2018 – April 2018).
- **Marinette Road Residential Development, Pacific Palisades, Los Angeles County, CA.** Principal and project manager for this development project, which included a SCCIC/NAHC record search, site survey, Tribal Group scoping letters, and agency consultation. The major challenge was that the project property was within the Will Rogers State Monument and National Register site boundary. An update for this project was conducted in 2018 to include AB-52 compliance. (February 2015 – May 2015; January 2018 – April 2018).
- **Phase I Survey for 6956 Dume Drive, Malibu, California, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for the completion of an SCCIC record search, and a site survey. (February 2018 – March 2018).
- **Phase I Survey of roughly 50-acres for Improvements on the Saddlerock Ranch/Malibu Wines Property in the Santa Monica Mountains, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC scoping, and a site survey. This project involves upgrades to the winery existing structures and public buildings, as well as road and parking improvements. Part of this project is located near a National Register Chumash rock art site as well as other prehistoric resources (November 2016 – March 2018).
- **Phase I Survey for 28730 Grayfox, Malibu, California, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. (January 2018 – February 2018).

- **Phase I Survey for 11681 Foothill Boulevard, a multiple-unit residential project in Sylmar, California, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. This project also included a Native American Tribal Cultural Resource Assessment. (November 2017 – February 2018).
- **Phase I Survey for a single family property development along Yerba Buena Road, Ventura County, CA.** Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. (December 2017 – January 2018).
- **Phase I Survey for 34134 Mulholland Highway, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (December 2017 – January 2018).
- **Faunal, Osteological, Archaeological, and Fossil Consultation for Citadel Environmental and Turner-Hunt for the Hollywood Park Development Project (new Rams NFL Stadium).** Osteological and paleontological consultant for Kiewit, Turner, and Citadel for the construction of the new Rams NFL stadium in Ingelwood. Project included discovery and recordation of modern and fossil mammal bones. We were the official on-call cultural/paleo resources team for the Rams Stadium project, being called in to deal with modern faunal and ancient fossil remains found during excavation. We worked closely with the construction team to get an expert on site within 24-hours of the discovery or quicker, with the goal of getting the discovery assessed and the construction team back to work as soon as possible. (December 2016 – January 2018).
- **Phase I Survey for 24600 Thousand Peaks Road, Calabasas, California, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (November 2017 – January 2018).
- **Phase I Survey for 28929 Grayfox, Malibu, California, Los Angeles County, CA.** Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. (November 2017 – January 2018).
- **Manzanita School Phase Ia Survey for a 20.27-acre private school development in Topanga Canyon, California, Los Angeles County, CA.** Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. This project also assessed built environment resources, which included early 1900s buildings, early 1900s water control features, culverts, and bridges, and 1950s landscaping elements (May 2017 – January 2018).
- **Phase I Survey for the 181 to 187 Monterrey Road Condominium Project, a small residential development near South Pasadena, California, Los Angeles County, CA.** P Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. (July 2017 – January 2018).
- **Phase I Survey for the Agoura Village project, a 7.37-acre Commercial Subdivision in the City of Agoura Hills, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC scoping, and a Phase Ia site survey. The Phase Ia survey was followed by a Phase Ib subsurface survey and an updated site form for a previously known prehistoric cultural resource that includes the entire project area. (October 2016 – December 2017).
- **Phase I survey for 22866 Beckledge Terrace, Malibu, California.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (September 2017 – November 2017).
- **Lynn Road Residential Development Project, Construction Monitoring, Newbury Park, CA.** Principal and Project Manager for the surface collection and construction monitoring for this 10-acre residential construction project. (October 2017 – November 2017.)

- **Phase II Evaluation of two cultural resources located on the Oakmont project property, City of Agoura Hills, Los Angeles County, CA.** Principal and Project Manager for the evaluation of a prehistoric cultural resource and a 1920s-1980s historic homestead cultural resource. Evaluation tasks included shovel test pits, and a test unit for the prehistoric cultural resource, and detailed mapping and documents research for the historic cultural resource. A combined report for both Oakmont projects was produced for the City. (August 2017 – October 2017).
- **City of Pomona Environmental On-Call (Including Cultural Resources), Los Angeles County, CA.** Envicom successful won inclusion as one of six on-call environmental firms for the City. (October 2014 – October 2017).
- **Phase I Survey for the Oakmont commercial project, a 5.75-acre development in the City of Agoura Hills, Los Angeles County, CA.** Principal and Project Manager for the completion of NAHC record search, and a Phase Ia site survey. The Phase Ia survey identified two cultural resources; a 1920s historic homestead foundation, and a large prehistoric archaeological site. (August 2017 – October 2017).
- **Phase I Assessment of the West Hills Crest 37-acre Residential Subdivision in West Hills, City of Los Angeles.** Principal and Project Manager for the completion of a SCCIC/NAHC record search and project area site survey. A key issue for this project was the record search being positive for a prehistoric cultural resource within the development area. This resource, CA-LAN-1223, was further investigated with 22 shovel test pits, and evaluated as not being a significant cultural resource. (February 2017 – October 2017).
- **San Bernardino County Cultural, Historic Architecture, and Paleontology On-Call, San Bernardino, CA.** Envicom successful won inclusion in the limited on-call pool. (October 2014 – October 2017).
- **Phase I Survey for 15498 LaPeyre Court, a residential development in Moorpark, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. Project also included coordination with numerous biology tasks. (August 2017 – September 2017).
- **Canyon View Estates Paleontological Survey, Santa Clarita, Los Angeles County, CA.** Principal and Project Manager for this paleontological record search, site survey, and report. (August – September 2017).
- **North Canyon Ranch 170-acre Residential Subdivision in Simi Valley, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search and project area site survey. A key issue for this project was a previously disturbed cultural resource within the project area, the destruction of which needed to be addressed in the final report. (May 2017 – August 2017).
- **Phase I Survey for the 12300 Valley Boulevard Hotel, a commercial development in El Monte, Los Angeles, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for this small residential development. (June 2017 – August 2017).
- **Phase Ia Survey for the Holiday Inn Express Hotel, a commercial development in El Monte, Los Angeles, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for this small residential development. (July 2017 – August 2017).
- **Arcadia Town Homes MND Phase I Cultural Assessment for a multi-unit residential development in Arcadia, Los Angeles, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for this multi-unit residential development. (May 2017 – August 2017).

- **Phase I Survey for 3800 Figueroa, an apartment complex development in Los Angeles, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for apartment complex development. (June 2017 – August 2017).
- **Phase I Survey for the Copper Canyon Project, a 5-acre residential development near Santa Clarita, California, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. Also part of the project was the resurvey of two previously recorded cultural resources within the project boundary. (May 2017 – July 2017).
- **Phase Ia Survey for the Oneonta Hillside Drive, a residential development in South Pasadena, Los Angeles County, CA.** Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. (May 2017 – July 2017).
- **Construction Monitoring for Parcel 2058-003-010, Lobo Canyon, Los Angeles County.** Principal and Project Manager for the surface collection and construction monitoring for this single family residential construction project. (July 2017**).**
- **Phase I Survey for the 6625 Bradley Road, a residential development in Somis, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for this small residential development. (June 2017 – July 2017).
- **11172 Santa Paula Road Phase Ia Survey for a 5.5-acre Agricultural property in Ojai, California, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (May 2017 – June 2017).
- **Pepperdine University Campus Life Project: Updated Cultural Resources Record Search.** Principal and Project Manager for an updated record search and letter report for the Pepperdine Campus Life housing, facilities, and trail development project. This update was part of an amended campus-wide EIR (December 2017 – June 2017).
- **Pepperdine University Campus Life Project: Phase I survey of new Baseball Field development.** Principal and Project Manager for the addition of the campus baseball field as part of the larger Pepperdine Campus Life housing, facilities, and trail development project. (February 2017 – June 2017).
- **6658 Reseda Boulevard, City of Reseda, Los Angeles County, CA.** Principal and Project Manager for a Phase 1 record search for this urban mixed use project. (March 2017 – May 2017).
- **Paradise Valley Development Project Environmental Impact Report and Impact Statement, Riverside County, CA.** Author of the cultural section for this EIR for a housing and mixed use development of over 2200-acres east of Indio, California. Also reviewed original technical documents, and incorporated legal and agency comments. Mitigation measures included the management and monitoring of dozens of cultural resources, sensitive soils, and paleontological resources. (October 2014 – March 2017).
- **Phase I Cultural Resources Survey for Parcel 2058-003-010, Lobo Canyon, Los Angeles County, CA.** Principal and Project Manager for completion of a Phase I and Army Corps of Engineers permit for the project (ACOE, Los Angeles District). Extensive communications and consultation with the ACOE and SHPO. (July 2016 – March 2017).
- **Phase I Survey for a 1.33-acre Mixed-Use development in the City of Northridge at the corner of Nordoff and Darby Streets, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC scoping, and a site survey. This project included a built-environment assessment of existing historic structures (October 2016 – February 2017).

- **Phase I Survey for a 0.5-acre Residential Subdivision in the City of Los Angeles at the end of Crisler Way, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (October 2016 – February 2017).
- **Deer Lake Residential Development Cultural Monitoring, Porter Ranch, Los Angeles, CA.** Principal and Project Manager for the cultural monitoring of eight cultural resources within the project development boundary. This project includes the writing of a final Monitoring Report. (May 2016 – February 2017).
- **Phase I Survey for a 0.5-acre Mixed Use Development Project on Camarillo Avenue in North Hollywood, Los Angeles County, CA.** Principal and Cultural Project Manager for the completion of a SCCIC/NAHC record search, NAHC scoping, and a site survey. This project also included a historic built environment assessment (November 2016 – January 2017).
- **Phase I Survey for a 14-acre Residential Subdivision in Woodland Hills, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC scoping, and a site survey. This project involved consultation with the City of Los Angeles on AB-52 (July 2016 – January 2017).
- **Lynn Road Residential Development Project, Newbury Park, CA.** Principal and Project Manager for the Phase Ia and Phase Ib survey of this 10-acre parcel. A large prehistoric Middle-Period seasonal settlement was discovered, which required subsurface testing and extensive mapping of surface hearths, yucca roasters, and dwelling features. Project included public testimony before the Thousand Oaks Planning Commission. (September 2015 – December 2016).
- **Pepperdine University Campus Life Project: Debris Basin Excavation Cultural and Paleontological Resource Monitoring, Los Angeles, CA.** Principal and Project Manager for cultural resource monitoring of Phase I of the Pepperdine Campus Life housing, facilities, and trail development project. (August – October 2016).
- **Trail Construction Monitoring, Conrad N. Hilton Foundation.** Principal and Project Manager for the development of a pedestrian foot trail loop between the Foundation and the nearby "Ridge" professional building, including the excavation of dozens of shovel test pits and a major surface collection of prehistoric artifacts, including trail construction monitoring. (August – September 2016).
- **Conrad N. Hilton Foundation Trail Project Cultural Assessment, Agoura Hills, Los Angeles County, CA.** Project Manager for the Phase 1b survey of a new pedestrian access trail linking off-site office space with the Foundation campus buildings. Project included the excavation of over 30 shovel test pits and the recording of numerous prehistoric features. (May – August 2016).
- **32640 PCH Phase I Cultural Resource Survey, Santa Monica, CA.** Principal and Project Manager for the Phase I cultural resource assessment of a ravine rehabilitation project between the Pacific Coast Highway and the Pacific Ocean. Included a SCCIC/NAHC record search, site survey, and technical report. (May 2015 – June 2016).
- **CA-LAN-320 Project Compliance Plans, and Native American and Lead Agency Consultation, Agoura Hills, Los Angeles County, CA.** Tasks included the authoring of a cultural resource Treatment and Data Recovery Plan, a cultural resource Management Plan, and a Curation Plan for all artifacts, as well as the organization of meetings with the Chumash Tribal Groups and the Lead Agency. (April 2015 – June 2016).
- **Canyon Park Homes, Sylmar, Los Angeles County, CA.** Native American Tribal Group consultation and pre-construction monitoring for this 80-acre residential property development, as well as EIR section writing. (February 2015 – March 2016).

- **Oakwood Schools Built Environment and Archaeological Assessment, North Hollywood, Los Angeles County, CA.** Principal and Project Manager for the Phase I cultural resource assessment of the project property prior to the construction of a new middle and high school campus within the North Hollywood area. Challenging tasks included Native American ghost writing for the lead agency (City of Los Angeles) and addressing a modern human cremation garden in the report (November 2015 – February 2016).
- **Floral Canyon Residential Development Cultural Resource Survey, North Hollywood, CA.** Principal and Project Manager for this Phase Ia cultural resource survey of an 8-acrea property. The cultural resource parts of the CEQA checklist were also completed. (September – December 2015).
- **Hilton Property Phase 3 Construction Site Phase Ib Cultural Resources Survey, Agoura Hills, Los Angeles County, CA.** Principal and Project manager for this extensive preliminary survey project, including excavation of over 200 shovel test pits and 4 test units to define the boundaries of a prehistoric ceremonial site of over 80-acres in size, used by Chumash Native Americans from 400 A.D. to the late 1700s. Recordation of over 190-features and 11,500 artifacts. Second phase will include data recovery tasks and an amended Environmental Impact Report. (February 2014 – March 2015).
- **Blessed Theresa Church Construction, City of Winchester, Riverside County, CA.** Cultural consultation including cultural/paleo monitoring issues. (April 2014 – July 2014).
- **Village at Los Carneros, City of Goleta, Santa Barbara County, CA.** Reviewed all previous technical studies and wrote part of the cultural sections of the Environmental Impact Report for this residential house development project. (March 2014 – April 2014).
- **3121 Old Topanga Canyon Road Phase I Survey and Literature Search, City of Calabasas, Los Angeles County, CA.** Principal and Project manager for this residential development project, including NAHC letters, literature review, site survey, paleontological survey and literature search, final technical report, and the writing of the cultural resources section of the Environmental Impact Report. (March 2014 – April 2014).

Cultural Division Director, Chambers Group, Inc., Santa Ana, CA
October, 2011 – October 2013

As Cultural Director, I oversaw all existing cultural, paleontological, ethnographic, and built environment projects for Chambers Group. Projects were staged out of seven regional offices located within California and Nevada. I oversaw a permanent staff of 20 individuals and a temporary staff of up to 40 people. I also was responsible for business development and coordination of projects with multi-disciplinary teams, including Biology, Air Quality, SWPPP, and Planning professionals. I reviewed and authored cultural sections of EA, EIR, and EIS documents. I also wrote proposals, oversaw quality control, provided cultural compliance sections of technical reports, developed agency relationships, wrote technical reports, managed and developed budgets, and oversaw all cultural staff. I performed QA/QC on all documents and ensured that management and mitigation measures were clearly defined and legally-defendable. Yearly Division budget was up to 3-million dollars annually.

Energy Projects:

- **Beacon Solar, Hecate Energy and LADWP, Kern County, CA.** Business Developer for the archaeology and biological monitoring, pre-construction surveys, and desert tortoise fence monitoring for this large, 2000-acre solar project for the Los Angeles Department of Water and Power. (July – October 2013).

- **Q-Cells Solar Survey, Palm Springs, Riverside County, CA.** Principal and Project Manager for a cultural survey and record search of 36-acres north of Palm Springs for solar development. (October 2013 – October 2013).
- **Pacific Gas and Electric NERC Support Monitoring, sub to URS, Northern and Central California.** Principal and Project Manager for this 4-year project in support of the national NERC power pole reliability project for PG&E. Involves cultural, biological, and paleontological monitoring and field surveys. (October 2013 – October 2013).
- **Gold Bar Transmission Line Survey, McEwen Mining, Eureka County, NV.** Principal and Project Manager for this 2,577-acre cultural survey for the development of a 33-mile transmission line to service the Gold Bar Mine in Nevada. Bureau of Land Management was the principal Federal agency. (April 2013 – October 2013).
- **East Kern Wind Resource Area (EKWRA) Power Pole Replacement Project, Environmental Intelligence / Southern California Edison, Kern County, CA.** Principal and Project Manager. This two-year project included cultural resource surveys, the evaluation of numerous cultural sites, and cultural and paleontological monitoring for the construction of over 130-miles of new power poles and fiber optics lines to service Tehachapi Mountain wind farms. (January 2013 – October 2013).
- **Pure Source Power, Victorville, San Bernardino, CA.** Principal and Project Manager for a cultural survey and record search of 140-acres north of Palm Springs for solar development. (September 2013 – October 2013).
- **Dry Ranch Solar Project, Silverado Power, Los Angeles County, CA.** Principal. Dr. Bischoff managed this 64-acre solar project near Lancaster, which included a SCCIC/NAHC record search, field survey, and cultural report to meet CEQA compliance. This project included coordination with Southern California Edison for a gen-tie line and telecom attachments. (March - April 2013).
- **Plainview Solar Project, Silverado Power, Los Angeles County, CA.** Principal. Dr. Bischoff managed this 114-acre solar project near Lancaster, which included a SCCIC/NAHC record search, field survey, and cultural report to meet CEQA compliance. (April - May 2013).
- **Silverleaf Solar Project, Cultural and Paleontological Survey, Agile Energy, Imperial County, CA.** Principal and Project Manager. Dr. Bischoff provided general review and quality control for a large solar project south of San Diego. This project involved an over 2,000-acre survey of proposed solar fields and 5-miles of electrical transmission gen-tie lines. The bureau of Land Management was the principal Federal agency. (November 2011 - July 2012).
- **Desert Harvest Solar Project, Cultural Resources Survey, eneXco Energy, Riverside County, CA.** Project Manager. Dr. Bischoff was the project manager for the built environment survey of 1,600-acre solar field and 12-miles of electrical transmission gen-tie lines. (November 2011 - June 2012).
- **Silverleaf Solar Project, Built Environment Survey, Agile Energy, Imperial County, CA.** Project Manager. Project Manager. Dr. Bischoff was the project manager for the built environment survey of 2,000-acre solar field and 5-miles of electrical transmission gen-tie lines. This included the production of a separate technical report for the Bureau of Land Management that included a historic structure inventory, assessment of significance, and an indirect effects analysis. (November 2011 - July 2012).
- **IVSC2 Solar Project, County of Imperial, Imperial County, CA.** Principal and Project Manager. Dr. Bischoff provided oversight of the 140-acre solar project east of the Salton Sea. This project was notable for the quick response time required to field a survey crew and complete a draft report for the County (Sept-Oct 2012).

- **Desert Harvest Solar Project, Cultural and Paleontological Resource Survey, eneXco Energy, Riverside County, CA.** Principal and Project Manager. Dr. Bischoff provided general review and quality control for a large solar project northeast of Blythe, CA. This project involved an over 1,600-acre survey of proposed solar fields and 12-miles of electrical transmission gen-tie lines. Bureau of Land Management was the principal Federal agency. (November 2011 - July 2012).
- **Desert Harvest Solar Project, Build Environment Survey, eneXco Energy, Riverside County, CA.** Project Manager. Dr. Bischoff was the project manager for the built environment survey of 1,600-acre solar field and 12-miles of electrical transmission gen-tie lines. This included the production of a separate technical report for the Bureau of Land Management that included a historic structure inventory, assessment of significance, and an indirect effects analysis. (November 2011 - June 2012).

Telecommunication Projects:

- **AT&T Fiber-optics Renewal Project, Evaluations, Mitigations, and Monitoring, AT&T, San Bernardino County, CA.** Cultural Principal and Project Manager. Dr. Bischoff will provide project management, technical writing, and quality control for the cultural and paleontological evaluations, data recoveries, and monitoring efforts for the AT&T fiber renewal project. This project involved the survey of over 90 miles of proposed new fiber-optic line between Barstow and Las Vegas, NV, and the management of over 100-cultural sites. Bureau of Land Management and Mojave National Preserve were the principal Federal agencies. (July 2013 – October).
- **Fiber Node Evaluations, Freedom Communications, Orange County, CA.** Cultural Principal. Dr. Bischoff provided general project management and quality control for the cultural background record searches and surveys for dozens of telecommunication sites throughout the City of Irvine as part of the Freedom Communications site development project. Dozens more sites are expected to be tested in the coming year. (April 2012 – October 2013).
- **San Diego Churches and Public Building Historic Structure Evaluations, DePratti Inc., City of San Diego, CA.** Principal Investigator. Dr. Bischoff acted as Principal and QA/QC manager for this project, which involved the evaluation of dozens of historic structures as part of the DePratti Communication telecommunication attachment project in the City of San Diego. (November 2011 – October 2013).
- **The Plunge Evaluation, DePratti Inc., City of San Diego, San Diego County, CA.** Principal for this historic architecture project involving the structural evaluation and National Register documentation for The Plunge historic salt-water bath house in San Diego. (September 2013 – September 2013).
- **AT&T Fiber-optics Renewal Project, Surveys, Literature Searches, and Technical Studies, AT&T, San Bernardino County, CA.** Cultural Principal and Project Manager. Dr. Bischoff provided general project management and quality control for the cultural, paleontological, and ethnographic surveys, literature searches, and technical studies. This project involved the survey of over 90 miles of proposed new fiber-optic line between Barstow and Las Vegas, NV, and the management of over 100-cultural sites. Bureau of Land Management and Mojave National Preserve were the principal Federal agencies. (April 2012 – July 2013).
- **Digital West Fiber Line Feasibility Study, San Luis Obispo to Los Angeles, Counties of San Luis Obispo, Santa Barbara, Ventura, and Los Angeles, CA.** Project Manager for this large feasibility study for placing a new fiber line down the US 101 freeway corridor. Biological, cultural, paleontological, and permitting constraints were all examined. (April 2012 – July 2013).

- **Digital 395 Broadband Stimulus Project, Praxis and California Broadband Corporation, California and Nevada.** Cultural Director. Dr. Bischoff acted as the California report manager of the cultural division, directed fieldwork, and authored management documents and reports. This project involved the new installation of over 650 miles of fiber-optic line across California and Nevada. The programmatic agreement of this complex project included 10 federal, state, and tribal agencies, with another seven acting as interested parties, and the management, evaluation, and monitoring of over 170 cultural sites. NTIAA was the Principal Federal Agency, but also involved twelve other California and Nevada State and Federal agencies and Tribal Groups (November 2011 – April 2012).

Defense Projects:

- **Fort Irwin Cell Tower Geotech Boring Monitoring, Northrop-Grumman and Fort Irwin Army Post, San Bernardino County, CA.** Principal. This project involves the cultural and paleo monitoring of sensitive areas as part of the construction of over 24 new cell tower locations. (October 2013 – October 2013).
- **Edwards Airforce Base Telecommunication Cultural Monitoring, Team Fischel Company, Edwards AFB, Kern County, CA.** Project Manager and Principal for the cultural monitoring of 40-miles of telecommunication trenching on Edwards AFB, including pre-construction meetings and a final monitoring report. (May 2013 – Sept. 2013).
- **Fort Irwin Cell Tower Surveys and Monitoring, Northrop-Grumman and Fort Irwin Army Post, San Bernardino County, CA.** Principal. This project involves the cultural and paleo survey of over 24 new cell tower locations and associated access roads on Fort Irwin, as well as construction phase monitoring. (April 2013 – October 2013).
- **Marine Corps Base, Camp Pendleton, Cultural Resources Consultation, Marine Corps Base, Pendleton, San Diego County, CA.** On-Call Senior Cultural Resources Consultant. Dr. Bischoff provided senior-level cultural resource consultation related to Camp Pendleton's Basewide Utilities Infrastructure Improvements project. He provided consulting on cultural resource management for several waste treatment and utility line systems as part of the Camp's "Grow the Force" initiative. (2011 – October 2013)**.**

Water Projects:

- **Pacoima Spreading Grounds Improvement Project, LACDPW, Los Angeles County, CA.** Cultural Principal. Dr. Bischoff managed the cultural resources record search and CEQA cultural section mitigation measures of an EIR for the improvement of the Pacoima spreading grounds and related canal resources. (April 2013 – October 2013).
- **Devil's Gate Reservoir Sediment Removal and Management Project, LACDPW, Los Angeles County, CA.** Principal of Cultural Resources. This project involved removal of sediment within the Devil's Gate Reservoir area, which required a preliminary cultural survey and record search under CEQA, as well as an EIR. Dr. Bischoff served as the cultural principal for the project and provided a recommended plan for dealing with sedimentary soils vs. native soils, monitoring criteria, and potential discovery situations. Dr. Bischoff helped write Environmental Impact Report sections, and worked with the Gabrieleno Tribal Group in the protection of archaeological and tribal cultural resources. (2011 – October 2013).

- **Peck Road Spreading Basin Improvement Project, LACDPW, Los Angeles County, CA.** Cultural Principal. Dr. Bischoff managed the cultural resources record searches, field survey, paleontological survey, and CEQA cultural section mitigation measures of an MND for the improvement of the Peck Road Spreading Basin, including a related new water discharge pipe. (June 2013 – September 2013).
- **Marina Del Rey Waterline Replacement Project Cultural Monitoring, LACDPW, Los Angeles County, CA.** Cultural Principal. This project with the Los Angeles Department of Public Works involved the cultural monitoring for the Marina Del Rey 18-inch Waterline Replacement. Chambers Group also provided a qualified archaeological monitor at the project site during excavation activities during construction. (March - May 2013).
- **Dieguto Wetlands Restoration Monitoring, Southern California Edison, Del Mar, San Diego County, CA.** Principal Investigator and Project Manager. This project involved the extensive rehabilitation of Southern California Edison property as part of the Dieguto Wetlands Restoration project. (April 2012 - January 2013).
- **Live Oaks Spreading Grounds Project, LACDPW, Los Angeles County, CA.** Cultural Principal. Dr. Bischoff managed the cultural resources record search and site visit for this public works project. (April 2013 – October 2013).
- **Los Penasquitos Wetlands Monitoring, AMEC, Del Mar, San Diego County, CA.** Principal Investigator. Dr. Bischoff managed the monitoring tasks, budgets, and professional standards for this project near the City of Del Mar as part of the Torrey Pines State Nature Reserve restoration. (October - December 2012).
- **San Gorgonio Creek Water Recharge Basin Construction Monitoring, Beaumont Cherry Valley Water District, Cherry Valley, Riverside County, CA.** Principal and Project Manager. This project involved paleontological and archaeological construction monitoring during construction, including emergency evaluation and monitoring when early 19Th Century structures and materials were unexpectedly encountered during earth moving. (February 2012 – April 2012).
- **Penmar Golf Course Water Quality Improvement Project, Pacific Hydrotech and City of Santa Monica, Santa Monica, CA.** Principal Investigator. Dr. Bischoff managed QA/QC review, budgets, and professional standards for the project in the City of Venice. Penmar was a multi-year waterline and tank improvement project in which evidence of ethnic Japanese barrios and fossil Pleistocene animal bones were discovered. (November 2011 - November 2012).
- **Oxford Retention Basin Flood Protection Project, LACDPW, Los Angeles County, CA.** Principal and Project Manager. The Oxford Basin in Marina Del Rey was receiving enhancement, and Dr. Bischoff managed the completion of the cultural survey, literature review, and construction monitoring for the project. (2011 - 2012).

Public Works Projects:

- **Veterans Administration, VISN 21 On-Call, Western States, Teamed with KAL Architects.** This project will provide cultural and biological technical services for Veterans Administration projects from October 2013 to October 2018. (October 2013 – October 2013).
- **Historic Structure Evaluations for Statewide Weatherization Efforts, sub to ICF for the State of California, All Counties, CA.** Project Manager and Principal. This project involves meeting NEPA compliance for low-income subsidized weatherization efforts throughout the State of California. Hundreds of structures will be evaluated as part of this project by a Chambers Architectural Historian using an abbreviated format. (November 2011 to October 2013).

- **CEQA Services for Improvements to Polytechnic and Wilson High Schools, LBUSD, City of Long Beach, CA.** Cultural Principal. Dr. Bischoff provided oversight and incorporation of the historic architecture technical reports into the project CEQA documents. (June 2013 – August 2013).
- **Mill Creek Crew Room Cultural Monitoring, Angeles National Forest (ANF), Los Angeles County, CA.** The County of Los Angeles Department of Public Works proposed to replace the crew room building within the Angeles Forest Mill Creek Summit Maintenance Yard facility. This CEQA/NHPA project involved the preparation of a treatment and discovery plan document, ARPA permitting, constant consultation with the ANF, construction monitoring, and a final monitoring report. (April – July 2013).
- **Review of Technical Report and CEQA Documents Relating to the Proposed Demolition of Santa Ana Public Building #16, City of Santa Ana, Santa Ana, CA.** Principal. This project involved the review of technical documents, mitigation measures, and CEQA documents relating to the demolition of a 1950s public building in the City of Santa Ana. (May 2013 – July 2013).
- **Roosevelt School, LBUSD, City of Long Beach, CA.** Cultural Principal. Dr. Bischoff provided oversight, authorship, and counsel on the EIR for the demolition of the Roosevelt Elementary School in Long Beach. This proved to be a complex project, involving an historic built environment resource evaluation and mitigation plan, legal investigation, and extensive responses to public comments. This process resulted in a HABS/HAER mitigation project. (November 2011 - June 2012).

Transportation Projects:

- **Foothill Toll Road Cultural and Paleontological Monitoring, Ghiradelli and Associates, Orange County, CA.** Principal and Project Manager for cultural monitoring related to the upgrade of all toll road payment stations in Orange County. (October 2013 – October 2013).
- **9th Street Extension Historic Structure Inventory and Evaluation, City of Holtville, Imperial County, CA.** Principal and Project Manager. Dr. Bischoff managed and provided QA/QC for this project involving a Caltrans inventory of project APE historic built environment resources, and the historic evaluation of a canal feature. Final deliverables included a Historic Resources Evaluation Report and a Historic Property Survey Report to CALTRANS standards. (June 2013 – August 2013).
- **Francisquito Bridges Replacement (3-Total), LADWP/CALTRANS, Los Angeles County, CA.** Principal. Dr. Bischoff managed and oversaw the completion of this project in the Angeles Forest. This project involved the replacement of three existing bridges on San Francisquito Canyon Road over San Francisquito Canyon Creek. The proposed improvement project involved widening the two lane bridges, improvement of approachment roadway, and the placement and installation of retaining walls, concrete barriers with tubular-steel handrails, and metal beam guardrails. (2011 – September 2013).
- **Murrieta Whitewood Road Extension, City of Murrieta, Riverside County, CA.** Principal and Project Manager. This road extension project involved a cultural resource survey and records search, a paleontological field study, and native American Consultation due to the historic use of the nearby Murrieta Hot Springs by local Native Americans. (April – June 2012).
- **Nuevo Road/ I-215 Interchange Improvement in the City of Perris, CALTRANS, Riverside County, CA.** Principal. Dr. Bischoff managed and provided QA/QC for this project involving street widening and additional improvements at the Nuevo Road/ I-215 interchange. Final deliverables included a SCCIC/NAHC record search and a survey report to CALTRANS standards. (2011 – 2012).

- **Soledad Canyon Road Bridge Replacement Project, LACDPW, Los Angeles County, CA.** Principal. LADPW intends to replace a bridge on Soledad Canyon Road. Chambers Group completed a SCCIC/NAHC record search and NAHC records review for potential archaeological resources. This project is on-going and may in the future involve further work, including cultural and historic structure surveys and evaluation. (2011 – 2012).

Development Projects:

- **Grove Lumber Facility Cultural and Paleontological Technical Studies, Thatcher Engineering, City of Perris, Riverside County, CA.** Principal for the cultural technical studies for this development project, including cultural and paleontological record searches, NAHC letters, and a cultural study (October 2013 – October 2013).
- **Newport Beach Yacht Club Evaluation, Community Development Department, City of Newport Beach, Orange County, CA.** Principal for this historic architecture project involving the built environment evaluation of the Newport Beach Yacht House. (October 2013 – October 2013).
- **Blossom Plaza Historic Structure Evaluation, China Town, City of Los Angeles, CA.** Principal for this historic architecture project involving the updating of technical reports and a standing structure evaluation. (July 2013 – September 2013).
- **Moreno Valley Residential Building Evaluation, City of Moreno Valley, Riverside, CA.** Principal for the architectural assessment of the J. Langdon Ranch located at 11761 Davis Street, in the city of Moreno Valley, Riverside County, California. (April 2013).
- **Indian Wells Tennis Court Development Project, Indian Wells, Riverside County, CA.** Principal Provided technical review of the planning documents cultural section, as well as oversaw Native American Heritage Commission communication for this project to enhance the Indian Wells Tennis Garden complex. (December 2012 – April 2013).
- **Scripps Hospital Paleontological and Archaeological Monitoring, Worley-Parsons, City of Encinitas, CA.** Principal Investigator. Dr. Bischoff managed QA/QC review, budgets, and professional standards for the cultural and paleontological monitoring of this large development project. (2011 - 2013).

Mining Projects:

- **Mining Projects, Quality Control and Management Support – Ormat, Enviroscientists, Newmont, McEwen, Midway, Reno, Nevada.** Dr. Bischoff was directly involved with the management of dozens of mining-related surveys, monitoring, and site evaluation projects conducted from the Chambers Group Reno, Nevada, office. Bureau of Land Management was the principal Federal agency. (2011 – October 2013).
- **Ruth Mine Reclamation Cultural Survey and Evaluation, ERRG and USACE, Inyo County, CA.** Principal. Dr. Bischoff oversaw the Intensive Phase I mapping of the Ruth Mine site, evaluation of several site features, and negotiations with the Army Corps of Engineers and the BLM. Extensive mapping of Mine features and structures were completed as part of this project. Bureau of Land Management was the principal Federal agency. (2011 - 2012)

Staff Archaeologist, Marine Corps Base Camp Pendleton, San Diego County, CA.
June 2011 – Oct. 2011

Dr. Bischoff was a staff cultural resources specialist at Camp Pendleton, and worked on NEPA, Section 106, and Section 110 compliance requirements for resource management and Base construction projects. Dr. Bischoff was responsible for writing, developing, and executing cultural sections of CATEXs, EAs, EISs, and organized/reviewed NHPA Section 106 and Section 110 reports. Types of projects included archaeological surveys and evaluations, historic research, and monitoring projects. He also performed historic structure surveys and evaluations, and wrote and prepared appropriate documentation to meet construction project cultural and environmental compliance requirements.

Principle Investigator and Project Manager, **Pacific Legacy, Inc**., **Lancaster, CA.**
Sept. 2009 – June 2011

While at Pacific Legacy, I acted as the cultural resource principal and project manager for various Pacific Legacy clients, including the San Jose Water District, Aera Energy, Berry Petroleum, Quad Knopf, AT&T, and **Southern California Edison**. My primary responsibility was the oversight of subcontracted services to Southern California Edison's Tehachapi Renewable Transmission Project (TRTP). The TRTP is one of the largest green-energy projects in the U.S. and involves the wreck-out and new construction of hundreds of transmission lines and power facilities to carry electricity from wind and solar generation sites to the greater Los Angeles area. During this time, I built the Lancaster office from a staff of two, to a fully-functioning regional office with a permanent staff of eight people and temporary staff of several dozen.

Major Projects:

- **Tehachapi Renewable Transmission Project (TRTP), Southern California Edison, Kern, Los Angeles, and San Bernardino Counties, CA.** Principal and Project Manager. Dr. Bischoff was responsible for all office and field operations that ensured the successful inventory and management of cultural resources related to this 300-mile transmission line project, including the management of standing historical structures and paleontological resources. He managed an annual budget in excess of $4 million, a staff of up to 40 persons, wrote compliance documents (Programmatic Agreement Appendices, ARPA permits, Project Agency Yearly Reports, and Management Plans), and managed hazmat situations. Dr. Bischoff completed over 150 individual projects in southern California including survey, evaluation, mitigation, and resource monitoring. He wrote individual budgets for project-specific tasks, as well as construction-related administrative tasks, each with different scopes of work and budget amounts. He reconciled all budgets on a monthly basis and coordinated them with the master construction schedule. Dr. Bischoff managed field compliance with NEPA, with TRTP-specific environmental agency agreements, and with the cultural section of the project EIR/EIS and Programmatic Agreement. He also met legal and agency guidelines for Section 106 of NHPA, CEQA, NAGPRA, and TRTP Cultural Resource Management Plan. The Angeles National Forest was the lead Federal Agency, but the CPUC and other Federal and California State Agencies were also involved. (November 2009 - June 2011).
- **East Kern Wind Resource Area (EKWRA) Power Pole Replacement Project, Southern California Edison, Kern County, CA.** Principal and Project Manager. Dr. Bischoff managed original technical studies for a project designed to replace hundreds of power poles in the Tehachapi Mountains area in support of new wind farm construction. He conducted large area surveys, some on BLM properties, and developed a management plan for dozens of archaeological sites. Bureau of Land Management was the principal Federal agency. (February 2010 - June 2011).

- **San Jose Salt Barge HAER Documentation Project, USACE and Santa Clara Valley Water District, City of San Jose, CA.** Principal. Dr. Bischoff consulted on the excavation and evaluation of a shallow-water shipwreck discovered during a wetlands rehabilitation project. This project involved USACE, San Francisco District as lead agency and the Water District as client. (January – February 2011).
- **Operations and Maintenance Contract, Southern California Edison. Southern California.** I acted as the Principal for all work orders issued to our office under the O/M contract. A major task under this contract was the response to the Crown Fire in 2010. I worked directly with SCE during and immediately after the fire to evaluate and protect cultural resources. (Jan 2010 - June 2011)
- **Crown Fire Survey and Cultural Site Update, Southern California Edison, Los Angeles County, CA.** Project Manager. Dr. Bischoff led the cultural response to the Crown Fire, which included surveying and updating known cultural sites as part of the SCE post-fire power pole and access road inspection. (August – Sept. 2010).

Principal and Office Manager, Marushia Consultants, Inc. Okemos, MI.
June 2003 – Sept. 2009

Marushia Consultants was a Cultural Resource Management Company. In this position I bid on projects, managed existing accounts, was responsible for office and project budgets, and oversaw marketing and business development. During this time, I was part of the legal contract team, and represented the company with the public and with agencies. I also managed project NEPA/NRHP compliance, wrote compliance documents, conducted historic structure analysis, dealt with hazmat situations, engaged in industrial sites mitigation, and was a team member on public parks and museum development projects. Major clients included the Detroit District Corps of Engineers, several engineering companies, the City of Kansas City (MO), the Maumee (OH) Wolcott Museum, the Port Authority of Kansas City (MO), the Indiana Department of Transportation, the Carroll County (IN) Wabash and Erie Canal Association, and the National Park Service. During this time, I developed relationships with new clients in several Midwest states (OH, IN, MO) and retained clients that I had previously worked with under other companies.

Major Projects:

- **Carroll County Wabash River Bridge Replacement, Beam, Longest, and Neff Engineering, Carroll County, IN.** Principal, Project Manager. Dr. Bischoff evaluated and tested several historic archaeology sites and acted as a consultant to the County historical society on a Memorandum of Agreement. Due to the important and undisturbed nature of the sites encountered, the bridge was later relocated away from all resources. (2005).
- **Park Expansion and Surveying of Carroll County Park and Trail Lands, Wabash and Erie Canal Association and City of Delphi, Carroll County, IN.** Principal, Project Manager. Over the course of 10 years, Dr. Bischoff managed all Section 106 and cultural resource management plan writing, park and trail survey and site evaluation, and construction monitoring for the large park and trail (20+ miles) project in central Indiana. He developed a master Management and Interpretive Plan, represented the project with the State of Indiana, and consulted on the construction of a multi-million dollar interpretive center. (1993 - 2005).
- **Wolcott Museum and Grounds, Park and Public Area Development, Maumee, OH.** Principal and Project Manager. This project involved the use of archaeology survey and historic research to enhance knowledge of the park archaeological resources and to aid in overall interpretation of the landscape. (2004-2005).
- **Soo Locks National Landmark Writing and Building Inventory, Detroit District USACE and National Park Service, Sault Ste. Marie, MI**. Principal and Project Manager. Dr. Bischoff was

responsible for completing all National Landmark forms, conducting historic research and writing, and compiling the inventory and photography of over 100 buildings and structures at the Soo Locks facility at Sault Ste. Marie. This project was a joint undertaking by USACE, Detroit District and the National Park Service. (2003-2005).

- **Development of the Town of Kansas Archaeological Park, Kansas City (MO).** Dr. Bischoff was part of the City of Kansas City Town of Kansas park development team, acting as the principal for cultural and historical resources. Preliminary work had begun on the plan for developing the park and for the purchasing and renovation of several historic buildings when the project was closed by the City due a reallocation of funds. Much of the completed work involved creating a land-use history for the entire 8-block park as a preliminary step for creating a park master plan. (2003-2004).
- **Missouri River Redundant Trunk Water Line, Black and Veatch and City of Kansas City, Missouri, Kansas City, Missouri.** Principal, Project Manager. Dr. Bischoff performed preliminary work for a NEPA/NRHP EIS, including the evaluation of alternative pipeline locations. Preliminary writing and planning was initiated, but the project was cancelled by the client due to cost issues. (March 2003-April 2004).
- **National Register Nominations for Multiple Lime Kilns Near Delphi, Indiana, Wabash and Erie Canal Association and City, Carroll County, IN.** Principal and Project Manager. Completed paperwork for the nomination of multiple historic 19th Century lime kilns to the National Register of Historic Places. Information used to enhance public interpretation of local archaeological resources, trails, and park lands. (2003-2004).

Principal and Office Manager, Landmark Environmental Services. Sheridan, Indiana.
Oct. 2001 – June 2003

Landmark Environmental Services was a Cultural Resource Management company. I was office manager in Michigan and tracked project budgets in excess of $300,000 dollars. He also bid on projects and marketed to new clients, successfully adding new clients to the company in several states (OH, TN, MO) and retaining relationships with clients I had previously worked with. I acted as part of federal and state agency teams as projects demanded. I also managed NEPA/NRHP compliance, historic structure analysis, rail relocation and industrial site projects, and public parks and museum development. Major clients included the Detroit District Corps of Engineers, the Indiana Department of Transportation, several engineering companies, the City of Erin (TN), the City of Kansas City (MO), the Maumee (OH) Wolcott Museum, the Port Authority of Kansas City (MO), Federal Highways, the Tennessee State Historic Preservation Office, the Carroll County (IN) Wabash and Erie Canal Association, the City of Lafayette (IN), and the National Park Service.

Major Projects:

- **US-231 Bypass Historic Structure Survey, INDOT, Dubois County, IN.** Principal, Project Manager. Dr. Bischoff identified historic landscapes and structures eligible for the National Register and worked with the IN SHPO and INDOT offices on recommendations for route selection based on findings. This large historic structure survey project involved the evaluation of hundreds of historic structures along several alternative routes for the US-231 bypass in southern Indiana, and the defining of a number of original farming landscapes dating back to the early 19th Century German immigration period in the area. This project became one of the first projects in the state to have a historic landscape element, and was used in part by INDOT to define the criteria for how to establish and define a historic landscape. (2002-2003).
- **National Register Nomination of Standing Stone Lime Kilns Near Erin, Project for the State of Tennessee, Nashville, Tennessee.** Principal and Project Manager. Completed paperwork for

the nomination of multiple historic 19th Century lime kilns to the National Register of Historic Places. Information used to enhance public interpretation of local archaeological resources, trails, and park lands. (2002-2003).

- **Lafayette, Indiana, Rail Relocation, City of Lafayette, Tippecanoe County, IN.** Principal, Project Manager. Dr. Bischoff was a field director on the original Wabash and Erie Canal Lafayette Wharf (used 1840-1880) mitigation, which took place in 1993-1994. This project involved the uncovering of 9-city blocks of original canal wharfing during the relocation of railroad tracks through Lafayette, Indiana to below street level. Due to the bankruptcy of the original contracting company, Dr. Bischoff was brought back onto the project to managed artifact analysis and report. He directed the analysis of thousands of nineteenth century artifacts and was the primary author on the final report document. (2002-2003).
- **Consultant for the Tennessee State Historic Preservation Office.** I provided consultation services for the development of grant projects in under-represented counties in Tennessee. (2002-2003).
- **Interstate-69 Extension, INDOT, KYTC, and FHA, Southern IN and Northern KY.** Principal. Dr. Bischoff was a member of the technical study cultural team for the extension of I-69 to the Ohio River in Indiana, and into Northern Kentucky. He worked with the Indiana DOT and Federal Highways on the selection of routes that would later be surveyed (2002). To this end, early forms of geographic cultural site modeling were used in the attempt to predict high vs. low cultural site density areas. (2002).
- **Town of Kansas Archaeological Park and Riverfront Access Pedestrian Bridge, City of Kansas City, MO.** Principal, Project Manager. Dr. Bischoff was responsible for all survey, evaluation, and monitoring activities related to this project. He was a team member on the Memorandum Of Agreement development and provided public testimony as needed. The final MOA was among the City, the Port Authority of Kansas City (MO), the Missouri SHPO, and other local parties. (2001-2003).
- **Soo Locks National Register and National Landmark Writing and Building Inventory, Detroit District USACE and National Park Service, Sault Ste. Marie, MI**. Principal and Project Manager. Dr. Bischoff was responsible for completing all National Register and National Landmark forms, conducting historic research and writing, and compiling the inventory and photography of over 100 buildings and structures at the Soo Locks facility at Sault Ste. Marie. This project was a joint undertaking by USACE, Detroit District and the National Park Service. (2001-2003).

Principal and Office Manager, Hemisphere Field Services. Minneapolis, Minnesota.
June 1999 – Sept. 2001

Hemisphere Field Services was a Cultural Resource Management company. I was the Michigan office manager, acted as the Principal on several successful bids, and oversaw several project budgets in excess of $600,000 dollars. I also represented the company with the public and with agencies, and provided public testimony. I managed NEPA/NRHP compliance, wrote compliance documents, conducted historic structure analysis, dealt with hazmat situations, engaged in industrial sites mitigation, and managed public parks and museum development. Clients included the Detroit District Corps of Engineers, the Upper Mississippi Corps of Engineers, the Minnesota Department of Military Affairs, the Minneapolis Community Development Agency, several engineering companies, the City of Kansas City (MO), the Carroll County (IN) Wabash and Erie Canal Association. During this time, I worked with the SHPOs of MI, WI, ND, MN, and IN, was part of the development teams for Environmental Impact Statements in several states, was a co-author on Memorandum of Agreements (MO, IN), and developed marketing strategies in several states for Hemisphere Field Services that resulted in a number of new clients for the company.

Major Projects:

- **Soo Locks National Register and National Landmark Writing and Building Inventory, Detroit District USACE and National Park Service, Sault Ste. Marie, MI**. Principal and Project Manager. Dr. Bischoff was responsible for completing all National Landmark forms, conducting historic research and writing, and compiling the inventory and photography of over 100 buildings and structures at the Soo Locks facility at Sault Ste. Marie. This project was a joint undertaking by USACE, Detroit District and the National Park Service. (2000-2001).
- **Service Contract: USACE, Detroit District, MI.** Principal. Dr. Bischoff worked with USACE, Detroit District for various Michigan, Wisconsin, and Minnesota historic and archaeological projects for this four-year contract. He managed various projects, conducted historic structure surveys and evaluations, worked on HABS/HAER documentation, and coordinated cultural resource surveys, National Landmark evaluations, and environmental impact statements. The largest individual projects completed included the preparation of an EIS for the Fox River Improvements in Wisconsin, National Register building inventory and historical research writing for the Soo Locks in northern Michigan, and HABS/HAER recordation of historic rail yard buildings on COE properties Minnesota. (2000-2001).
- **Guthrie Theater Location Survey and Cultural Sites Evaluation, City of Minneapolis, MN.** Principal, Project Manager. Dr. Bischoff was involved with the creation of a land-use history for the project area, including potential hazmat locations, and the mechanical surveying of several city blocks prior to construction with this large construction project. Dr. Bischoff conducted WEAP hazmat training due to the existence of a collapsed historic train depot, repair house, and yard facilities underneath the site location. (2000-2001).
- **Town of Kansas Archaeological Park and Riverfront Access Pedestrian Bridge, City of Kansas City, MO.** Principal, Project Manager. Dr. Bischoff was responsible for all survey, evaluation, and monitoring activities related to this project. He was a team member on the Memorandum Of Agreement development and provided public testimony as needed. The final MOA was among the City, the Port Authority of Kansas City (MO), the Missouri SHPO, and other local parties. (1999-2001).
- **Survey and Evaluation of Two historic Properties, Minneapolis Community Development Agency, Minneapolis, MN.** Principal and Project Manager. These projects involved re-use of urban areas for the city. I was involved with site survey and evaluation. (2000-2001).
- **Fort Ripley Management Plan, Fort Ripley Army Post, MN.** Principal, Project Manager. Dr. Bischoff was responsible for archaeological testing, historic research, and the development of a management plan for Fort Ripley as part of the Army National Guard's ongoing Section 106 and Section 110 obligations. (2000-2001).
- **Baraboo Badger Army Ammunition Plant Decommissioning, GSA, WI.** Principal, Project Manager. Dr. Bischoff managed all work related to this project, including the enforcement of the project's Memorandum of Agreement. This project involved archaeological testing of several hundred acres, recording of dozens of historic farmsteads, and evaluation of all archaeological sites in preparation for the final dispersal of Army lands to historic groups, tribes, and the State of Wisconsin. (2000-2001).
- **Levee Improvements, Grand Forks, North Dakota, St. Paul District Corps of Engineers.** This project involved archaeological survey and testing of several areas scheduled to have levee improvements within the city of Grand Forks. (2000-2001).

Archaeological Project Manager, Michigan State University. East Lansing, Michigan. 1993 – 1999

I conducted research projects at Michigan State and also managed cultural resource management (CRM) projects in several states, bid on projects, managed project budgets, conducted limited marketing in Indiana and Michigan, and organized public interactions on projects.

Major Projects:

- Clinton Township Canal Park and Trails Development, Clinton Township, MI. Principal and Project Manager. Dr. Bischoff conducted several years of archaeological and documentary research in locating park and canal features. This information was later incorporated into trail development and kiosk historical information. (1997-1999).
- State of Indiana Grant for surveying historic transportation-related sites in Central Indiana.
- Three-year analysis and reporting of Southwest artifacts from the Puebla de la Mesa, New Mexico.
- Analysis and reporting of skeletal collection for NAGPRA Compliance, Tippecanoe County Historical Association, West Lafayette, Indiana.
- Analysis of skeletal collection for NAGPRA Compliance, Michigan State University Museum, East Lansing, MI.
- Initial evaluation of the Wabash and Erie Canal unexpected discovery: The Lafayette (IN) Rail Relocation Project and HTNB engineering. I was the original project manager for the City until contract negotiations were solidified between the principals and Great Lakes Research (Williamston, MI), at which time I became a crew chief and project historian. I produced a land-use history for the project, as well as historical background. This project involved WEAP hazmat training due to the existence historic fuel oil plants and other contaminants.

July 1, 2021

West Pointe Homes, Inc.
26500 West Agoura Road #652
Calabasas, California 91301

Attn: Ms. Makenzie Rasmussen

Subj: Cultural Resources Phase I Assessment for Moorpark 67/North Ranch Project (*Envicom Project #2021-112-01*)

Dear Ms. Rasmussen,

Envicom Corporation (Envicom) has completed a Phase I Cultural Resource Assessment for the Moorpark 67/North Ranch Project (**Figure 1** and **Figure 2**). The Project is 67.96 acres in size and located on APNs 5110-190-285 and 5110-190-305 (Project or Project Site) within the city of Moorpark, CA (City). The project will involve the subdivision of the property into 138 individual lots for residential development. The general location of the Project is as follows:

United States Geological Survey 7.5' Quadrangles: Moorpark
Township: 2 North Range: 20 West
Latitude: 34° 17'19.99"North Longitude: 118°54'22.27"West

The Phase I Cultural Resource Assessment included a cultural resource record search conducted by the South Central Coastal Information Center (SCCIC) and a Native American cultural resource record search conducted by the California Native American Heritage Commission (NAHC). Both record searches examined the Project site plus a 0.25-mile area ("study area") around the Project Site (see Figure 1). Additional databases examined during the Phase I Assessment included historic regional maps, historic United States Geological Survey (USGS) maps, and historic Google Earth images. The University of California Santa Barbara (UCSB) Library Historic Aerial Photograph Database was also examined. In addition, a record search for known paleontological resources was requested of the Natural History Museum of Los Angeles County (NHM), within the same 0.25-mile study area.

The purpose of a cultural resource record search is to identify any known cultural resources previously recorded within or immediately adjacent to the proposed Project Site, to provide cultural resource context for the Project from the examination of the study area, and to assess the overall cultural resource sensitivity of the Project region. A cultural resource is often defined as any building, structure, object, or archaeological site older than 50-years in age and can include historic or prehistoric locations of human habitation and occupation.

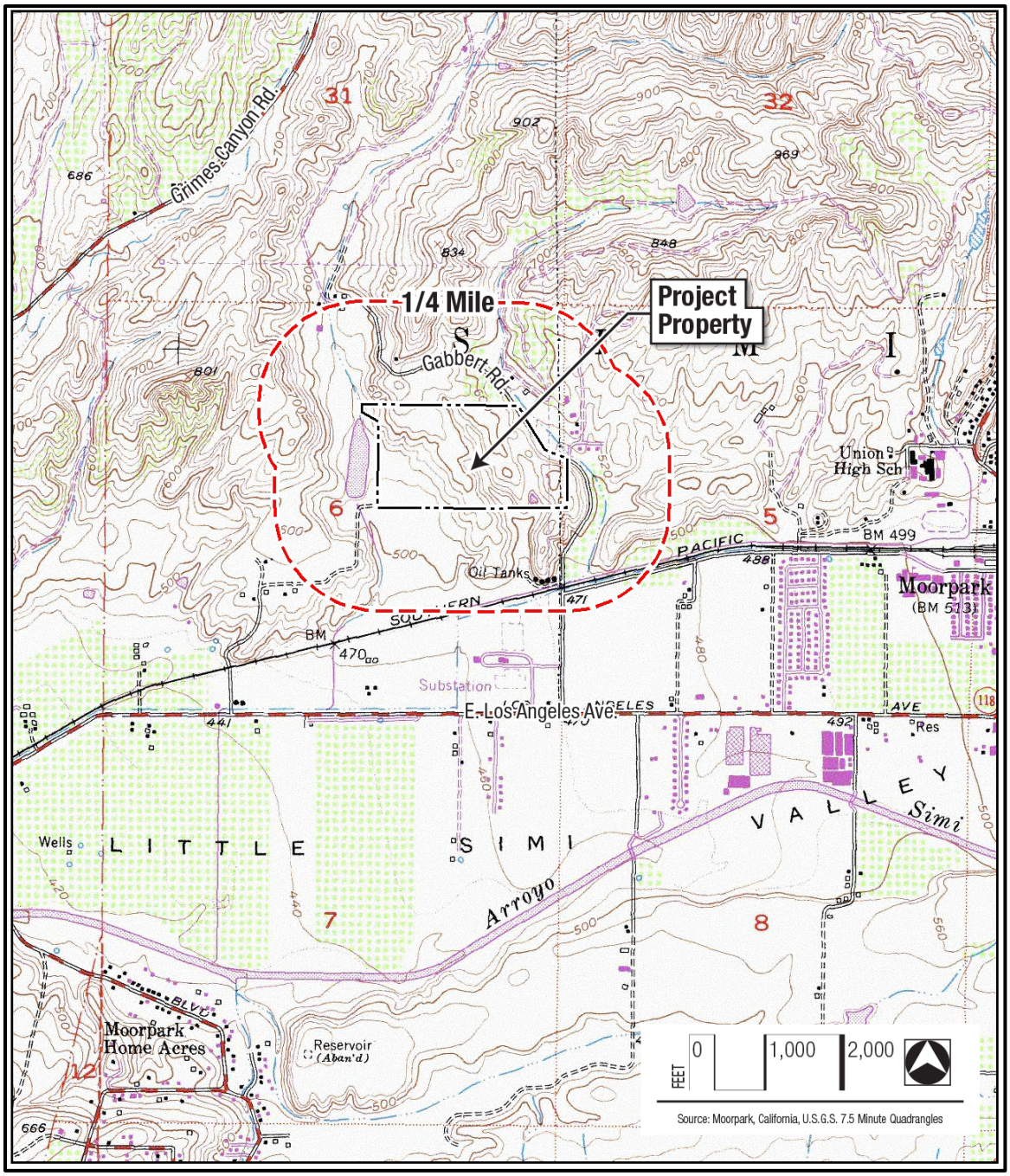


Figure 1: The Project location in Ventura County, California, with the 0.25-mile study area shown (1951 Moorpark Quadrangle Topographic Map, updated in 1974).



Figure 2: The Project property, showing the current conditions (2017 Google Earth Image).

RECORD SEARCH RESULTS

SCCIC and NAHC Record Searches

On May 26, 2021, Envicom submitted a request to the SCCIC to conduct a search of their database for cultural resources located within the Project property, and within the surrounding study area (defined as the Project property, plus a 0.25-mile buffer area) for regional cultural resource context (see Figure 1). The record search included a request for all complete site records for cultural resources within or adjacent to the Project property, as well as copies of all cultural resource technical reports that intersected with all or part of the Project property. Envicom also contacted the NAHC and the NHM on May 26, 2021, with a similar record search request.

Envicom received the cultural resource records search results from the SCCIC on June 28, 2021. The SCCIC record search found no previously identified cultural resources located within the Project property; but identified one (1) cultural resource within the 0.25-mile surrounding study area. This cultural resource is too distant from the Project property to be relevance for further consideration.

The SCCIC further identified that six (6) cultural resource reports involved the Project property. A cultural report titled "An Archaeological Survey of 2500 Acres for a Proposed Oil Exploration Project by Neaves Petroleum Development in the Vicinity of Moorpark, Ventura County, California" was written in 1977 by Robert Lopez. This report did not find any cultural resources. The second report titled "Cultural Resources Survey and Impact Assessment for Parcel B of Lot 53 on Gabbert Road in the City of Moorpark, Ventura County, California," written by C. A. Singer & Associates in 1994, also did not locate any cultural resources, but recommended that if any cultural resources were discovered during grading, then an Archaeologist was to be brought to the site for further assessment of the discovery.

W. S. Consultants wrote two reports that dealt with part of the Project property. The first from 1994 is titled "Phase 1 Archaeological Survey and Cultural Resources Assessment for the Levy Specific Plan Study Area, Ventura County, California." This report recommended that an archaeologist be present (monitoring) during grading within the center of the survey area, however, closer examination of the 1994 study area places it entirely outside of the Project property to the east and south (**Figure 3**). Their recommendation of monitoring is, therefore, not relevant for this project. The second report by W. S. Consultants, completed in 2003 and titled "Phase 1 Archaeological Survey of Hitch Ranch, Moorpark, Ventura County, California," involved the same property as was examined in 1994. No cultural resources were found, and any recommendations from that report are also not relevant for this project, due to the lack of overlap with the current Project property.

Mooney, Jones & Stokes wrote a report in 2006 titled, "Archaeological Survey Report for the Southern California Edison Company Replacement of 30 Deteriorated Poles Private and Public Inholdings, Ventura, Los Angeles, and Santa Barbara Counties, California." This report did not locate any cultural resources, but included recommendations that if any cultural resource was discovered then an Archaeologist was to be brought to the site. The last report was completed in 2015 by Dudek and was titled "Archaeological Survey Report Moorpark-2 Gabbert Road, Moorpark Ventura County, California." This report did not locate any cultural resources and did not recommend any mitigation measures or regulatory compliance actions other than an archaeologist being brought on site in the case of the discovery of cultural resources during grading.

Additionally, the SCCIC identified ten (10) additional cultural reports that involved the 0.25-mile study area. Examination of these reports did not indicate any cultural resource issues of relevance for the Project. All relevant cultural resource reports provided by the SCCIC are summarized in **Appendix A** of this report.

The results from the 2021 NAHC record search were received on June 10, 2021, with negative findings. If the Lead/Permitting Agency for the Project is required to perform an Assembly Bill (AB)-52 process, the NAHC letter should be made a part of the Native American consultation record. Envicom did not contact Native American groups on the NAHC list, as communications with Tribal Group representatives is the responsibility of the Lead/Permitting Agency, if required for this Project.

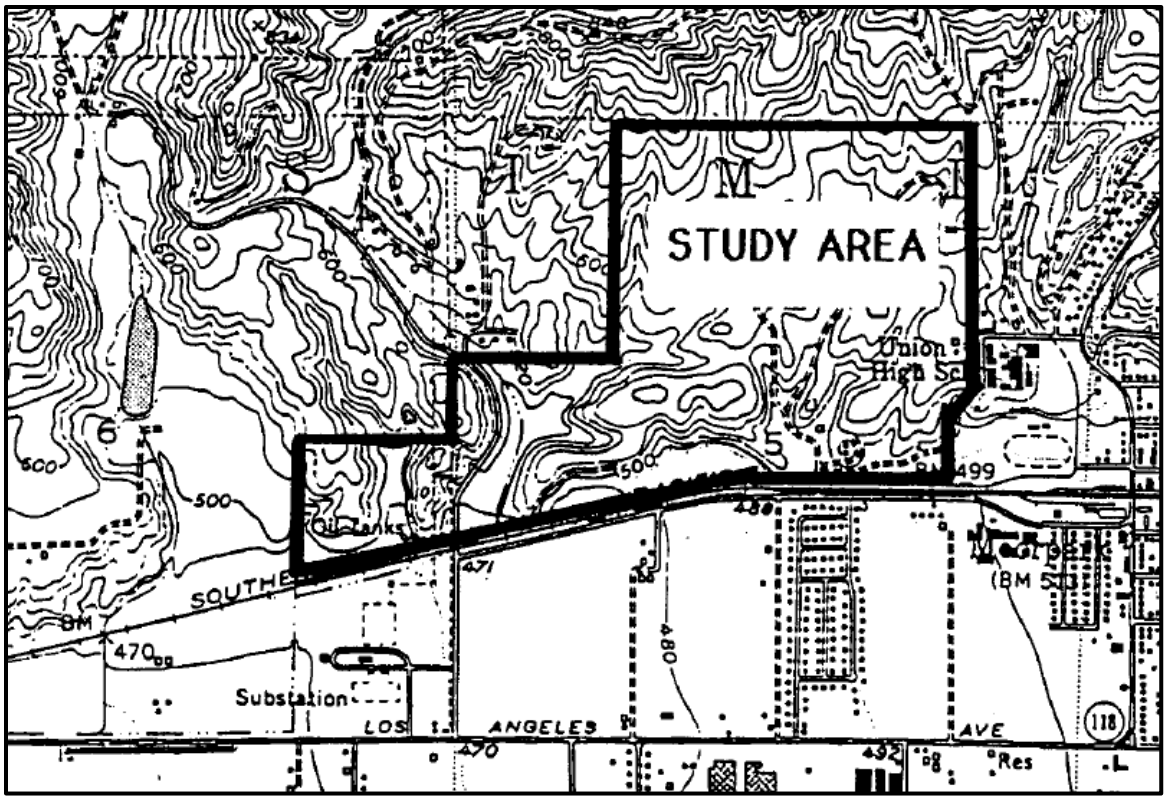


Figure 3: The W. S. Consultants 1994 and 2003 survey area, which was located to the south and east of the Project property (from the 1994 report).

Any findings from the SCCIC as to the physical location of cultural resources, except for public-knowledge built environment resources, is considered confidential by state law and are, therefore, not included in this report. Copies of the request letter to the SCCIC, NAHC, and NHM are included in **Appendix B** of this report, as are the response letters from the NAHC and NHM. The Principal Author's resume is provided in **Appendix C**.

Historical Map and Aerial Photograph Database Search

Examination of historic maps included fourteen (14) historic USGS maps, dating between 1903 and 1979. The 1903 Camulos USGS map shows no development within the Project property except for a single residential building located in the far northwest corner of the Project property. The map does show some development within the local region, especially along the railroad to the south (**Figure 4**). A second residence is located on the west side of the wash, however, this structure appears to be off the Project property. The 1921 Piru USGS map shows the same conditions, with some additional regional development, but no additional buildings within the Project property (**Figure 5**).

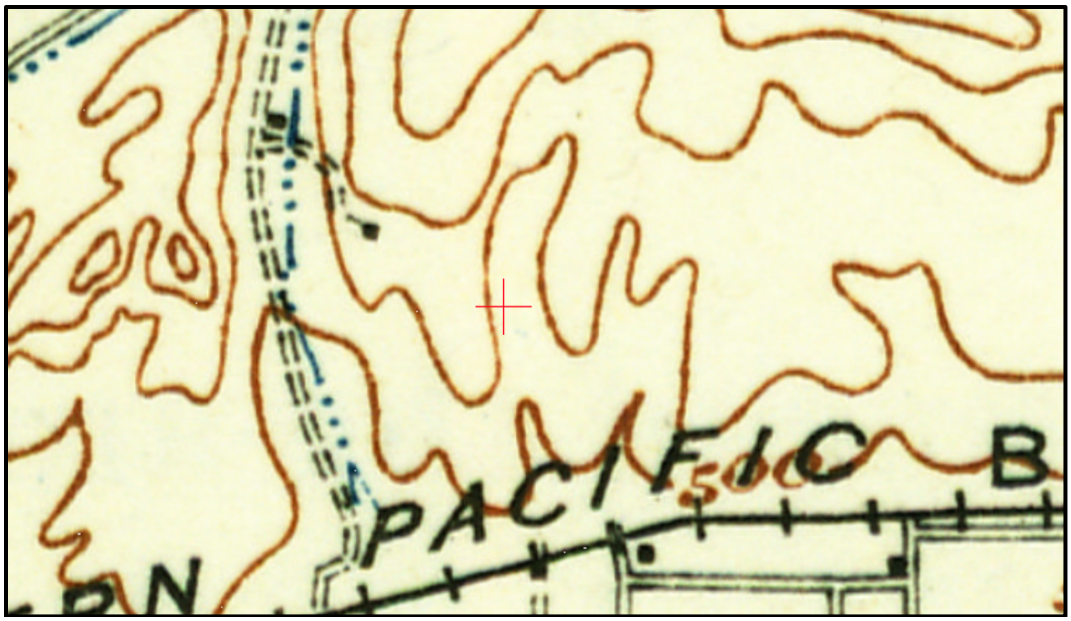


Figure 4: The 1903 Camulos USGS Map, showing a residence in the property at upper-left of center (red cross marks the general Project location).

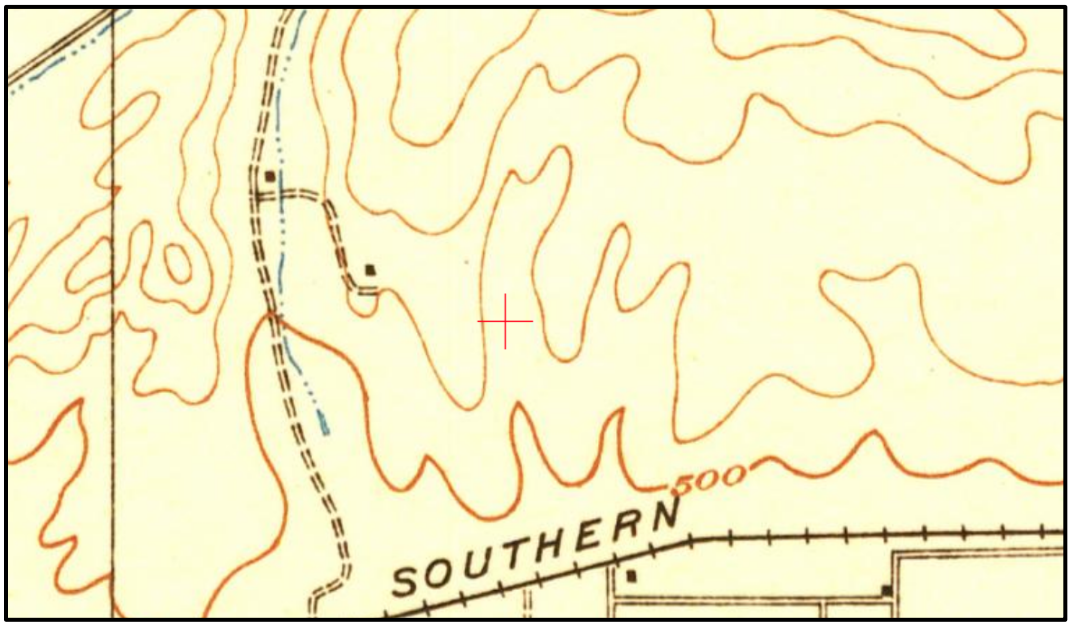


Figure 5: The 1921 Piru USGS Map, again showing the residence at upper-left of center (red cross marks the general Project location).

The oldest aerial photograph in the UCSB Library historic aerial photography database is from 1929 (**Figure 6**). This photo shows the Project property as mostly undeveloped, with local roads around the property and orchards to the south. The residential building shown on the 1903 and 1921 maps is not visible in the 1929 aerial photograph.

The 1941 Piru USGS map shows the property as completely undeveloped except for orchards in the western half (**Figure 7**). The route of Gabbert Road is firmly established by this time. The residence from the 1903 and 1921 maps is also not visible, suggesting that it was removed between 1921 and 1929, with the location being later used for agriculture. The 1951 Moorpark USGS map shows the same conditions, with no structures located on the Project property and with the western half of the property being used for orchards or agriculture (**Figure 8**). The 1969 Moorpark USGS map shows the large barrow pit just outside of the Project property to the west for the first time, but no additional development on the Project property itself. The 1974 Moorpark USGS map also shows no development on the property.

Historic Google Earth satellite images date back to 1985, but the first clear image dates to 1994. This image shows a number of cleared areas and new roads on the property, which would have been made between 1974 and 1994 (**Figure 9**). It is unclear whether the cleared areas were intended as house foundations or not. It appears that one or two of the cleared areas were later used for structures by 2001, however, several of the reports note the foundations with associated building material that was unused. No other changes to the property could be seen on Google Earth images from that point up to present.

The review of historic maps, satellite images, and aerial images indicated that the Project property does not have the potential to contain historic cultural resources dating to prior to the 1940s (World War II), which is considered to be the limit for older historic cultural resource sensitivity for the region, due to the only known older historic structure on the property being razed in the 1920s and the area converted to orchards. The historic map and aerial photograph database was, therefore, ***negative for the potential of older historic resources being found on the Project property***.

Paleontological Record Search Results

The NHM record search findings were received on June 3, 2021 and confirmed that the Project is near areas considered to be sensitive for paleontological resources. Fossils found in the Project study area include examples of marine shells, sturgeon, and waterfowl, with terrestrial mastodon and horse fossils also being found. The NHM recommended monitoring of any substantial extractions (e.g., excavated soil) within the Project property. The NHM record search also recommended that a paleontological study be conducted for the Project, however, Envicom determined that the combination of the NHM findings supported by additional in-house research would be sufficient for the Project. The response letter from the NHM is also located in Appendix B of this report.

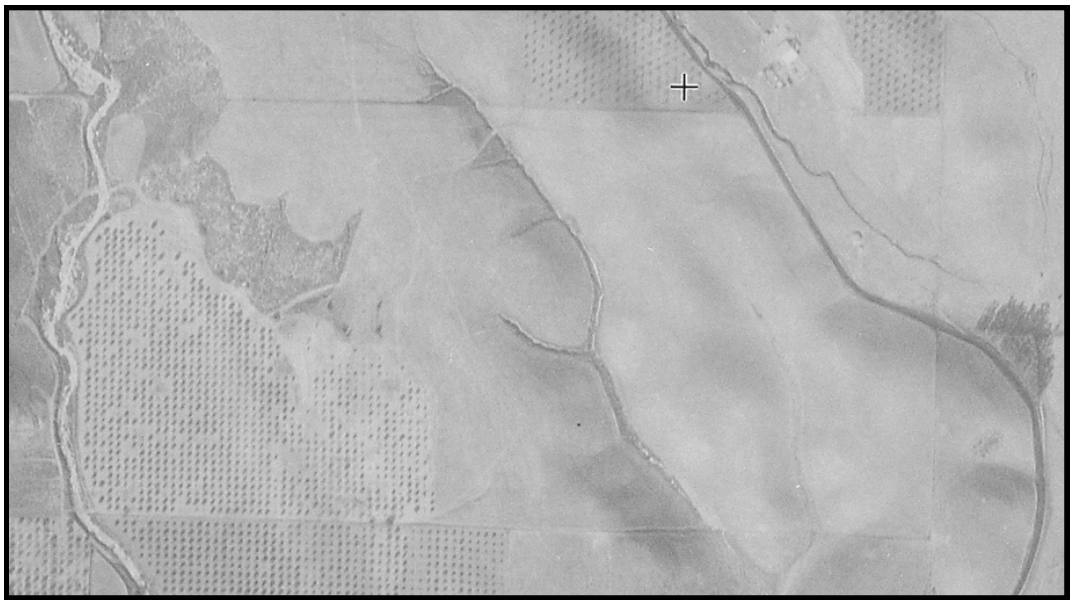


Figure 6: The Project area in 1929 image, showing the Project property with the earlier residence no longer visible in the upper-left corner (UCSB Historic Aerial Image Database).

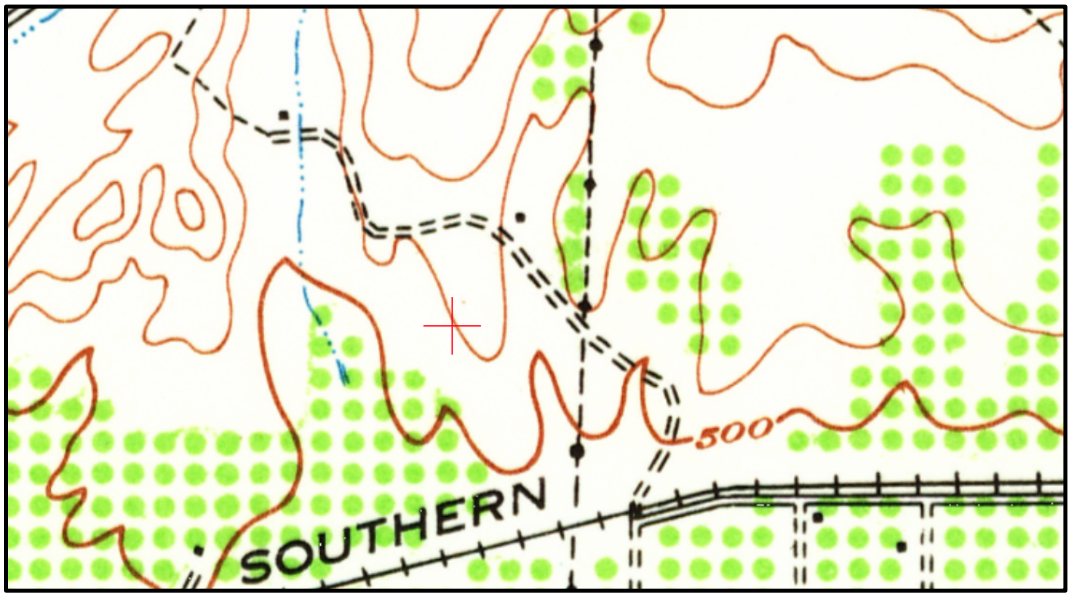


Figure 7: The 1941 Piru USGS Map (red cross marks the general Project location).

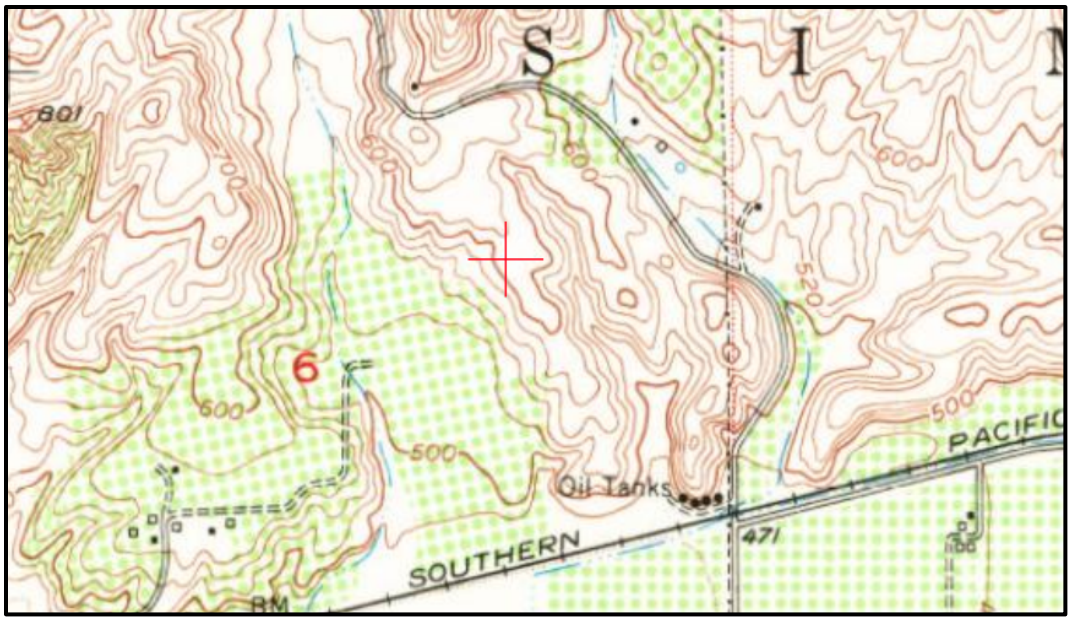


Figure 8: The 1951 Moorpark USGS Map, showing no development on the Project property except for orchards (red cross marks the general Project location).



Figure 9: The 1951 Moorpark USGS Map, showing no development on the Project property except for orchards (red cross marks the general Project location).

Envicom examined the 1992 Thomas W. Dibblee, Jr., Geological Map of the Moorpark Quadrangle, which shows the Project property being dominated by recent alluvial material (Qa) and the older Saugus Formation (QTs) periods (**Figure 10**). The Saugus Formation, which dates to the nonmarine Pleistocene and Pliocene time period, is a known source of important fossils in the region, and should be monitored when project excavation encounters the formation. Envicom, therefore, will recommend monitoring of excavation and grading within the Saugus Formation bedrock.



Figure 10: The 1992 Dibblee geological map, showing the recent alluvium (Qa: gray color) and the Saugus Formation (QTs: beige color) that dominate the project site (based on the USGS 1951 Moorpark Quadrangle map, revised in 1969).

Field Survey Results

Envicom staff visited the Project property on May 27, 2020. The Project property has two APNs: 5110-190-285 and 5110-190-305. The northern APN 5110-190-285 has been developed with roads, bridges, gardens, four concrete foundations and a tennis court which appear to date to the 1980s. The southern APN 5110-190-305 has dirt roads running through it with powerlines and towers on the east side of the parcel. The project property was covered with modern trash and seemed to be used as a trash dump and for hiking tail by surrounding residents (**Figure 11**, **Figure 12**, **Figure 13**, **Figure 14**, **Figure 15**, and **Figure 16**). Ground visibility was poor, with most of the landscape surface being covered in vegetation and trash. No early historic or prehistoric artifacts or features were observed on the surface. The findings were, therefore, ***negative for cultural resources within the Project property.*** However, the lack of ground visibility was concerning. Due to the modern age of the observed historic features, site recordation was not required.



Figure 11: Overview of Foundation 1, located in the northern APN.



Figure 12: Overview of foundation 2.



Figure 13: Overview of foundation 3.



Figure 14: Overview of the tennis court.



Figure 15: Overview of the Project property southern APN.



Figure 16: Overview of part of the garden area.

RECOMMENDATIONS

The results of the SCCIC database record searches were negative for cultural resources within and adjacent to the Project property. Examination of the historic USGS maps aerial photographs were negative for older historic material or features to be present within the property. The surface assessment was also negative for cultural resources. The NHM paleontological record search was positive for potential paleontological resources within the Project region, and Envicom found that the Project property is within the sensitive Saugus Formation, which is known for fossil finds.

Envicom does not recommend further assessment of the Project, nor does Envicom recommend archaeological or Native American monitoring during construction activities, given the lack of cultural resources on the Project property or in the surrounding region. Envicom does, however, recommends Paleontological monitoring when site grading and subsurface activities are near or within the Saugus Formation. Envicom also recommends contingency measures for situations where cultural resources are unexpectedly encountering during grading:

Recommendation 1: Paleontological Monitoring

A qualified paleontological monitor will be on site during grading in undisturbed Saugus Formation. The paleontological monitor will collect any fossil material that is uncovered through grading that is found within a disturbed context and can halt construction within 30-feet of a potentially significant fossil resource if necessary. Fossils collected from a disturbed context or that do not warrant additional assessment can be collected, without the need to halt grading. If fossils are not present within the older alluvial or bedrock material, and the project conditions warrant reduced monitoring, then a weekly spot-check system of monitoring can be arranged by the compliance team with the construction manager. However, if fossils are encountered, which cannot be removed during grading and that the monitor believes will need further assessment, then the Project "discovery" protocol will be followed. Discovery situations that do not lead to further assessment, survey, evaluation, or data recovery can be described in the monitor's daily forms.

All fossils recovered that may be of importance to California paleontology, will be cleaned, analyzed, and described within a final Project Monitoring Report. All materials will be curated at the Natural History Museum of Los Angeles County or placed on public display by the owner. If important fossils are found during monitoring, a Curation Plan will be needed that is reviewed by the Lead Agency prior to the publication of the Monitoring Report. The costs of the Monitoring Report, the Curation Plan, and the processing, analysis, and curation of all fossils will be the responsibility of the applicant.

Recommendation 2: Archaeological Discovery Protocol

If potentially significant intact deposits are encountered within an undisturbed context, then a cultural resource "discovery" protocol will be followed. If older historic or prehistoric features, artifact concentrations, or larger significant artifacts are encountered during Project grading within native soils or original context, then all work in that area shall be halted or diverted away from the discovery to a distance of 30-feet until a qualified senior archaeologist can evaluate the nature and/or significance of the find(s). If the senior archaeologist (not the field monitor) confirms that

the discovery is potentially significant, then the Lead Agency will be contacted and informed of the discovery.

Construction will not resume in the locality of the discovery until consultation between the senior archaeologist, the owner's Project manager, the Lead Agency, and any other concerned parties (such as additional regulatory agencies), takes place and reaches a conclusion approved by the Lead Agency. If a significant cultural resource is discovered during earth-moving, complete avoidance of the find is preferred. However, if the discovery cannot be avoided, further survey work, evaluation tasks, or data recovery of the significant resource may be required by the Lead Agency. The Lead Agency may also require changes to site monitoring, based on the discovery. All individual reports, including the final Project Monitoring Report, will be submitted to the SCCIC at the conclusion of the Project.

Recommendation 3: Inadvertent Discovery of Human Remains.

The inadvertent discovery of human remains is always a possibility during ground disturbances; State of California Health and Safety Code Section 7050.5 addresses these findings. This code section states that in the event human remains are uncovered, no further disturbance shall occur until the County Coroner has made a determination as to the origin and disposition of the remains pursuant to California Public Resources Code Section 5097.98. The Coroner must be notified of the find immediately, together with the City and the property owner.

If the human remains are determined to be prehistoric, the Coroner will notify the NAHC, which will determine and notify a Most Likely Descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials and an appropriate re-internment site. The Lead Agency and a qualified archaeologist shall also establish additional appropriate mitigation measures for further site development, which may include additional archaeological and Native American monitoring or subsurface testing.

Sincerely,

Wayne Bischoff,
Envicom Director of Cultural Resources
(with Ms. Samantha Renta)

ATTACHMENTS:

Appendix A: List of Previously Completed Cultural Resource Reports in the Project Property and Surrounding Study Area.
Appendix B: SCCIC, NAHC, and NHM Request Letters, and the NAHC and NHM response letters.
Appendix C: Resume of Dr. Wayne Bischoff (Principal)

APPENDIX A
List of Previously Completed Cultural Resource Reports in the Project Property and Surrounding Study Area

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
VN-00213		1979	Lopez, Robert	Archaeological Assessment for Pm-3192 Moorpark, Ventura County California.		
VN-00572		1988	Dames and Moore	Phase 1 Cultural Resources Survey Fiber Optic Cable Project, Burbank to Santa Barbara, California for Us Sprint Communications Company	Dames & Moore	56-000027, 56-000196, 56-000202, 56-000240, 56-000241, 56-000341, 56-000342, 56-000550, 56-000643, 56-000644, 56-000655, 56-000729, 56-000789, 56-000895, 56-000896, 56-000916, 56-000917, 56-000918
VN-00575		1988	Lopez, Robert	An Archaeological Reconnaissance of the Areas Involved in the Proposed Swepi Well Locations and Pipeline Routes Oxnard Plain, Ventura County, California	Robert Lopez, Archaeological Consultant	56-000631, 56-000665, 56-000666
VN-00607		1977	Lopez, Robert	An Archaeological Survey of 2500 Acres for a Proposed Oil Exploration Project by Neaves Petroleum Developments in the Vicinity of Moorpark, Ventura County, California	Robert Lopez, Archaeological Consultant	
VN-01059		1991	Singer, Clay A. and John E. Atwood	Cultural Resources Survey and Impact Assessment for Parcel B of Lot 53 on Gabbert Road in the City of Moorpark, Ventura County, California.	C.A. Singer & Associates, Inc.	
VN-01153		1991	Peak and Associates, Inc.	Class 3 Cultural Resource Assessment of the Proposed Carpinteria and Southern Reroutes, Santa Barbara, Ventura, and Los Angeles Counties, California	Peak & Associates	56-001089
VN-01265		1992	Reed, L.W.	Consolidated Report: Cultural Resources Studies for the Proposed Pacific Pipeline Project	Peak and Associates	19-000007, 19-000021, 19-000034, 19-000089, 19-000251, 19-000357, 19-000385, 19-000389, 19-000390, 19-000407, 19-000409, 19-000668, 19-000781, 19-000830, 19-000887, 19-000901, 19-000963, 19-001097, 19-001112, 19-001124, 19-001575, 19-001620
VN-01329		1994	Whitley, David S. and Joseph M. Simon	Phase 1 Archaeological Survey and Cultural Resources Assessment for the Levy Specific Plan Study Area, Ventura County, California	W & S Consultants	
VN-01589		1977	Lopez, Robert	Archaeological Survey of a Proposed New Well Site Within The Area of the Winchester Development in the Vicinity of Moorpark, Ventura County, Ca.	Rober Lopez	
VN-02314		2003	Whitley, David S. and Joseph M. Simon	Phase I Archaeological Survey of Hitch Ranch, Moorpark, Ventura County, California	W & S Consultants	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
VN-02386		2006	Jordon, Stacey C. and Patterson, Joshua D.	Archaeological Survery Report for the Southern California Edison Company Replacement of 71 Deteriorated Poles on the Patricia 16kv, Thacher 16kv, Matilda 16kv, Tico 16kv, Seaquit 4kv, Maguire 16kv, Galahad 16kv, Brennan B4 16kvm Strathern 16kv, Gabbert B2	Mooney, Jones & Stokes	19-001041, 19-001402, 19-002075, 19-002076, 19-120027, 56-000137, 56-000140, 56-000192, 56-000193, 56-001109, 56-001265, 56-001266, 56-100048, 56-100049, 56-152750
VN-02390		2006	Jordan, Stacey C. and Patterson, Joshua D.	Archaeological Survey Report for the Southern California Edison Company Replacement of 30 Deteriorated Poles Private and Public Inholdings, Ventura, Los Angeles, and Santa Barbara Counties, California	Mooney, Jones & Stokes	19-000729, 19-000730, 19-000731, 19-001266, 56-000141, 56-000550, 56-000562, 56-000901, 56-000902, 56-000980, 56-001110, 56-001124, 56-001125
VN-02504		2006	Arrington, Cindy and Nancy Sikes	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project State of California: Volumes I and Ii	SWCA Environmental Consultants, Inc.	
VN-02617		2007	Schmidt, James J.	Archaeological Survey Report, Southern California Edison, Moorpark-newbury 66kv New Source Line Project, Wo 4605-2104: Jo 6042-0468	Compass Rose Archaeological, Inc.	56-000449, 56-000454, 56-001031, 56-001032, 56-001036
VN-03094		2002	Foster, John A.	Historic Resource Evaluation Report- Mason Avenue At-Grade Crossing and Safety Improvements Project, Los Angeles City, California	Greenwood and Associates	
VN-03263		2015	Stone, David and Heather McDaniel	ARCHAEOLOGICAL SURVEY REPORT MOORPARK - 2 GABBERT ROAD, MOORPARK VENTURA COUNTY, CALIFORNIA	DUDEK	

APPENDIX B
SCCIC, NAHC, and NHM Request Letters, and the NAHC and NHM Response Letters

California Historical Resources Information System

CHRIS Data Request Form

ACCESS AND USE AGREEMENT NO.: _____ **IC FILE NO.:** _____

To: Information Center

Print Name: Samantha Renta Date: 5/26/21

Affiliation: Envicom Corporation

Address: 4165 E. Thousand Oaks Blvd

City: Westlake Village State: CA Zip: 91362

Phone: 818-879-4700 Fax: _____ Email: srenta@envicomcorporation.com

Billing Address (if different than above): _____

Billing Email: wbischoff@envicomcorporation.com Billing Phone: 818-879-4700

Project Name / Reference: Moorpark 67/North Ranch Project, #2021-112-01

Project Street Address: _____

County or Counties: Ventura

Township/Range/UTMs: T 2N, R 20W, 34.17'19.99"N, 118.54'22.27"W

USGS 7.5' Quad(s): Moorpark

PRIORITY RESPONSE (Additional Fee): yes ☐ / no ☐

TOTAL FEE NOT TO EXCEED: $_____
(If blank, the Information Center will contact you if the fee is expected to exceed $1,000.00)

Special Instructions:

Information Center Use Only

Date of CHRIS Data Provided for this Request: _____

Confidential Data Included in Response: yes ☐ / no ☐

Notes: _____

CHRIS Data Request Form

Mark the request form as needed. Attach a PDF of your project area (with the radius if applicable) mapped on a 7.5' USGS topographic quadrangle to scale 1:24000 ratio 1:1 neither enlarged nor reduced and include a shapefile of your project area, if available. Shapefiles are the current CHRIS standard for submitting digital spatial data for your project area or radius. **Check with the appropriate IC for current availability of digital data products.**

- Documents will be provided in PDF format. Paper copies will only be provided if PDFs are not available at the time of the request or under specially arranged circumstances.
- Location information will be provided as a digital map product (Custom Maps or GIS data) unless the area has not yet been digitized. In such circumstances, the IC may provide hand drawn maps.
- In addition to the $150/hr. staff time fee, client will be charged the Custom Map fee when GIS is required to complete the request [e.g., a map printout or map image/PDF is requested and no GIS Data is requested, or an electronic product is requested (derived from GIS data) but no mapping is requested].

For product fees, see the CHRIS IC Fee Structure on the OHP website.

1. Map Format Choice:

Select One: Custom GIS Maps ☐ GIS Data ☑ Custom GIS Maps **and** GIS Data ☐ No Maps ☐

Any selection below left unmarked will be considered a "no. "

Location Information:

	Within project area	Within 0.25 mi. radius
ARCHAEOLOGICAL Resource Locations[1]	yes ☑ / no ☐	yes ☑ / no ☐
NON-ARCHAEOLOGICAL Resource Locations	yes ☑ / no ☐	yes ☑ / no ☐
Report Locations[1]	yes ☑ / no ☐	yes ☑ / no ☐
"Other" Report Locations[2]	yes ☐ / no ☐	yes ☐ / no ☐

3. Database Information:
(contact the IC for product examples, or visit the SSJVIC website for examples)

	Within project area	Within 0.25 mi. radius
ARCHAEOLOGICAL Resource Database[1]		
List (PDF format)	yes ☑ / no ☐	yes ☑ / no ☐
Detail (PDF format)	yes ☑ / no ☐	yes ☑ / no ☐
Excel Spreadsheet	yes ☐ / no ☑	yes ☐ / no ☑
NON-ARCHAEOLOGICAL Resource Database		
List (PDF format)	yes ☑ / no ☐	yes ☐ / no ☑
Detail (PDF format)	yes ☑ / no ☐	yes ☐ / no ☑
Excel Spreadsheet	yes ☐ / no ☑	yes ☐ / no ☐
Report Database[1]		
List (PDF format)	yes ☑ / no ☐	yes ☑ / no ☐
Detail (PDF format)	yes ☑ / no ☐	yes ☑ / no ☐
Excel Spreadsheet	yes ☐ / no ☑	yes ☐ / no ☑
Include "Other" Reports [2]	yes ☐ / no ☑	yes ☐ / no ☑

4. Document PDFs (paper copy only upon request)**:**

	Within project area	Within 0.25 mi. radius
ARCHAEOLOGICAL Resource Records[1]	yes ☑ / no ☐	yes ☐ / no ☑
NON-ARCHAEOLOGICAL Resource Records	yes ☑ / no ☐	yes ☐ / no ☑
Reports[1]	yes ☑ / no ☐	yes ☐ / no ☑
"Other" Reports[2]	yes ☑ / no ☐	yes ☐ / no ☑

CHRIS Data Request Form

5. Eligibility Listings and Documentation:

	Within project area	Within 0.25 mi. radius
OHP Built Environment Resources Directory[3]:		
Directory listing only (Excel format)	yes ☐ / no ☑	yes ☐ / no ☑
Associated documentation[4]	yes ☐ / no ☑	yes ☐ / no ☑
OHP Archaeological Resources Directory[1,5]:		
Directory listing only (Excel format)	yes ☑ / no ☐	yes ☐ / no ☑
Associated documentation[4]	yes ☑ / no ☐	yes ☐ / no ☑
***California Inventory of Historic Resources* (1976):**		
Directory listing only (PDF format)	yes ☑ / no ☐	yes ☑ / no ☐
Associated documentation[4]	yes ☑ / no ☐	yes ☑ / no ☐

6. Additional Information:

The following sources of information may be available through the Information Center. However, several of these sources are now available on the OHP website and can be accessed directly. The Office of Historic Preservation makes no guarantees about the availability, completeness, or accuracy of the information provided through these sources. Indicate below if the Information Center should review and provide documentation (if available) of any of the following sources as part of this request.

Caltrans Bridge Survey	yes ☑ / no ☐
Ethnographic Information	yes ☑ / no ☐
Historical Literature	yes ☑ / no ☐
Historical Maps	yes ☐ / no ☑
Local Inventories	yes ☑ / no ☐
GLO and/or Rancho Plat Maps	yes ☑ / no ☐
Shipwreck Inventory	yes ☐ / no ☑
Soil Survey Maps	yes ☐ / no ☑

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[1] In order to receive archaeological information, requestor must meet qualifications as specified in Section III of the current version of the California Historical Resources Information System Information Center Rules of Operation Manual and be identified as an Authorized User or Conditional User under an active CHRIS Access and Use Agreement.

[2] "Other" Reports GIS layer consists of report study areas for which the report content is almost entirely non-fieldwork related (e.g., local/regional history, or overview) and/or for which the presentation of the study area boundary may or may not add value to a record search.

[3] Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Includes, but not limited to, information regarding National Register of Historic Places, California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and historic building surveys. Previously known as the HRI and then as the HPD, it is now known as the Built Environment Resources Directory (BERD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.

[4] Associated documentation will vary by resource. Contact the IC for further details.

[5] Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Previously known as the Archaeological Determinations of Eligibility, now it is known as the Archaeological Resources Directory (ARD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.

May 26, 2021

Native American Heritage Commission
1550 Harbor Boulevard, Room 100
West Sacramento, CA 95691

Subj: Cultural Resources Phase I Assessment for Moorpark 67/North Ranch Project
(Envicom Project #2021-112-01)

To Whom It May Concern,

Envicom Corporation (Envicom) is requesting a record review of the Native American Heritage Commission (NAHC) records of cultural resources for the Project site, plus a **0.25-mile study area**. We also request a list of Tribal Group representatives for the area in the event we need to contact their offices. The Project site is located at:

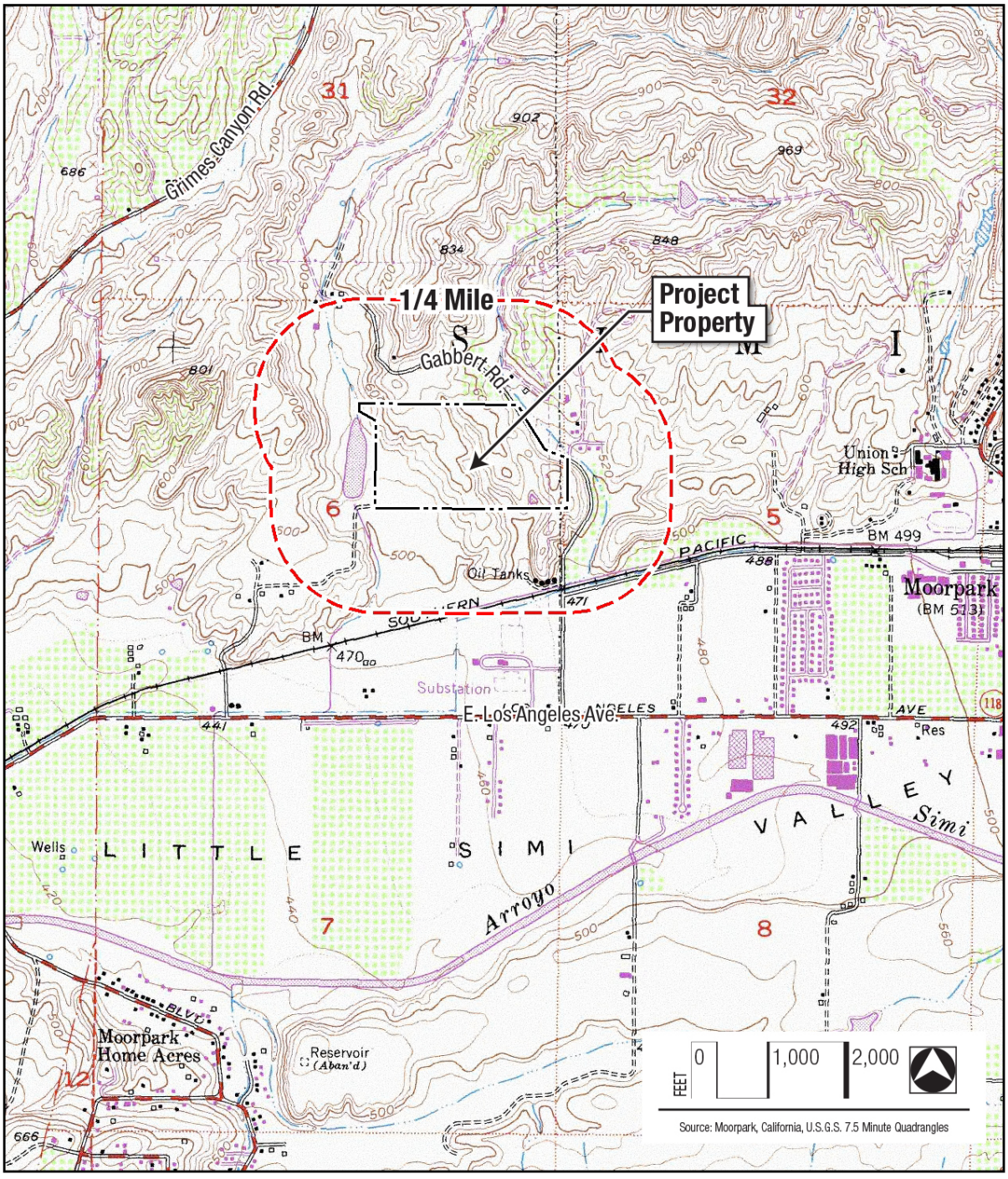
United States Geological Survey 7.5' Quadrangles: Moorpark
Township: 2 North Range: 20 West
Latitude: 34° 17'19.99"North Longitude: 118°54'22.27"West
County: Ventura

Envicom appreciates the NAHC's help with this request. For correspondence or questions regarding this Project, please contact Wayne Bischoff at 818-879-4700 (wbischoff@envicomcorporation.com).

Sincerely,

Wayne Bischoff
Director of Cultural Resources

Attachment:
Project vicinity map on 1:24,000 topographic map


1/4 Mile
Project Property
Gabbert Rd
Grimes Canyon Rd
E. Los Angeles Ave.
Moorpark
(BM 513)
Union High Sch
BM 499
Oil Tanks
Substation
BM 470
PACIFIC
SOUTHERN
Wells
LITTLE SIMI
VALLEY
Simi
Arroyo
Moorpark Home Acres
Reservoir (Aban'd)
31
32
6
5
7
8
12
FEET
0
1,000
2,000
Source: Moorpark, California, U.S.G.S. 7.5 Minute Quadrangles

May 26, 2021

Natural History Museum of Los Angeles
900 Exposition Blvd.
Los Angeles, CA 90007

Subj: Cultural Resources Phase I Assessment for Moorpark 67/North Ranch Project
(Envicom Project #2021-112-01)

To Whom It May Concern,

Envicom Corporation (Envicom) is requesting a record search of the Natural History Museum of Los Angeles County (NHM) database for paleontological resources/sensitivity for the Project site and surrounding area (within 0.25 mile of the Project site), as well as a map/listing of all paleontological resources previously identified within the attached Project site, plus the 0.25-mile study area. The Project site is located at:

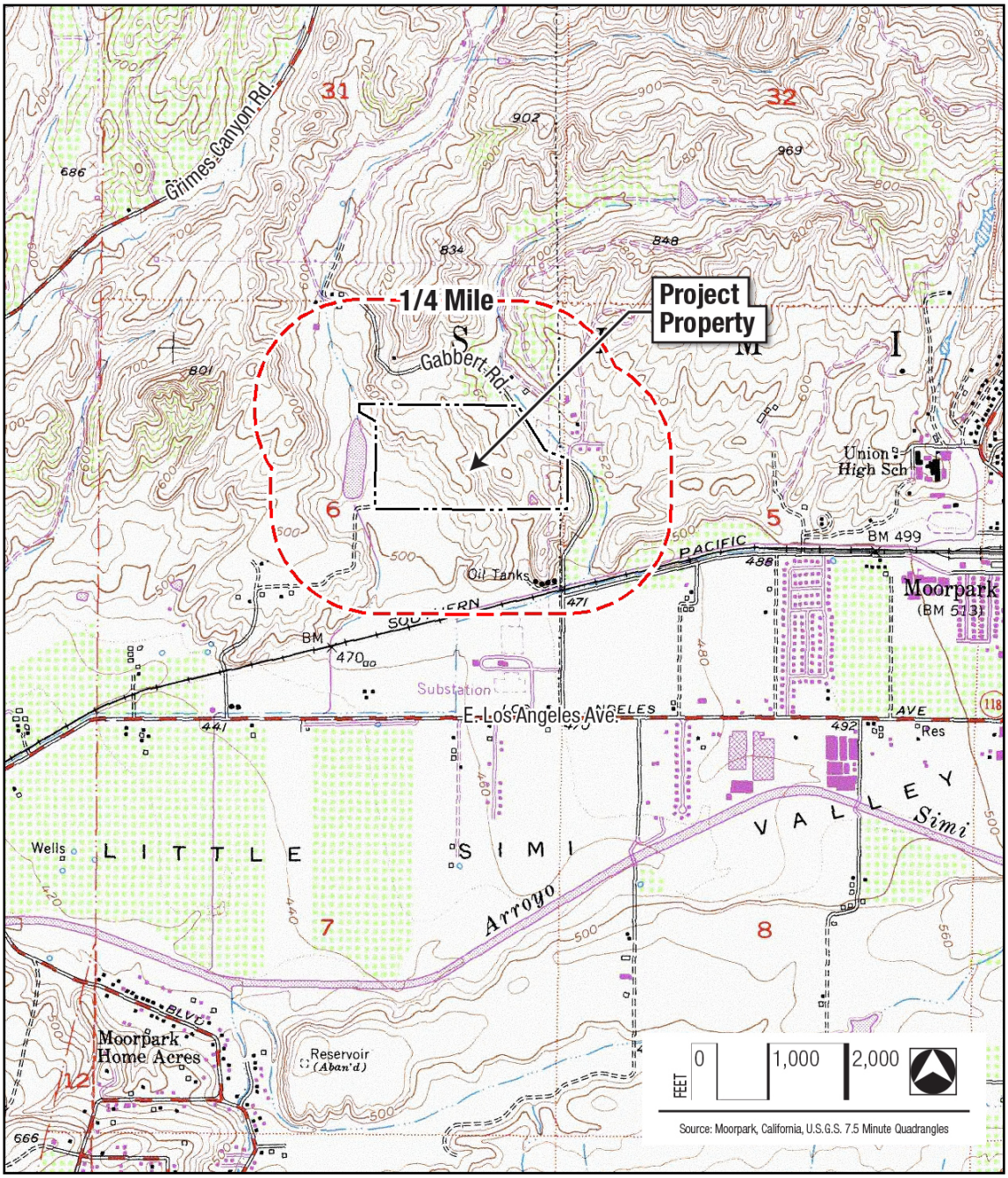
United States Geological Survey 7.5' Quadrangles: Moorpark
Township: 2 North Range: 20 West
Latitude: 34° 17'19.99"North Longitude: 118°54'22.27"West
County: Ventura

Envicom appreciates the NHM's help with this request. For correspondence or questions regarding this Project, please contact Wayne Bischoff at 818-879-4700 (wbischoff@envicomcorporation.com).

Sincerely,

Wayne Bischoff
Director of Cultural Resources

Attachment:
Project vicinity map on 1:24,000 topographic map


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LITTLE SIMI VALLEY
Simi Arroyo
Moorpark Home Acres
Reservoir (Aban'd)
PACIFIC
SOUTHERN
Res
AVE
BLVD
31
32
6
5
7
8
12
FEET
0
1,000
2,000
Source: Moorpark, California, U.S.G.S. 7.5 Minute Quadrangles

NATIVE AMERICAN HERITAGE COMMISSION

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COMMISSIONER
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COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

June 10, 2021

Wayne Bischoff, Director of Cultural Resources
Envicom Corp.

Via Email to: wbischoff@envicomcorporation.com

Re: Cultural Resources Phase I Assessment for Moorpark 67/North Ranch (Envicom Project # 2021-112-01) Project, Ventura County

Dear Dr. Bischoff:

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: Sarah.Fonseca@nahc.ca.gov.

Sincerely,

Sarah Fonseca
Cultural Resources Analyst

Attachment

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007
tel 213.763.DINO
www.nhm.org

NATURAL HISTORY MUSEUM
LOS ANGELES COUNTY

Research & Collections

e-mail: paleorecords@nhm.org

June 3, 2021

Envicom Corporation
Attn: Wayne Bischoff

re: Paleontological resources for the Moorpark 67/North Ranch Project (Envicom Project #2021-112-01)

Dear Wayne:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the Moorpark 67/North Ranch project area as outlined on the portion of the Moorpark USGS topographic quadrangle map that you sent to me via e-mail on June 1, 2021. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County.

Locality Number	Location	Formation	Taxa	Depth
LACM IP 1146	South flank of the Las Posas Hills; between Little Simi Valley and Santa Rosa Valley	Pico Formation (fine sand that overlies a gray-green mudstone)	Scallops (*Aequipecten* sp)	surface
LACM IP 17111	just northwest of north bound onramp to the Moorpark Freeway (Hwy 23) from Tierra Rejada Rd	Pico Formation (fine-grained limaceous silty sandstone)	Lucinid bivalves, scallops, and bore holes of lithophagid bivalves	surface
LACM VP 6107	E of Alamos Canyon and N of Hwy 118, Strathearn	Pleistocene terrace deposit	Horse (*Equus occidentalis*)	Surface
LACM VP 7455	Shea Homes Big Sky Ranch Development project north of Simi Valley; east of Erringer Rd	Unknown formation (Pleistocene; cobbly sandstone alluvium)	Mastodon (*Mammut*)	Unknown (collected during grading)
VIP CIT 585	Southern Las Posas Hills, northwest of intersection of Upland Rd and Santa Rosa Rd	Saugus Fm	Mastodon (Mammutidae)	Unknown
LACM VP 6238-6240	Near intersection of Mine Rd and Tapo	Saugus Formation (coarse light yellow	Sturgeon (*Acipenser*), scoter (*Melanitta*), albatross (*Diomedea*),	Unknown (collected

	Canyon Rd, Santa Susana Mtns	sand channel interbedded with light gray bioturbated siltstones)	shearwater (*Puffinus*), auk (*Mancalla*), baleen whale (Balaenidae), rorquals (Balaenopteridae), eared seal (Otariidae), sea snake (Hydrophiisae)	during grading)

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

This records search covers only the records of the Natural History Museum of Los Angeles County ("NHMLA"). It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,



Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

APPENDIX C
Resume of Dr. Wayne Bischoff (Principal).

WAYNE BISCHOFF, PH.D.

Professional Resume
Registered Professional Archaeologist (RPA #32450562)

Education

2000 - Ph.D. in Anthropology (Historical Archaeology emphasis), Michigan State University, East Lansing, MI.
1991 - Bachelor of Arts (Anthropology, Education, and U.S. History), Purdue University, West Lafayette, IN.

Professional Summary

- **Over 25 Years' Experience Managing Projects.** Projects completed under the California Environmental Quality Act (CEQA), Section 106 and 110 of the National Historic Preservation Act (NHPA), the National Environmental Protection Act (NEPA), as well as numerous other federal and state laws and permit regulations regarding cultural resources.
- **Successful Performance History.** Dr. Bischoff has managed up to 60 professional staff in multiple offices covering several states. He has completed challenged projects, developed successful cultural resource teams, and is experienced with budgeting and scoping projects, successful proposal writing, client and agency relationships, and large project management.
- **Numerous Market Sectors.** Dr. Bischoff has completed projects involving solar, wind, geothermal, and electric transmission lines; defense, public works, education, residential, and commercial development; telecommunication, mining, transportation, parks and trails, and water resources; and storm and sewer lines, industrial sites, and railroads.
- **Planning and Compliance Document Author.** Dr. Bischoff has been an author on Environmental Impact Reports (EIR), Mitigated Negative Declarations (MND), Environmental Impact Statements (EIS), Environmental Assessments (EA), Programmatic Agreements (PA), Memorandum of Agreements (MOA), Initial Studies (IS), ACOE permits, and Memorandum of Understanding (MOU).
- **Extensive Experience with Federal, State, County, and Local Agencies.** SHPOs, FHA, NPS, and CALTRANS. Multiple Bureau of Land Management districts (Barstow, Bishop, Moreno Valley, Needles, El Centro, Nevada). The Army and National Guard, Marine Corps, Navy, and Air Force. The GSA, the USDA, Forest Service, California Coastal Commission, and several USCOE districts, LACDPW, LADWP, and many regional water districts. Fish and Wildlife, the CPUC, and the Counties of Los Angeles, San Bernardino, Riverside, Ventura, Imperial, Kern, Santa Clara, Inyo, Mono, Santa Barbara, San Diego, and Orange. Many port authorities, state agencies, and local governments.
- **Consultation and Communication with Many Tribal Groups.** Tribal groups include the Chumash, Gabrielino, Tongva, Washo, Piute, Quechan, Cahuilla, Tataviam, San Manuel, Morongo, and Luiseno. ***I am a professional expert in AB-52 compliance and Tribal consultation.***
- **Over 500 Cultural Resource Projects Completed in Eleven States**. Including hundreds of Phase I Surveys, Phase II Evaluations, Phase III Data Recoveries, and Monitoring Projects. I have authored cultural resource Monitoring Plans, Evaluation Plans, Data Recovery Plans, PRIMPs, Construction Phase Management Plans, WEAPs, Feasibility Studies, and National Register and National Landmark nominations. Reports have included Cultural, Paleontological, and Built Environment resources.
- **Historic Architecture Project Management.** Including built environment surveys and inventories, building assessments and evaluations, HABS/HAER mitigation reports, landscape studies, and indirect effects reports. Subjects have included houses, commercial buildings, roads, canals, and power lines.

Professional Experience

Cultural Resources Director, Envicom Inc., Westlake Village, CA
February, 2014 – Current

As Cultural Resources Director at Envicom, I complete all cultural resource, archaeological, and paleontological phase I studies, all cultural resource evaluations and data recoveries, Native American consultation, and built environment projects for Envicom, and author cultural resource sections of permitting and planning documents, including MNDs and EIRs. Project area includes Ventura, Santa Barbara, Los Angles, Riverside, Kern, Imperial, San Diego, and San Bernardino Counties. I oversee cultural staff and work with planning teams on larger projects. I am also responsible for business development and project management tasks. I write proposals, oversee quality control, develop agency relationships, write technical reports, and manage and develop project budgets.

Projects:

- **Paleontological Monitoring of 15353 Camarillo, Sherman Oaks, CA.** Principal and Project Manager for this paleontological monitoring project. (Upcoming).
- **Archaeological and Paleontological Monitoring of the Twin Lakes Water Tank Construction for the Las Virgenes Water District, Porter Ranch, CA.** Principal and Project Manager for this monitoring project. (Upcoming).
- **Cultural Resource Tasks Associated with the Arrowhead Estates Project, Banning, CA.** Principal and Project Manager for this 65-acre residential project, which will construct 170+ houses near the historic Saint Boniface Indian School (now demolished). This project involved the National Register nomination of the Indian School, a HAER-level documentation of a stone and concrete water channel, the curation of all artifacts with the Morongo Tribal Group, the installation of historic signage, and the archaeological and Native American monitoring of the project site grading. (Upcoming).
- **Archaeological Monitoring at the Sakioka Business Park, Oxnard, Ventura County, CA.** Project Manager for this large archaeological monitoring project. (October 2020 – Current).
- **Phase I survey of the proposed Little Rock Mobile Home Park, unincorporated Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (November 2020 – Current).
- **Phase I survey of 410 Tico Road, Ojai, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (November 2020 – Current).
- **Native American Monitoring at the Los Angeles International Airport (LAX), City of Los Angeles, Los Angeles County, CA.** Project Manager for this long term Native American monitoring project, which includes a Discovery Plan and a final Monitoring Report. (October 2020 – Current).
- **Oakmont Senior Living Historic and Archaeological Display Production, Agoura Hills, Los Angeles County, CA.** Project Manager for this historical interpretation display project (October 2020 to Current).
- **Arts District Archaeological Monitoring Project, Los Angeles, CA.** Principal and Project Manager for this archaeological monitoring project. (October 2020 to Current).
- **Oakmont Senior Living Historic and Archaeological Display Production, Simi Valley, Ventura County, CA.** Project Manager for this historical interpretation display project (with the Strathearn Historic Park and Museum) (September 2020 to Current).

- **Phase I Survey of 122 acres of the Canyon Ostara residential development project, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC and NAHC record search and a site survey. (August 2020 – Current).
- **Cultural Resource Monitoring for the Oasis Windmill Farm, Kern County, CA.** Project manager for the monitoring of impacts in six cultural resources as part of the Oasis Windmill Farm upgrade (August 2020 – Current).
- **Keyes Porsche Archaeological, Paleontological, and Native American Monitoring Project, Woodland Hills, CA.** Principal and Project Manager for this archaeological, paleontological, and Native American monitoring project. (August 2020 – Current).
- **Archaeological, Paleontological, and Native American Monitoring for the JPA/Las Virgenes Water District Solar Farm Expansion, Calabasas, CA.** Principal and Project Manager for this monitoring project. This project encountered elements of a very old prehistoric site at depth, which included lithic material, groundstone artifacts, and an intact multi-episodic hearth feature (April 2020 – Current).
- **Summit View Apartments Project Paleontological Monitoring for this Veterans Housing Project, City of Los Angeles, CA.** Principal and Project Manager for this paleontological monitoring project. (February 2020 – Current).
- **Oakmont Senior Housing Archaeological, Paleontological, and Native American Monitoring Project, Agoura Hills, CA.** Principal and Project Manager for this archaeological, paleontological, and Native American monitoring project. (January 2020 – Current).
- **Conrad N. Hilton Foundation Phase Ib of Proposed Phase II Building Locations, Agoura Hills, California.** This project involved the excavation of 48 shovel test pits within the western periphery of cultural resource CA-LAN-320 on Foundation property. (January 2020 – Current).
- **18800 Gale Avenue Archaeological, Biological, and Paleontological Monitoring Project, Rowland Heights, CA.** Principal and Project Manager for this archaeological, biological, and paleontological monitoring project. (November 2019 – Current).
- **Los Angeles Unified School District (LAUSD) Environmental On-Call for archaeological and paleontological tasks, Los Angeles County, CA.** Principal, Project Manager, and cultural resource task completion as needed. Envicom is one of three selected vendors for one year, with four potential renewable years in the contract. (February 2019 – Current).
- **Los Angeles Community College District Environmental On-Call (including cultural resources), Los Angeles County, CA.** Principal, Project Manager, and cultural resource consultant as needed. (February 2018 – Current).
- **Review of Technical Documents and EIR Cultural Section Writing for "The Agoura Village Expansion" project, Agoura Hills, Los Angeles County, CA.** Professional review of project cultural resource documents and authoring of cultural resource section of MND for this large mixed use project. The primary challenge is that the development is located on a significant prehistoric Native American cultural resource. (January 2018 – Current).
- **Los Angeles Unified Schools Department (LAUSD) Environmental On-Call (including cultural resources), City of Los Angeles, Los Angeles County, CA.** Principal, Project Manager, and cultural resource consultant as needed. Envicom was one of 15 companies to be awarded this large on-call contract. (February 2017 – Current).
- **CA-LAN-320 Phased Evaluation Project, Agoura Hills, Los Angeles County, CA.** Principal and Project Manager for the phased evaluation (Phase II) of CA-LAN-320 in response to potential impacts from the construction of the Conrad N. Hilton Foundation Phase 2 Campus Building. The site is a prehistoric Chumash residential and ceremonial center of over 80-acres in size and that was used by prehistoric Native Americans from 300 B.C. to the late 1700s. Dozens of test units, hundreds of shovel test pits, surface collection, and surface feature mapping have been completed to date planned. (August 2015 – Current).

- **Phase I Survey of a property within the Rancho Ojai subdivision, Ojai, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (October 2020 – November 2020).
- **Fillmore Terrace Phase I and Native American Consultation, Fillmore, Venture County, CA (with Samantha Renta).** Principal and Project Manager for this large low-income housing project, which included an SCCIC record search, site visit, and Native American consultation on behalf of the City. (September 2020 – October 2020).
- **Phase I Survey of a property on Giles Road, Lake Sherwood, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. Exploration of all rock shelters and cache openings on the property for historic artifacts was part of this project (July 2020 – October 2020).
- **Phase I Survey of 730 South Vermont, City of Los Angeles, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC, NAHC, and NHM record searches and a site visit. (June 2020 – October 2020).
- **Phase I Survey of the Reconstruction of the Brookview Ranch Riding and Event Venue, School of Management Building, County of Los Angeles, CA (with Samantha Whittington).** Principal and Project Manager for this riding venue rebuild and expansion. Project included a SCCIC/NAHC record search and a site visit. One of the challenges has been integrating a prehistoric cultural resource immediately north of the project development, but on the project property, into the assessment recommendations (July 2019 – September 2020).
- **Phase I Survey of 715 Del Oro Drive, Ojai, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (June 2020 – August 2020).
- **Phase I Survey of 604 Gridley Road, Ojai, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (July 2020 – August 2020).
- **Phase I Survey of the Tehachapi Battery Storage Project, Terra Gen Windfarms, Kern County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included a Bakersfield record search and a site survey. (July 2020 – August 2020).
- **Phase I Survey of the 5041 Lankershim Hotel Property, North Hollywood, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC, NHM, NAHC record searches and a site visit. (May 2020 – July 2020).
- **Phase II Evaluation of CA-LAN-41 within the Boundary of the Agoura Village project, City of Agoura Hills, Los Angeles County, CA.** Principal and Project Manager for the completion of an Evaluation (Phase II) of a complex prehistoric cultural resource within the boundary of the Agoura Village project. The Phase II involved the excavation of ten test units, dozens of shovel test pits, as well as more detailed mapping of the site. (January 2019 – July 2020).
- **Phase I Survey of 6544 Wandermere Road, Malibu, Los Angeles County, CA (with Samantha R3nta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (June 2020 – July 2020).
- **Phase I Survey of 5841 Busch Drive, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (May 2020 – July 2020).
- **Archaeological and Paleontological Monitoring for the Agoura Landmark Development Project, Agoura Hills, CA.** Principal and Project Manager for this monitoring project. A negative findings report was also completed and submitted to the City (January 2019 – July 2020).

- **Phase I Survey 505 Centre Street, City of Los Angeles, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC, NAHC, and NHM record searches and a site visit. This complex project had multiple built environment concerns, including the adjacent San Pedro Commercial Historic District (April 2020 – June 2020).
- **Paleontological Phase I Survey of an Agricultural Development Parcel in Balcom Canyon, City of Somis, Ventura County, CA.** Author for this project, which included a detailed geological and paleontological statement for the proposed project. (June 2020).
- **Cultural Resource Discovery Plan for the Oasis and Point Wind Windmill Farm, Kern County, CA.** Author of the discovery plan for upgrades to two large windmill farms for Terra Gen. (March – April 2020).
- **Phase II Evaluation of Six Native American Archaeological Sites for the Terra Gen Oasis Windmill Farm, Kern County, CA.** Principal and Project Manager for this archaeological evaluation project, which utilized shovel test pits and test units to evaluate six prehistoric Native American cultural resources that would be impacted by future windfarm development. (March 2020 – April 2020).
- **Phase I Survey of The Emerald Residential Project, Lancaster, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this approximately 5-acre housing project, which included an SCCIC/NAHC/NHM record searches and a site visit. (February 2020 – April 2020).
- **Phase I Survey of The West Palmdale Residential Complex Project, Palmdale, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this approximately 35-acre housing project, which included an SCCIC/NAHC/NHM record searches and a site visit. (February 2020 – April 2020).
- **Conrad N. Hilton Foundation Geotech Boring Archaeological and Paleontological Monitoring, Agoura Hills, California.** This project involved the monitoring of geotech trench and drilling sites within Foundation and Las Virgenes Water District properties within the City of Agoura Hills. (January 2020 – April 2020).
- **Phase I Survey of 4510 Via Vienta, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (January 2020 – April 2020).
- **Phase I Survey of the Proposed California Lutheran University, School of Management Building, Thousand Oaks, CA (with Samantha Renta).** Principal and Project Manager for this university project. Project included a SCCIC/NAHC record search and a site visit. (December 2019 – April 2020).
- **Phase I Survey of the Twin Lakes Water Tank Project, Porter Ranch, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for the Los Virgenes Municipal Water District. (October 2019 – April 2020).
- **Phase I Survey of the Castaic Apartments Project, Town of Castaic, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this large 105-acre mixed use development project, which included an SCCIC/NAHC record search, an NHM record search, and a site visit. The cultural survey discovered two complex older historic sites, which required extensive recordation and evaluation (July 2019 – April 2020).

- **Sierra West Assisted Living Project, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this group residential project. Project included NHM/SCCIC/NAHC record searches, and a site visit. A project challenge was addressing historic early 20th Century structures, including an early stagecoach station, which once were located on the property, as well as the proximity of the parcel to a historic (1880s) cemetery. (October 2019 – April 2020).
- **Phase I Survey of 1175 Camille Drive, Ojai, Ventura County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC/NAHC record search and a site visit. (January 2020 – February 2020).
- **Vineland and Cleon Self Storage Project Phase I Cultural Survey, Burbank, CA (with Samantha Renta).** Principal and Project Manager for this commercial project. Project included NHM/SCCIC/NAHC record searches, but no site visit due to extensive urbanization. (December 2019 – January 2020).
- **Phase I Survey of 5617 Busch Drive, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (December 2019 – January 2020).
- **Cultural Resource Monitoring of the 21110 Oxnard Hotel project, Woodland Hills, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this monitoring project. (August 2019 – January 2020).
- **Phase I Survey of the Riverwalk II Mixed-Use Project, Santa Clarita, CA.** Principal and Project Manager for this commercial and Residential Project. Project included a SCCIC/NAHC record search and a site visit. (December 2019 – December 2019).
- **Phase I Survey of 5814 Philip Road, Malibu, Los Angeles County, CA (with Samantha Renta).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (October 2019 – December 2019).
- **Phase I Survey of Improvements to the Coronado Golf Course, San Diego, San Diego County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC record search only. (October 2019 – November 2019).
- **Phase I Survey of 6208 Tapia Drive, Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (October 2019 – November 2019).
- **Phase I Survey of 6711 Wandermere Road, Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (September 2019 – October 2019).
- **Phase I Survey of 5820 Foxview Drive, Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for residential project, which included an SCCIC/NAHC record search, an NHM record search, and a site visit. (September 2019 – October 2019).
- **Phase I Survey of the new Keyes Porsche Auto Dealership, Woodland Hills, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC/NHM record search, a site visit, and the production of a separate Ethnographic Assessment Report for the project. Envicom also supported the Lead Agency in AB-52 consultation with the Tataviam and Tongva Tribal Groups. (August 2019 – October 2019).
- **Cultural Resource Monitoring of the 21121 Van Owen development project, Canoga Park, Los Angeles County, CA.** Principal and Project Manager for this monitoring project. (September 2019).

- **Phase I Survey of the Avenue 34 Mixed-Use Development Project, City of Los Angeles, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC record search and a site visit. (August 2019 – September 2019).
- **Phase I Survey of the Faith Lutheran Senior Living Project, City of Inglewood, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC record search and a site visit. (August 2019 – September 2019).
- **Phase II Evaluation of Cultural Resource CA-LAN-513 within the Boundary of 6282 Sea Star Estates Residential Development within the City of Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this Phase II evaluation, which involved surface examination only due to plowed field conditions. No evidence of a cultural resource was found. (September 2019).
- **Phase I Survey of an Agricultural Development Parcel in Balcom Canyon, City of Somis, Ventura County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC record search, a site visit, and the recordation of a prehistoric site at the edge of the project boundary. (July 2019 – August 2019).
- **Phase I Survey of 31215 Bailard Road, City of Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC record search and a site visit. (July 2019 – August 2019).
- **Phase II Evaluation of the Proposed Location of the Printz Colony House within the Strathearn Historic Park, City of Simi Hills, Ventura County, CA (with Samantha Whittington).** Principal and Project Manager for this Phase II evaluation of part of the 1880s Strathearn Farmstead. Evaluation tasks included the excavation of shovel test pits and a single test unit, construction monitoring, and a combined report for the Rancho Simi Recreation and Parks District (June 2019 – July 2019).
- **Phase I Survey of the Parks LA project, City of Los Angeles, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC/NHM record search, a site visit, and a Natural History Museum paleontological assessment. (June 2019 – July 2019).
- **Phase I Survey of the Rancho Malibu residential development project, City of Malibu, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this project, which included an SCCIC/NAHC/NHM record search, a site visit, and a Natural History Museum paleontological assessment. (June 2019 – July 2019).
- **Phase I Survey of 380 South Rosemead, City of Los Angeles, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for this development project, which included an SCCIC/NAHC/NHM record search, a site visit, and a Natural History Museum paleontological assessment. (May 2019 – June 2019).
- **Phase II Evaluation of CA-LAN-129 and CA-LAN-129a, two prehistoric sites, and CA-LAN-4363H, an early historic site located in Calabasas, CA.** Principal and Project Manager for the evaluation of these three sites as part of permitting with the Corps of Engineers. The evaluation was written to NRHP/SHPO standards. (May 2019 – June 2019).
- **Phase I Survey of 1160 Sulphur Mountain Road, City of Ojai, Ventura County, CA.** Principal and Project Manager for this residential development project, which included a SCCIC/NAHC record search and a site visit (May 2019 – May 2019).
- **Phase I Survey of the Cal Grow Farms Project, City of Perris, Riverside County, CA.** Principal and Project Manager for this agricultural development project, which included a SCCIC/NAHC/NHM record search and a site visit. (March 2019 – May 2019).

- **Phase I Survey of the Riverwalk Mixed-Use Project, Santa Clarita, CA.** Principal and Project Manager for this commercial and Residential Project. Project included a SCCIC/NAHC record search and a site visit. (March 2019 – May 2019).
- **Phase I Survey of the West Village Project, Calabasas, CA.** Principal and Project Manager for this Army Corps of Engineers (ACOE) permitting project. Project included a SCCIC/NAHC/NHM record search and a site visit, as well as SHPO review of the final report. (March 2019 – May 2019).
- **Phase I Survey of the Belvedere Middle School Improvements Project, City of Los Angeles, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search and NAHC record search request for LAUSD. (November 2018 – April 2019).
- **Phase I Survey "The Angel" Project, Los Angeles County, CA.** Principal and Project Manager for this low income housing project in the San Fernando Valley. Project included a SCCIC/NAHC record search and a site visit. (January 2019 – March 2019).
- **Fourth and Hewitt, City of Los Angeles, Los Angeles County, CA.** Principal and Project Manager for a cultural resource record search for the development of a new office building within a commercial urban environment. Project also included a paleontological assessment of the property due to an extensively deep planned parking garage and Native American concerns. Also completed with an Ethnographic Report to meet AB-52 criteria. Another key issue was determining whether a historic built environment assessment was needed. (February 2017 – March 2019).
- **Phase I Survey of the Deer Lake Water Tank Project, Porter Ranch, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for the Los Virgenes Municipal Water District. (November 2018 – March 2019).
- **Phase I Survey of the Sherwood Development Corporation, Tract 4409, Ventura County, CA.** Principal and Project Manager for this Army Corps of Engineers (ACOE) permitting project. Project included a SCCIC/NAHC record search and a site visit, as well as SHPO review. (January 2019 – February 2019).
- **City of Thousand Oaks Environmental On-Call (Including Cultural Resources), Los Angeles County, CA.** Envicom was selected as one of a limited number of on-call environmental firms for the City. (June 2015 – December 2018)
- **Phase II Evaluation of Cultural Resource CA-LAN-513 within the Boundary of 6361 Sea Star Estates Residential Development within the City of Malibu, Los Angeles County, CA.** Principal and Project Manager for this Phase II evaluation, which involved limited shovel test pits and surface examination. No evidence of a cultural resource was found. (November 2018 – December 2018)
- **Phase I Survey for the Massilia Spa Project, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. Project also includes an inventory and initial assessment of over a dozen 1930 through 1990 structures on the property (June 2018 – December 2018)
- **Phase I Survey of the Conejo Creek Park, City of Thousand Oaks, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (August 2018 – November 2018)
- **Phase I Survey of the Butler Ranch, in Ventura County near west Simi Valley, California.** Principal and Project Manager for the completion of a Phase I record search, NAHC record search request, and a site survey of this 332-acre low density residential development project. (May 2018 – October 2018)
- **Valencia Travel Village, Valencia, Los Angeles County, CA.** Principal and Project Manager for the completion of a Phase I for trailer park and recreation center. (August 2018 – October 2018)

- **Phase I Survey of the JPA Solar Farm, Calabasas, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for the Los Virgenes Municipal Water District. This 20-acre solar project also addressed a large prehistoric Native American site located next to and partially on the property. Project included Native American consultation with the Lead Agency and the Tatatviam and the recordation of two prehistoric petroglyphs (August 2018 – October 2018)
- **Simi BMX Course Phase I Survey, Simi Valley, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (July 2018 – August 2018)
- **Phase I Paleontological Survey of the 3467 Camino de la Cumbre Property in Sherman Oaks, Los Angeles County, CA.** Principal and Project Manager for the completion of a Natural History Museum record search and paleo report. (August 2018)
- **Phase I Survey of the proposed 113-133 West Plymouth Street multiple unit residential development, Inglewood, Los Angeles County, CA (with Samantha Whittington, Debbie Balam, and Charlie Fazzone).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, paleontological record search, NAHC record search request, and a site survey. Additional tasks included writing for the cultural section of the MND document (April 2018 – August 2018)
- **Phase I Survey for the 17-acre Olivas Park Extension commercial development project in Ventura, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey, followed by limited monitoring. (January 2018 – June 2018)
- **Phase I(b) Survey of the proposed Forrest Club 50-acre private club development, Los Angeles County, CA (with Samantha Whittington and Charlie Fazzone).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. In addition, 24 shovel test pits were excavated across the locations of two 1920s historic cabins. No further work was required. (April 2018 – June 2018)
- **Phase I Survey for the Ascension Lutheran Church Master Plan and MND, Thousand Oaks, California, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (May 2018 – June 2018)
- **Cultural, Paleo, and Native American Monitoring for the Agoura Hills Marriott Development Project, Agoura Hills, CA.** Principal and Project Manager for this monitoring project. During monitoring, a prehistoric Chumash cultural resource was discovered (number not yet assigned), which led to artifact collection, analysis, and a final report of findings that was submitted to the City (January 2018 – June 2018)
- **Phase I Survey for the Mulholland Senior Living Project, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (May 2018 – May 2018)
- **Phase I Survey of the proposed Tapo at Alamo EIR for a mixed-use development project, Simi Valley, Ventura County, CA (with Samantha Whittington and Debbie Balam).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (March 2018 – May 2018)
- **Phase I Survey of the Upper Bailey Road tract, Sylmar, Los Angeles County, CA (with Samantha Whittington and Debbie Balam).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (December 2017 – April 2018)

- **Phase I Survey of the Lower Bailey Road tract, Sylmar, Los Angeles County, CA (with Samantha Whittington and Debbie Balam).** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (December 2017 – April 2018)
- **Historic Structure Evaluation of Blythe Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. (February 2018 – April 2018)
- **Historic Structure Evaluation of Robert Hill Lane Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. (February 2018 – April 2018)
- **Historic Structure Evaluation of James Madison Middle School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. School was found eligible for the CRHR. (February 2018 – April 2018)
- **Historic Structure Evaluation of 54th Street Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. School was found eligible for the CRHR. (February 2018 – April 2018)
- **Historic Structure Evaluation of Chapman Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. (February 2018 – April 2018)
- **Historic Structure Evaluation of Dena Street Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. (February 2018 – April 2018)
- **Historic Structure Evaluation of Patrick Henry Middle School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. School was found eligible for the CRHR. (February 2018 – April 2018)
- **Historic Structure Evaluation of Richland Avenue Elementary School for LAUSD.** Project Manager for this project, with Chattel, Inc., being the historic preservation consultant. (February 2018 – April 2018)
- **Marinette Road Residential Development, Pacific Palisades, Los Angeles County, CA.** Principal and project manager for this development project, which included a SCCIC/NAHC record search, site survey, Tribal Group scoping letters, and agency consultation. The major challenge was that the project property was within the Will Rogers State Monument and National Register site boundary. An update for this project was conducted in 2018 to include AB-52 compliance. (February 2015 – May 2015; January 2018 – April 2018)
- **Phase I Survey for 6956 Dume Drive, Malibu, California, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for the completion of an SCCIC record search, and a site survey. (February 2018 – March 2018)
- **Phase I Survey of roughly 50-acres for Improvements on the Saddlerock Ranch/Malibu Wines Property in the Santa Monica Mountains, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC scoping, and a site survey. This project involves upgrades to the winery existing structures and public buildings, as well as road and parking improvements. Part of this project is located near a National Register Chumash rock art site as well as other prehistoric resources (November 2016 – March 2018)
- **Phase I Survey for 28730 Grayfox, Malibu, California, Los Angeles County, CA (with Samantha Whittington).** Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. (January 2018 – February 2018)

- **Phase I Survey for 11681 Foothill Boulevard, a multiple-unit residential project in Sylmar, California, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. This project also included a Native American Tribal Cultural Resource Assessment. (November 2017 – February 2018)
- **Phase I Survey for a single family property development along Yerba Buena Road, Ventura County, CA.** Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. (December 2017 – January 2018)
- **Phase I Survey for 34134 Mulholland Highway, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (December 2017 – January 2018)
- **Faunal, Osteological, Archaeological, and Fossil Consultation for Citadel Environmental and Turner-Hunt for the Hollywood Park Development Project (new Rams NFL Stadium).** Osteological and paleontological consultant for Kiewit, Turner, and Citadel for the construction of the new Rams NFL stadium in Ingelwood. Project included discovery and recordation of modern and fossil mammal bones. We were the official on-call cultural/paleo resources team for the Rams Stadium project, being called in to deal with modern faunal and ancient fossil remains found during excavation. We worked closely with the construction team to get an expert on site within 24-hours of the discovery or quicker, with the goal of getting the discovery assessed and the construction team back to work as soon as possible. (December 2016 – January 2018)
- **Phase I Survey for 24600 Thousand Peaks Road, Calabasas, California, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (November 2017 – January 2018)
- **Phase I Survey for 28929 Grayfox, Malibu, California, Los Angeles County, CA.** Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. (November 2017 – January 2018)
- **Manzanita School Phase Ia Survey for a 20.27-acre private school development in Topanga Canyon, California, Los Angeles County, CA.** Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. This project also assessed built environment resources, which included early 1900s buildings, early 1900s water control features, culverts, and bridges, and 1950s landscaping elements (May 2017 – January 2018)
- **Phase I Survey for the 181 to 187 Monterrey Road Condominium Project, a small residential development near South Pasadena, California, Los Angeles County, CA.** P Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. (July 2017 – January 2018)
- **Phase I Survey for the Agoura Village project, a 7.37-acre Commercial Subdivision in the City of Agoura Hills, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC scoping, and a Phase Ia site survey. The Phase Ia survey was followed by a Phase Ib subsurface survey and an updated site form for a previously known prehistoric cultural resource that includes the entire project area. (October 2016 – December 2017)
- **Phase I survey for 22866 Beckledge Terrace, Malibu, California.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (September 2017 – November 2017)
- **Lynn Road Residential Development Project, Construction Monitoring, Newbury Park, CA.** Principal and Project Manager for the surface collection and construction monitoring for this 10-acre residential construction project. (October 2017 – November 2017)

- **Phase II Evaluation of two cultural resources located on the Oakmont project property, City of Agoura Hills, Los Angeles County, CA.** Principal and Project Manager for the evaluation of a prehistoric cultural resource and a 1920s-1980s historic homestead cultural resource. Evaluation tasks included shovel test pits, and a test unit for the prehistoric cultural resource, and detailed mapping and documents research for the historic cultural resource. A combined report for both Oakmont projects was produced for the City. (August 2017 – October 2017)
- **City of Pomona Environmental On-Call (Including Cultural Resources), Los Angeles County, CA.** Envicom successful won inclusion as one of six on-call environmental firms for the City. (October 2014 – October 2017)
- **Phase I Survey for the Oakmont commercial project, a 5.75-acre development in the City of Agoura Hills, Los Angeles County, CA.** Principal and Project Manager for the completion of NAHC record search, and a Phase Ia site survey. The Phase Ia survey identified two cultural resources; a 1920s historic homestead foundation, and a large prehistoric archaeological site. (August 2017 – October 2017)
- **Phase I Assessment of the West Hills Crest 37-acre Residential Subdivision in West Hills, City of Los Angeles.** Principal and Project Manager for the completion of a SCCIC/NAHC record search and project area site survey. A key issue for this project was the record search being positive for a prehistoric cultural resource within the development area. This resource, CA-LAN-1223, was further investigated with 22 shovel test pits, and evaluated as not being a significant cultural resource. (February 2017 – October 2017)
- **San Bernardino County Cultural, Historic Architecture, and Paleontology On-Call, San Bernardino, CA.** Envicom successful won inclusion in the limited on-call pool. (October 2014 – October 2017)
- **Phase I Survey for 15498 LaPeyre Court, a residential development in Moorpark, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. Project also included coordination with numerous biology tasks. (August 2017 – September 2017)
- **Canyon View Estates Paleontological Survey, Santa Clarita, Los Angeles County, CA.** Principal and Project Manager for this paleontological record search, site survey, and report. (August – September 2017)
- **North Canyon Ranch 170-acre Residential Subdivision in Simi Valley, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search and project area site survey. A key issue for this project was a previously disturbed cultural resource within the project area, the destruction of which needed to be addressed in the final report. (May 2017 – August 2017)
- **Phase I Survey for the 12300 Valley Boulevard Hotel, a commercial development in El Monte, Los Angeles, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for this small residential development. (June 2017 – August 2017)
- **Phase Ia Survey for the Holiday Inn Express Hotel, a commercial development in El Monte, Los Angeles, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for this small residential development. (July 2017 – August 2017)
- **Arcadia Town Homes MND Phase I Cultural Assessment for a multi-unit residential development in Arcadia, Los Angeles, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for this multi-unit residential development. (May 2017 – August 2017)

- **Phase I Survey for 3800 Figueroa, an apartment complex development in Los Angeles, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for apartment complex development. (June 2017 – August 2017)
- **Phase I Survey for the Copper Canyon Project, a 5-acre residential development near Santa Clarita, California, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. Also part of the project was the resurvey of two previously recorded cultural resources within the project boundary. (May 2017 – July 2017)
- **Phase Ia Survey for the Oneonta Hillside Drive, a residential development in South Pasadena, Los Angeles County, CA.** Principal and Project Manager for the completion of an SCCIC and NAHC record search, and a site survey. (May 2017 – July 2017)
- **Construction Monitoring for Parcel 2058-003-010, Lobo Canyon, Los Angeles County.** Principal and Project Manager for the surface collection and construction monitoring for this single family residential construction project. (July 2017)**.**
- **Phase I Survey for the 6625 Bradley Road, a residential development in Somis, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey for this small residential development. (June 2017 – July 2017)
- **11172 Santa Paula Road Phase Ia Survey for a 5.5-acre Agricultural property in Ojai, California, Ventura County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (May 2017 – June 2017)
- **Pepperdine University Campus Life Project: Updated Cultural Resources Record Search.** Principal and Project Manager for an updated record search and letter report for the Pepperdine Campus Life housing, facilities, and trail development project. This update was part of an amended campus-wide EIR (December 2017 – June 2017)
- **Pepperdine University Campus Life Project: Phase I survey of new Baseball Field development.** Principal and Project Manager for the addition of the campus baseball field as part of the larger Pepperdine Campus Life housing, facilities, and trail development project. (February 2017 – June 2017)
- **6658 Reseda Boulevard, City of Reseda, Los Angeles County, CA.** Principal and Project Manager for a Phase 1 record search for this urban mixed use project. (March 2017 – May 2017)
- **Paradise Valley Development Project Environmental Impact Report and Impact Statement, Riverside County, CA.** Author of the cultural section for this EIR for a housing and mixed use development of over 2200-acres east of Indio, California. Also reviewed original technical documents, and incorporated legal and agency comments. Mitigation measures included the management and monitoring of dozens of cultural resources, sensitive soils, and paleontological resources. (October 2014 – March 2017)
- **Phase I Cultural Resources Survey for Parcel 2058-003-010, Lobo Canyon, Los Angeles County, CA.** Principal and Project Manager for completion of a Phase I and Army Corps of Engineers permit for the project (ACOE, Los Angeles District). Extensive communications and consultation with the ACOE and SHPO. (July 2016 – March 2017)
- **Phase I Survey for a 1.33-acre Mixed-Use development in the City of Northridge at the corner of Nordoff and Darby Streets, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC scoping, and a site survey. This project included a built-environment assessment of existing historic structures (October 2016 – February 2017)

- **Phase I Survey for a 0.5-acre Residential Subdivision in the City of Los Angeles at the end of Crisler Way, Los Angeles County, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC record search request, and a site survey. (October 2016 – February 2017)
- **Deer Lake Residential Development Cultural Monitoring, Porter Ranch, Los Angeles, CA.** Principal and Project Manager for the cultural monitoring of eight cultural resources within the project development boundary. This project includes the writing of a final Monitoring Report. (May 2016 – February 2017)
- **Phase I Survey for a 0.5-acre Mixed Use Development Project on Camarillo Avenue in North Hollywood, Los Angeles County, CA.** Principal and Cultural Project Manager for the completion of a SCCIC/NAHC record search, NAHC scoping, and a site survey. This project also included a historic built environment assessment (November 2016 – January 2017)
- **Phase I Survey for a 14-acre Residential Subdivision in Woodland Hills, CA.** Principal and Project Manager for the completion of a SCCIC/NAHC record search, NAHC scoping, and a site survey. This project involved consultation with the City of Los Angeles on AB-52 (July 2016 – January 2017)
- **Lynn Road Residential Development Project, Newbury Park, CA.** Principal and Project Manager for the Phase Ia and Phase Ib survey of this 10-acre parcel. A large prehistoric Middle-Period seasonal settlement was discovered, which required subsurface testing and extensive mapping of surface hearths, yucca roasters, and dwelling features. Project included public testimony before the Thousand Oaks Planning Commission. (September 2015 – December 2016)
- **Pepperdine University Campus Life Project: Debris Basin Excavation Cultural and Paleontological Resource Monitoring, Los Angeles, CA.** Principal and Project Manager for cultural resource monitoring of Phase I of the Pepperdine Campus Life housing, facilities, and trail development project. (August – October 2016)
- **Trail Construction Monitoring, Conrad N. Hilton Foundation.** Principal and Project Manager for the development of a pedestrian foot trail loop between the Foundation and the nearby "Ridge" professional building, including the excavation of dozens of shovel test pits and a major surface collection of prehistoric artifacts, including trail construction monitoring. (August – September 2016)
- **Conrad N. Hilton Foundation Trail Project Cultural Assessment, Agoura Hills, Los Angeles County, CA.** Project Manager for the Phase 1b survey of a new pedestrian access trail linking off-site office space with the Foundation campus buildings. Project included the excavation of over 30 shovel test pits and the recording of numerous prehistoric features. (May – August 2016)
- **32640 PCH Phase I Cultural Resource Survey, Santa Monica, CA.** Principal and Project Manager for the Phase I cultural resource assessment of a ravine rehabilitation project between the Pacific Coast Highway and the Pacific Ocean. Included a SCCIC/NAHC record search, site survey, and technical report. (May 2015 – June 2016)
- **CA-LAN-320 Project Compliance Plans, and Native American and Lead Agency Consultation, Agoura Hills, Los Angeles County, CA.** Tasks included the authoring of a cultural resource Treatment and Data Recovery Plan, a cultural resource Management Plan, and a Curation Plan for all artifacts, as well as the organization of meetings with the Chumash Tribal Groups and the Lead Agency. (April 2015 – June 2016)
- **Canyon Park Homes, Sylmar, Los Angeles County, CA.** Native American Tribal Group consultation and pre-construction monitoring for this 80-acre residential property development, as well as EIR section writing. (February 2015 – March 2016)

- **Oakwood Schools Built Environment and Archaeological Assessment, North Hollywood, Los Angeles County, CA.** Principal and Project Manager for the Phase I cultural resource assessment of the project property prior to the construction of a new middle and high school campus within the North Hollywood area. Challenging tasks included Native American ghost writing for the lead agency (City of Los Angeles) and addressing a modern human cremation garden in the report (November 2015 – February 2016)
- **Floral Canyon Residential Development Cultural Resource Survey, North Hollywood, CA.** Principal and Project Manager for this Phase Ia cultural resource survey of an 8-acrea property. The cultural resource parts of the CEQA checklist were also completed. (September – December 2015).
- **Hilton Property Phase 3 Construction Site Phase Ib Cultural Resources Survey, Agoura Hills, Los Angeles County, CA.** Principal and Project manager for this extensive preliminary survey project, including excavation of over 200 shovel test pits and 4 test units to define the boundaries of a prehistoric ceremonial site of over 80-acres in size, used by Chumash Native Americans from 400 A.D. to the late 1700s. Recordation of over 190-features and 11,500 artifacts. Second phase will include data recovery tasks and an amended Environmental Impact Report. (February 2014 – March 2015)
- **Blessed Theresa Church Construction, City of Winchester, Riverside County, CA.** Cultural consultation including cultural/paleo monitoring issues. (April 2014 – July 2014)
- **Village at Los Carneros, City of Goleta, Santa Barbara County, CA.** Reviewed all previous technical studies and wrote part of the cultural sections of the Environmental Impact Report for this residential house development project. (March 2014 – April 2014)
- **3121 Old Topanga Canyon Road Phase I Survey and Literature Search, City of Calabasas, Los Angeles County, CA.** Principal and Project manager for this residential development project, including NAHC letters, literature review, site survey, paleontological survey and literature search, final technical report, and the writing of the cultural resources section of the Environmental Impact Report. (March 2014 – April 2014)

Cultural Division Director, Chambers Group, Inc., Santa Ana, CA
October, 2011 – October 2013

As Cultural Director, I oversaw all existing cultural, paleontological, ethnographic, and built environment projects for Chambers Group. Projects were staged out of seven regional offices located within California and Nevada. I oversaw a permanent staff of 20 individuals and a temporary staff of up to 40 people. I also was responsible for business development and coordination of projects with multi-disciplinary teams, including Biology, Air Quality, SWPPP, and Planning professionals. I reviewed and authored cultural sections of EA, EIR, and EIS documents. I also wrote proposals, oversaw quality control, provided cultural compliance sections of technical reports, developed agency relationships, wrote technical reports, managed and developed budgets, and oversaw all cultural staff. I performed QA/QC on all documents and ensured that management and mitigation measures were clearly defined and legally-defendable. Yearly Division budget was up to 3-million dollars annually.

Energy Projects:

- **Beacon Solar, Hecate Energy and LADWP, Kern County, CA.** Business Developer for the archaeology and biological monitoring, pre-construction surveys, and desert tortoise fence monitoring for this large, 2000-acre solar project for the Los Angeles Department of Water and Power. (July – October 2013).
- **Q-Cells Solar Survey, Palm Springs, Riverside County, CA.** Principal and Project Manager for a cultural survey and record search of 36-acres north of Palm Springs for solar development. (October 2013 – October 2013)
- **Pacific Gas and Electric NERC Support Monitoring, sub to URS, Northern and Central California.** Principal and Project Manager for this 4-year project in support of the national NERC power pole reliability project for PG&E. Involves cultural, biological, and paleontological monitoring and field surveys. (October 2013 – October 2013)
- **Gold Bar Transmission Line Survey, McEwen Mining, Eureka County, NV.** Principal and Project Manager for this 2,577-acre cultural survey for the development of a 33-mile transmission line to service the Gold Bar Mine in Nevada. Bureau of Land Management was the principal Federal agency. (April 2013 – October 2013).
- **East Kern Wind Resource Area (EKWRA) Power Pole Replacement Project, Environmental Intelligence / Southern California Edison, Kern County, CA.** Principal and Project Manager. This two-year project included cultural resource surveys, the evaluation of numerous cultural sites, and cultural and paleontological monitoring for the construction of over 130-miles of new power poles and fiber optics lines to service Tehachapi Mountain wind farms. (January 2013 – October 2013)
- **Pure Source Power, Victorville, San Bernardino, CA.** Principal and Project Manager for a cultural survey and record search of 140-acres north of Palm Springs for solar development. (September 2013 – October 2013)
- **Dry Ranch Solar Project, Silverado Power, Los Angeles County, CA.** Principal. Dr. Bischoff managed this 64-acre solar project near Lancaster, which included a SCCIC/NAHC record search, field survey, and cultural report to meet CEQA compliance. This project included coordination with Southern California Edison for a gen-tie line and telecom attachments. (March - April 2013)
- **Plainview Solar Project, Silverado Power, Los Angeles County, CA.** Principal. Dr. Bischoff managed this 114-acre solar project near Lancaster, which included a SCCIC/NAHC record search, field survey, and cultural report to meet CEQA compliance. (April - May 2013)
- **Silverleaf Solar Project, Cultural and Paleontological Survey, Agile Energy, Imperial County, CA.** Principal and Project Manager. Dr. Bischoff provided general review and quality control for a large solar project south of San Diego. This project involved an over 2,000-acre survey of proposed solar fields and 5-miles of electrical transmission gen-tie lines. The bureau of Land Management was the principal Federal agency. (November 2011 - July 2012)
- **Desert Harvest Solar Project, Cultural Resources Survey, eneXco Energy, Riverside County, CA.** Project Manager. Dr. Bischoff was the project manager for the built environment survey of 1,600-acre solar field and 12-miles of electrical transmission gen-tie lines. (November 2011 - June 2012)
- **Silverleaf Solar Project, Built Environment Survey, Agile Energy, Imperial County, CA.** Project Manager. Project Manager. Dr. Bischoff was the project manager for the built environment survey of 2,000-acre solar field and 5-miles of electrical transmission gen-tie lines. This included the production of a separate technical report for the Bureau of Land Management that included a historic structure inventory, assessment of significance, and an indirect effects analysis. (November 2011 - July 2012)

- **IVSC2 Solar Project, County of Imperial, Imperial County, CA.** Principal and Project Manager. Dr. Bischoff provided oversight of the 140-acre solar project east of the Salton Sea. This project was notable for the quick response time required to field a survey crew and complete a draft report for the County (Sept-Oct 2012)
- **Desert Harvest Solar Project, Cultural and Paleontological Resource Survey, eneXco Energy, Riverside County, CA.** Principal and Project Manager. Dr. Bischoff provided general review and quality control for a large solar project northeast of Blythe, CA. This project involved an over 1,600-acre survey of proposed solar fields and 12-miles of electrical transmission gen-tie lines. Bureau of Land Management was the principal Federal agency. (November 2011 - July 2012)
- **Desert Harvest Solar Project, Build Environment Survey, eneXco Energy, Riverside County, CA.** Project Manager. Dr. Bischoff was the project manager for the built environment survey of 1,600-acre solar field and 12-miles of electrical transmission gen-tie lines. This included the production of a separate technical report for the Bureau of Land Management that included a historic structure inventory, assessment of significance, and an indirect effects analysis. (November 2011 - June 2012)

Telecommunication Projects:

- **AT&T Fiber-optics Renewal Project, Evaluations, Mitigations, and Monitoring, AT&T, San Bernardino County, CA.** Cultural Principal and Project Manager. Dr. Bischoff will provide project management, technical writing, and quality control for the cultural and paleontological evaluations, data recoveries, and monitoring efforts for the AT&T fiber renewal project. This project involved the survey of over 90 miles of proposed new fiber-optic line between Barstow and Las Vegas, NV, and the management of over 100-cultural sites. Bureau of Land Management and Mojave National Preserve were the principal Federal agencies. (July 2013 – October)
- **Fiber Node Evaluations, Freedom Communications, Orange County, CA.** Cultural Principal. Dr. Bischoff provided general project management and quality control for the cultural background record searches and surveys for dozens of telecommunication sites throughout the City of Irvine as part of the Freedom Communications site development project. Dozens more sites are expected to be tested in the coming year. (April 2012 – October 2013)
- **San Diego Churches and Public Building Historic Structure Evaluations, DePratti Inc., City of San Diego, CA.** Principal Investigator. Dr. Bischoff acted as Principal and QA/QC manager for this project, which involved the evaluation of dozens of historic structures as part of the DePratti Communication telecommunication attachment project in the City of San Diego. (November 2011 – October 2013)
- **The Plunge Evaluation, DePratti Inc., City of San Diego, San Diego County, CA.** Principal for this historic architecture project involving the structural evaluation and National Register documentation for The Plunge historic salt-water bath house in San Diego. (September 2013 – September 2013)
- **AT&T Fiber-optics Renewal Project, Surveys, Literature Searches, and Technical Studies, AT&T, San Bernardino County, CA.** Cultural Principal and Project Manager. Dr. Bischoff provided general project management and quality control for the cultural, paleontological, and ethnographic surveys, literature searches, and technical studies. This project involved the survey of over 90 miles of proposed new fiber-optic line between Barstow and Las Vegas, NV, and the management of over 100-cultural sites. Bureau of Land Management and Mojave National Preserve were the principal Federal agencies. (April 2012 – July 2013)

- **Digital West Fiber Line Feasibility Study, San Luis Obispo to Los Angeles, Counties of San Luis Obispo, Santa Barbara, Ventura, and Los Angeles, CA.** Project Manager for this large feasibility study for placing a new fiber line down the US 101 freeway corridor. Biological, cultural, paleontological, and permitting constraints were all examined. (April 2012 – July 2013)
- **Digital 395 Broadband Stimulus Project, Praxis and California Broadband Corporation, California and Nevada.** Cultural Director. Dr. Bischoff acted as the California report manager of the cultural division, directed fieldwork, and authored management documents and reports. This project involved the new installation of over 650 miles of fiber-optic line across California and Nevada. The programmatic agreement of this complex project included 10 federal, state, and tribal agencies, with another seven acting as interested parties, and the management, evaluation, and monitoring of over 170 cultural sites. NTIAA was the Principal Federal Agency, but also involved twelve other California and Nevada State and Federal agencies and Tribal Groups (November 2011 – April 2012)

Defense Projects:

- **Fort Irwin Cell Tower Geotech Boring Monitoring, Northrop-Grumman and Fort Irwin Army Post, San Bernardino County, CA.** Principal. This project involves the cultural and paleo monitoring of sensitive areas as part of the construction of over 24 new cell tower locations. (October 2013 – October 2013)
- **Edwards Airforce Base Telecommunication Cultural Monitoring, Team Fischel Company, Edwards AFB, Kern County, CA.** Project Manager and Principal for the cultural monitoring of 40-miles of telecommunication trenching on Edwards AFB, including pre-construction meetings and a final monitoring report. (May 2013 – Sept. 2013)
- **Fort Irwin Cell Tower Surveys and Monitoring, Northrop-Grumman and Fort Irwin Army Post, San Bernardino County, CA.** Principal. This project involves the cultural and paleo survey of over 24 new cell tower locations and associated access roads on Fort Irwin, as well as construction phase monitoring. (April 2013 – October 2013)
- **Marine Corps Base, Camp Pendleton, Cultural Resources Consultation, Marine Corps Base, Pendleton, San Diego County, CA.** On-Call Senior Cultural Resources Consultant. Dr. Bischoff provided senior-level cultural resource consultation related to Camp Pendleton's Basewide Utilities Infrastructure Improvements project. He provided consulting on cultural resource management for several waste treatment and utility line systems as part of the Camp's "Grow the Force" initiative. (2011 – October 2013)

Water Projects:

- **Pacoima Spreading Grounds Improvement Project, LACDPW, Los Angeles County, CA.** Cultural Principal. Dr. Bischoff managed the cultural resources record search and CEQA cultural section mitigation measures of an EIR for the improvement of the Pacoima spreading grounds and related canal resources. (April 2013 – October 2013)
- **Devil's Gate Reservoir Sediment Removal and Management Project, LACDPW, Los Angeles County, CA.** Principal of Cultural Resources. This project involved removal of sediment within the Devil's Gate Reservoir area, which required a preliminary cultural survey and record search under CEQA, as well as an EIR. Dr. Bischoff served as the cultural principal for the project and provided a recommended plan for dealing with sedimentary soils vs. native soils, monitoring criteria, and potential discovery situations. Dr. Bischoff helped write Environmental Impact Report sections, and worked with the Gabrieleno Tribal Group in the protection of archaeological and tribal cultural resources. (2011 – October 2013)

- **Peck Road Spreading Basin Improvement Project, LACDPW, Los Angeles County, CA.** Cultural Principal. Dr. Bischoff managed the cultural resources record searches, field survey, paleontological survey, and CEQA cultural section mitigation measures of an MND for the improvement of the Peck Road Spreading Basin, including a related new water discharge pipe. (June 2013 – September 2013)
- **Marina Del Rey Waterline Replacement Project Cultural Monitoring, LACDPW, Los Angeles County, CA.** Cultural Principal. This project with the Los Angeles Department of Public Works involved the cultural monitoring for the Marina Del Rey 18-inch Waterline Replacement. Chambers Group also provided a qualified archaeological monitor at the project site during excavation activities during construction. (March - May 2013)
- **Dieguto Wetlands Restoration Monitoring, Southern California Edison, Del Mar, San Diego County, CA.** Principal Investigator and Project Manager. This project involved the extensive rehabilitation of Southern California Edison property as part of the Dieguto Wetlands Restoration project. (April 2012 - January 2013)
- **Live Oaks Spreading Grounds Project, LACDPW, Los Angeles County, CA.** Cultural Principal. Dr. Bischoff managed the cultural resources record search and site visit for this public works project. (April 2013 – October 2013)
- **Los Penasquitos Wetlands Monitoring, AMEC, Del Mar, San Diego County, CA.** Principal Investigator. Dr. Bischoff managed the monitoring tasks, budgets, and professional standards for this project near the City of Del Mar as part of the Torrey Pines State Nature Reserve restoration. (October - December 2012)
- **San Gorgonio Creek Water Recharge Basin Construction Monitoring, Beaumont Cherry Valley Water District, Cherry Valley, Riverside County, CA.** Principal and Project Manager. This project involved paleontological and archaeological construction monitoring during construction, including emergency evaluation and monitoring when early 19Th Century structures and materials were unexpectedly encountered during earth moving. (February 2012 – April 2012)
- **Penmar Golf Course Water Quality Improvement Project, Pacific Hydrotech and City of Santa Monica, Santa Monica, CA.** Principal Investigator. Dr. Bischoff managed QA/QC review, budgets, and professional standards for the project in the City of Venice. Penmar was a multi-year waterline and tank improvement project in which evidence of ethnic Japanese barrios and fossil Pleistocene animal bones were discovered. (November 2011 - November 2012)
- **Oxford Retention Basin Flood Protection Project, LACDPW, Los Angeles County, CA.** Principal and Project Manager. The Oxford Basin in Marina Del Rey was receiving enhancement, and Dr. Bischoff managed the completion of the cultural survey, literature review, and construction monitoring for the project. (2011 - 2012)

Public Works Projects:

- **Veterans Administration, VISN 21 On-Call, Western States, Teamed with KAL Architects.** This project will provide cultural and biological technical services for Veterans Administration projects from October 2013 to October 2018. (October 2013 – October 2013)
- **Historic Structure Evaluations for Statewide Weatherization Efforts, sub to ICF for the State of California, All Counties, CA.** Project Manager and Principal. This project involves meeting NEPA compliance for low-income subsidized weatherization efforts throughout the State of California. Hundreds of structures will be evaluated as part of this project by a Chambers Architectural Historian using a abbreviated format. (November 2011 to October 2013)
- **CEQA Services for Improvements to Polytechnic and Wilson High Schools, LBUSD, City of Long Beach, CA.** Cultural Principal. Dr. Bischoff provided oversight and incorporation of the historic architecture technical reports into the project CEQA documents. (June 2013 – August 2013)

- **Mill Creek Crew Room Cultural Monitoring, Angeles National Forest (ANF), Los Angeles County, CA.** The County of Los Angeles Department of Public Works proposed to replace the crew room building within the Angeles Forest Mill Creek Summit Maintenance Yard facility. This CEQA/NHPA project involved the preparation of a treatment and discovery plan document, ARPA permitting, constant consultation with the ANF, construction monitoring, and a final monitoring report. (April – July 2013)
- **Review of Technical Report and CEQA Documents Relating to the Proposed Demolition of Santa Ana Public Building #16, City of Santa Ana, Santa Ana, CA.** Principal. This project involved the review of technical documents, mitigation measures, and CEQA documents relating to the demolition of a 1950s public building in the City of Santa Ana. (May 2013 – July 2013)
- **Roosevelt School, LBUSD, City of Long Beach, CA.** Cultural Principal. Dr. Bischoff provided oversight, authorship, and counsel on the EIR for the demolition of the Roosevelt Elementary School in Long Beach. This proved to be a complex project, involving an historic built environment resource evaluation and mitigation plan, legal investigation, and extensive responses to public comments. This process resulted in a HABS/HAER mitigation project. (November 2011 - June 2012)

Transportation Projects:

- **Foothill Toll Road Cultural and Paleontological Monitoring, Ghiradelli and Associates, Orange County, CA.** Principal and Project Manager for cultural monitoring related to the upgrade of all toll road payment stations in Orange County. (October 2013 – October 2013)
- **9th Street Extension Historic Structure Inventory and Evaluation, City of Holtville, Imperial County, CA.** Principal and Project Manager. Dr. Bischoff managed and provided QA/QC for this project involving a Caltrans inventory of project APE historic built environment resources, and the historic evaluation of a canal feature. Final deliverables included a Historic Resources Evaluation Report and a Historic Property Survey Report to CALTRANS standards. (June 2013 – August 2013)
- **Francisquito Bridges Replacement (3-Total), LADWP/CALTRANS, Los Angeles County, CA.** Principal. Dr. Bischoff managed and oversaw the completion of this project in the Angeles Forest. This project involved the replacement of three existing bridges on San Francisquito Canyon Road over San Francisquito Canyon Creek. The proposed improvement project involved widening the two lane bridges, improvement of approachment roadway, and the placement and installation of retaining walls, concrete barriers with tubular-steel handrails, and metal beam guardrails. (2011 – September 2013)
- **Murrieta Whitewood Road Extension, City of Murrieta, Riverside County, CA.** Principal and Project Manager. This road extension project involved a cultural resource survey and records search, a paleontological field study, and native American Consultation due to the historic use of the nearby Murrieta Hot Springs by local Native Americans. (April – June 2012)
- **Nuevo Road/ I-215 Interchange Improvement in the City of Perris, CALTRANS, Riverside County, CA.** Principal. Dr. Bischoff managed and provided QA/QC for this project involving street widening and additional improvements at the Nuevo Road/ I-215 interchange. Final deliverables included a SCCIC/NAHC record search and a survey report to CALTRANS standards. (2011 – 2012)
- **Soledad Canyon Road Bridge Replacement Project, LACDPW, Los Angeles County, CA.** Principal. LADPW intends to replace a bridge on Soledad Canyon Road. Chambers Group completed a SCCIC/NAHC record search and NAHC records review for potential archaeological resources. This project is on-going and may in the future involve further work, including cultural and historic structure surveys and evaluation. (2011 – 2012)

Development Projects:

- **Grove Lumber Facility Cultural and Paleontological Technical Studies, Thatcher Engineering, City of Perris, Riverside County, CA.** Principal for the cultural technical studies for this development project, including cultural and paleontological record searches, NAHC letters, and a cultural study (October 2013 – October 2013)
- **Newport Beach Yacht Club Evaluation, Community Development Department, City of Newport Beach, Orange County, CA.** Principal for this historic architecture project involving the built environment evaluation of the Newport Beach Yacht House. (October 2013 – October 2013)
- **Blossom Plaza Historic Structure Evaluation, China Town, City of Los Angeles, CA.** Principal for this historic architecture project involving the updating of technical reports and a standing structure evaluation. (July 2013 – September 2013)
- **Moreno Valley Residential Building Evaluation, City of Moreno Valley, Riverside, CA.** Principal for the architectural assessment of the J. Langdon Ranch located at 11761 Davis Street, in the city of Moreno Valley, Riverside County, California. (April 2013)
- **Indian Wells Tennis Court Development Project, Indian Wells, Riverside County, CA.** Principal Provided technical review of the planning documents cultural section, as well as oversaw Native American Heritage Commission communication for this project to enhance the Indian Wells Tennis Garden complex. (December 2012 – April 2013)
- **Scripps Hospital Paleontological and Archaeological Monitoring, Worley-Parsons, City of Encinitas, CA.** Principal Investigator. Dr. Bischoff managed QA/QC review, budgets, and professional standards for the cultural and paleontological monitoring of this large development project. (2011 - 2013)

Mining Projects:

- **Mining Projects, Quality Control and Management Support – Ormat, Enviroscientists, Newmont, McEwen, Midway, Reno, Nevada.** Dr. Bischoff was directly involved with the management of dozens of mining-related surveys, monitoring, and site evaluation projects conducted from the Chambers Group Reno, Nevada, office. Bureau of Land Management was the principal Federal agency. (2011 – October 2013)
- **Ruth Mine Reclamation Cultural Survey and Evaluation, ERRG and USACE, Inyo County, CA.** Principal. Dr. Bischoff oversaw the Intensive Phase I mapping of the Ruth Mine site, evaluation of several site features, and negotiations with the Army Corps of Engineers and the BLM. Extensive mapping of Mine features and structures were completed as part of this project. Bureau of Land Management was the principal Federal agency. (2011 - 2012)

Staff Archaeologist, Marine Corps Base Camp Pendleton, San Diego County, CA.
June 2011 – Oct. 2011

Dr. Bischoff was a staff cultural resources specialist at Camp Pendleton, and worked on NEPA, Section 106, and Section 110 compliance requirements for resource management and Base construction projects. Dr. Bischoff was responsible for writing, developing, and executing cultural sections of CATEXs, EAs, EISs, and organized/reviewed NHPA Section 106 and Section 110 reports. Types of projects included archaeological surveys and evaluations, historic research, and monitoring projects. He also performed historic structure surveys and evaluations, and wrote and prepared appropriate documentation to meet construction project cultural and environmental compliance requirements.

Principle Investigator and Project Manager, **Pacific Legacy, Inc**., **Lancaster, CA.**
Sept. 2009 – June 2011

While at Pacific Legacy, I acted as the cultural resource principal and project manager for various Pacific Legacy clients, including the San Jose Water District, Aera Energy, Berry Petroleum, Quad Knopf, AT&T, and **Southern California Edison**. My primary responsibility was the oversight of subcontracted services to Southern California Edison's Tehachapi Renewable Transmission Project (TRTP). The TRTP is one of the largest green-energy projects in the U.S. and involves the wreck-out and new construction of hundreds of transmission lines and power facilities to carry electricity from wind and solar generation sites to the greater Los Angeles area. During this time, I built the Lancaster office from a staff of two, to a fully-functioning regional office with a permanent staff of eight people and temporary staff of several dozen.

Major Projects:

- **Tehachapi Renewable Transmission Project (TRTP), Southern California Edison, Kern, Los Angeles, and San Bernardino Counties, CA.** Principal and Project Manager. Dr. Bischoff was responsible for all office and field operations that ensured the successful inventory and management of cultural resources related to this 300-mile transmission line project, including the management of standing historical structures and paleontological resources. He managed an annual budget in excess of $4 million, a staff of up to 40 persons, wrote compliance documents (Programmatic Agreement Appendices, ARPA permits, Project Agency Yearly Reports, and Management Plans), and managed hazmat situations. Dr. Bischoff completed over 150 individual projects in southern California including survey, evaluation, mitigation, and resource monitoring. He wrote individual budgets for project-specific tasks, as well as construction-related administrative tasks, each with different scopes of work and budget amounts. He reconciled all budgets on a monthly basis and coordinated them with the master construction schedule. Dr. Bischoff managed field compliance with NEPA, with TRTP-specific environmental agency agreements, and with the cultural section of the project EIR/EIS and Programmatic Agreement. He also met legal and agency guidelines for Section 106 of NHPA, CEQA, NAGPRA, and TRTP Cultural Resource Management Plan. The Angeles National Forest was the lead Federal Agency, but the CPUC and other Federal and California State Agencies were also involved. (November 2009 - June 2011)
- **East Kern Wind Resource Area (EKWRA) Power Pole Replacement Project, Southern California Edison, Kern County, CA.** Principal and Project Manager. Dr. Bischoff managed original technical studies for a project designed to replace hundreds of power poles in the Tehachapi Mountains area in support of new wind farm construction. He conducted large area surveys, some on BLM properties, and developed a management plan for dozens of archaeological sites. Bureau of Land Management was the principal Federal agency. (February 2010 - June 2011)
- **San Jose Salt Barge HAER Documentation Project, USACE and Santa Clara Valley Water District, City of San Jose, CA.** Principal. Dr. Bischoff consulted on the excavation and evaluation of a shallow-water shipwreck discovered during a wetlands rehabilitation project. This project involved USACE, San Francisco District as lead agency and the Water District as client. (January – February 2011)
- **Operations and Maintenance Contract, Southern California Edison. Southern California.** I acted as the Principal for all work orders issued to our office under the O/M contract. A major task under this contract was the response to the Crown Fire in 2010. I worked directly with SCE during and immediately after the fire to evaluate and protect cultural resources. (Jan 2010 - June 2011)

- **Crown Fire Survey and Cultural Site Update, Southern California Edison, Los Angeles County, CA.** Project Manager. Dr. Bischoff led the cultural response to the Crown Fire, which included surveying and updating known cultural sites as part of the SCE post-fire power pole and access road inspection. (August – Sept. 2010)

APPENDIX G
Geotechnical Investigation Report

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June 10, 2016

Moorpark Property 67, LLC
26500 W Agoura Rd. #652
Calabasas, CA 91302

Attention: Mr. James Rasmussen

Subject: Geotechnical Investigation
Tract 5847
Moorpark, CA

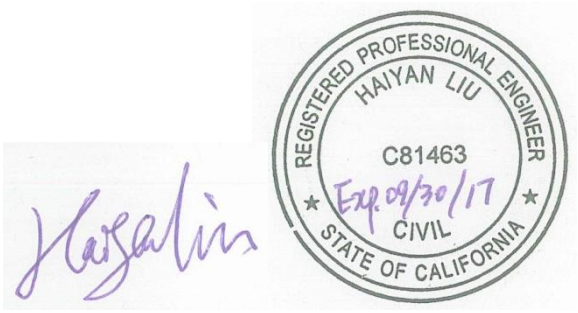
Dear Mr. Rasmussen:

In accordance with your request, a geotechnical investigation has been completed for the above-referenced project. The report addresses both engineering geologic and geotechnical conditions. The results of the investigation are presented in the accompanying report, which includes a description of site conditions, results of our field exploration and laboratory testing, conclusions, and recommendations.

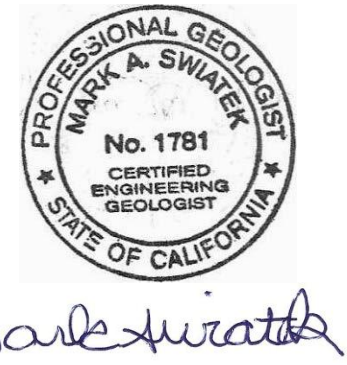
We appreciate this opportunity to be of continued service to you. If you have any questions regarding this report, please do not hesitate to contact us at your convenience.

Respectfully submitted,

RMA GeoScience



Haiyan Liu, PE
Project Engineer
C81463



Mark Swiatek, PG | CEG
Engineering Geologist
CEG 1781

Alison Stonehouse
Staff Geologist

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GEOTECHNICAL INVESTIGATION
FOR
TRACT 5847
MOORPARK, CA

for

Moorpark Property 67, LLC
26500 W Agoura Rd. #652
Calabasas, CA 91302

June 10, 2016

16-G63-0

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TABLE OF CONTENTS

		PAGE
1.00	**INTRODUCTION**	1
1.01	Purpose	1
1.02	Scope of the Investigation	1
1.03	Site Location and Description	1
1.04	Current and Past Land Usage	1
1.05	Planned Usage	2
1.06	Investigation Methods and Limitations	2
2.00	**FINDINGS**	2
2.01	Geologic Setting	2
2.02	Earth Materials	3
2.03	Expansive Soils	3
2.04	Surface and Groundwater Conditions	3
2.05	Faults	4
2.06	Historic Seismicity	4
2.07	Flooding Potential	4
2.08	Landslides and Erosion	4
2.09	Regional Land Subsidence	4
2.10	Mineral Resources	5
2.11	Slope Stability	5
2.12	Liquefaction Screening Evaluation Results	6
2.13	Settlement Due To Seismic Shaking	7
2.14	Total and Differential Settlement	7
3.00	**CONCLUSIONS AND RECOMMENDATIONS**	7
3.01	General Conclusion	7
3.02	General Earthwork and Grading	8
3.03	Earthwork Shrinkage and Subsidence	8
3.04	Removals and Overexcavation	8
3.05	Rippability and Rock Disposal	9
3.06	Subdrains	9
3.07	Fill and Cut Slopes	9
3.08	Wind and Water Erosion	9
3.09	Faulting	10
3.10	Seismic Design Parameters	10
3.11	Liquefaction and Secondary Earthquake Hazards	11
3.12	Foundations	11
3.13	Foundation Setbacks from Slopes	12
3.14	Slabs on Grade	13
3.15	Miscellaneous Concrete Flatwork	13
3.16	Footing Excavation and Slab Preparations	14
3.17	Lateral Load Resistance	14
3.18	Drainage and Moisture Proofing	15
3.19	Cement Type and Corrosion Potential	15

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TABLE OF CONTENTS
(Continued)

		PAGE
3.20	Temporary Slopes	16
3.21	Utility Trench Backfill	18
3.22	Pavement Sections	18
3.23	Plan Review	19
3.24	Geotechnical Observation and Testing During Rough Grading	19
3.25	Post-Grading Geotechnical Observation and Testing	19
4.00	**CLOSURE**	20

FIGURES AND TABLES

Figure 1	Site Vicinity Map
Figure 2a	Regional Geology Map
Figure 2b	Regional Geology Map Legend
Figure 3	Seismic Hazards Map
Figure 4	Earthquake Fault Zones Map
Figure 5	FEMA FIRM Map
Table 1	Historical Strong Earthquakes

APPENDICES

Appendix A	Field Investigation	A1
Appendix B	Laboratory Tests	B1
Appendix C	General Earthwork and Grading Specifications	C1
Appendix D	Liquefaction Screening Evaluation	D1
Appendix E	Stability Analysis	E1
Appendix F	References	F1

PLATES

Plate 1	Geologic Map
Plate 2	Cross Sections
Plate 3	Limits of Removals & Subdrains

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1.00 INTRODUCTION

1.01 Purpose

A geotechnical investigation has been completed for a proposed master planned community known as North Hills in the City of Moorpark and County of Ventura, California. The purpose of the investigation is to present geotechnical and geological information relative to planned grading and development of Tract 5847.

1.02 Scope of the Investigation

The general scope of this investigation included the following:

- Review of published and unpublished geologic, seismic, groundwater and geotechnical literature
- Examination of aerial photographs
- Contacting of underground service alert to locate onsite utility lines
- Logging, sampling and backfilling of 6 exploratory borings; 4 drilled with a bucket auger drill rig and 2 with a hollow stem auger drill rig
- Laboratory testing of representative soil samples
- Geotechnical evaluation of the compiled data
- Preparation of this report presenting our findings, conclusions and recommendations

Our scope of work did not include a preliminary site assessment for the potential of hazardous materials onsite

1.03 Site Location and Description

The site consists of approximately 68 acres of land located in the City of Moorpark, California. The property is bound to the north by existing ranch-style residences, to the east by Gabbert Road, to the south by undeveloped land, and to the west by a Ventura County Flood Control District (VCFCD) debris basin (Figure 1). The approximate geographic position of the center of the site is 34.2886° latitude and -118.9060° longitude.

The majority of the property consists of rolling hills, valleys, and incised drainages with the exception of the southwest corner which is relatively flat. Elevations range from approximately 1,500 to 1,640 feet above sea level. At the time of our field work, majority of the site was covered in grasses, brush, cacti, and sporadic trees.

Existing improvements on the site consist of a concrete road winding west from Gabbert Road to the center portion of the site where there are several smaller concrete roads and concrete pads. There are currently an abandoned swimming pool, a shed and a tennis court on the concrete pads in the central portion of the site. There is also an occupied residence near the east entrance at Gabbert Road. The concrete pads are level; indicating previous grading work was done on the site. There are also high voltage electrical transmission lines on the eastern portion of the site running in a north-south direction.

1.04 Current and Past Land Usage

Aerial photographs and historic topographic maps show that the site was completely undeveloped until sometime around

1947, at which time the flatter southwest portion of the site appears to have been an orchard. In 1967 the orchards are still there and the VCFCD debris basin is in place. By 1978 the residence located in the northeast corner of the site just east of Gabbert Road at the main entrance is in place, and the orchards on the southwest portion of the site appear to have been removed or abandoned. Between 1980 and 1994 the concrete roads and pads were put in place. By 2002 the residences to the north of the site had been constructed and the area that used to have the orchards had been covered by native vegetation.

Currently the site is vacant with the exception of the occupied residence in the northeast corner near Gabbert Road.

1.05 Planned Usage

It is our understanding that the proposed development will consist of a residential master planned community that will included multiple housing types, community facilities, and infrastructure improvements (Figure 3).

Our investigation was performed prior to the preparation of foundation plans. To aid in preparation of this report, we utilized the following assumptions:

- Maximum foundation loads of 3 kips per linear foot for continuous footings and 60 kips for isolated spread footings
- Cuts and fills will be less than 65 feet

1.06 Investigation Methods and Limitations

Our investigation consisted of office research, field exploration, laboratory testing, review of the compiled data, and preparation of this report. It has been performed in a manner consistent with generally accepted engineering and geologic principles and practices, and has incorporated applicable requirements of California Buildings Code. Definitions of technical terms and symbols used in this report include those of the ASTM International, the California Building Code, and commonly used geologic nomenclature.

Technical supporting data are presented in the attached appendices. Appendix A presents a description of the methods and equipment used in performing the field exploration and logs of our subsurface exploration. Appendix B presents a description of our laboratory testing and the test results. Standard Grading Specifications and references are presented in Appendix C. Liquefaction and stability analyses are presented in Appendices D and E, respectively. References are presented in Appendix F.

2.00 FINDINGS

2.01 Geologic Setting

The site is located in the Simi Hills, part of the Transverse Ranges. The rocks in the region consist of marine and non-marine sedimentary rocks deposited beginning 75 million years ago (Squires, 1997). The site is underlain by the Plio-Pleistocene aged Saugus Formation (TQs). The upper part of the Saugus Formation, deposited approximately 1.5 to 1 million years ago, was deposited by the rivers crossing the delta and consists of "light gray to brown gravel composed of pebbles and small cobbles mostly of white to light gray granitic rocks, and a few of gneiss, metavolcanic rocks, quartzite, very few anorthosite, gabbro, and basaltic to andesitic volcanic rocks (Tertiary) and of dark reddish sandstone in coarse sandy matrix, crudely bedded; includes minor sand and clay, locally weathers to fray and brown pebbly soil" (Dibblee, 1992). The structure of the Saugus Formation beneath the site generally consists of flat lying to shallow dipping beds.

2.02 Earth Materials

Our field investigation encountered 4 geologic units: artificial fill, alluvium, and Saugus Formation bedrock. These units are described individually below and where encountered during our subsurface investigation on the accompanying boring logs (Appendix A).

- Artificial Fill (af)

  Artificial fills have been placed within the site to create the existing concrete roads and pads. These fills appear to have been derived from onsite soils composed of silty sands and sandy silts. We found no information regarding the placement and compaction of these fills.

- Alluvium (Map Symbol Qal)

  Alluvial deposits occur in valley areas and tributary drainage courses within the site as well as the southwest portion where borings B4-B6 were drilled. These deposits are typically composed of brown sandy silts, silty sands, and gravelly sand. At the time of our study, the deposits typically ranged from dry to slightly moist and were found to typically range from loose to medium dense.

- Saugus Formation Bedrock (Map Symbol TQs)

  The Saugus Formation locally underlies the site. It ranges from gravelly sand to sandy silt with minor clay in various layers. At the time of our study the deposits ranged from dry to slightly moist and ranged from loose to dense.

A site Geologic Map showing the distribution of the above geologic units and the locations of our borings is presented as Plate 1. Logs of the borings and trenches are presented in Appendix A.

2.03 Expansive Soils

Expansion index tests were performed on selected soil samples by the test methods outlined in ASTM D4829. The selected soil samples were obtained from encountered clayey soils and represented the worst scenario of the on-site soil profile. The test results indicate that these soils have a medium expansion potential. Results of expansion tests are presented in Appendix B. Visual observations of the earth materials suggest majority of the onsite soils will have a very low to low EI.

Since expansion testing was performed on only a small portion of the soils within the site and since site grading will redistribute soils, additional testing of the expansive properties of soils should be performed during future geotechnical investigations of the property and near the completion of rough grading in each development area.

2.04 Surface and Groundwater Conditions

Springs and standing water were not present at the time of our study. Seepage was observed in B1 at approximately 45' in depth where a clay-rich layer was acting locally as an aquatard causing a minimal seepage within the boring. Below this layer was dry caving sand, and no evidence of an aquatard was seen in any of the other borings that we drilled which leads us to believe that this aquatard is not continuous across the site and only local to the area around B1.

Groundwater was not encountered during our subsurface exploration to the maximum depth explored of 75'. According to the California Department of Water Resources State Groundwater Elevation Monitoring System, the depth to ground water in the vicinity of the site has ranged from approximately 330 to 395 feet below the ground surface. Data from

nearby wells is summarized below:

Well No.	Approximate Distance from Site	Highest Groundwater Level (ft)	Lowest Groundwater Level (ft)	Dates of Reported Groundwater Measurements
02N19W06F001S	0.34 miles to the west	330.8	392.4	1974-1977
02N19W06E001S	0.64 miles to the west	359.6	394.6	1968-1974

It is possible that shallower perched groundwater may occur seasonally along or near drainage courses.

2.05 Faults

The site is not located within the boundaries of an Earthquake Fault Zone for fault-rupture hazards as defined by the Alquist-Priolo Earthquake Fault Zoning Act (Figure 4). The nearest Earthquake Fault Zone is located more than 2.5 miles to the southeast along the San Gorgonio Pass fault. No evidence of faulting was observed during our investigation.

2.06 Historic Seismicity

Three historic strong earthquakes have been epicentered within about 20 miles of the site. The most recent of these events was the 6.7 magnitude Northridge Earthquake in 1994 which was 21.6 miles from the site. The largest magnitude quake within 100 miles of the site was a 7.7 magnitude quake in 1852 and was approximately 38 miles away.

Strong earthquakes that have occurred within the region in historic time and their approximate epicentral distances are summarized in Table 2.

2.07 Flooding Potential

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) 06111C0817E and 06111C0816E (effective dates January 20, 2010) the entirety of the site is within Zone X which is defined as areas determined to be outside the 0.2% annual chance floodplain (Figure 5).

The design civil engineer should consider nearby flood zones as well as other surface runoff originating from both within and outside of the site in design of the project.

2.08 Landslides and Erosion

The site is not located in a seismic hazard zone of required investigation for earthquake-induced landslides. No large landslides were encountered during our field investigation and none were apparent on aerial photographs. The majority of the site is generally not susceptible to landsliding due its low gradient. Soils along and adjacent to some drainage course have been eroded by water and there have been some failures of channel banks. However, these areas are restricted to the immediate channel areas.

2.09 Regional Land Subsidence

Ground subsidence is a gradual settling or sinking of the ground surface that is typically associated with oil, gas or groundwater extraction. No known records of subsidence were found and no evidence of subsidence was observed on the site. There are no oil or gas fields within or near the site. Consequently, regional land subsidence due to extraction of oil or gas is not a hazard at the site. Alluvial sediments beneath could be susceptible to land subsidence if proper groundwater management practices are not followed.

2.10 Mineral Resources

No mines or mineral resources are shown to be present within the site on a map showing the locations of mines and mineral resources in Ventura County (Bowers, 1988). The general plan maps and regional geologic maps do not identify any mineral resources within the site.

2.11 Slope Stability

Global stability was evaluated for both of these conditions using the XSTABL computer program originally developed by Purdue University. Hundreds of random circular failure surfaces that satisfy user-designed constraints are generated, analyzed and sorted by factor of safety (FOS).

Direct shear testing was performed six (6) samples including in-situ conditions on native soils, remodeled conditions on artificial fill and bedrock. Among the six soil samples, two of them were selected from the caving layers encountered during our exploration in B1 at 49' and B3 at 12'. Observation and testing results confirm there are local beds present with low cohesion. After reviewing all direct shear testing results, we used the following conservative parameters for slope stability analysis:

- Cohesion = 220 psf
- Friction = 33 degree
- Unit Weight = 105 pcf

Surficial (infinite slope) stability was evaluated using an Excel spreadsheet developed internally by RMA. The surficial stability analyses were performed on artificial fill and bedrock for a 4 foot saturated thickness on a 2H:1V slope. Seismic analyses were not performed for the surficial condition. The shear strength parameters utilized in the stability analysis and results of surficial stability analysis are presented in the following table.

Shear Strength Parameters								FOS from Surficial Stability Analysis
Sampling Location	Material	Unit Weight (pcf)	Cohesion (psf)		Friction Angle (degree)		Remarks	
			Peak	Residual	Peak	Residual		
B1@35 feet	Sandstone	105	390	220	37	33	Undisturbed sample	1.8
B1@50 feet	Sandstone	101	550	240	38	34	Undisturbed sample	2.0
B2@30 feet	Claystone	116	490	360	22	20	Undisturbed sample	2.2
B3@60 feet	Sandstone	97	320	270	35	32	Undisturbed sample	2.1
B1@49 feet	Sandstone (Caving)	127	240	120	36	34	Remodeled Sample	1.3
B3@12 feet	Sandstone (Caving)	122	310	80	33	31	Remodeled Sample	1.0

Our slope stability analysis results are presented in Appendix E.

2.12 Liquefaction Screening Evaluation Results

Liquefaction describes a phenomenon where cyclic stresses, which are produced by earthquake-induced ground motions, create excess pore pressures in cohesionless soils. As a result, the soils may acquire a high degree of mobility, which can lead to lateral spreading, consolidation and settlement of loose sediments, ground oscillation, flow failure, loss of bearing strength, ground fissuring, sand boils, and other damaging deformations. This phenomenon occurs only below the water table, but after liquefaction has developed, it can propagate upward into overlying, non-saturated soil as excess pore water escapes. Descriptions of each of the phenomena associated with liquefaction are described below:

Lateral Spreading: Lateral spreading is the lateral movement of stiff, surficial blocks of sediments as a result of a subsurface layer liquefying. The lateral movements can cause ground fissures or extensional, open cracks at the surface as the blocks move toward a slope face, such as a stream bank or in the direction of a gentle slope. When the shaking stops, these isolated blocks of sediments come to rest in a place different from their original location and may be tilted.

Ground Oscillation: Ground oscillation occurs when liquefaction occurs at depth but the slopes are too gentle to permit lateral displacement. In this case, individual blocks may separate and oscillate on a liquefied layer. Sand boils and fissures are often associated with this phenomenon.

Flow Failure: A more catastrophic mode of ground failure than either lateral spreading or ground oscillation, involves large masses of liquefied sediment or blocks of intact material riding on a liquefied layer moving at high speeds over large distances. Generally flow failures are associated with ground slopes steeper than those associated with either lateral spreading or ground oscillation.

Bearing Strength Loss: Bearing strength decreases with a decrease in effective stress. Loss of bearing strength occurs when the effective stresses are reduced due to the cyclic loading caused by an earthquake. Even if the soil does not liquefy, the bearing of the soil may be reduced below its value either prior to or after the earthquake. If the bearing strength is sufficiently reduced, structures supported on the sediments can settle, tilt, or even float upward in the case of lightly loaded structures such as gas pipelines.

Ground Fissuring and Sand Boils: Ground fissuring and sand boils are surface manifestations associated with liquefaction and lateral spreading, ground oscillation, and flow failure. As apparent from the above descriptions, the likelihood of ground fissures developing is high when lateral spreading, ground oscillations, and flow failure occur. Sand boils occur when the high pore water pressures are relieved by drainage to the surface along weak spots that may have been created by fissuring. As the water flows to the surface, it can carry sediments, and if the pore water pressures are high enough create a gusher (sand boils) at the point of exit.

Research has shown that saturated, loose sands with a silt content less than about 25 percent are most susceptible to liquefaction, whereas other soil types are generally considered to have a low susceptibility. According to the California Geological Survey (CGS) Special Publication SP-117A (2008), "Guidelines for Evaluating and Mitigating Seismic Hazards in California," any materials with a PI > 12 and moisture content < 85% of the liquid limit were considered not subject to liquefaction. Liquefaction susceptibility is related to numerous factors, and the following conditions must exist for liquefaction to occur:

- Sediments must be relatively young in age and must not have developed large amounts of cementation
- Sediments must consist mainly of cohesionless sands and silts
- The sediment must not have a high relative density
- Free groundwater must exist in the sediment; and

- The site must be exposed to seismic events of a magnitude large enough to induce straining of soil particles

Based on our field investigations, high groundwater was 16 feet below the existing grade. No historic high groundwater data was accessible within a reasonable vicinity of the site. Therefore, RMA GeoScience considered the potential for groundwater to be at 10 feet below existing grade in the liquefaction screening evaluation. The soil strata encountered in both borings was used in our liquefaction screening evaluation.

The analysis was performed using LiquefyPro Version 5 (2015 edition) for groundwater conditions: at a depth of 15 feet. The analysis also took into account that two-third of the (PGA_M) is 0.71g and the Modal Magnitude (M_M) for the design level earthquake is 6.86 (based on the PSH Deaggregation tool on the USGS website). A summary of the input data and the results of this liquefaction analysis are provided in Appendix C of this report. Based on this analysis, there appears to be a very low risk of liquefaction occurring at the project site during a design level earthquake (Factor-of-Safety against liquefaction is greater than 1.1).

It should be noted that the California Geological Survey has not yet prepared a Seismic Hazard Zone Map of potential liquefaction hazards for the quadrangle in which the site is located. In addition, there are no liquefaction hazard zones near the site according to any publicly available records. Because there are no mapped liquefaction hazard zones near the site, a map depicting such a zone relative to the site has not been prepared.

2.13 Settlement Due to Seismic Shaking

The potential for seismically-induced settlement was evaluated for the site by using LiquefyPro Version 5 and Later, which was created by CivilTech Software. LiquefyPro is software that evaluates liquefaction potential and calculates the settlement of soil deposits due to seismic loads. The program is based on the most recent publications of NCEER Workshop and SP117 Implementation. Standard Penetration Tests (SPT) were used as input data to run LiquefyPro.

The seismically induced settlement is 1.75 inches when running LiquefyPro on SPT data from boring B-5 to a depth of 50 feet.

A detailed description of the seismically-induced settlement methodology is discussed in Appendix D.

2.14 Total and Differential Settlement

The above seismically induced settlement amount should be combined with the anticipated amount of static settlement in order to obtain an estimate of the amount of differential settlement that may affect the site. The maximum total static settlement of the proposed conventional footings is not expected to exceed ½ inch under the recommended bearing pressure. Therefore, the anticipated total settlement (static and seismic) is expected to be less than 2¼ inches. A differential settlement of approximately 1 inch in a 40 feet span is estimated for design of the proposed structures.

3.00 CONCLUSIONS AND RECOMMENDATIONS

3.01 General Conclusion

Based on specific data and information contained in this report, our understanding of the project and our general experience in engineering geology and geotechnical engineering, it is our professional judgment that the proposed development is geologically and geotechnically feasible. This is provided that the recommendations presented below are

fully implemented during design, grading and construction.

3.02 General Earthwork and Grading

All grading should be performed in accordance with the General Earthwork and Grading Specifications outlined in Appendix C, unless specifically revised or amended below. Recommendations contained in Appendix C are general specifications for typical grading projects and may not be entirely applicable to this project.

It is also recommended that all earthwork and grading be performed in accordance with Appendix J of the 2013 California Building Code and all applicable governmental agency requirements. In the event of conflicts between this report and Appendix J, this report shall govern.

3.03 Earthwork Shrinkage and Subsidence

Shrinkage is the decrease in volume of soil upon removal and recompaction expressed as a percentage of the original in-place volume. Subsidence occurs as natural ground is densified to receive fill. These factors account for changes in earth volumes that will occur during grading.

Alluvium and existing fills are expected to have fairly high shrinkage, perhaps on the order of 10 to 20 percent. Because of its granular nature, the shrinkage of wash deposits is expected to be less. Based on our experience in similar wash deposits on other sites, shrinkage of wash deposits is expected to be on the order of 5 to 10 percent. Older alluvial soils are fairly dense, thus its shrinkage is expected to be less than alluvium, approximately 5 to 10 percent for surficial older alluvium and 0 to 5 percent for deeper older alluvium. Grading is currently not proposed within bedrock, thus its shrinkage potential is not applicable to the currently proposed project. Excavations in bedrock could result in bulking.

Since alluvial soils that will need to be densified have low in situ densities, subsidence could be on the order of 0.2 feet. Existing fill soils will need to be entirely removed to competent native soils and thus subsidence of fills is not applicable. It is expected that older alluvial soils that will be exposed at the base of removals will be dense, thus a subsidence value of 0.1 foot may be considered in planning. Wash deposits are expected to have a similar subsidence value. Subsidence in areas underlain by bedrock will be nil.

The above estimates of shrinkage and subsidence are based on a small sample size when the size of the property is considered. Shrinkage and subsidence potential should be studied in greater detail to refine these estimates. For initial planning purposes prior to additional testing, use of multiple shrinkage and subsidence scenarios should be considered.

The degree to which fill soils are compacted and variations in the insitu density of existing soils will influence earth volume changes. Consequently, some adjustments in grades near the completion of grading could be required to balance the earthwork.

3.04 Removals and Overexcavation

All vegetation, trash and debris should be cleared from the grading area and removed from the site. Prior to placement of compacted fills, all non-engineered fills and loose, porous, or compressible soils will need to be removed down to competent ground. Depths of removals will be dependent upon the nature of the underlying soils and proposed land use. In general, it is anticipated that the following removals will be need for areas to receive fill or support structures:

- Artificial fills (Map Symbol af): Complete removal of artificial fills to competent natural ground is anticipated.

- Alluvium (Map Symbol Qal): The in situ density of alluvial soils within the site varies laterally and with depth. It is anticipated that removals of alluvium will typically need to extend to bedrock or a minimum depth of 10

feet in alluvium. Alluvial removals will need to be evaluated in greater detail when grading plans are developed. The estimated removal depths are indicated on Plate 3.

- Bedrock (Map Symbol TQs): Bedrock is the recommended bearing material in the majority of the fill areas on site.

More detail evaluation of removals should be developed once grading plans are available. At that time overexcavation recommendations should also be developed. Typically, footing areas that are not in deep fill areas are undercut, moistened, and compacted to a minimum of 90% relative compaction to a depth equal to the width of the footing below the bottom of the footing or to a depth of 3 feet below the bottom of the footing, whichever is less. Footing areas are typically defined as extending from the edge of the footing for a distance of 5 feet. Floor slabs, concrete flatwork and paved areas are typically underlain by a minimum of 12 inches of soil compacted to a minimum of 90% relative compaction. Removal and overexcavation depths will need to be confirmed or adjusted, if necessary, at the time of grading.

3.05 Rippability and Rock Disposal

Our exploratory trenches and borings indicate that soils within the site will be rippable with conventional heavy duty grading equipment and that it is unlikely that oversized materials will be encountered within the onsite soils.

The rippability of the bedrock knob in the southeast portion of the site was not specifically analyzed because no development in that area is currently proposed. Based on our visual field observations and experience with similar bedrock materials in southern California, we expect that heavy ripping and possibly blasting will be necessary to make significant cuts in the bedrock and that such excavations will likely generate oversized materials. Our general guidelines for rock disposal are presented in Appendix C. Implementation of our guidelines will require continuous testing and observation by a member of our staff. Oversized materials should not be placed within 10 feet of finish grade without the prior approval of the geotechnical consultant. Additional investigation of bedrock rippability can be performed, if requested.

3.06 Subdrains

Groundwater was not encountered during the course of our subsurface investigation. Water well data indicates that the depth to groundwater in the region is in excess of 200 feet. Conceptual development plans indicate that several drainage courses within the site will likely be filled. However, since it is anticipated that the permeability of native soils will be greater than soils would likely be placed within filled drainage courses, installation of canyon subdrains may not be necessary. The potential need for installation of canyon subdrains will need to be further evaluated once detailed development and grading plans have been prepared, however preliminary subdrain locations are shown in Plate 3.

3.07 Fill and Cut Slopes

For preliminary planning purposes we recommend that cut and fill slopes be inclined no steeper than 2 horizontal to 1 vertical. Our calculations demonstrate that cut and fill slopes will be stable to the maximum heights of the planned cut and fills. Observations and testing confirm that local layers not expected to be greater than five feet in vertical thickness will be exposed in the planned cut with low cohesion. We recommend placement of a geotextile fabric to promote plant growth and enhance the surficial stability of the layers with low cohesion.

3.08 Wind and Water Erosion

Wind erosion does not pose a threat to development within the site. No known wind hazards were encountered in our investigation and research.

Drainage courses within the site have eroded channels. These channels and their banks will be subject to future erosion during periods of high runoff. Mitigation of channel erosion and protection of adjoining areas to be developed will need to be addressed in planning, design and construction.

3.09 Faulting

Regional maps show no faults within the site and no evidence of faulting, recent or otherwise, was observed during our investigation.

Other faults within the region are potential sources for future earthquakes, but they do not represent a future surface fault rupture hazards within the property because they do not pass through the site.

3.10 Seismic Design Parameters

Seismic design parameters have been developed in accordance with the 2013 California Building Code (CBC) using the online U.S. Geological Survey Java Ground Motion Parameter Calculator (ASCE 7-10 Standard) and a site location based on latitude and longitude. The calculator generates probabilistic and deterministic maximum considered earthquake spectral parameters represented by a 5-percent damped acceleration response spectrum having a 2-percent probability of exceedance in 50 years. The deterministic response accelerations are calculated as 150 percent of the largest median 5-percent damped spectral response acceleration computed on active faults within a region, where the deterministic values govern. The calculator does not, however, produce separate probabilistic and deterministic results. The parameters generated for the subject site are presented below:

2013 California Building Code (CBC) Seismic Parameters

Parameter	Value
Site Location	Latitude = 34.2866 degrees Longitude = -118.9084 degrees
Site Class	Site Class = D Soil Profile Name = Stiff soil profile
Mapped Spectral Accelerations (Site Class B)	S_s (0.2- second period) = 2.750g S_1 (1-second period) = 0.943g
Site Coefficients (Site Class D)	F_a = 1.0 F_v = 1.5
Maximum Considered Earthquake Spectral Accelerations (Site Class D)	S_{MS} (0.2- second period) = 2.750g S_{M1} (1-second period) = 1.414g
Design Earthquake Spectral Accelerations (Site Class D)	S_{DS} (0.2- second period) = 1833g S_{D1} (1-second period) = 0.943g

The above table shows that the mapped spectral response acceleration parameter for a 1-second period (S_1) is greater than 0.75g. Therefore, for Occupancy Category II the Seismic Design Category is E (CBC Table 1604.5 and Section 1613.5.6). Consequently, as required for Seismic Design Categories C through F by CBC Section 1803.5.11, slope instability, liquefaction, total and differential settlement and surface displacement due to faulting or seismically induced flooding have been evaluated.

Peak earthquake ground acceleration adjusted for site class effects (PGA_M) has been determine in accordance with ASCE 7-10 Section 11.8.3 as follows: $PGA_M = F_{PGA} \times PGA = 1.0 \times 1.06 = 1.06g$.

3.11 Liquefaction and Secondary Earthquake Hazards

Potential secondary seismic hazards that can affect land development projects include liquefaction, tsunamis, seiches, seismically induced settlement, seismically induced flooding and seismically induced landsliding.

Liquefaction

Liquefaction is a phenomenon where earthquake- induced ground vibrations increase the pore pressure in saturated, granular soils until it is equal to the confining, overburden pressure. When this occurs, the soil can completely loose its shear strength and enter a liquefied state. The possibility of liquefaction is dependent upon grain size, relative density, confining pressure, saturation of the soils, and intensity and duration of ground shaking. In order for liquefaction to occur, three criteria must be met: underlying loose, coarse-grained (sandy) soils, a groundwater depth of less than about 50 feet, and a potential for seismic shaking from nearby large-magnitude earthquake.

The California Geological Survey has prepared a Seismic Hazard Zone Map for the Moorpark Quadrangle and the southwestern portion of the site is mapped as having liquefaction potential. A liquefaction analysis is presented in Appendix D.

Tsunamis and Seiches

Tsunamis are sea waves that are generated in response to large-magnitude earthquakes. When these waves reach shorelines, they sometimes produce coastal flooding. Seiches are the oscillation of large bodies of standing water, such as lakes, that can occur in response to ground shaking. Tsunamis and seiches do not pose hazards due to the inland location of the site and lack of nearby bodies of standing water.

Seismically Induced Settlement

Seismically induced settlement occurs most frequently in areas underlain by loose, granular sediments. Damage as a result of seismically induced settlement is most dramatic when differential settlement occurs in areas with large variations in the thickness of underlying sediments. Settlement caused by ground shaking is often non-uniformly distributed, which can result in differential settlement. Since it is anticipated that loose soils underlying the site is being removed and replaced with compacted fill, the potential for significant seismically induced settlement appears unlikely. A Settlement Analysis is presented in Appendix D.

Seismically Induced Flooding

The site is not located directly down-stream from any major reservoirs. Consequently seismically induced flooding at the site is unlikely. There is an offsite water storage tank located on the south side of Westward Way east of Sunset Avenue that could pose a localized flooding hazard should the tank or its connecting pipes fail during an earthquake.

Seismically Induced Landsliding

The California Geological Survey has prepared a Seismic Hazard Zone Map for the Moorpark Quadrangle and landslides are not a recognized hazard anywhere within the site.

3.12 Foundations

For preliminary design purposes, isolated spread footings and/or continuous wall footings are recommended to support of residential structures, retaining walls and other lightly loaded structures associated with residential development. If the recommendations in the section on grading are followed and footings are established in firm native soils or

compacted fill materials, preliminary design of footings may use the following allowable soil bearing values:

- Continuous Wall Footings:

  Footings having a minimum width of 12 inches and a minimum depth of 12 inches below the lowest adjacent grade have allowable bearing capacity of 1,500 pounds per square foot (psf). This value may be increased by 20% for each additional foot of width and/or depth to a maximum value of 3,500 psf.

- Isolated Spread Footings:

  Footings having a minimum width of 12 inches and a minimum depth of 18 inches below the lowest adjacent grade have allowable bearing capacity of 2,500 psf. This value may be increased by 20% for each additional foot of width or depth to a maximum value of 3,500 psf.

- Retaining Wall Footings:

  Footings for retaining walls should be founded a minimum depth of 12 inches and have a minimum width of 12 inches. Footings may be designed using the allowable bearing capacity and lateral resistance values recommended for building footings. However, when calculating passive resistance, the upper 6 inches of the footings should be ignored in areas where the footings will not be covered with concrete flatwork. This value may also be increased by 20% for each additional foot of width or depth to a maximum value of 3,500 psf. Reinforcement should be provided for structural considerations as determined by the design engineer.

The above bearing capacities represent an allowable net increase in soil pressure over existing soil pressure and may be increased by one-third for short-term wind or seismic loads. The maximum expected settlement of footings designed with the recommended allowable bearing capacity is expected to be on the order of ½ inch with differential settlement on the order of ¼ inch.

Preliminary testing indicates that soils within the site have a very low expansion potential. Therefore, reinforcement of footings for expansive soil is not required. However, in view of the seismic setting, a nominal reinforcement consisting of one #4 bar placed within 3 inches of the top of footings and another placed within 3 inches of the bottom of footings is recommended. The structural engineer may require heavier reinforcement.

Due to the preliminary nature of the expansion tests performed for this study, we recommend additional testing be performed when detailed development have been prepared and near the completion of rough grading to verify the preliminary expansion test results and recommended foundation design criteria.

3.13 Foundation Setbacks from Slopes

Setbacks for footings adjacent to slopes should conform to the requirements of the California Building Code. Specifically, footings should maintain a horizontal distance or setback between any adjacent slope face and the bottom outer edge of the footing.

For slopes descending away from the foundation, the horizontal distance may be calculated by using h/3, where h is the height of the slope. The horizontal setback should not be less than 5 feet, nor need not be greater than 40 feet per the California Building Code. Where structures encroach within the zone of h/3 from the top of the slope the setback may be maintained by deepening the foundations. Flatwork and utilities within the zone of h/3 from the top of slope may be subject to lateral distortion caused by gradual downslope creep. Walls, fences and landscaping improvements constructed at the top of descending slopes should be designed with consideration of the potential for gradual downslope creep.

For ascending slopes, the horizontal setback required may be calculated by using h/2 where h is the height of the slope.

The horizontal setback need not be greater than 15 feet per the California Building Code.

3.14 Slabs on Grade

Testing performed during this investigation indicates that soils on the site have a very low expansion potential. Therefore it is anticipated that reinforcement of slabs on grade to resist forces of expansive soils will not be required. Floor slabs should have a nominal thickness of at least 4 inches and should be are divided into squares or rectangles using weakened plane joints, each with maximum dimensions not exceeding 25 feet. If weakened plane joints are not planned, then the slabs shall be reinforced with at least 6x6-10/10 welded wire fabric placed at mid-height of the slab.

A moisture vapor retarder/barrier is recommended beneath all slabs-on-grade that will be covered by moisture-sensitive flooring materials such as vinyl, linoleum, wood, carpet, rubber, rubber-backed carpet, tile, impermeable floor coatings, adhesives, or where moisture-sensitive equipment, products, or environments will exist. Design and construction of the vapor retarder or barrier should conform to Section 1805 of the 2010 California Building Code (CBC) and pertinent sections of American Concrete Institute (ACI) guidance documents 302.1R-04, 302.2R-06 and 360R-10.

The moisture vapor retarder/barrier should consist of a minimum 10 mils thick polyethylene with a maximum perm rating of 0.3 in accordance with ASTM E 1745. Seams in the moisture vapor retarder/barrier should be overlapped no less than 6 inches or in accordance with the manufacturer's recommendations. Joints and penetrations should be sealed with the manufacturer's recommended adhesives, pressure-sensitive tape, or both. The contractor must avoid damaging or puncturing the vapor retarder/barrier and repair any punctures with additional polyethylene properly lapped and sealed.

ACI guidelines allow for the placement of moisture vapor retarder/barriers either directly beneath floor slabs or below an intermediate granular soil layer.

Placing the moisture retarder/barrier directly beneath the floor slab will provide improved curing of the slab bottom and will eliminate potential problems caused by water being trapped in a granular fill layer. Concrete slabs poured directly on a vapor retarder/barrier can experience shrinkage cracking and curling due to differential rates of curing through the thickness of the slab. Therefore, for concrete placed directly on the vapor retarded, a maximum water cement ratio of 0.45 and the use of water-reducing admixtures to increase workability and decrease bleeding will likely be required.

If granular soil is placed over the vapor retarder/barrier, the layer should be at least 2 inches thick in accordance with traditional practice in southern California. The granular layer should be uniformly compacted and trimmed to provide the full design thickness of the proposed slab, and should not be left exposed to rain or other sources of water such as wet-grinding, power washing, pipe leaks or other processes, and should be dry at the time of concrete placement. Granular fill layers that become saturated should be removed and replaced prior to concrete placement.

An additional layer of sand may be placed beneath the vapor retarder/barrier at the developer's discretion to minimize the potential of the retarder/barrier being punctured by underlying soils.

Slab on grade design recommendations should be further evaluated once grading and foundation plans are prepared and near the completion of rough grading.

3.15 Miscellaneous Concrete Flatwork

For preliminary design purposes, miscellaneous concrete flatwork and walkways may be designed with a minimum thickness of 4 inches. Large slabs should be reinforced with a minimum of 6x6-10/10 welded wire mesh placed at

mid-height in the slab. Control joints should be constructed to create squares or rectangles with a maximum spacing of 15 feet.

Walkways may be constructed without reinforcement. Walkways should be separated from foundations with a thick expansion joint filler. Control joints should be constructed into non-reinforced walkways at a maximum of 5 feet spacing.

The subgrade soils beneath all miscellaneous concrete flatwork should be compacted to a minimum of 90 percent relative compaction for a minimum depth of 12 inches. The geotechnical engineer should monitor the compaction of the subgrade soils and perform testing to verify that proper compaction has been obtained.

3.16 Footing Excavation and Slab Preparations

All footing excavations should be observed by the geotechnical consultant to verify that they have been excavated into competent soils. The foundation excavations should be observed prior to the placement of forms, reinforcement steel, or concrete. These excavations should be evenly trimmed and level. Prior to concrete placement, any loose or soft soils should be removed. Excavated soils should not be placed on slab or footing areas unless properly compacted.

Prior to the placement of the moisture barrier, the subgrade soils underlying the slab should be observed by the geotechnical consultant to verify that all under-slab utility trenches have been properly backfilled and compacted, that no loose or soft soils are present, and that the slab subgrade has been properly compacted to a minimum of 90 percent relative compaction within the upper 12 inches.

Footings may experience and overall loss in bearing capacity or an increased potential to settle where located in close proximity to existing or future utility trenches. Furthermore, stresses imposed by the footings on the utility lines may cause cracking, collapse and/or a loss of serviceability. To reduce this risk, footings should extend below a 1:1 plane projected upward from the closest bottom of the trench.

Subgrade soils in area of slabs on grade and walkways should near their optimum moisture content prior to the placement of concrete. The geotechnical consultant should verify that the appropriate moisture content has been achieved a maximum of 24 hours prior to the placement of concrete or moisture barriers.

3.17 Lateral Load Resistance

Lateral loads may be resisted by soil friction and the passive resistance of the soil. The following parameters are recommended.

- Passive Earth Pressure = 375 pcf (equivalent fluid weight)
- Coefficient of Friction (soil to footing) = 0.35
- Retaining structures should be designed to resist the following lateral active earth pressures:

Surface Slope of Retained Materials (Horizontal:Vertical)	Equivalent Fluid Weight (pcf)
Level	38
5:1	40
4:1	45

3:1	52
2:1	56

These active earth pressures are only applicable if the retained earth is allowed to strain sufficiently to achieve the active state. The required minimum horizontal strain to achieve the active state is approximately 0.0025H. Retaining structures should be designed to resist an at-rest lateral earth pressure if this horizontal strain cannot be achieved.

- At-rest Lateral Earth Pressure = 59 pcf (equivalent fluid weight)

The Mononobe-Okabe method is commonly utilized for determining seismically induced active and passive lateral earth pressures and is based on the limit equilibrium Coulomb theory for static stress conditions. This method entails three fundamental assumptions (e.g., Seed and Whitman, 1970): Wall movement is sufficient to ensure either active or passive conditions, the driving soil wedge inducing the lateral earth pressures is formed by a planar failure surface starting at the heel of the wall and extending to the free surface of the backfill, and the driving soil wedge and the retaining structure act as rigid bodies, and therefore, experiences uniform accelerations throughout the respective bodies (U.S. Army Corps of Engineers, 2003, Engineering and Design - Stability Analysis of Concrete Structures).

- Seismic Lateral Earth Pressure = 23 pcf (equivalent fluid weight)

The seismic lateral earth pressure given above is an inverted triangle, and the resultant of this pressure is an increment of force which should be applied to the back of the wall in the upper 1/3 of the wall height and also applied as a reduction of force to the front of the wall in the upper 1/3 of the footing depth.

3.18 Drainage and Moisture Proofing

Surface drainage should be directed away from proposed structures and into suitable drainage devices. Neither excess irrigation nor rainwater should be allowed to collect or pond against building foundations or within low-lying or level areas. Surface waters should be diverted away from the tops of slopes and prevented from draining over the top of slopes and down the slope face.

Walls and portions thereof that retain soil and enclose interior spaces and floors below grade should be waterproofed and dampproofed in accordance with CBC Section 1805.

Retaining structures should be drained to prevent the accumulation of subsurface water behind the walls. Backdrains should be installed behind all retaining walls exceeding 3 feet in height. A typical detail for retaining wall back drains is presented in Appendix C. All backdrains should be outlet to suitable drainage devices. Retaining wall less than 3 feet in height should be provided with backdrains or weep holes. Dampproofing and/or waterproofing should also be provided on all retaining walls.

3.19 Cement Type and Corrosion Potential

Initial soluble sulfate tests indicate that concrete at the subject site will have a negligible exposure to water-soluble sulfate in the soil. Our preliminary recommendations for concrete exposed to sulfate-containing soils are presented in the table below.

Recommendations for Concrete Exposed to Sulfate-Containing Soils

Sulfate Exposure	Water Soluble Sulfate (SO_4) in Soil (% by Weight)	Sulfate (SO_4) in Water (ppm)	Cement Type (ASTM C150)	Maximum Water-Cement Ratio (by Weight)	Minimum Compressive Strength (psi)
Negligible	0.00 - 0.10	0-150	--	--	2,500
Moderate	0.10 - 0.20	150-1,500	II	0.50	4,000
Severe	0.20 - 2.00	1,500-10,000	V	0.45	4,500
Very Severe	Over 2.00	Over 10,000	V plus pozzolan or slag	0.45	4,500

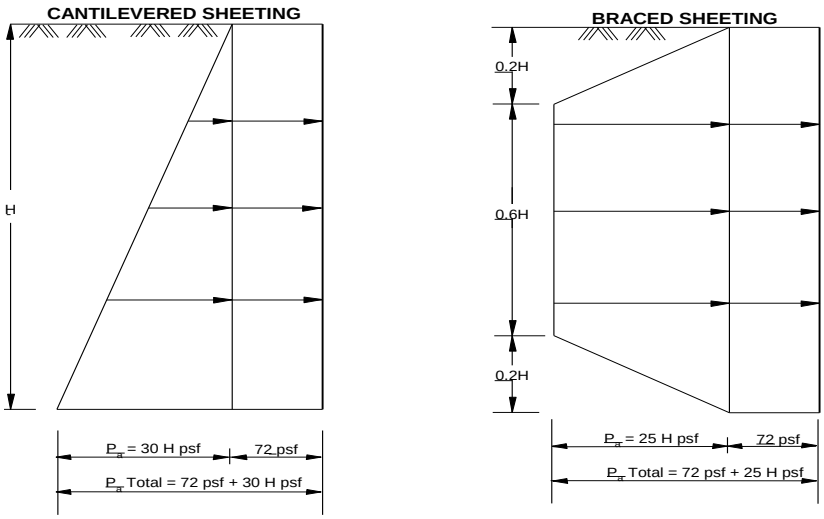
Use of alternate combinations of cementitious materials may be permitted if the combinations meet design recommendations contained in American Concrete Institute guideline ACI 318-11.

The soils were also tested for soil reactivity (pH) and electrical resistivity (ohm-cm). The preliminary test results indicate that the on-site soils have a soil reactivity ranging from 7.5 to 7.7 and an electrical resistivity ranging from 9287 to 11907 ohm-cm. A neutral or non-corrosive soil has a value ranging from 5.5 to 8.4. Generally, soils that could be considered moderately corrosive to ferrous metals have resistivityvalues of about 3,000 ohm-cm to 10,000 ohm-cm. Soils with resistivity values less than 3,000 ohm-cm can be considered corrosive and soils with resistivity values less than 1,000 ohm-cm can be considered extremely corrosive.

Based on these test results, it appears that soils underlying the site have a moderately corrosion potential. However, due to the preliminary nature of the testing performed, it is recommended that additional testing be performed as specific development plans are developed and that specific design recommendations be developed at that time.

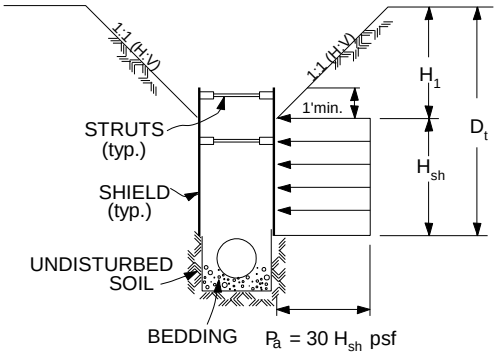
3.20 Temporary Slopes

Excavation of utility trenches will require either temporary sloped excavations or shoring. Temporary excavations in existing alluvial soils may be safely made at an inclination of 1:1 or flatter. If vertical sidewalls are required in excavations greater than 5 feet in depth, the use of cantilevered or braced shoring is recommended. Excavations less than 5 feet in depth may be constructed with vertical sidewalls without shoring or shielding. Our recommendations for lateral earth pressures to be used in the design of cantilevered and/or braced shoring are presented below. These values incorporate a uniform lateral pressure of 72 psf to provide for the normal construction loads imposed by vehicles, equipment, materials, and workmen on the surface adjacent to the trench excavation. However, if vehicles, equipment, materials, etc., are kept a minimum distance equal to the height of the excavation away from the edge of the excavation, this surcharge load need not be applied.



SHORING DESIGN: LATERAL SHORING PRESSURES

Design of the shield struts should be based on a value of 0.65 times the indicated pressure, Pa, for the approximate trench depth. The wales and sheeting can be designed for a value of 2/3 the design strut value.



HEIGHT OF SHIELD, H_{sh} = DEPTH OF TRENCH, D_t , MINUS DEPTH OF SLOPE, H_1

TYPICAL SHORING
DETAIL

Placement of the shield may be made after the excavation is completed or driven down as the material is excavated from inside of the shield. If placed after the excavation, some overexcavation may be required to allow for the shield width and advancement of the shield. The shield may be placed at either the top or the bottom of the pipe zone. Due to the anticipated thinness of the shield walls, removal of the shield after construction should have negligible effects on the load factor of pipes. Shields may be successively placed with conventional trenching equipment.

Vehicles, equipment, materials, etc. should be set back away from the edge of temporary excavations a minimum distance of 15 feet from the top edge of the excavation. Surface waters should be diverted away from temporary excavations and prevented from draining over the top of the excavation and down the slope face. During periods of heavy rain, the slope face should be protected with sandbags to prevent drainage over the edge of the slope, and a visqueen liner placed on the slope face to prevent erosion of the slope face.

Periodic observations of the excavations should be made by the geotechnical consultant to verify that the soil conditions have not varied from those anticipated and to monitor the overall condition of the temporary excavations over time. If at any time during construction conditions are encountered which differ from those anticipated, the geotechnical consultant should be contacted and allowed to analyze the field conditions prior to commencing work within the excavation.

Cal/OSHA construction safety orders should be observed during all underground work.

3.21 Utility Trench Backfill

Alluvial and older alluvial soils on the site will not be suitable for use as pipe bedding for buried utilities. All pipes should be bedded in a sand, gravel or crushed aggregate imported material complying with the requirements of the Standard Specifications for Public Works Construction Section 306-1.2.1. Crushed rock products that do not contain appreciable fines should not be utilized as pipe bedding and/or backfill. Bedding materials should be densified to at least 90% relative compaction (ASTM D1557) by mechanical methods. The geotechnical consultant should review and approve of proposed bedding materials prior to use.

The on-site soils are expected to be suitable as trench backfill provided they are screened of organic matter and cobbles over 6 inches in diameter. Backfill may include rocks up to 12 inches when the trench width is greater than 3 feet. Trench backfill should be densified to at least 90% relative compaction (ASTM D1557).

All utility trench backfill within street right of way, utility easements, under or adjacent to sidewalks, driveways, or building pads should be observed and tested by the geotechnical consultant to verify proper compaction. Trenches excavated adjacent to foundations should not extend within the footing influence zone defined as the area within a line projected at a 1:1 drawn from the bottom edge of the footing. Trenches crossing perpendicular to foundations should be excavated and backfilled prior to the construction of the foundations. The excavations should be backfilled in the presence of the geotechnical engineer and tested to verify adequate compaction beneath the proposed footing.

Cal/OSHA construction safety orders should be observed during all underground work.

3.22 Pavement Sections

The roadways of the subject project will be designed by County of Los Angeles. R-value tests were not performed on our soil samples. However, based on our experiences on similar materials, we estimate the R-values of the on-site soils would be higher than 30. Thus, an R-value of 30 was used to calculate preliminary pavement sections. Structural sections were designed using the procedures outlined in Chapter 630 of the California Highway Design Manual (Caltrans, 2012). This procedure uses the principle that the pavement structural section must be of adequate thickness to distribute the load from the design traffic index (TI) to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value).

Calculated pavement sections are presented in the table below.

Structural Pavement Sections

	Major Collectors	Minor Collectors	Local Streets
Traffic Index	7	6	5
Calculated Pavement Section	4”AC/10”AB	4”AC/7”AB	3”AC/6”AB

AC = Asphaltic concrete
AB = Class II aggregate base

It is anticipated that Portland Cement Concrete (PCC) pavements for areas which are not subject to traffic loads will need to be a minimum thickness of 4 inches thick and may be placed on compacted soils. Where there will be traffic loads it is anticipated that PCC pavement will need to be a minimum thickness of 6 inches of Portland cement concrete and will need to rest on 4 inches of crushed aggregate base.

Prior to paving, the subgrade soils should be scarified and the moisture adjusted to within 2% of the optimum moisture content. The subgrade soils should be compacted to a minimum of 90% relative compaction where base is used and 95% relative compaction where base is not used. All aggregate base courses should be compacted to a minimum of 95% relative compaction.

The above pavement sections have been provided for preliminary planning purposes. Additional testing and analyses of pavement sections will need to be performed when detailed development or grading plans have been developed and near the completion of rough grading of individual development areas.

3.23 Plan Review

Once grading and foundation plans are prepared for the subject property, this office should review the plans from a geotechnical viewpoint. More detail geotechnical investigations and/or analyses will need to be performed at that time.

3.24 Geotechnical Observation and Testing During Rough Grading

The geotechnical engineer should be contacted to provide observation and testing during the following stages of grading:

- During the clearing and grubbing of the site
- During the demolition of any existing structures, buried utilities or other existing improvements
- During excavation and overexcavation of compressible soils
- During all phases of grading including ground preparation and filling operations
- When any unusual conditions are encountered during grading

A final geotechnical report summarizing conditions encountered during grading should be submitted upon completion of the rough grading operations.

3.25 Post-Grading Geotechnical Observation and Testing

After the completion of grading the geotechnical engineer should be contacted to provide additional observation and testing during the following construction activities:

- During trenching and backfilling operations of buried improvements and utilities to verify proper backfill and compaction of the utility trenches
- After excavation and prior to placement of reinforcing steel or concrete within footing trenches to verify that footings are properly founded in competent materials
- During fine or precise grading involving the placement of any fills underlying driveways, sidewalks, walkways, or other miscellaneous concrete flatwork to verify proper placement, mixing and compaction of fills
- When any unusual conditions are encountered during construction

4.00 CLOSURE

The findings, conclusions and recommendations in this report were prepared in accordance with generally accepted engineering and geologic principles and practices. No other warranty, either expressed or implied, is made. This report has been prepared for Moorpark Property 67, LLC to be used solely for design purposes. Anyone using this report for any other purpose must draw their own conclusions regarding required construction procedures and subsurface conditions.

The geotechnical and geologic consultant should be retained during the earthwork and foundation phases of construction to monitor compliance with the design concepts and recommendations and to provide additional recommendations as needed. Should subsurface conditions be encountered during construction that are different from those described in this report, this office should be notified immediately so that our recommendations may be re-evaluated.

RMA GeoScience
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FIGURES AND TABLES

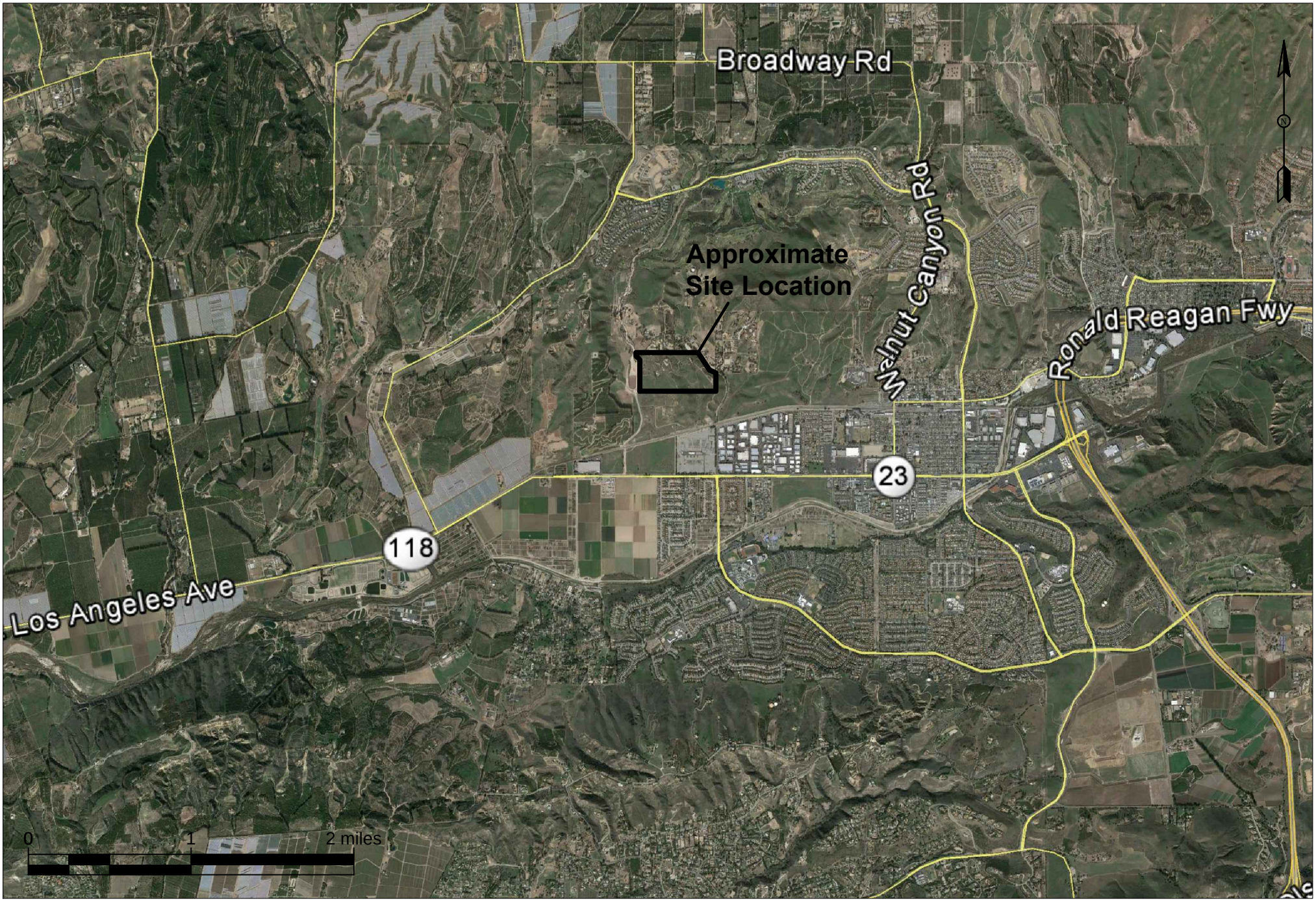


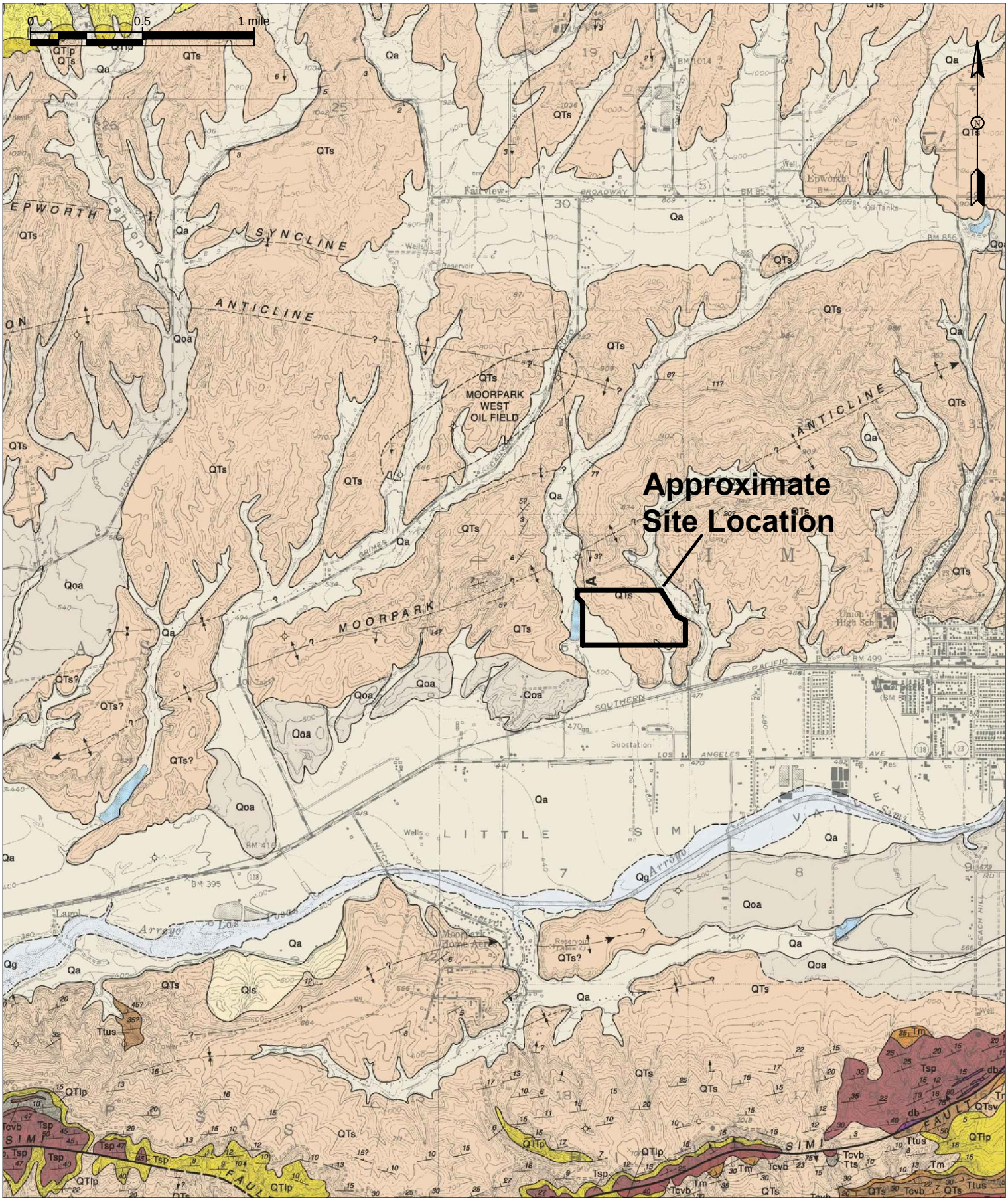
Figure 1

Site Vicinity Map

North Hills, Moorpark, CA

RMA GeoScience

RMA Job No:	16-G63-0
Date:	June 10, 2016
Prepared By:	AMS



Source: USGS Open-File Report 03-293 Preliminary Geologic Map of the San Bernardino 30' X 60' Quadrangle, California Version 1.0
Compiled By Douglas M. Morton & Fred K. Miller, 2003. Contour Interval: 50 meters

Figure 2a

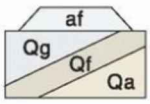
Regional Geology Map

North Hills, Moorpark, CA

RMA Job No:	16-G63-0
Date:	June 10, 2016
Prepared By:	AMS

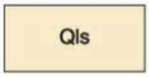
RMA GeoScience

LEGEND



SURFICIAL SEDIMENTS
Unconsolidated alluvial deposits; generally undissected

af *Artificiall fill*
Qg *Gravel and sand of major stream channels*
Qf *Alluvial fan boulder-cobble gravel*
Qa *Alluvium: silt, sand and gravel of valley and floodplain areas*

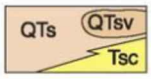


LANDSLIDE DEBRIS
Qls *In northeastern area debris derived mostly from Monterey shale (**Tm**)*



OLDER SURFICIAL SEDIMENTS
Dissected, weakly consolidated alluvial deposits
Qoa *Older alluvial gravel, and silt/clay; composed largely of detritus derived from formations within quadrangle*

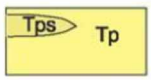
— *UNCONFORMITY* —



SAUGUS FORMATION
(Of Hershey 1902; Kew 1924; Weber et al. 1973; Jakes 1979; Yeats 1967, 1987)
Nonmarine fluviatile, weakly consolidated; Pleistocene and Pliocene(?) ages
QTs *Light gray to brown gravel composed of pebbles and small cobbles mostly of white to light gray granitic rocks, and few of gneiss, metavolcanic rocks, quartzite, very few anorthosite, gabbro, and basaltic to andesitic volcanic rocks (Tertiary) and of dark reddish sandstone in coarse sandy matrix; crudely bedded; includes minor sand and clay, locally weathers to gray to brown pebbly soil*
Tsc *Similar to **QTs**, but gray-white, mostly pebbly sand, somewhat more consolidated, sorted and bedded, prominently cross-bedded; forms steep bluffs where eroded in Grimes Canyon; contains rare thin lenses of sandstone with shell fragments; intertongues westward*
QTsv *Southeast corner of quadrangle only: crudely bedded to massive brown breccia-conglomerate composed of andesitic-basaltic, angular to subrounded detritus of Conejo Volcanics, and a few clasts of Monterey Shale locally*



LAS POSAS SAND
(Of Pressler 1929; included in Saugus Formation by Kew 1924, Weber et al. 1973, Jakes 1929; similar to and probably in part equivalent to Santa Barbara Formation in that area, and to San Pedro Formation of San Pedro area)
Shallow marine regressive; probably early Pleistocene age*
(* Erroneously referred to Pliocene age in Dibblee and Ehrenspeck 1990)
QTlp *Weakly indurated light gray to yellow tan, friable, fine to medium grained sand, commonly with molluscan shell fragments; in Las Posas Hills, contains thin lenses of calcareous fossilferous pebbly sandstone; unconformity at base in Las Posas Hills; grades upward and eastward into **QTs** and **QTsv**.*

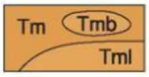


PICO FORMATION
(Of Kew 1924; Weber et al. 1973. Yeats 1967, 1987)
Marine clastic; Pliocene and Pleistocene(?) ages
Tp *Gray, vaguely bedded claystone-siltstone, crumbly where weathered; includes some layers of gray fine grained sandstone; includes a thin bed of 3 to 6 inches (8 to 16cm) thick of coherent, fine grained white tuff (Bailey Tuff of Yeats 1987)*
Tps *Bedded, light gray, semi-friable, fine to medium grained sandstone, locally pebbly*

— *UNCONFORMITY* —



SISQUOC FORMATION
(Included in Modelo Formation by Kew 1924; Weber et al. 1973, Yeats 1987; same lithologic unit as Sisquoc Formation in northern Ventura basin)
Marine clastic and biogenic; late Miocene age
Tsq *Dark gray to brownish gray clay shale, weathers light gray; some layers contain large tan dolomitic concretions; includes some white-weathering, thin bedded diatomaceous semi-siliceous shale*



MONTEREY SHALE
(Modelo Formation of Kew 1924; Yeats 1987; same lithologic unit as Monterey Shale of northern Ventura basin)
Marine biogenic; middle and late Miocene age (Luisian and Mohnian Stages)
Tm *Upper part: white-weathering soft fissle to punky thin bedded semi-siliceous shale and interbeds of hard platy to brittle siliceous shale; includes thin calcareous strata in lower part*
Tmb *Burned siliceous shale; same as **Tm**, but shale once partly molten by underground fires causing shale layers to expand, partially melt and remobilize, and flow unevenly to frothy, finely pumiceous layers of varying bright colors, mostly red, tan, yellow-green, maroon, and black*
Tml *Lower part: soft, thin bedded clayey shale; includes some tan dolomitic concretions; probably middle Miocene age*



UPPER TOPANGA FORMATION
[Topanga Formation of Jakes 1979; may be equivalent to Detrital Sediments (Tls) of Lindero Canyon in Thousand Oaks quadrangle, and in Camarillo-Newbury Park quadrangles (Dibblee and Ehrenspeck 1990)]
Marine transgressive clastic; middle Miocene age
Ttus *Light gray to tan semi-friable sandstone in Las Posas Hills*



CONEJO VOLCANICS
Extrusive volcanic rocks; middle Miocene age
Tcvb *Basaltic flows and sills (?) within and below Topanga Sandstone (**Tts**) in Las Posas Hills; black, massive basalt, fine grained, moderately hard to somewhat incoherent where weathered*



TOPANGA SANDSTONE
(Vaqueros Formation of Kew 1924, Yeats 1987)
Marine transgressive clastic; mostly early and middle Miocene age
Tts *Light gray to tan, thick bedded semi-friable sandstone; in Oak Ridge area may be in part equivalent to Vaqueros Formation of northern Ventura basin, mostly early Miocene age (Zemorrian-Saucesian-Relizian Stages); in Las Posas Hills, gray to brown, bedded, probably middle Miocene age, with unconformity at base*



SESPE FORMATION
Nonmarine fluviatile; mostly Oligocene age
Tsp *Mostly thick bedded tan to greenish gray friable sandstone, locally pebbly, and thin interbeds of soft red, pink, and greenish gray claystone; deposited by streams*

Source: Geologic Map of the Moorpark Quadrangle, Ventura County, California, Thomas W. Dibblee, Jr., 1992. Dibblee Geology Center Map #DF-40. Contour Interval 20'.

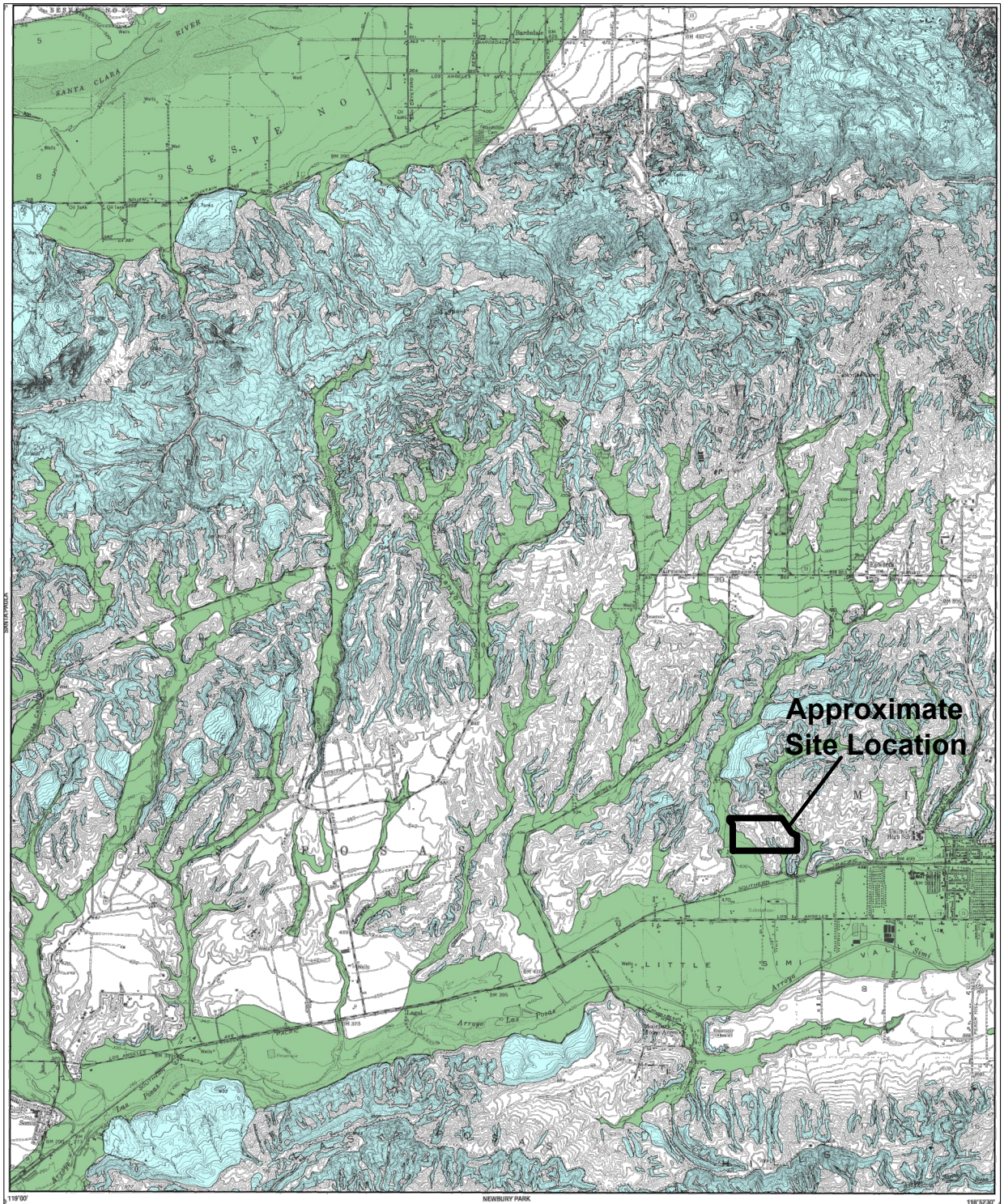
Figure 2b

RMA GeoScience

Regional Geology Map Legend

North Hills, Moorpark, CA

RMA Job No:	16-G63-0
Date:	June 10, 2016
Prepared By:	AMS



Base Map prepared by U.S. Geological Survey, 1951, photorevised

PURPOSE OF MAP

This map will assist cities and counties in fulfilling their responsibilities for protecting the public safety from the effects of earthquake-triggered ground failure as required by the Seismic Hazards Mapping Act (Public Resources Code Sections 2690-2699.6).

For information regarding the scope and recommended methods to be used in conducting the required site investigations, see DMG *Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards* in California.

For a general description of the Seismic Hazards Mapping Program, the Seismic Hazards Mapping Act and regulations, and related information, please refer to the draft User's Guide (see http://www.consrv.ca.gov/dmg/shezp/userguid/).

Production of this map was funded by the Federal Emergency Management Agency's Hazard Mitigation Program and the Department of Conservation in cooperation with the Governor's Office of Emergency Services.

IMPORTANT - PLEASE NOTE

1) This map may not show all areas that have the potential for liquefaction, landsliding, strong earthquake ground shaking or other earthquake and geologic hazards. Also, single earthquake capable of causing liquefaction or triggering landslide failure will not uniformly affect the entire area zoned.

2) Liquefaction zones may also contain areas susceptible to the effects of earthquake-induced landslides. This situation typically exists at or near the toe of existing landslides, downslope from rockfall or debris flow source areas, or adjacent to steep stream banks.

3) This map does not show Alquist-Priolo earthquake fault zones, if any, that may exist in this area. Please refer to the latest official map of earthquake fault zones for disclosures and other actions that are required by the Alquist-Priolo Earthquake Fault Zoning Act. For more information on this subject and an index to available maps, see DMG Special Publication 42.

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 0 1 KILOMETER

STATE OF CALIFORNIA

SEISMIC HAZARD ZONES

Delineated in compliance with
Chapter 7.8, Division 2 of the California Public Resources
(Seismic Hazards Mapping Act)

MOORPARK QUADRANGLE

OFFICIAL MAP

Released:November 17, 2000

MAP EXPLANATION

Zones of Required Investigation:

Liquefaction

Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides

Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

DATA AND METHODOLOGY USED TO DEVELOP THIS MAP ARE PRESENTED IN THE FOLLOWING:

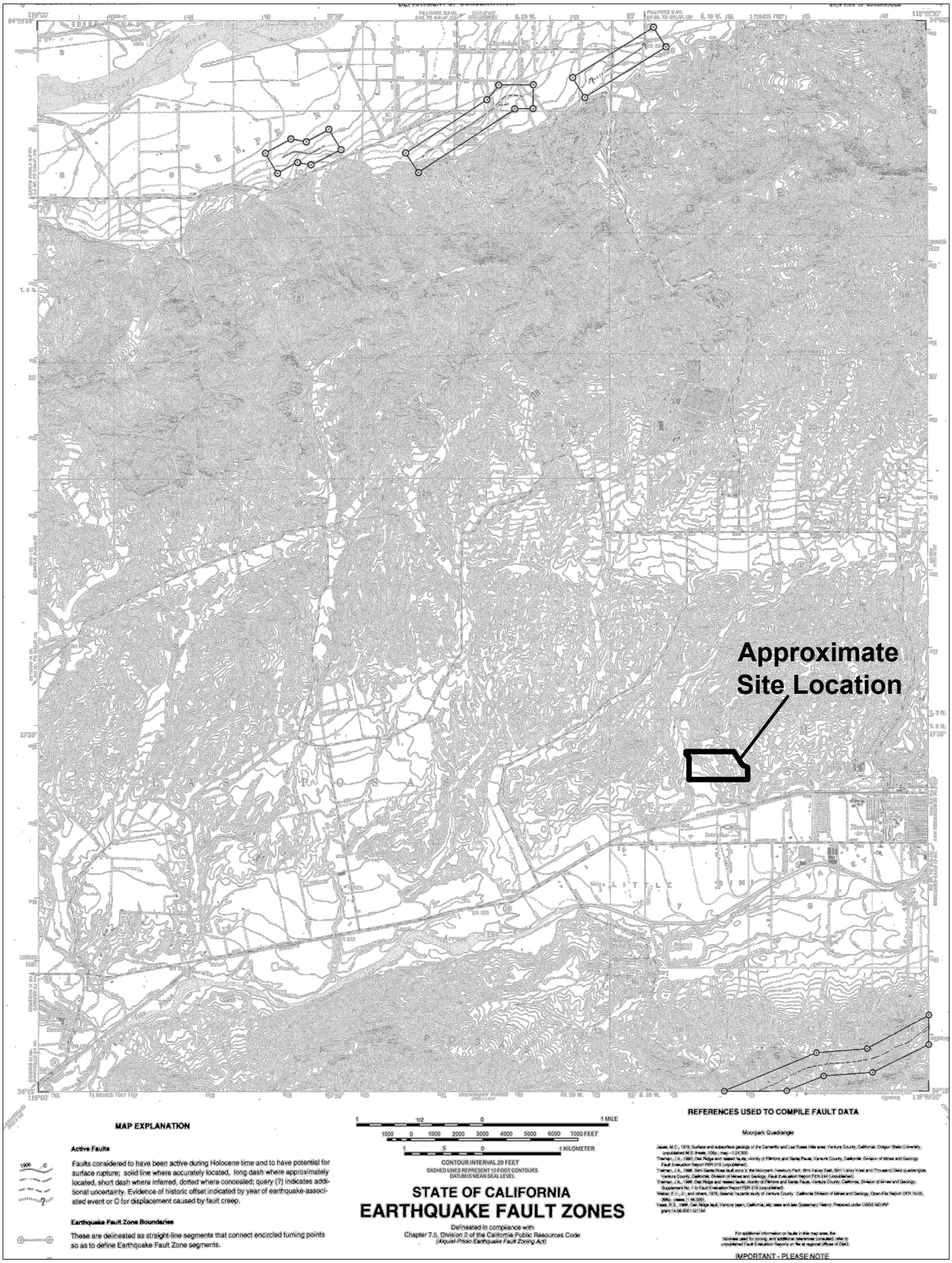
RMA GeoScience

Liquefaction Map

North Hills, Moorpark, CA

Figure 3

RMA Job No:	16-G63-0
Date:	June 10, 2016
Prepared By:	AMS

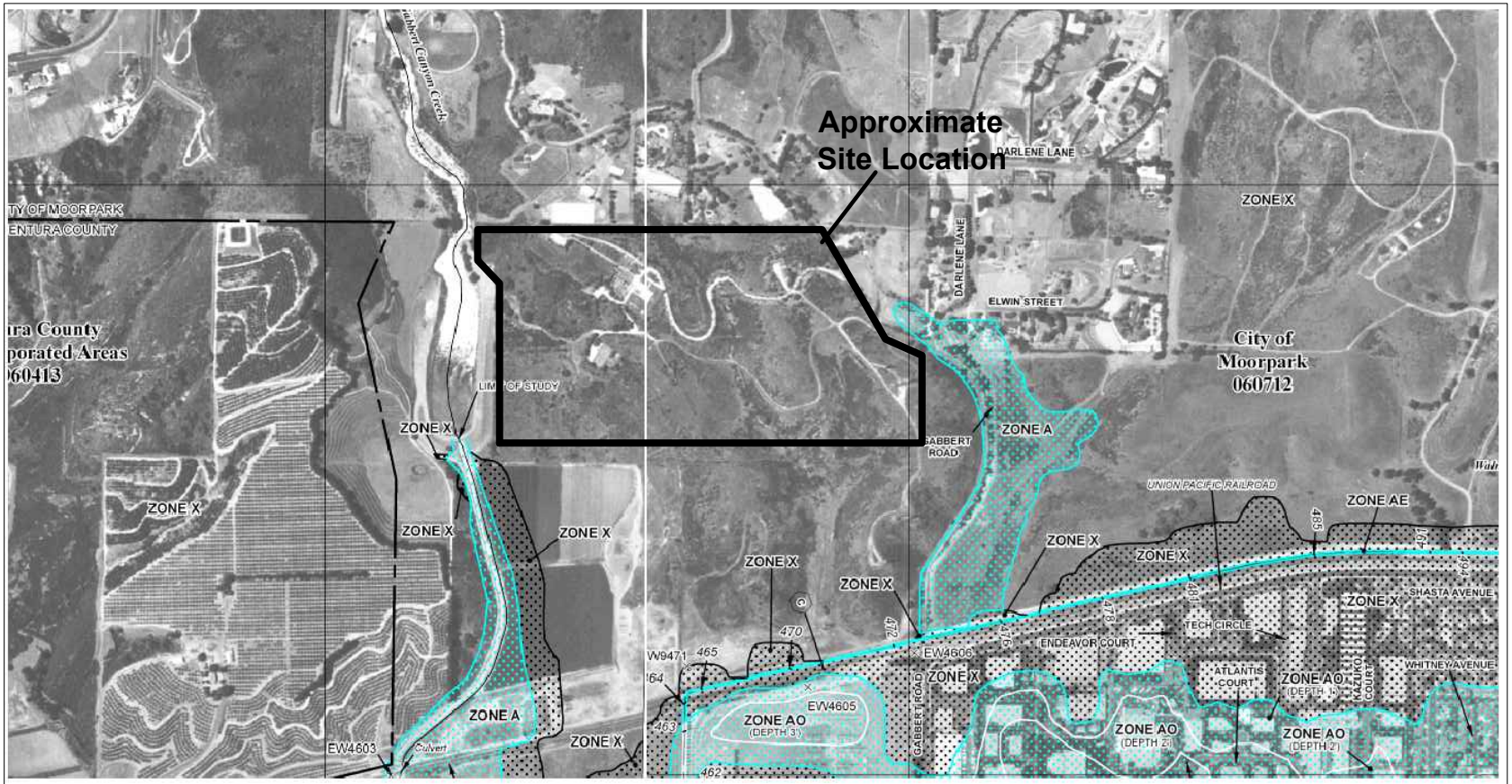


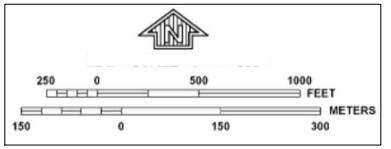
Earthquake Fault Zones Map

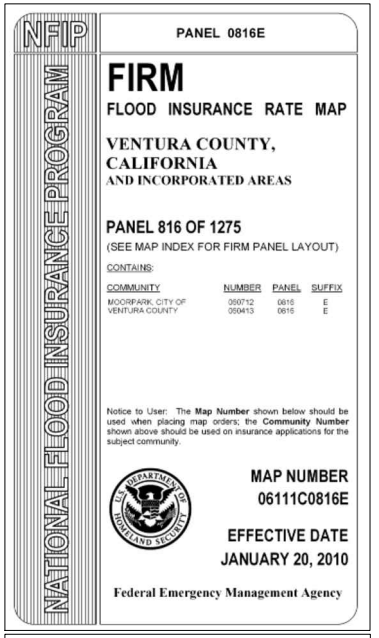
North Hills, Moorpark, CA

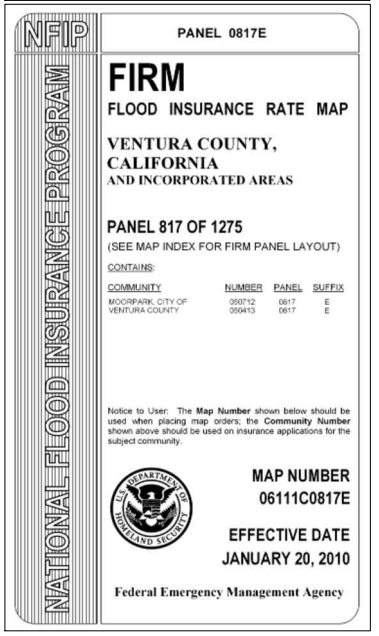
Figure 4

RMA Job No:	16-G63-0
Date:	June 10, 2016
Prepared By:	AMS









LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4376000 mN — 1000-meter Universal Transverse Mercator grid values, zone 11
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

Figure 5

FEMA Flood Insurance Rate Maps

North Hills, Moorpark, CA

RMA Job No:	16-G63-0
Date:	June 10, 2016
Prepared By:	AMS

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TABLE 1

HISTORIC STRONG EARTHQUAKES WITHIN 100 MILES OF SITE SINCE 1812

LATITUDE NORTH	LONGITUDE WEST	DATE OF EVENT	DEPTH (km)	QUAKE MAG.	SITE ACC. g	APPROX. DISTANCE mi(km)
34.3000	118.6000	04/04/1893	0.0	6.00	0.080	17.4(28.0)
34.0000	119.0000	09/24/1827	0.0	7.00	0.130	20.5(33.0)
34.2130	118.5370	1/17/1994	18.0	6.70	0.098	21.6(34.7)
34.4110	118.4010	2/9/1971	8.4	6.40	0.048	30.0(48.2)
34.8000	119.1000	09/05/1883	0.0	6.00	0.025	37.1(59.8)
34.8300	118.7500	11/27/1852	0.0	7.00	0.051	38.5(62.0)
34.9000	118.9000	10/23/1916	0.0	6.00	0.020	42.3(68.1)
34.1000	118.1000	07/11/1855	0.0	6.30	0.021	47.7(76.8)
35.0000	119.0000	7/21/1952	0.0	6.40	0.022	49.5(79.7)
35.0000	119.0170	7/21/1952	0.0	7.70	0.059	49.7(79.9)
34.3000	119.8000	6/29/1925	0.0	6.25	0.018	51.1(82.2)
34.2000	119.8000	12/21/1812	0.0	7.00	0.033	51.5(82.8)
33.6170	117.9670	3/11/1933	0.0	6.30	0.011	70.9(114.0)
34.3700	117.6500	12/08/1812	0.0	7.00	0.019	71.8(115.5)
34.3000	117.6000	07/30/1894	0.0	6.00	0.008	74.4(119.8)
35.3830	118.8500	7/29/1952	0.0	6.10	0.009	75.7(121.9)
35.3670	118.5830	7/23/1952	0.0	6.10	0.008	76.8(123.5)
34.3000	117.5000	07/22/1899	0.0	6.50	0.011	80.1(128.9)
34.0000	117.5000	12/16/1858	0.0	7.00	0.015	82.7(133.0)
35.3000	119.8000	01/09/1857	0.0	7.90	0.029	86.4(139.1)
34.6000	120.4000	8/1/1902	0.0	6.30	0.008	87.8(141.4)
34.6000	120.4000	7/28/1902	0.0	6.30	0.008	87.8(141.4)
33.7000	117.4000	5/15/1910	0.0	6.00	0.005	95.2(153.2)
34.0000	117.2500	7/23/1923	0.0	6.25	0.007	96.6(155.5)

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APPENDIX A

FIELD INVESTIGATION

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APPENDIX A

FIELD INVESTIGATION

A-1.00 FIELD EXPLORATION

A-1.01 Number of Borings

Our subsurface investigation consisted of 6 borings, 4 of which were done using a bucket auger and 2 of which were performed with a CME-75 drill rig equipped with 8-inch diameter hollow stem augers. All of the borings were logged and backfilled.

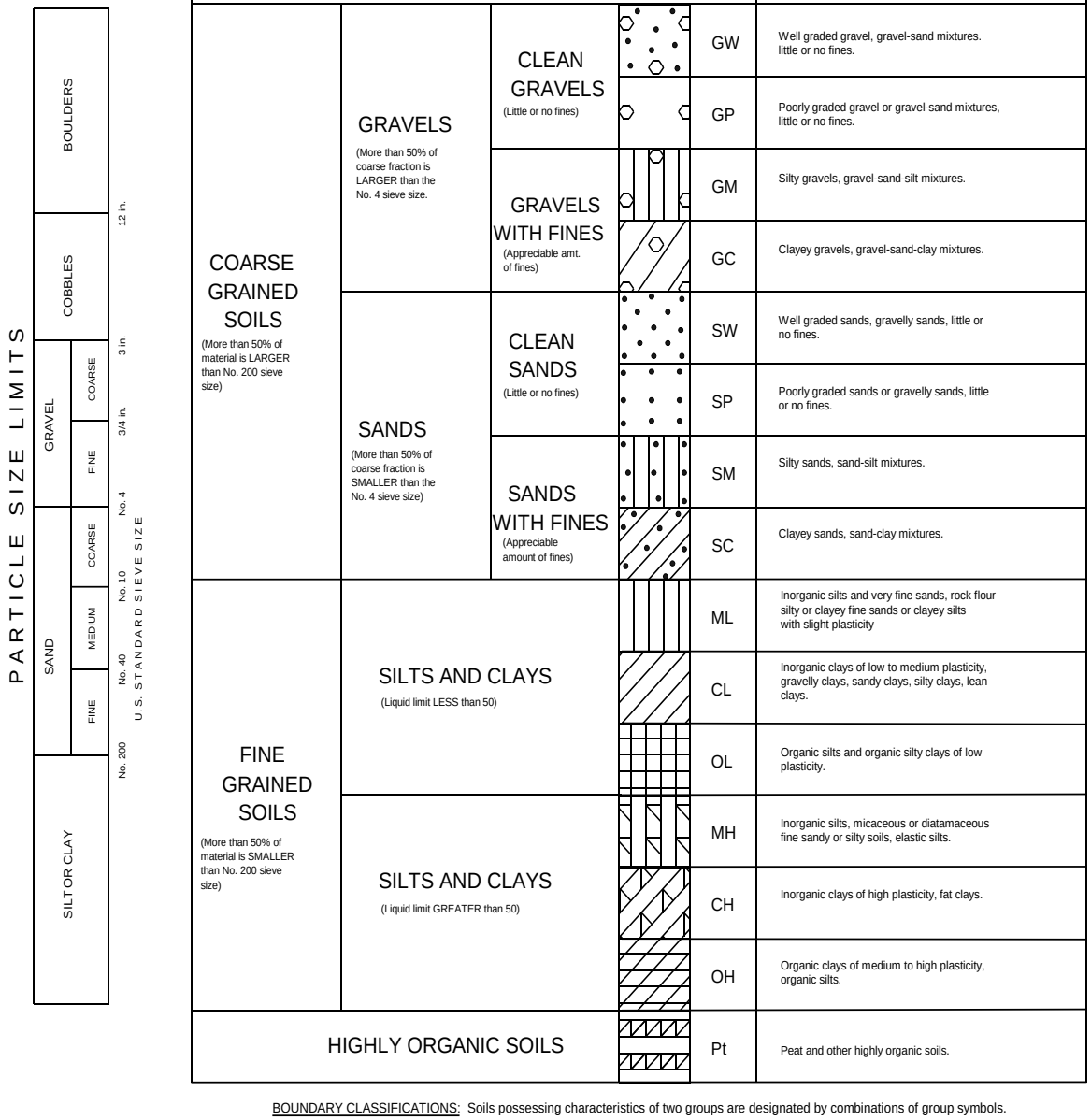
A-1.02 Location of Borings

A Site Geologic Map showing the approximate locations of the borings is presented as Plate 1.

A-1.03 Boring and Trench Logging

Logs of borings and trenches were prepared by one of our staff and are attached in this appendix. The logs contain factual information and interpretation of subsurface conditions between samples. The strata indicated on these logs represent the approximate boundary between earth units and the transition may be gradual. The logs show subsurface conditions at the dates and locations indicated, and may not be representative of subsurface conditions at other locations and times.

Identification of the soils encountered during the subsurface exploration was made using the field identification procedure of the Unified Soils Classification System (ASTM D2488). A legend indicating the symbols and definitions used in this classification system and a legend defining the terms used in describing the relative compaction, consistency or firmness of the soil are attached in this appendix. Bag samples of the major earth units were obtained for laboratory inspection and testing, and the in-place density of the various strata encountered in the exploration was determined



BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

UNIFIED SOIL CLASSIFICATION SYSTEM

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I. SOIL STRENGTH/DENSITY

BASED ON STANDARD PENETRATION TESTS

Compactness of sand		Consistency of clay	
Penetration Resistance N (blows/Ft)	Compactness	Penetration Resistance N (blows/ft)	Consistency
0-4	Very Loose	<2	Very Soft
4-10	Loose	2-4	Soft
10-30	Medium Dense	4-8	Medium Stiff
30-50	Dense	8-15	Stiff
>50	Very Dense	15-30	Very Stiff
		>30	Hard

N = Number of blows of 140 lb. weight falling 30 in. to drive 2-in OD sampler 1 ft.

BASED ON RELATIVE COMPACTION

Compactness of sand		Consistency of clay	
% Compaction	Compactness	% Compaction	Consistency
<75	Loose	<80	Soft
75-83	Medium Dense	80-85	Medium Stiff
83-90	Dense	85-90	Stiff
>90	Very Dense	>90	Very Stiff

II. SOIL MOISTURE

Moisture of sands		Moisture of clays	
% Moisture	Description	% Moisture	Description
<5%	Dry	<12%	Dry
5-12%	Moist	12-20%	Moist
>12%	Very Moist	>20%	Very Moist, wet

SOIL DESCRIPTION LEGEND

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BORING NUMBER 1

Client: Moorpark Property 67, LLC
Project Name: North Hills Moorpark
Project Number 16-G63-0
Project Location: Moorpark, California
Date Started: 5/6/2016 Completed: 5/6/2016
Ground Elevation: 609' Boring Diameter: 36"
Excavation Method: Bucket Auger
Ground Water Levels: n/a
Drilling Contractor: Dave's Drilling
Notes: The Blow Count from Bucket Auger Kelly Bars
Logged By: ams Checked By: HL

Depth (ft)	Drive Sample	Blow Count (12")	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
										Top Soil: Light brown Sandy SILT, sporadic subrounded to subangular gravel less than 3" in diameter, dry			ML
5		7		1.7	117	119				5': TQs - Light orangey brown fine to coarse Sandy SILTSTONE with sporadic subrounded to subangular gravel less than 3" in diameter, medium dense, dry			ML
										9': N67E / 4NW			
10		8		1.6	117	118				10': TQs - Light to medium orangey brown Silty fine to coarse SANDSTONE with sporadic subrounded to subangular gravel less than 3" in diameter, medium dense, dry			SM
15		10		3	128	132				15': TQs - Reddish to orangey brown medium to coarse SANDSTONE with sporadic subrounded to angular gravel less than 4" in diameter, dense, slightly moist			SW
										17': N80E / 7S			
20		3		6.3	94	100				20': TQs - Medium yellow brown fine Sandy SILTSTONE, loose, slightly moist			ML
										22-25': Herringbone cross beds, otherwise bedding is flat			
25		7		3.4	103	106				25': TQs - Medium yellow brown fine Sandy SILTSTONE, mesium dense, slightly moist, laminated beds			ML
30		8		2	134	136				30': TQs - Medium yellow brown fine to coarse SANDSTONE with silt and rounded to subangular gravel less than 1" in diameter, medium dense, slightly moist			SW
										32': N60E / 6NW Herringbone cross beds			

Material Description

Thin Wall Tube | 2.5" Ring Sample | Bulk Sample | Standard Split Spoon Sample | Static Water Table

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BORING NUMBER 1

Client: Moorpark Property 67, LLC
Project Name: North Hills Moorpark
Project Number 16-G63-0
Project Location: Moorpark, California
Date Started: 5/6/2016 Completed: 5/6/2016
Ground Elevation: 609' Boring Diameter: 36"
Excavation Method: Bucket Auger
Ground Water Levels: n/a
Drilling Contractor: Dave's Drilling
Notes: The Blow Count from Bucket Auger Kelly Bars
Logged By: ams Checked By:

Depth (ft)	Drive Sample	Blow Count (12")	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
35	☒	12	▨	2.4	118	121				35': TQs - Dark yellow brown Silty fine to coarse SANDSTONE with subrounded to subangular gravel less than 3" in diameter, slightly moist, flat bedding			SW
40	☒	10	▨	6.5	109	116				40': TQs - Medium reddish brown fine to coarse grained SANDSTONE, moist			SW
										44': Sharp planar contact with medium brown CLAYSTONE layer approximately 5' thick, seepage in top of layer, overall layer is dipping approximately 5° into the slope			
45	☒	10-10"	▨	8	107	116				45': TQs - Medium brown Clayey SILTSTONE with minor fine sand especially in tip, slightly moist			ML
										49': Grades over 6 inches into very clean medium to coarse grained SANDSTONE, moderate caving			
50	☒	5-8"	▨	2.6	102	105				50': TQs - Tan fine to medium grained SANDSTONE with minor coarse grained sand, slightly moist, herringbone crossbeds, slight caving			SP
55	☒	12-10"	▨	2.9	131	135				55': TQs - Tan fine to coarse grained SANDSTONE with sporadic subrounded to subangular gravel less than 1" in diameter, slightly moist, flat laminated bedding			SW
60	☒	15	▨	1.1	108	110				60': TQs - Tan fine to coarse grained SANDSTONE with sporadic subrounded to subangular gravel less than 1" in diameter, slightly moist			SW
										64': Crossbeds			
65	☒	15-7"	▨	4.9	107	112				65': TQs - Tan fine to coarse grained SANDSTONE with subrounded to angular gravel less than 4" in diameter, minor silt, slightly moist, flat bedding			SW

Material Description: ■ Thin Wall Tube; ☒ 2.5" Ring Sample; ▨ Bulk Sample; ◫ Standard Split Spoon Sample; ▽ Static Water Table

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BORING NUMBER 1

Client: Moorpark Property 67, LLC
Project Name: North Hills Moorpark
Project Number 16-G63-0
Project Location: Moorpark, California
Date Started: 5/6/2016 Completed: 5/6/2016
Ground Elevation: 609' Boring Diameter: 36"
Excavation Method: Bucket Auger
Ground Water Levels: n/a
Drilling Contractor: Dave's Drilling
Notes: The Blow Count from Bucket Auger Kelly Bars
Logged By: ams Checked By:

Depth (ft)	Drive Sample	Blow Count (12")	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
70	☒	15-8"	▨	7.2	112	120				70': TQs - Medium brown fine to coarse grained SANDSTONE with subrounded to subangular gravel less than 2" in diameter, minor clay and silt, very sporadic dark brown clay nodules less than 1.5" in diameter, slightly moist, minor caving			SW
75	☒	15-10"	▨	4.9	118	124				75': TQs - Tan fine to coarse grained SANDSTONE with minor silt and sporadic rounded to subangular gravel less than 2.5" in diameter, slightly moist			SM / SW
80													
85													
90													
95													
100													

Material Description

■ Thin Wall Tube ☒ 2.5" Ring Sample ▨ Bulk Sample ◫ Standard Split Spoon Sample ▽ Static Water Table

Total Depth: 75'
Caving: 49'
Groundwater: None Encountered
Backfilled: Cuttings

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BORING NUMBER 2

Client: Moorpark Property 67, LLC

Project Name: North Hills Moorpark

Project Number 16-G63-0

Project Location: Moorpark, California

Date Started: 5/6/2016 Completed: 5/6/2016

Ground Elevation: 627' Boring Diameter: 36"

Excavation Method: Bucket Auger

Ground Water Levels: n/a

Drilling Contractor: Dave's Drilling

Notes: The Blow Count from Bucket Auger Kelly Bars

Logged By: ams Checked By: HL

Depth (ft)	Drive Sample	Blow Count (12")	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
										Top Soil: Medium brown gravelly fine to coarse Sandy SILT, dry			SW / SM
5										6': 8" thick clean coarse SANDSTONE layer, bedding is flat			
10		6		3.8	125	130				10': TQs - Reddish brown Silty fine to coarse SANDSTONE with minor clay and sporadic gravel less than 2" in diameter, medium dense, slightly moist, bedding is flat			SM
15													
20		6		6.7	116	124				20': TQs - Reddish brown gravelly coarse SANDSTONE, subangular to rounded crystalline gravel less than 4" in diameter, medium dense, minor clay, moist, bedding is flat			SW
										22.5': N45E / 6SE			
25													
30		2		36	86	117				30': TQs - Medium orangey brown Silty CLAYSTONE with minor fine to coarse sand and small gravel, less than 5" in diameter, soft, moist, bedding is flat			CL

Material Description: Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table

Total Depth: 30'

Caving: No

Groundwater: None Encountered

Backfilled: Cuttings

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BORING NUMBER 3

Client: Moorpark Property 67, LLC
Project Name: North Hills Moorpark
Project Number 16-G63-0
Project Location: Moorpark, California
Date Started: 5/6/2016 Completed: 5/6/2016
Ground Elevation: 580' Boring Diameter: 36"
Excavation Method: Bucket Auger
Ground Water Levels: n/a
Drilling Contractor: Dave's Drilling
Notes: The Blow Count from Bucket Auger Kelly Bars
Logged By: ams Checked By: HL

Depth (ft)	Drive Sample	Blow Count (12")	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
										Top Soil: Brown fine to coarse grained Sandy SILT with subangular to sunrounded gravel less than 4" in diameter, dry			ML
5										5.5': Laminated bedding			
										8': N25E / 10 NW (cross beds)			
10		5		1.2	107	108				10': TQs - Medium tan brown fine to coarse SANDSTONE with subandular to subrounded gravel less than 3" in diameter, minor silt, medium dense, dry, approximately 3-4' wide of caving in a layer approximately 5' tall			SW
										12.5': N-S / 8W			
15													
20		10		6.4	128	137				20': TQs - Medium tan brown fine to coarse grained SANDSTONE, with subangular to subrounded gravel less than 3" in diameter, minor silt, dense, dry, bedding is flat			SW
25													
30		6		8.5	109	119				30': TQs - Light orangey brown fine to coarse SANDSTONE with clay, sporadic rounded to subangular gravel less than 1.5" in diameter, minor silt, medium dense, slightly moist, bedding is flat			SC

Material Description: Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table

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BORING NUMBER 3

Client: Moorpark Property 67, LLC
Project Name: North Hills Moorpark
Project Number 16-G63-0
Project Location: Moorpark, California
Date Started: 5/6/2016 Completed: 5/6/2016
Ground Elevation: 580' Boring Diameter: 36"
Excavation Method: Bucket Auger
Ground Water Levels: n/a
Drilling Contractor: Dave's Drilling
Notes: The Blow Count from Bucket Auger Kelly Bars
Logged By: ams Checked By:

Depth (ft)	Drive Sample	Blow Count (12")	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
35										34.5': Herringbone cross beds 37': Herringbone cross beds			
40	☒	10	⧄	3	105	108				40': TQs - Light orangey brown fine to coase SANDSTONE with silt and subangular to sunrounded gravel less than 2" in diameter, minor clay, dense, slightly moist, bedding is flat 42': Cross bedding			SM / SW
45													
50	☒	7	⧄	7	107	114				47': Cross Bedding 50': TQs - Light orangey brown fine to coarse SANDSTONE with minor clay, silt, and angular to subangular gravel less than 1" in diameter, medium dense, slightly moist, bedding is flat			SM
55										53': Clast supported CONGLOMERATE with coarse grained sandy matrix, caving approximately 4' wide and 5' thick, bedding is flat			
60	☒	15	⧄	2.3	108	110				60': TQs - Light orangey brown fine to medium SANDSTONE with coarse sand, silt, and sporadic rounded to subangular gravel less than 1" in diameter, dense, dry, bedding is flat			SM / SW
65													

Material Description

Thin Wall Tube ☒ 2.5" Ring Sample
⧄ Bulk Sample ◫ Standard Split Spoon Sample ▽ Static Water Table

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BORING NUMBER 3

Client: Moorpark Property 67, LLC
Project Name: North Hills Moorpark
Project Number 16-G63-0
Project Location: Moorpark, California
Date Started: 5/6/2016 Completed: 5/6/2016
Ground Elevation: 580' Boring Diameter: 36"
Excavation Method: Bucket Auger
Ground Water Levels: n/a
Drilling Contractor: Dave's Drilling
Notes: The Blow Count from Bucket Auger Kelly Bars
Logged By: ams Checked By:

Depth (ft)	Drive Sample	Blow Count (12")	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
70	☒	15	▨	11	121	134				70': TQs - Orangey brown fine to medium Sandy CLAYSTONE with silt, coarse sand, and rounded to subangular gravel less than 1.5" in diameter, very stiff, slightly moist			SC / CL
75													
80													
85													
90													
95													
100													

Material Description: ■ Thin Wall Tube; ☒ 2.5" Ring Sample; ▨ Bulk Sample; ◫ Standard Split Spoon Sample; ▽ Static Water Table

Total Depth: 70'
Caving:
Groundwater: None Encountered
Backfilled: Cuttings

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BORING NUMBER 4

Client: Moorpark Property 67, LLC

Project Name: North Hills Moorpark

Project Number 16-G63-0

Project Location: Moorpark, California

Date Started: 5/6/2016 Completed: 5/6/2016

Ground Elevation: 522' Boring Diameter: 36"

Excavation Method: Bucket Auger

Ground Water Levels: n/a

Drilling Contractor: Dave's Drilling

Notes: The Blow Count from Bucket Auger Kelly Bars

Logged By: ams Checked By: HL

Depth (ft)	Drive Sample	Blow Count (12")	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
										Top Soil: Medium brown Sandy SILT with subangular to subrounded gravel less than 3" in diameter, dry			
10	☒	1	▨	9	106	116				10': Qal - Light to medium brown SILT with minor clay and fine to coarse sand, loose, slightly moist, bedding is flat			ML
										18': Flat laminated bedding			
20	☒	5		1.6	106	108				20': Qal - Light brown SILT with minor clay, sand, and sporadic rounded to subangular gravel less than 3" in diameter, medium dense, slightly moist, bedding is flat			ML
30	☒	8	▨	8	106	115				30': Qal - Medium reddish brown Clayey SILT with minor fine to medium sand, medium dense, slightly moist, bedding is flat			ML

Material Description

Thin Wall Tube ☒ 2.5" Ring Sample ▨ Bulk Sample ◫ Standard Split Spoon Sample ▽ Static Water Table

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BORING NUMBER 4

Client: Moorpark Property 67, LLC
Project Name: North Hills Moorpark
Project Number 16-G63-0
Project Location: Moorpark, California
Date Started: 5/6/2016 Completed: 5/6/2016
Ground Elevation: 522' Boring Diameter: 36"
Excavation Method: Bucket Auger
Ground Water Levels: n/a
Drilling Contractor: Dave's Drilling
Notes: The Blow Count from Bucket Auger Kelly Bars
Logged By: ams Checked By:

Depth (ft)	Drive Sample	Blow Count (12")	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
35													
40	☒	10	▨	2	101	103				40': Qal - Light reddish brown Silty fine to medium grained SAND with minor coarse sand, clay, and sporadic rounded to subangular gravel less than 2" in diameter, dense, slightly moist, bedding is flat			SM
45													
50	☒	4	▨	11	109	121				50': Qal - Light reddish brown Clayey SILT with minor fine sand, medium dense, slightly moist, bedding is flat			ML
55													
60										Total Depth: 50' Caving: No Groundwater: None Encountered Backfilled: Cuttings			
65													

Material Description

☒ Thin Wall Tube ☒ 2.5" Ring Sample
▨ Bulk Sample ◫ Standard Split Spoon Sample ▽ Static Water Table

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BORING NUMBER 5

Client: Moorpark Property 67, LLC

Project Name: North Hills Moorpark

Project Number 16-G63-0

Project Location: Moorpark, California

Date Started: 5/6/2016 Completed: 5/6/2016

Ground Elevation: 516' Boring Diameter: 8"

Excavation Method: Hollow Stem Auger

Ground Water Levels: n/a

Drilling Contractor: Choice Drilling

Notes:

Logged By: ams Checked By:

Depth (ft)	Drive Sample	Blow Count (N Value)	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
										Top Soil: Brown Sandy SILT, dry			ML
		9/10/11								2.5': Qal - Brown fine to coarse Sandy SILT with angular to subrounded pebbles less than 1" in diameter, medium dense, dry			ML
5		10/17/20		4.3	116	121				5': Qal - Brown Sandy SILT with angular to subrounded pebbles less than 1" in diameter, mild porosity, caliche visible in rings, medium dense, dry			ML
		5/6/7								7.5': Qal - Brown Silty SAND with subangular to rounded pebbles less than 1" in diameter, minor clay, medium dense, slightly moist	48	0.1	SM
10		7/12/18		11	107	119				10': Qal - Brown fine to medium Sandy SILT with clay, caliche, medium dense, slightly moist			ML
		7/8/10								12.5': Qal - Light to med brown fine to coarse Silty SAND with silt and angular to subrounded pebbles less than 1" in diameter, medium dense, clay in tip, slightly moist	12		SW / SM
15		5/7/10		7.2	116	124				15': Qal - Medium brown fine Sandy SILT with clay and sporadic coarse sand, loose, slightly moist			ML
		7/8/10								17.5': Qal - Light yellow brown Silty fine to coarse SAND, medium dense, slightly moist			SM
20		20/50-6		3.2	108	112				20': Qal - Yellow brown Silty fine to medium SAND, very dense, slightly moist			SM
		4/5/7								22.5': Qal - Medium yellow brown fine Silty SAND, medium dense, slightly moist	32		SM
25		5/10/20		5	115	121				25': Qal - Medium yellow brown fine Sandy SILT with minor clay and coarse SAND, medium dense, slightly moist			ML
		4/6/7								27.5': Qal - Medium yellow brown fine Silty SAND with minor clay, medium dense, slightly moist	40	0.1	SM
30		10/17/20		13	106	120				30': Qal - Tip is medium yellow brown fine to medium SAND with minor coarse sand and clay, slightly moist, medium dense. Sample is medium reddish brown Silty CLAY with white mottling, medium dense, slightly moist			SM
		4/5/7								32.5': Qal - Medium reddish brown Clayey SAND, white varigation, stiff, slightly moist	45		SC

Material Description

Thin Wall Tube | 2.5" Ring Sample | Bulk Sample | Standard Split Spoon Sample | Static Water Table

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BORING NUMBER 5

Client: Moorpark Property 67, LLC
Project Name: North Hills Moorpark
Project Number 16-G63-0
Project Location: Moorpark, California
Date Started: 5/6/2016 Completed: 5/6/2016
Ground Elevation: 516' Boring Diameter: 8"
Excavation Method: Hollow Stem Auger
Ground Water Levels: n/a
Drilling Contractor: Choice Drilling
Notes:
Logged By: ams Checked By:

Depth (ft)	Drive Sample	Blow Count (N Value)	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
35	☒	15/18/25		2	118	121				35': Qal - Dark yellow brown fine Sandy SILT with minor clay, medium dense, slightly moist			ML
	▯	12/18/20								37.5': Qal - Medium yellow brown Silty fine to coarse SAND with rounded to subangular gravel less than 1.5" in diameter, minor clay in top of sample, dense, slightly moist	4		SM
40	☒	32/50-4		2	123	126				40': Qal - Medium yellow brown rounded to sub rounded Gravely medium to coarse SAND, very dense, slightly moist			SW
	▯	11/12/14								42.5': Qal - Dark yellow brown angular to subrounded Gravely SAND, medium dense, slightly moist			SW
45	☒	29/20/19		6.3	117	124				45': Qal - Medium orangey brown rounded to subangular Gravely SAND with silt and minor clay, medium dense, slightly moist			SW
	▯	7/8/14								47.5': Qal - Medium reddish brown Clayey SAND, medium dense, moist	32		ML
50	☒	18/30/50-6		5	122	128				50': Qal - Tip is orangey brown fine Sandy SILT with clay, coarse sand, and sporadic rounded to subangular pebbles less than 1" in diameter, dense, moist. Sample is brown fine Sandy SILT with clay, dense, moist			ML
55													
60										Total Depth: 50' Caving: No Groundwater: None Encountered Backfilled: Grout			
65													

Material Description

▬ Thin Wall Tube ☒ 2.5" Ring Sample ▨ Bulk Sample ▯▯ Standard Split Spoon Sample ▽ Static Water Table

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BORING NUMBER 6

Client: Moorpark Property 67, LLC

Project Name: North Hills Moorpark

Project Number: 16-G63-0

Project Location: Moorpark, California

Date Started: 5/6/2016 Completed: 5/6/2016

Ground Elevation: 540' Boring Diameter: 8"

Excavation Method: Hollow Stem Auger

Ground Water Levels: n/a

Drilling Contractor: Choice Drilling

Notes:

Logged By: ams Checked By: HL

Depth (ft)	Drive Sample	Blow Count (N Value)	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
										Top Soil: Brown Silty fine to coarse SAND, dry			SM
		15/18/40		7.1	122	131				2.5': Qal - Light brown Silty fine to medium SAND with coarse sand and rounded to subrounded pebbles less than 0.75" in diameter, dense, slightly moist			SM
5		8/12/16								5': Qal - Medium brown Silty fine to coarse SAND with rounded to subangular pebbles less than 0.75" in diameter, medium dense, slightly moist	12		SM
		10/12/15		3.1	111	114				7.5': Qal - Brown Silty fine to coarse SAND with rounded to subrounded gravel less than 1" in diameter, minor clay in tip, medium dense, slightly moist			SM
10		5/8/9								10': Qal - (Rock in tip) Brown fine to coarse Silty SAND, medium dense, slightly moist	34	0.2	SM
		18/10/14		6.2	120	127				12.5': Qal - Brown Clayey fine to medium Sandy SILT, medium dense, slightly moist			SM
15		4/6/7								15': Qal - (Rock in tip) Medium to dark brown Silty fine to medium SAND with sporadic fine gravel, medium dense, slightly moist	18	0.5	SM
		6/12/15		7	116	124				17.5': Qal - Orangey brown to dark brown fine Silty SAND with clay, medium dense, slightly moist			SM
20		6/6/7								20': Qal - Tip is dark orange Clayey fine Silty SAND, medium dense, slightly moist. Sample is Silty fine to coarse SAND with minor clay, medium dense, slightly moist	16		SM
		12/30/50-5"		6.4	108	115				22.5': TQs - Light orangey brown Silty fine grained SANDSTONE, dense, slightly moist			SM
25		15/40/50-5"								25': TQs - Light orangey brown Silty fine grained SANDSTONE (coarser in bottom of sample), dense, slightly moist			SM
		50-5"		7.4	108	116				27.5': TQs - Tan to orange, Clayey Silty Gravely fine to coarse grained SANDSTONE, clasts are rounded to subangular and less than 4" in diameter, dense, slightly moist			SM / SW
30		28/50-6"								30': TQs - Tip is orangley brown Silty fine grained SANDSTONE, dense, moist. Sample is subangular to subrounded Gravely medium to coarse SAND, dense, slightly moist	10		SM
		30/50-4"		28	97	124				32.5': TQs - Tip is orangey brown Silty fine grained SANDSTONE with minor clay, dense, slightly moist. Sample is brown Silty CLAY to Clayey SILT, dense, slightly moist			SM / ML/ CL

Material Description: Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table

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BORING NUMBER 6

Client: Moorpark Property 67, LLC
Project Name: North Hills Moorpark
Project Number 16-G63-0
Project Location: Moorpark, California
Date Started: 5/6/2016 Completed: 5/6/2016
Ground Elevation: 540' Boring Diameter: 8"
Excavation Method: Hollow Stem Auger
Ground Water Levels: n/a
Drilling Contractor: Choice Drilling
Notes:
Logged By: ams Checked By:

Depth (ft)	Drive Sample	Blow Count (N Value)	Bulk Sample	Moisture Content (%)	Dry Density (pcf)	Wet Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index	Material Description	<#200	D_{50}	USCS Classification
35		6/12/18								35': TQs - Reddish brown Silty fine grained SANDSTONE to Clayey SILTSTONE, dense, slightly moist			SM
		28/50-5"		19.1	111	133				37.5': TQs - Brown Sandy CLAYSTONE, very stiff, slightly moist			CL
40		8/16/18								40': TQs - Dark orangey brown Clayey fine grained SANDSTONE, dense, slightly moist	27		SC
		15/27/40		25	102	127				42.5': TQs - Orangey brown fine Sandy Clayey SILTSTONE, dense, slightly moist			ML
45		7/8/10								45': TQs - Dark orangey brown Silty CLAYSTONE, very stiff, slightly moist			CL
		20/50-6"		13	114	129				47.5': TQs - Medium to dark orangey brown Clayey SILT,STONE dense, slightly moist			ML
50		11/12/15								50': TQs - Medium orangey brown fine Clayey SANDSTONE, medium dense, slightly moist	26		ML
55													
60										Total Depth: 50' Caving: No Groundwater: Not Encountered Backfilled: Grout			
65													

Thin Wall Tube | 2.5" Ring Sample | Bulk Sample | Standard Split Spoon Sample | Static Water Table

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APPENDIX B

LABORATORY TESTS

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APPENDIX B
LABORATORY TESTS

B-1.00 LABORATORY TESTS

B-1.01 Maximum Density

Maximum density - optimum moisture relationships for the major soil types encountered during the field exploration were performed in the laboratory using the standard procedures of ASTM D1557.

B-1.02 Soluble Sulfates

Testing was performed on representative samples encountered during the investigation and the tests were performed by using California Test Method 417.

B-1.03 Soil Reactivity (pH) and Electrical Conductivity (Ec)

Representative soil samples were tested for soil reactivity (pH) and electrical conductivity (Ec) using California Test Method 643. The pH measurement determines the degree of acidity or alkalinity in the soils. The Ec is a measure of the electrical resistivity and is expressed as the reciprocal of the resistivity.

B-1.04 Particle Size Analysis

Particle size analysis was performed on representative samples of the major soils types in accordance to the standard test methods of the ASTM D422.

B-1.05 Direct Shear

Direct shear tests were performed on representative samples using the standard test method of ASTM D3080 (consolidated and drained). Tests were performed on undisturbed and remolded samples. Remolded samples were tested at approximately 90 percent relative compaction.

Shear tests were performed on a direct shear machine of the strain-controlled type. To simulate possible adverse field conditions, the samples were saturated prior to shearing. Several samples were sheared at varying normal loads and the results plotted to establish the angle of the internal friction and cohesion of the tested samples.

B-1.06 Moisture Determination

Moisture content of the soil samples was performed in accordance to standard method for determination of water content of soil by drying oven, ASTM D2216. The mass of material remaining after oven drying is used as the mass of the solid particles.

B-1.07 Density of Split-Barrel Samples

The densities of soil samples obtained by using a split-barrel sampler were determined in accordance to standard method of ASTM D1586.

B-1.08 Expansion Tests

Expansion index tests were performed on representative samples of the major soil types encountered by the test methods outlined in ASTM D4829.

B-1.09 Test Results

Test results for all laboratory tests performed on the subject project are presented in this appendix.

MAXIMUM DENSITY - OPTIMUM MOISTURE

(Test Method: ASTM D1557)

Sample Location	Optimum Moisture (Percent)	Maximum Density (lbs/ft^3)
B-1 @15 ft	10.4	126.7
B-1 @20 ft	12.9	123.8
B-1 @50 ft	12.8	119.8
B-2 @30 ft	16.9	110.5

SOLUBLE SULFATES

(Test Method: California Test Method 417 & California Test Method 422)

Sample Number	Soluble Sulfate (ppm)	Chloride Content (ppm)
B-3 @ 10 ft	47	37
B-4 @ 0-3 ft	42	37

SOIL REACTIVITY (pH) AND ELECTRICAL CONDUCTIVITY

(Test Method: California Test Method 643)

Sample Number	pH	Resistivity (Ohm-cm)
B-3 @ 10 ft	7.5	11907
B-4 @ 0-3 ft	7.7	9287

EXPANSION INDEX*

(Test Method: ASTM D4829)

Sample Number	Material Type	Expansion Index	Expansion Potential
B-1 @ 45 ft	Sandy Clay (CL)	58	Moderate
B-2 @ 30 ft	Sandy Clay (CL)	82	Moderate

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PARTICLE SIZE ANALYSIS

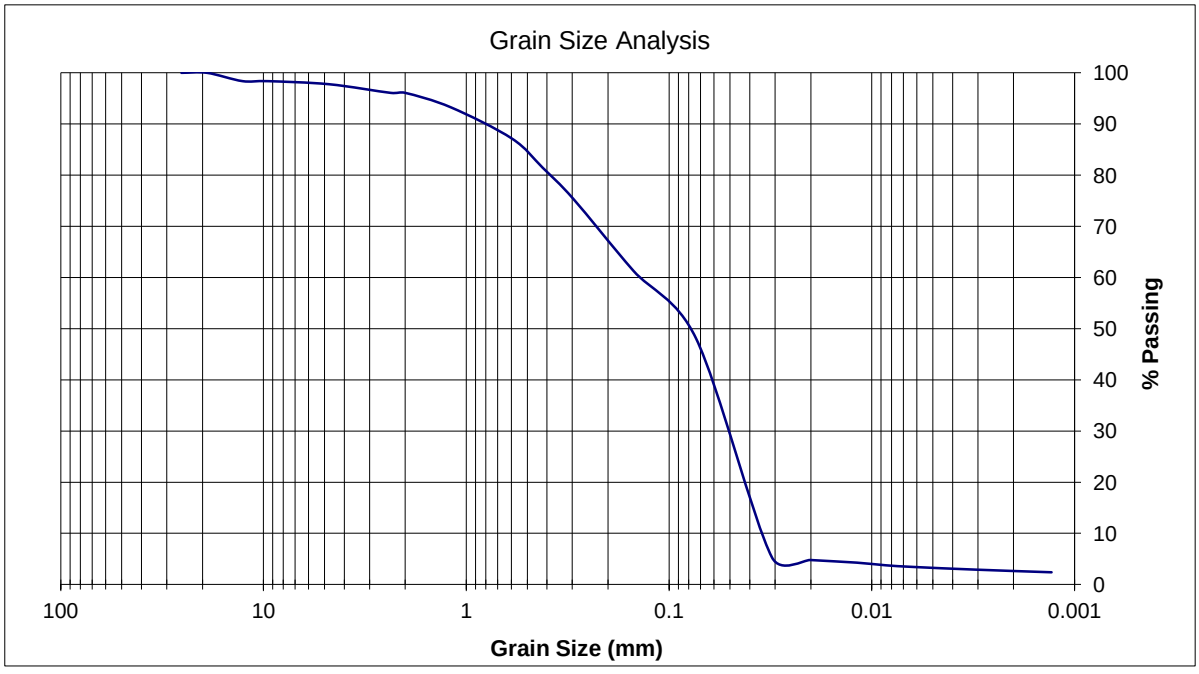
ASTM D422

Project ID: 16-G63-0/01
Sample ID: 16-197M
Location: B5
Depth: 7.5'
Soil Description: Medium brown silty sand

Fraction A Dry Net Weight (gms): 479.7

Fraction A: Screen Size	Net Retained Weight (gms)	Net Passing Weight (gms)	% Passing
1"	0	479.7	100
3/4"	0	479.7	100
1/2"	7.8	471.9	98
3/8"	7.8	471.9	98
#4	10.7	469.0	98
#8	18.8	460.9	96
#10	18.8	460.9	96
#16	32.4	447.3	93
#30	61.7	418.0	87
#40	89	390.7	81
#50	118	361.7	75
#100	185.6	294.1	61
#200	248.9	230.8	48

Hydrometer Portion: Particle Diameter (mm)	% Soil in Suspension
0.031	5.3
0.020	4.8
0.012	4.3
0.009	3.8
0.006	3.4
0.003	2.9
0.001	2.4



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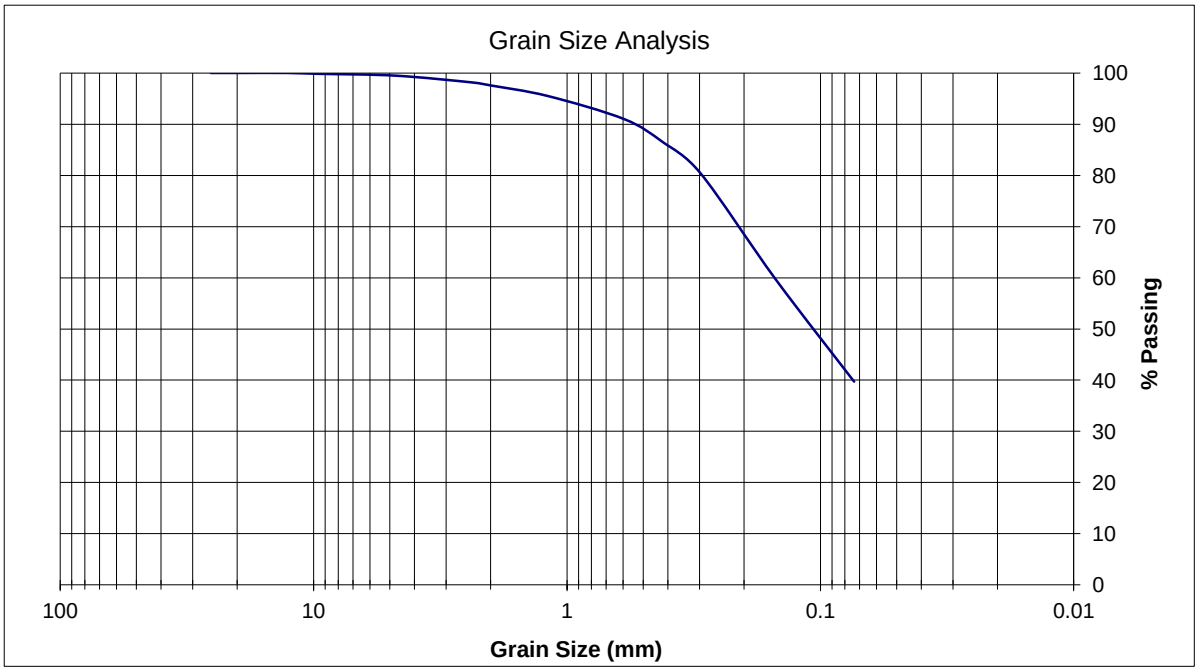
PARTICLE SIZE ANALYSIS

ASTM D422

Project ID: 16-G63-0/01
Sample ID: 16-201
Location: B5
Depth: 27.5'
Soil Description: Medium brown clayey sand

Fraction A Dry Net Weight (gms): 741.5

Fraction A: Screen Size	Net Retained Weight (gms)	Net Passing Weight (gms)	% Passing
1"	0	741.5	100
3/4"	0	741.5	100
1/2"	0	741.5	100
3/8"	1.3	740.2	100
#4	3.9	737.6	99
#8	13.8	727.7	98
#10	18.1	723.4	98
#16	33.4	708.1	95
#30	66.8	674.7	91
#40	99.8	641.7	87
#50	145.3	596.2	80
#100	299.3	442.2	60
#200	446.8	294.7	40



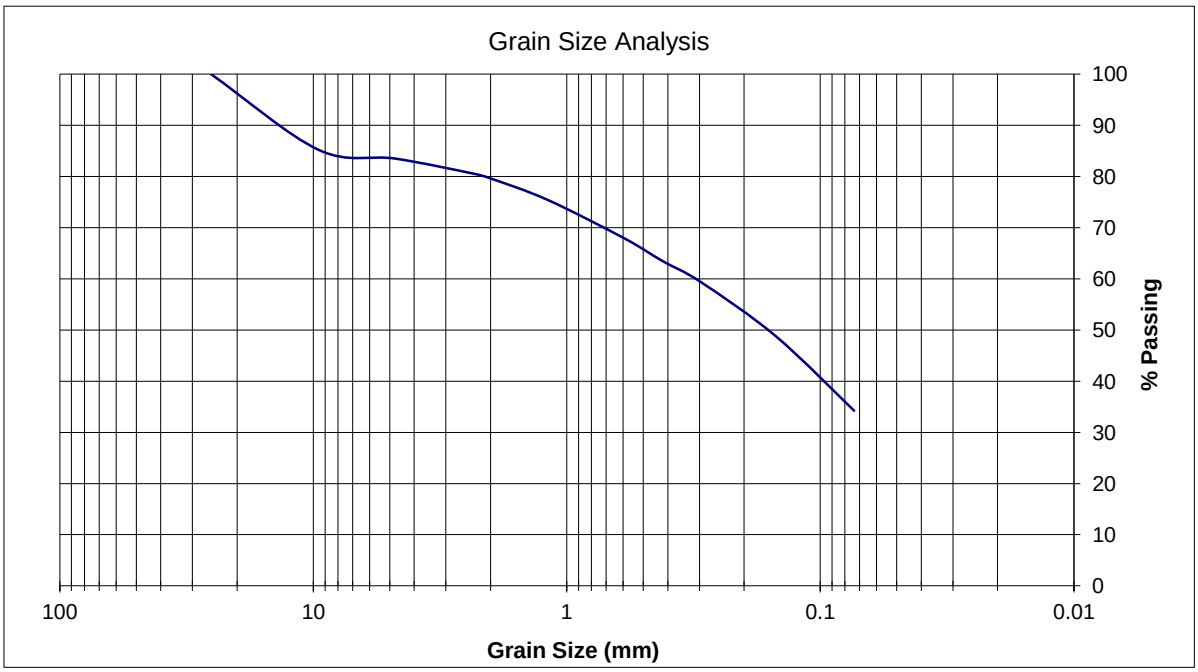
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PARTICLE SIZE ANALYSIS
ASTM D422

Project ID: 16-G63-0/01
Sample ID: 16-217
Location: B6
Depth: 10'
Soil Description: Silty Sand

Fraction A Dry Net Weight (gms): 314.2

Fraction A: Screen Size	Net Retained Weight (gms)	Net Passing Weight (gms)	% Passing
1"	0	314.2	100
3/4"	46.6	267.6	85
1/2"	46.6	267.6	85
3/8"	46.6	267.6	85
#4	51.9	262.3	83
#8	61	253.2	81
#10	64.1	250.1	80
#16	77.3	236.9	75
#30	100.8	213.4	68
#40	114.8	199.4	63
#50	127.6	186.6	59
#100	161	153.2	49
#200	206.7	107.5	34



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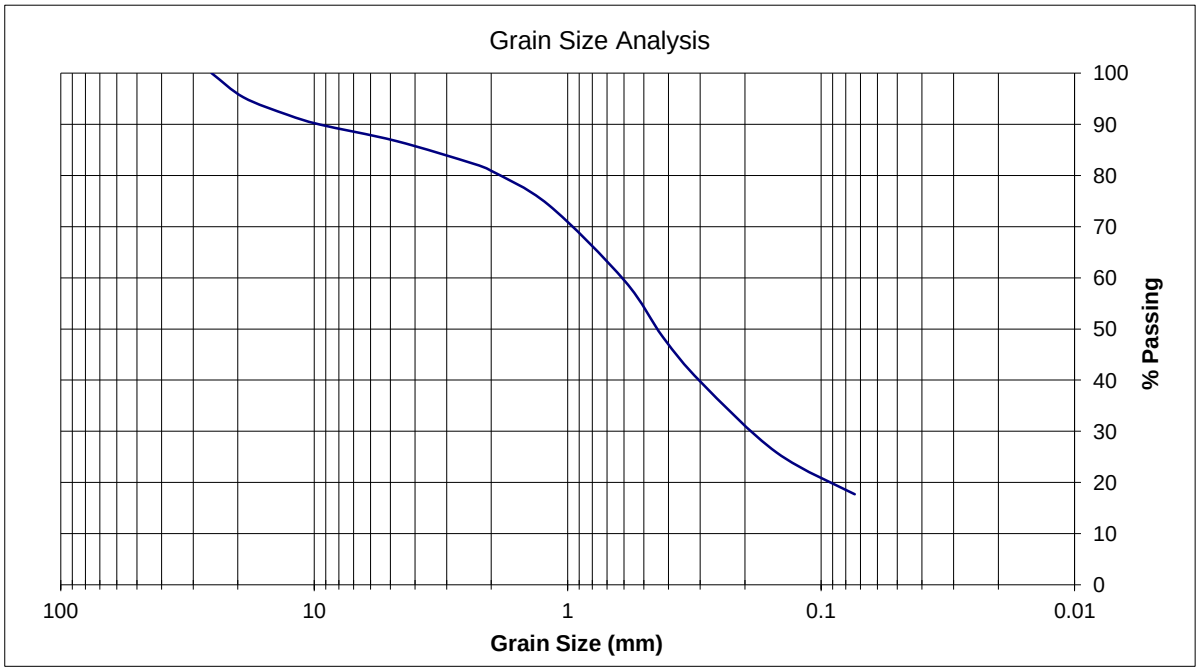
PARTICLE SIZE ANALYSIS

ASTM D422

Project ID: 16-G63-0/01
Sample ID: 16-218
Location: B6
Depth: 15'
Soil Description: Silty Sand

Fraction A Dry Net Weight (gms): 353

Fraction A: Screen Size	Net Retained Weight (gms)	Net Passing Weight (gms)	% Passing
1"	0	353.0	100
3/4"	16.7	336.3	95
1/2"	28.8	324.2	92
3/8"	35.4	317.6	90
#4	46.8	306.2	87
#8	62.4	290.6	82
#10	67.4	285.6	81
#16	90.8	262.2	74
#30	143.3	209.7	59
#40	182.2	170.8	48
#50	213.3	139.7	40
#100	261.6	91.4	26
#200	290.4	62.6	18



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DIRECT SHEAR TEST
ASTM D3080

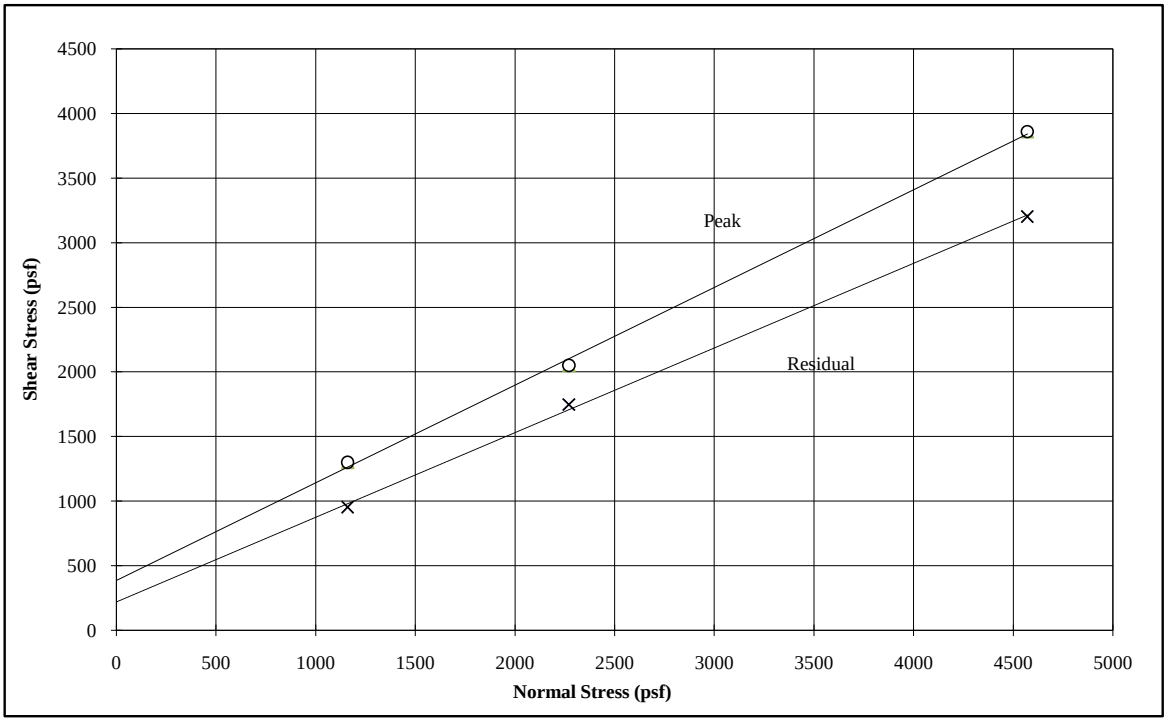
Project ID: 16-G63-0
Sample ID: 16-152
Location: B1
Depth: 35'
Soil Description: Sandstone

Remolded or Undisturbed: Undisturbed
Maximum Dry Density (pcf) = N/A
Optimum Moisture Content (%) = N/A
Initial Dry Density (pcf) = 102.1
Relative Compaction (%) = N/A
Initial Moisture Content (%) = 2.4
Final Moisture Content (%) = 17.6

Diameter (in)	2.41
Area of sample (in^2)	4.56
Load Ring Constant (lb/in)	4010

Load Applied (g)	Normal Pressure (psf)	Peak		Residual	
		Dial Reading	Shear Resist (psf)	Dial Reading	Shear Resist (psf)
16615	1160	0.0102	1300	0.0075	954
32600	2270	0.0162	2050	0.0138	1747
65681	4570	0.0305	3860	0.0253	3203

	Peak	Residual
Cohesion (psf) =	390	220
Friction Angle (deg) =	37	33



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DIRECT SHEAR TEST
ASTM D3080

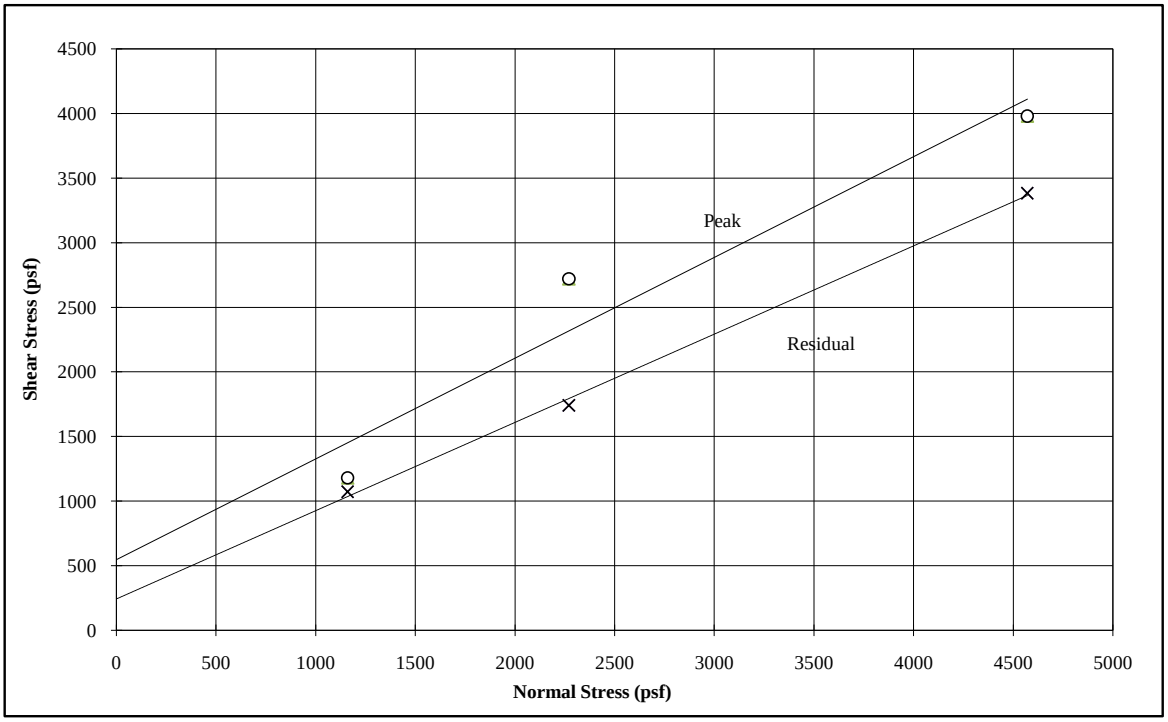
Project ID: 16-G63-0
Sample ID: 16-155
Location: B1
Depth: 50'
Soil Description: Sandstone

Remolded or Undisturbed: Undisturbed
Maximum Dry Density (pcf) = N/A
Optimum Moisture Content (%) = N/A
Initial Dry Density (pcf) = 98.1
Relative Compaction (%) = N/A
Initial Moisture Content (%) = 2.6
Final Moisture Content (%) = 13.9

Diameter (in)	2.41
Area of sample (in^2)	4.56
Load Ring Constant (lb/in)	4010

Load Applied (g)	Normal Pressure (psf)	Peak		Residual	
		Dial Reading	Shear Resist (psf)	Dial Reading	Shear Resist (psf)
16615	1160	0.0094	1180	0.0085	1072
32600	2270	0.0215	2720	0.0138	1741
65681	4570	0.0315	3980	0.0267	3384

	Peak	Residual
Cohesion (psf) =	550	240
Friction Angle (deg) =	38	34



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DIRECT SHEAR TEST
ASTM D3080

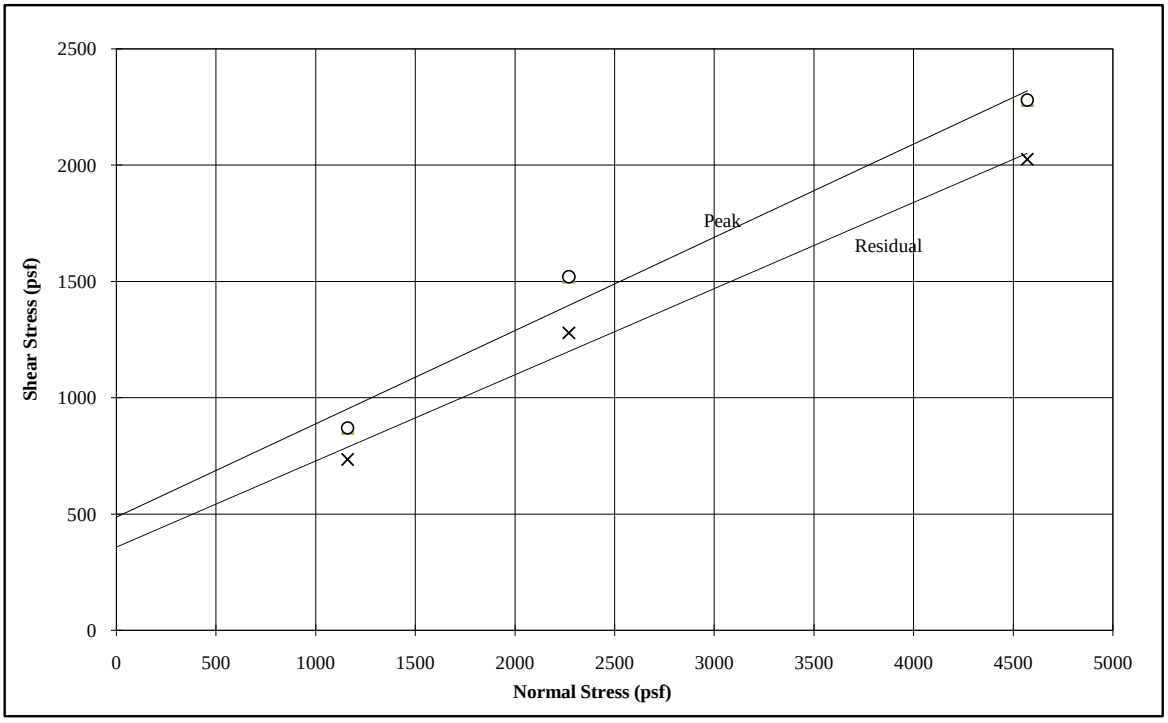
Project ID: 16-G63-0
Sample ID: 16-167
Location: B2
Depth: 30'
Soil Description: Claystone

Remolded or Undisturbed: Undisturbed
Maximum Dry Density (pcf) = N/A
Optimum Moisture Content (%) = N/A
Initial Dry Density (pcf) = 85.5
Relative Compaction (%) = N/A
Initial Moisture Content (%) = 36.0
Final Moisture Content (%) = 39.2

Diameter (in)	2.41
Area of sample (in^2)	4.56
Load Ring Constant (lb/in)	4010

Load Applied (g)	Normal Pressure (psf)	Peak		Residual	
		Dial Reading	Shear Resist (psf)	Dial Reading	Shear Resist (psf)
16615	1160	0.0069	870	0.0058	734
32600	2270	0.0120	1520	0.0101	1279
65681	4570	0.0180	2280	0.0160	2025

	Peak	Residual
Cohesion (psf) =	490	360
Friction Angle (deg) =	22	20



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DIRECT SHEAR TEST
ASTM D3080

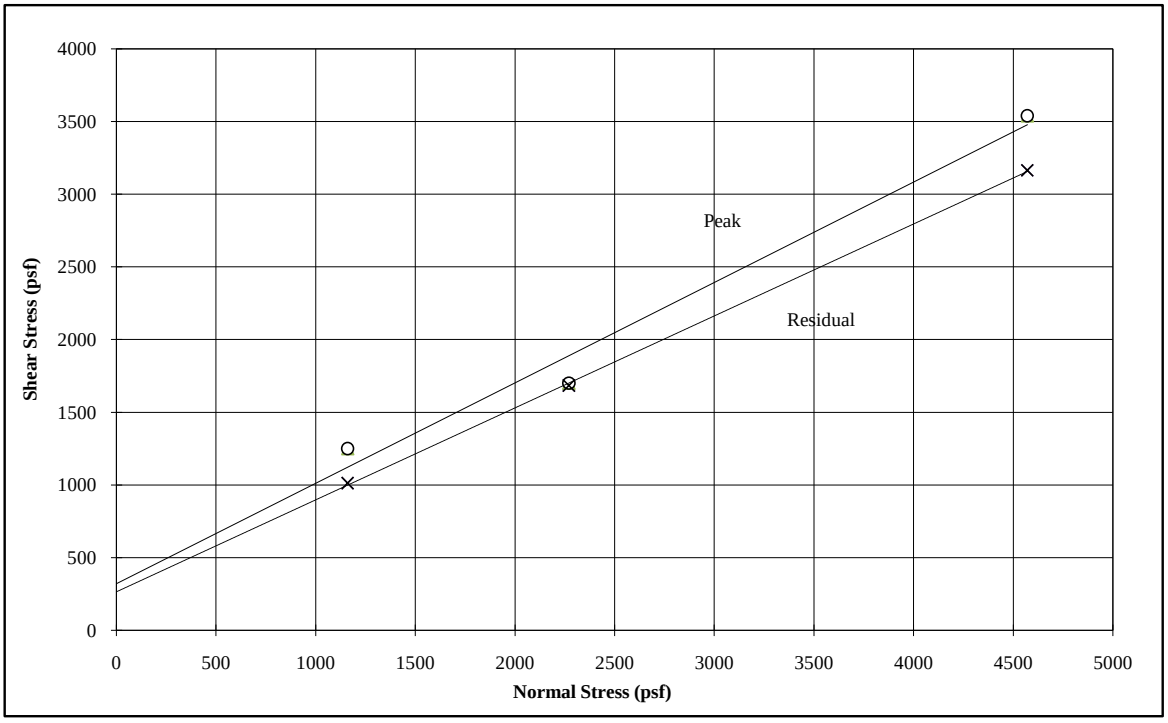
Project ID: 16-G63-0
Sample ID: 116-181
Location: B3
Depth: 60'
Soil Description: Sandstone

Remolded or Undisturbed: Undisturbed
Maximum Dry Density (pcf) = N/A
Optimum Moisture Content (%) = N/A
Initial Dry Density (pcf) = 97.4
Relative Compaction (%) = N/A
Initial Moisture Content (%) = 2.3
Final Moisture Content (%) = 15.4

Diameter (in)	2.41
Area of sample (in^2)	4.56
Load Ring Constant (lb/in)	4010

Load Applied (g)	Normal Pressure (psf)	Peak		Residual	
		Dial Reading	Shear Resist (psf)	Dial Reading	Shear Resist (psf)
16615	1160	0.0099	1250	0.0080	1013
32600	2270	0.0134	1700	0.0133	1684
65681	4570	0.0280	3540	0.0250	3165

	Peak	Residual
Cohesion (psf) =	320	270
Friction Angle (deg) =	35	32



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DIRECT SHEAR TEST
ASTM D3080

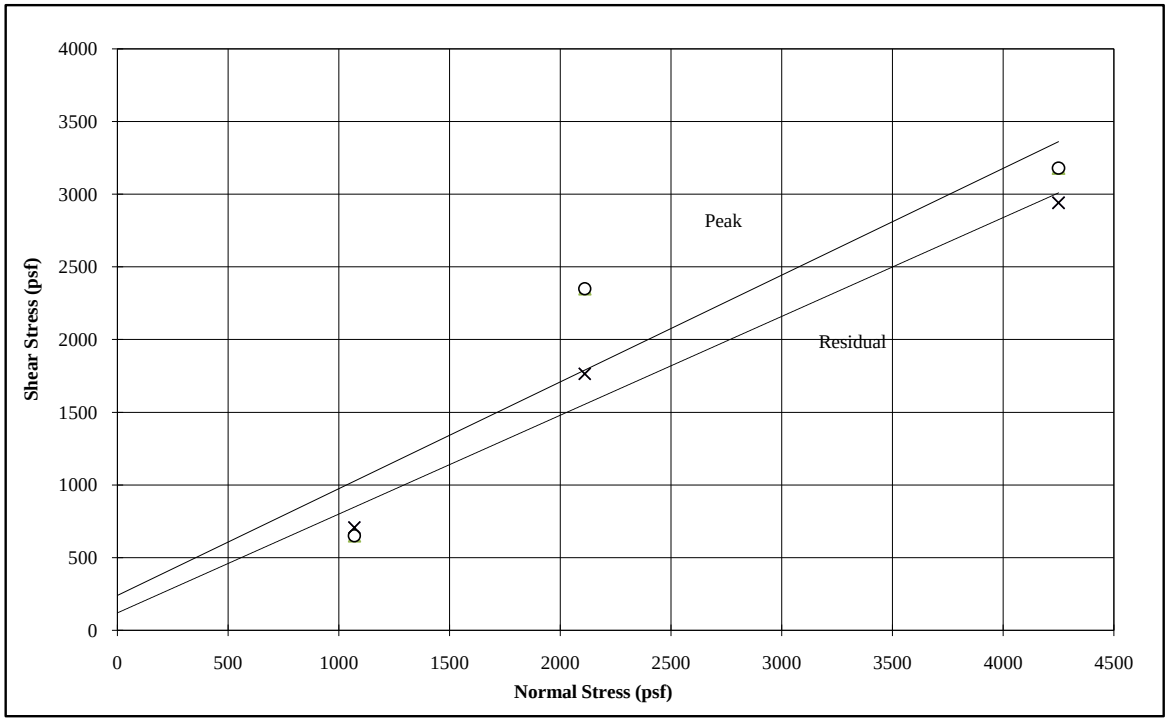
Project ID: 16-G63-0
Sample ID: 16-162
Location: B1
Depth: 49'
Soil Description: SandStone (caving)

Remolded or Undisturbed: Remolded
Maximum Dry Density (pcf) = 123.8
Optimum Moisture Content (%) = 12.9
Initial Dry Density (pcf) = 112.0
Relative Compaction (%) = 90%
Initial Moisture Content (%) = 13.3
Final Moisture Content (%) = 18.9

Diameter (in)	2.5
Area of sample (in^2)	4.91
Load Ring Constant (lb/in)	4010

Load Applied (g)	Normal Pressure (psf)	Peak		Residual	
		Dial Reading	Shear Resist (psf)	Dial Reading	Shear Resist (psf)
16615	1070	0.0055	650	0.0060	706
32600	2110	0.0200	2350	0.0150	1765
65681	4250	0.0270	3180	0.0250	2941

	Peak	Residual
Cohesion (psf) =	240	120
Friction Angle (deg) =	36	34



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DIRECT SHEAR TEST
ASTM D3080

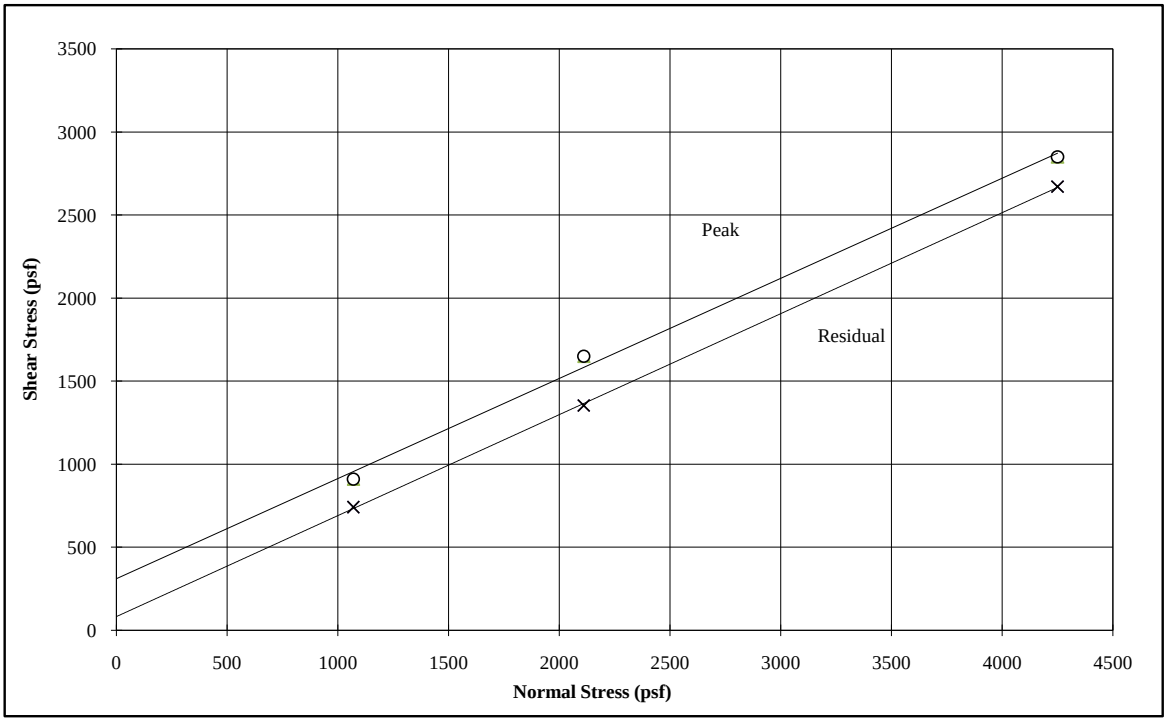
Project ID: 16-G63-0
Sample ID: 16-193
Location: B3
Depth: 12'
Soil Description: Sandstone (caving)

Remolded or Undisturbed: Remolded
Maximum Dry Density (pcf) = 110.5
Optimum Moisture Content (%) = 16.9
Initial Dry Density (pcf) = 106.0
Relative Compaction (%) = 96%
Initial Moisture Content (%) = 15.2
Final Moisture Content (%) = 19.6

Diameter (in)	2.5
Area of sample (in^2)	4.91
Load Ring Constant (lb/in)	4010

Load Applied (g)	Normal Pressure (psf)	Peak		Residual	
		Dial Reading	Shear Resist (psf)	Dial Reading	Shear Resist (psf)
16615	1070	0.0077	910	0.0063	741
32600	2110	0.0140	1650	0.0115	1353
65681	4250	0.0242	2850	0.0227	2670

	Peak	Residual
Cohesion (psf) =	310	80
Friction Angle (deg) =	31	31



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APPENDIX C

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

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APPENDIX C

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

C-1.00 GENERAL DESCRIPTION

C-1.01 Introduction

These specifications present our general recommendations for earthwork and grading as shown on the approved grading plans for the subject project. These specifications shall cover all clearing and grubbing, removal of existing structures, preparation of land to be filled, filling of the land, spreading, compaction and control of the fill, and all subsidiary work necessary to complete the grading of the filled areas to conform with the lines, grades and slopes as shown on the approved plans.

The recommendations contained in the geotechnical report of which these general specifications are a part of shall supersede the provisions contained hereinafter in case of conflict.

C-1.02 Laboratory Standard and Field Test Methods

The laboratory standard used to establish the maximum density and optimum moisture shall be ASTM D1557.

The insitu density of earth materials (field compaction tests) shall be determined by the sand cone method (ASTM D1556), direct transmission nuclear method (ASTM D2922) or other test methods as considered appropriate by the geotechnical consultant.

Relative compaction is defined, for purposes of these specifications, as the ratio of the in-place density to the maximum density as determined in the previously mentioned laboratory standard.

C-2.00 CLEARING

C-2.01 Surface Clearing

All structures marked for removal, timber, logs, trees, brush and other rubbish shall be removed and disposed of off the site. Any trees to be removed shall be pulled in such a manner so as to remove as much of the root system as possible.

C-2.02 Subsurface Removals

A thorough search should be made for possible underground storage tanks and/or septic tanks and cesspools. If found, tanks should be removed and cesspools pumped dry.

Any concrete irrigation lines shall be crushed in place and all metal underground lines shall be removed from the site.

C-2.03 Backfill of Cavities

All cavities created or exposed during clearing and grubbing operations or by previous use of the site shall be cleared of deleterious material and backfilled with native soils or other materials approved by the soil engineer. Said backfill shall be compacted to a minimum of 90% relative compaction.

C-3.00 ORIGINAL GROUND PREPARATION

C-3.01 Stripping of Vegetation

After the site has been properly cleared, all vegetation and topsoil containing the root systems of former vegetation shall be stripped from areas to be graded. Materials removed in this stripping process may be used as fill in areas designated by the soil engineer, provided the vegetation is mixed with a sufficient amount of soil to assure that no appreciable settlement or other detriment will occur due to decaying of the organic matter. Soil materials containing more than 3% organics shall not be used as structural fill.

C-3.02 Removals of Non-Engineered Fills

Any non-engineered fills encountered during grading shall be completely removed and the underlying ground shall be prepared in accordance to the recommendations for original ground preparation contained in this section. After cleansing of any organic matter the fill material may be used for engineered fill.

C-3.03 Overexcavation of Fill Areas

The existing ground in all areas determined to be satisfactory for the support of fills shall be scarified to a minimum depth of 6 inches. Scarification shall continue until the soils are broken down and free from lumps or clods and until the scarified zone is uniform. The moisture content of the scarified zone shall be adjusted to within 2% of optimum moisture. The scarified zone shall then be uniformly compacted to 90% relative compaction.

Where fill material is to be placed on ground with slopes steeper than 5:1 (H:V) the sloping ground shall be benched. The lowermost bench shall be a minimum of 15 feet wide, shall be a minimum of 2 feet deep, and shall expose firm material as determined by the geotechnical consultant. Other benches shall be excavated to firm material as determined by the geotechnical consultant and shall have a minimum width of 4 feet.

Existing ground that is determined to be unsatisfactory for the support of fills shall be overexcavated in accordance to the recommendations contained in the geotechnical report of which these general specifications are a part.

C-4.00 FILL MATERIALS

C-4.01 General

Materials for the fill shall be free from vegetable matter and other deleterious substances, shall not contain rocks or lumps of a greater dimension than is recommended by the geotechnical consultant, and shall be approved by the geotechnical consultant. Soils of poor gradation, expansion, or strength properties shall be placed in areas designated by the geotechnical consultant or shall be mixed with other soils providing satisfactory fill material.

C-4.02 Oversize Material

Oversize material, rock or other irreducible material with a maximum dimension greater than 12 inches shall not be placed in fills, unless the location, materials, and disposal methods are specifically approved by the geotechnical consultant. Oversize material shall be placed in such a manner that nesting of oversize material does not occur and in such a manner that the oversize material is completely surrounded by fill material compacted to a minimum of 90% relative compaction. Oversize material shall not be placed within 10 feet of finished grade without the approval of the geotechnical consultant.

C-4.03 Import

Material imported to the site shall conform to the requirements of Section 4.01 of these specifications. Potential import material shall be approved by the geotechnical consultant prior to importation to the subject site.

C-5.00 PLACING AND SPREADING OF FILL

C-5.01 Fill Lifts

The selected fill material shall be placed in nearly horizontal layers which when compacted will not exceed approximately 6 inches in thickness. Thicker lifts may be placed if testing indicates the compaction procedures are such that the required compaction is being achieved and the geotechnical consultant approves their use.
Each layer shall be spread evenly and shall be thoroughly blade mixed during the spreading to insure uniformity of material in each layer.

C-5.02 Fill Moisture

When the moisture content of the fill material is below that recommended by the soils engineer, water shall then be added until he moisture content is as specified to assure thorough bonding during the compacting process.

When the moisture content of the fill material is above that recommended by the soils engineer, the fill material shall be aerated by blading or other satisfactory methods until the moisture content is as specified.

C-5.03 Fill Compaction

After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted to not less than 90% relative compaction. Compaction shall be by sheepsfoot rollers, multiple-wheel pneumatic tired rollers, or other types approved by the soil engineer.

Rolling shall be accomplished while the fill material is at the specified moisture content. Rolling of each layer shall be continuous over its entire area and the roller shall make sufficient trips to insure that the desired density has been obtained.

C-5.04 Fill Slopes

Fill slopes shall be compacted by means of sheepsfoot rollers or other suitable equipment. Compacting of the slopes may be done progressively in increments of 3 to 4 feet in fill height. At the completion of grading, the slope face shall be compacted to a minimum of 90% relative compaction. This may require track rolling or rolling with a grid roller attached to a tractor mounted side-boom.

Slopes may be over filled and cut back in such a manner that the exposed slope faces are compacted to a minimum of 90% relative compaction.

The fill operation shall be continued in six inch (6") compacted layers, or as specified above, until the fill has been brought to the finished slopes and grades as shown on the accepted plans.

C-5.05 Compaction Testing

Field density tests shall be made by the geotechnical consultant of the compaction of each layer of fill. Density tests shall be made at locations selected by the geotechnical consultant.

Frequency of field density tests shall be not less than one test for each 2.0 feet of fill height and at least every one thousand cubic yards of fill. Where fill slopes exceed four feet in height their finished faces shall be tested at a frequency of one test for each 1000 square feet of slope face.

Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density reading shall be taken in the compacted material below the disturbed surface. When these readings indicate that the density of any layer of fill or portion thereof is below the required density, the particular layer or portion shall be reworked until the required density has been obtained.

C-6.00 SUBDRAINS

C-6.01 Subdrain Material

Subdrains shall be constructed of a minimum 4-inch diameter pipe encased in a suitable filter material. The subdrain pipe shall be Schedule 40 Acrylonitrile Butadiene Styrene (ABS) or Schedule 40 Polyvinyl Chloride Plastic (PVC) pipe or approved equivalent. Subdrain pipe shall be installed with perforations down. Filter material shall consist of 3/4" to 1 1/2" clean gravel wrapped in an envelope of filter fabric consisting of Mirafi 140N or approved equivalent.

C-6.02 Subdrain Installation

Subdrain systems, if required, shall be installed in approved ground to conform the approximate alignment and details shown on the plans or herein. The subdrain locations shall not be changed or modified without the approval of the geotechnical consultant. The geotechnical consultant may recommend and direct changes in the subdrain line, grade or material upon approval by the design civil engineer and the appropriate governmental agencies.

C-7.00 EXCAVATIONS

C-7.01 General

Excavations and cut slopes shall be examined by the geotechnical consultant. If determined necessary by the geotechnical consultant, further excavation or overexcavation and refilling of overexcavated areas shall be performed, and/or remedial grading of cut slopes shall be performed.

C-7.02 Fill-Over-Cut Slopes

Where fill-over-cut slopes are to be graded the cut portion of the slope shall be made and approved by the geotechnical consultant prior to placement of materials for construction of the fill portion of the slope.

C-8.00 TRENCH BACKFILL

C-.01 General

Trench backfill within street right of ways shall be compacted to 90% relative compaction as determined by the ASTM D1557 test method. Backfill may be jetted as a means of initial compaction; however, mechanical compaction will be required to obtain the required percentage of relative compaction. If trenches are jetted, there must be a suitable delay for drainage of excess water before mechanical compaction is applied.

C-9.00 SEASONAL LIMITS

C-9.01 General

No fill material shall be placed, spread or rolled while it is frozen or thawing or during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the soils engineer indicate that the moisture content and density of the fill are as previously specified.

C-10.00 SUPERVISION

C-10.01 Prior to Grading

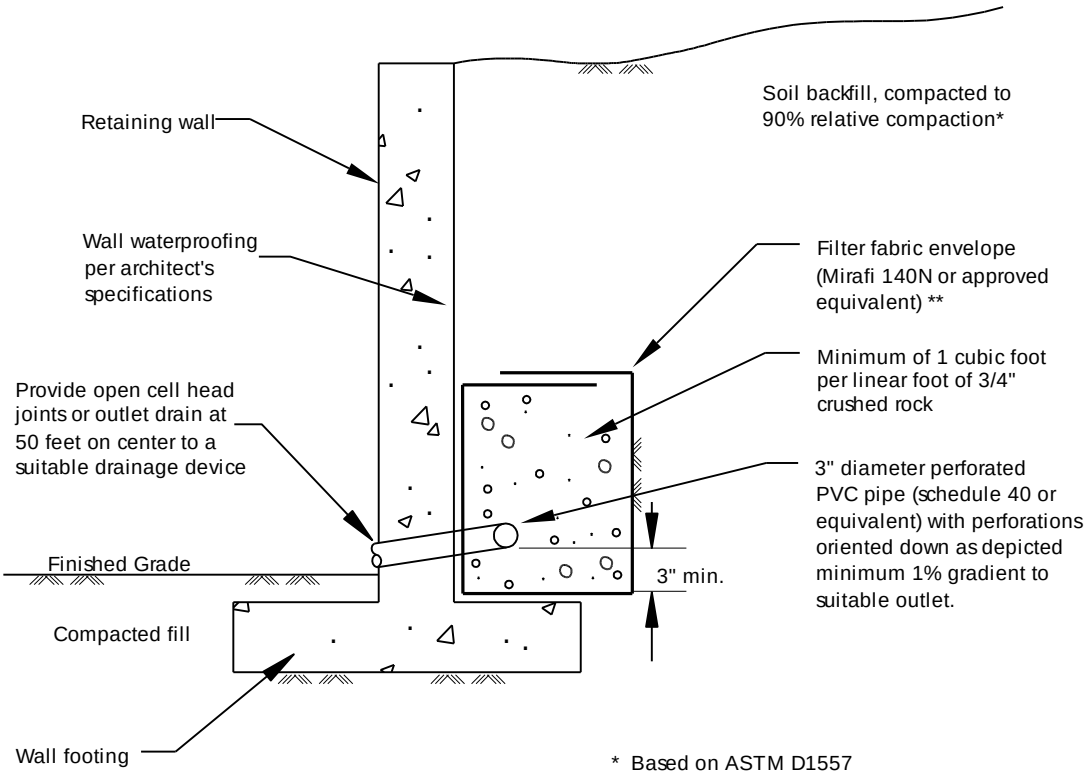
The site shall be observed by the geotechnical consultant upon completion of clearing and grubbing, prior to the preparation of any original ground for preparation of fill.

The supervisor of the grading contractor and the field representative of the geotechnical consultant shall have a meeting and discuss the geotechnical aspects of the earthwork prior to commencement of grading.

C-10.02 During Grading

Site preparation of all areas to receive fill shall be tested and approved by the geotechnical consultant prior to the placement of any fill.

The geotechnical consultant or his representative shall observe the fill and compaction operations so that he can provide an opinion regarding the conformance of the work to the recommendations contained in this report.



* Based on ASTM D1557

** If class 2 permeable material (See gradation to left) is used in place of 3/4" - 1 1/2" gravel. Filter fabric may be deleted. Class 2 permeable material compacted to 90% relative compaction. *

SPECIFICATIONS FOR CLASS 2 PERMEABLE MATERIAL (CAL TRANS SPECIFICATIONS)

Sieve Size	% Passing
1"	100
3/4"	90-100
3/8"	40-100
No.4	25-40
No.8	18-33
No.30	5-15
No.50	0-7
No.200	0-3

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APPENDIX D

SEISMIC SETTLEMENT ANALYSIS
RESULTS FROM RUNNING LIQUEFYPRO

LIQUEFACTION ANALYSIS_SPT B5 INPUT GRAPHICS
LIQUEFACTION ANALYSIS_SPT B5 OUTPUT GRAPHICS
LIQUEFACTION ANALYSIS_ SPT B5 INPUT & OUTPUT DATA

Seismically-induced settlement in unsaturated (dry) and saturated soils generally occur due to the dissipation of pore pressure in a liquefiable soil layer. As previously defined, liquefaction occurs when cyclic stresses, which are produced by earthquake-induced ground motions, create excess pore pressures in predominately cohesionless soils. The controlling factors affecting settlement in saturated sands consist of the pore pressure drainage path, magnitude and duration of the seismic event, cyclic stresses, maximum shear strains, and the SPT (N1)60 value of the soil layers. Seismically-induced settlement in partially saturated or dry sands is controlled predominately by the magnitude and duration of the seismic event, cyclic strains, and the SPT (N1)60 value of the soil layers.

The potential for seismically-induced settlement is greatest in loose granular soils (i.e., sands, silty sands, sandy silts), whereas cohesive soils (i.e., clays and silts) are generally not prone to this kind of settlement. It should be realized that granular soils are susceptible to settlement during a seismic event whether the soils liquefy or not. Soils underlying the site generally consist of alternating layers of sandy soils with silt, clay and gravel components.

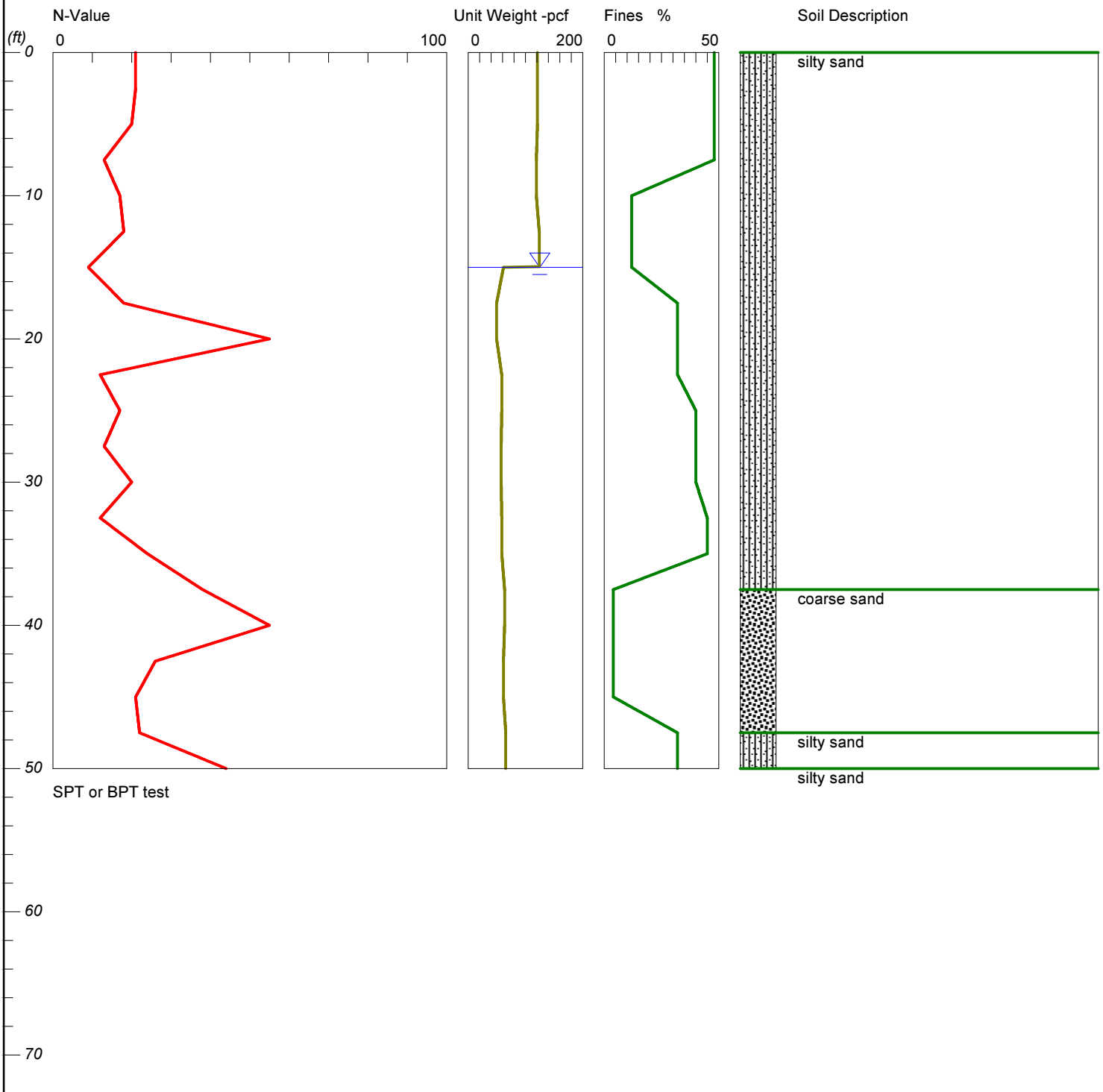
The potential for seismically-induced settlement was evaluated for the site by using LiquefyPro Version 5 and Later, which was created by CivilTech Software. The input data and output results are presented as follows.

LIQUEFACTION ANALYSIS

16-G63-0, Settlement

Hole No.=B-5 Water Depth=15 ft Surface Elev.=511

Magnitude=6.86
Acceleration=0.71g



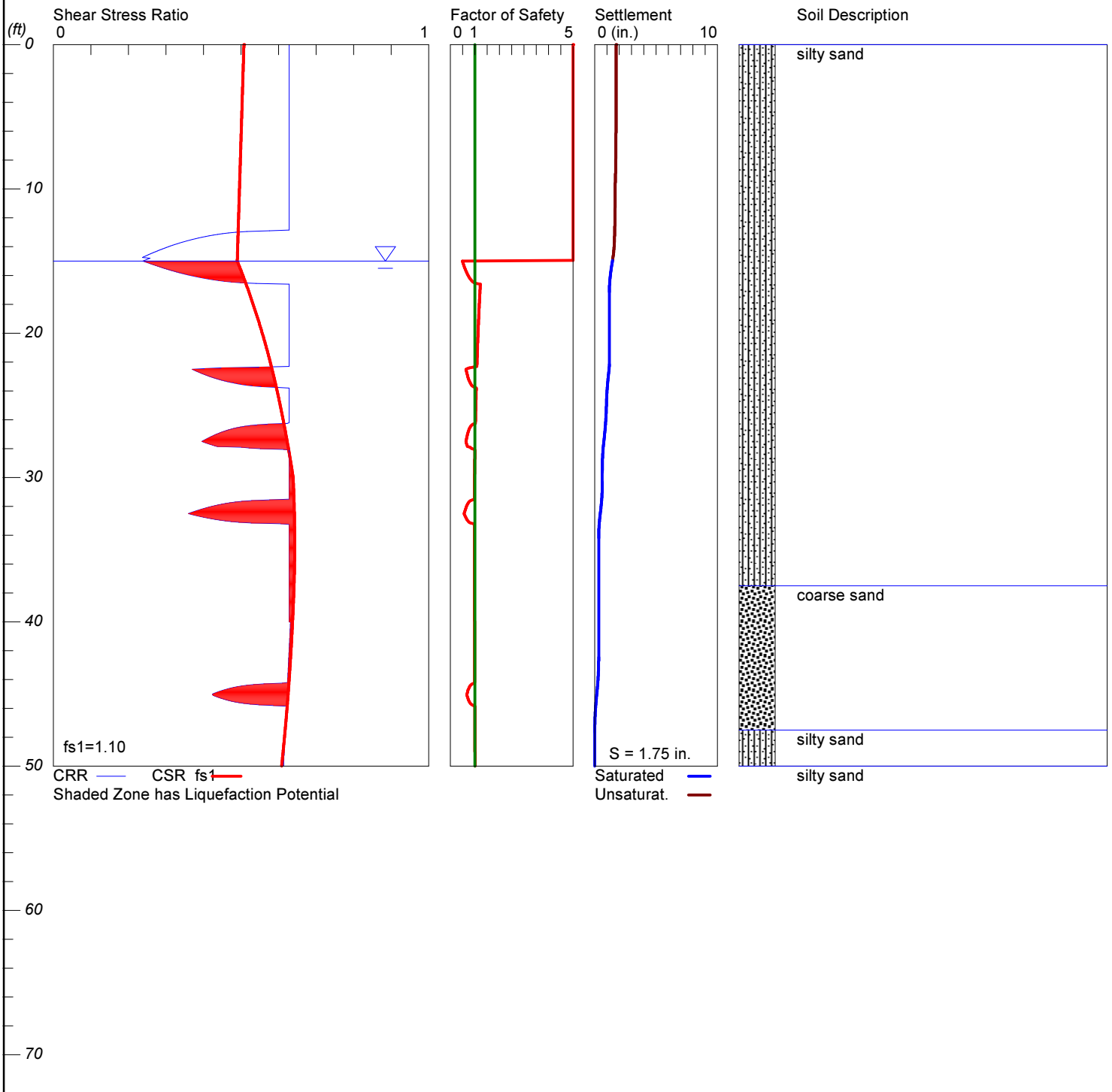
LiquefyPro CivilTech Software USA www.civiltech.com

LIQUEFACTION ANALYSIS

16-G63-0, Settlement

Hole No.=B-5 Water Depth=15 ft Surface Elev.=511

Magnitude=6.86
Acceleration=0.71g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: C:\Users\geo-science\Documents\16-G63-0_B5.liq
Title: 16-G63-0, Settlement
Subtitle: Tract 5847_MoorPark

Surface Elev.=511
Hole No.=B-5
Depth of Hole= 50.00 ft
Water Table during Earthquake= 15.00 ft
Water Table during In-Situ Testing= 15.00 ft
Max. Acceleration= 0.71 g
Earthquake Magnitude= 6.86

Input Data:
Surface Elev.=511
Hole No.=B-5
Depth of Hole=50.00 ft
Water Table during Earthquake= 15.00 ft
Water Table during In-Situ Testing= 15.00 ft
Max. Acceleration=0.71 g
Earthquake Magnitude=6.86
No-Liquefiable Soils: Based on Analysis

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.1
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	21.00	121.00	48.00
2.50	21.00	121.00	48.00
5.00	20.00	121.00	48.00
7.50	13.00	119.00	48.00
10.00	17.00	119.00	12.00
12.50	18.00	124.00	12.00
15.00	9.00	124.00	12.00
17.50	18.00	112.00	32.00
20.00	55.00	112.00	32.00
22.50	12.00	121.00	32.00
25.00	17.00	121.00	40.00
27.50	13.00	120.00	40.00
30.00	20.00	120.00	40.00
32.50	12.00	121.00	45.00
35.00	24.00	121.00	45.00
37.50	38.00	126.00	4.00
40.00	55.00	126.00	4.00
42.50	26.00	124.00	4.00
45.00	21.00	124.00	4.00
47.50	22.00	128.00	32.00
50.00	44.00	128.00	32.00

Output Results:

Settlement of Saturated Sands=1.44 in.
Settlement of Unsaturated Sands=0.30 in.
Total Settlement of Saturated and Unsaturated Sands=1.75 in.
Differential Settlement=0.874 to 1.153 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	0.63	0.51	5.00	1.44	0.30	1.75
0.05	0.63	0.51	5.00	1.44	0.30	1.75
0.10	0.63	0.51	5.00	1.44	0.30	1.75
0.15	0.63	0.51	5.00	1.44	0.30	1.75
0.20	0.63	0.51	5.00	1.44	0.30	1.75
0.25	0.63	0.51	5.00	1.44	0.30	1.75
0.30	0.63	0.51	5.00	1.44	0.30	1.75
0.35	0.63	0.51	5.00	1.44	0.30	1.75
0.40	0.63	0.51	5.00	1.44	0.30	1.75
0.45	0.63	0.51	5.00	1.44	0.30	1.75
0.50	0.63	0.51	5.00	1.44	0.30	1.75
0.55	0.63	0.51	5.00	1.44	0.30	1.75

0.60	0.63	0.51	5.00	1.44	0.30	1.75
0.65	0.63	0.51	5.00	1.44	0.30	1.75
0.70	0.63	0.51	5.00	1.44	0.30	1.75
0.75	0.63	0.51	5.00	1.44	0.30	1.75
0.80	0.63	0.51	5.00	1.44	0.30	1.75
0.85	0.63	0.51	5.00	1.44	0.30	1.75
0.90	0.63	0.51	5.00	1.44	0.30	1.75
0.95	0.63	0.51	5.00	1.44	0.30	1.75
1.00	0.63	0.51	5.00	1.44	0.30	1.75
1.05	0.63	0.51	5.00	1.44	0.30	1.75
1.10	0.63	0.51	5.00	1.44	0.30	1.75
1.15	0.63	0.51	5.00	1.44	0.30	1.75
1.20	0.63	0.51	5.00	1.44	0.30	1.75
1.25	0.63	0.51	5.00	1.44	0.30	1.75
1.30	0.63	0.51	5.00	1.44	0.30	1.75
1.35	0.63	0.51	5.00	1.44	0.30	1.75
1.40	0.63	0.51	5.00	1.44	0.30	1.75
1.45	0.63	0.51	5.00	1.44	0.30	1.75
1.50	0.63	0.51	5.00	1.44	0.30	1.75
1.55	0.63	0.51	5.00	1.44	0.30	1.75
1.60	0.63	0.51	5.00	1.44	0.30	1.75
1.65	0.63	0.51	5.00	1.44	0.30	1.75
1.70	0.63	0.51	5.00	1.44	0.30	1.75
1.75	0.63	0.51	5.00	1.44	0.30	1.75
1.80	0.63	0.51	5.00	1.44	0.30	1.75
1.85	0.63	0.51	5.00	1.44	0.30	1.75
1.90	0.63	0.51	5.00	1.44	0.30	1.75
1.95	0.63	0.51	5.00	1.44	0.30	1.75
2.00	0.63	0.51	5.00	1.44	0.30	1.75
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2.20	0.63	0.51	5.00	1.44	0.30	1.74
2.25	0.63	0.50	5.00	1.44	0.30	1.74
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2.65	0.63	0.50	5.00	1.44	0.30	1.74
2.70	0.63	0.50	5.00	1.44	0.30	1.74
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3.90	0.63	0.50	5.00	1.44	0.30	1.74
3.95	0.63	0.50	5.00	1.44	0.30	1.74
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4.80	0.63	0.50	5.00	1.44	0.30	1.74
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5.70	0.63	0.50	5.00	1.44	0.29	1.74
5.75	0.63	0.50	5.00	1.44	0.29	1.74
5.80	0.63	0.50	5.00	1.44	0.29	1.74
5.85	0.63	0.50	5.00	1.44	0.29	1.74
5.90	0.63	0.50	5.00	1.44	0.29	1.74
5.95	0.63	0.50	5.00	1.44	0.29	1.74
6.00	0.63	0.50	5.00	1.44	0.29	1.74
6.05	0.63	0.50	5.00	1.44	0.29	1.74
6.10	0.63	0.50	5.00	1.44	0.29	1.74
6.15	0.63	0.50	5.00	1.44	0.29	1.74
6.20	0.63	0.50	5.00	1.44	0.29	1.73
6.25	0.63	0.50	5.00	1.44	0.29	1.73
6.30	0.63	0.50	5.00	1.44	0.29	1.73
6.35	0.63	0.50	5.00	1.44	0.29	1.73
6.40	0.63	0.50	5.00	1.44	0.29	1.73
6.45	0.63	0.50	5.00	1.44	0.29	1.73
6.50	0.63	0.50	5.00	1.44	0.29	1.73
6.55	0.63	0.50	5.00	1.44	0.29	1.73
6.60	0.63	0.50	5.00	1.44	0.29	1.73
6.65	0.63	0.50	5.00	1.44	0.29	1.73
6.70	0.63	0.50	5.00	1.44	0.29	1.73
6.75	0.63	0.50	5.00	1.44	0.29	1.73
6.80	0.63	0.50	5.00	1.44	0.29	1.73
6.85	0.63	0.50	5.00	1.44	0.29	1.73
6.90	0.63	0.50	5.00	1.44	0.29	1.73
6.95	0.63	0.50	5.00	1.44	0.29	1.73
7.00	0.63	0.50	5.00	1.44	0.29	1.73
7.05	0.63	0.50	5.00	1.44	0.29	1.73
7.10	0.63	0.50	5.00	1.44	0.29	1.73
7.15	0.63	0.50	5.00	1.44	0.29	1.73
7.20	0.63	0.50	5.00	1.44	0.29	1.73
7.25	0.63	0.50	5.00	1.44	0.28	1.73
7.30	0.63	0.50	5.00	1.44	0.28	1.73
7.35	0.63	0.50	5.00	1.44	0.28	1.73
7.40	0.63	0.50	5.00	1.44	0.28	1.73
7.45	0.63	0.50	5.00	1.44	0.28	1.73
7.50	0.63	0.50	5.00	1.44	0.28	1.72
7.55	0.63	0.50	5.00	1.44	0.28	1.72
7.60	0.63	0.50	5.00	1.44	0.28	1.72
7.65	0.63	0.50	5.00	1.44	0.28	1.72
7.70	0.63	0.50	5.00	1.44	0.28	1.72
7.75	0.63	0.50	5.00	1.44	0.28	1.72

7.80	0.63	0.50	5.00	1.44	0.28	1.72
7.85	0.63	0.50	5.00	1.44	0.27	1.72
7.90	0.63	0.50	5.00	1.44	0.27	1.72
7.95	0.63	0.50	5.00	1.44	0.27	1.72
8.00	0.63	0.50	5.00	1.44	0.27	1.71
8.05	0.63	0.50	5.00	1.44	0.27	1.71
8.10	0.63	0.50	5.00	1.44	0.27	1.71
8.15	0.63	0.50	5.00	1.44	0.27	1.71
8.20	0.63	0.50	5.00	1.44	0.27	1.71
8.25	0.63	0.50	5.00	1.44	0.26	1.71
8.30	0.63	0.50	5.00	1.44	0.26	1.71
8.35	0.63	0.50	5.00	1.44	0.26	1.71
8.40	0.63	0.50	5.00	1.44	0.26	1.71
8.45	0.63	0.50	5.00	1.44	0.26	1.70
8.50	0.63	0.50	5.00	1.44	0.26	1.70
8.55	0.63	0.50	5.00	1.44	0.26	1.70
8.60	0.63	0.50	5.00	1.44	0.26	1.70
8.65	0.63	0.50	5.00	1.44	0.26	1.70
8.70	0.63	0.50	5.00	1.44	0.26	1.70
8.75	0.63	0.50	5.00	1.44	0.26	1.70
8.80	0.63	0.50	5.00	1.44	0.26	1.70
8.85	0.63	0.50	5.00	1.44	0.25	1.70
8.90	0.63	0.50	5.00	1.44	0.25	1.70
8.95	0.63	0.50	5.00	1.44	0.25	1.69
9.00	0.63	0.50	5.00	1.44	0.25	1.69
9.05	0.63	0.50	5.00	1.44	0.25	1.69
9.10	0.63	0.50	5.00	1.44	0.25	1.69
9.15	0.63	0.50	5.00	1.44	0.25	1.69
9.20	0.63	0.50	5.00	1.44	0.24	1.69
9.25	0.63	0.50	5.00	1.44	0.24	1.69
9.30	0.63	0.50	5.00	1.44	0.24	1.68
9.35	0.63	0.50	5.00	1.44	0.24	1.68
9.40	0.63	0.50	5.00	1.44	0.24	1.68
9.45	0.63	0.50	5.00	1.44	0.24	1.68
9.50	0.63	0.50	5.00	1.44	0.23	1.68
9.55	0.63	0.50	5.00	1.44	0.23	1.68
9.60	0.63	0.50	5.00	1.44	0.23	1.68
9.65	0.63	0.50	5.00	1.44	0.23	1.68
9.70	0.63	0.50	5.00	1.44	0.23	1.68
9.75	0.63	0.50	5.00	1.44	0.23	1.67
9.80	0.63	0.50	5.00	1.44	0.23	1.67
9.85	0.63	0.50	5.00	1.44	0.23	1.67
9.90	0.63	0.50	5.00	1.44	0.23	1.67
9.95	0.63	0.50	5.00	1.44	0.23	1.67
10.00	0.63	0.50	5.00	1.44	0.23	1.67
10.05	0.63	0.50	5.00	1.44	0.23	1.67
10.10	0.63	0.50	5.00	1.44	0.23	1.67
10.15	0.63	0.50	5.00	1.44	0.23	1.67

10.20	0.63	0.50	5.00	1.44	0.23	1.67
10.25	0.63	0.50	5.00	1.44	0.23	1.67
10.30	0.63	0.50	5.00	1.44	0.23	1.67
10.35	0.63	0.50	5.00	1.44	0.23	1.67
10.40	0.63	0.50	5.00	1.44	0.23	1.67
10.45	0.63	0.50	5.00	1.44	0.22	1.67
10.50	0.63	0.50	5.00	1.44	0.22	1.67
10.55	0.63	0.50	5.00	1.44	0.22	1.67
10.60	0.63	0.50	5.00	1.44	0.22	1.67
10.65	0.63	0.50	5.00	1.44	0.22	1.67
10.70	0.63	0.49	5.00	1.44	0.22	1.66
10.75	0.63	0.49	5.00	1.44	0.22	1.66
10.80	0.63	0.49	5.00	1.44	0.22	1.66
10.85	0.63	0.49	5.00	1.44	0.22	1.66
10.90	0.63	0.49	5.00	1.44	0.22	1.66
10.95	0.63	0.49	5.00	1.44	0.22	1.66
11.00	0.63	0.49	5.00	1.44	0.22	1.66
11.05	0.63	0.49	5.00	1.44	0.22	1.66
11.10	0.63	0.49	5.00	1.44	0.22	1.66
11.15	0.63	0.49	5.00	1.44	0.22	1.66
11.20	0.63	0.49	5.00	1.44	0.22	1.66
11.25	0.63	0.49	5.00	1.44	0.21	1.66
11.30	0.63	0.49	5.00	1.44	0.21	1.66
11.35	0.63	0.49	5.00	1.44	0.21	1.66
11.40	0.63	0.49	5.00	1.44	0.21	1.66
11.45	0.63	0.49	5.00	1.44	0.21	1.66
11.50	0.63	0.49	5.00	1.44	0.21	1.65
11.55	0.63	0.49	5.00	1.44	0.21	1.65
11.60	0.63	0.49	5.00	1.44	0.21	1.65
11.65	0.63	0.49	5.00	1.44	0.21	1.65
11.70	0.63	0.49	5.00	1.44	0.21	1.65
11.75	0.63	0.49	5.00	1.44	0.21	1.65
11.80	0.63	0.49	5.00	1.44	0.21	1.65
11.85	0.63	0.49	5.00	1.44	0.21	1.65
11.90	0.63	0.49	5.00	1.44	0.21	1.65
11.95	0.63	0.49	5.00	1.44	0.20	1.65
12.00	0.63	0.49	5.00	1.44	0.20	1.65
12.05	0.63	0.49	5.00	1.44	0.20	1.65
12.10	0.63	0.49	5.00	1.44	0.20	1.65
12.15	0.63	0.49	5.00	1.44	0.20	1.64
12.20	0.63	0.49	5.00	1.44	0.20	1.64
12.25	0.63	0.49	5.00	1.44	0.20	1.64
12.30	0.63	0.49	5.00	1.44	0.20	1.64
12.35	0.63	0.49	5.00	1.44	0.20	1.64
12.40	0.63	0.49	5.00	1.44	0.20	1.64
12.45	0.63	0.49	5.00	1.44	0.20	1.64
12.50	0.63	0.49	5.00	1.44	0.20	1.64
12.55	0.63	0.49	5.00	1.44	0.19	1.64

12.60	0.63	0.49	5.00	1.44	0.19	1.64
12.65	0.63	0.49	5.00	1.44	0.19	1.64
12.70	0.63	0.49	5.00	1.44	0.19	1.63
12.75	0.63	0.49	5.00	1.44	0.19	1.63
12.80	0.63	0.49	5.00	1.44	0.19	1.63
12.85	0.63	0.49	5.00	1.44	0.19	1.63
12.90	0.58	0.49	5.00	1.44	0.19	1.63
12.95	0.52	0.49	5.00	1.44	0.19	1.63
13.00	0.49	0.49	5.00	1.44	0.18	1.63
13.05	0.47	0.49	5.00	1.44	0.18	1.63
13.10	0.45	0.49	5.00	1.44	0.18	1.62
13.15	0.44	0.49	5.00	1.44	0.18	1.62
13.20	0.43	0.49	5.00	1.44	0.18	1.62
13.25	0.41	0.49	5.00	1.44	0.18	1.62
13.30	0.40	0.49	5.00	1.44	0.17	1.62
13.35	0.40	0.49	5.00	1.44	0.17	1.62
13.40	0.39	0.49	5.00	1.44	0.17	1.61
13.45	0.38	0.49	5.00	1.44	0.17	1.61
13.50	0.37	0.49	5.00	1.44	0.17	1.61
13.55	0.36	0.49	5.00	1.44	0.16	1.61
13.60	0.36	0.49	5.00	1.44	0.16	1.60
13.65	0.35	0.49	5.00	1.44	0.16	1.60
13.70	0.34	0.49	5.00	1.44	0.16	1.60
13.75	0.34	0.49	5.00	1.44	0.15	1.60
13.80	0.33	0.49	5.00	1.44	0.15	1.59
13.85	0.32	0.49	5.00	1.44	0.15	1.59
13.90	0.32	0.49	5.00	1.44	0.14	1.59
13.95	0.31	0.49	5.00	1.44	0.14	1.58
14.00	0.31	0.49	5.00	1.44	0.14	1.58
14.05	0.30	0.49	5.00	1.44	0.13	1.58
14.10	0.30	0.49	5.00	1.44	0.13	1.57
14.15	0.29	0.49	5.00	1.44	0.12	1.57
14.20	0.29	0.49	5.00	1.44	0.12	1.56
14.25	0.28	0.49	5.00	1.44	0.12	1.56
14.30	0.28	0.49	5.00	1.44	0.11	1.55
14.35	0.27	0.49	5.00	1.44	0.10	1.55
14.40	0.27	0.49	5.00	1.44	0.10	1.54
14.45	0.26	0.49	5.00	1.44	0.09	1.54
14.50	0.26	0.49	5.00	1.44	0.09	1.53
14.55	0.25	0.49	5.00	1.44	0.08	1.52
14.60	0.25	0.49	5.00	1.44	0.07	1.51
14.65	0.25	0.49	5.00	1.44	0.06	1.51
14.70	0.24	0.49	5.00	1.44	0.05	1.50
14.75	0.24	0.49	5.00	1.44	0.04	1.49
14.80	0.26	0.49	5.00	1.44	0.03	1.48
14.85	0.25	0.49	5.00	1.44	0.03	1.47
14.90	0.25	0.49	5.00	1.44	0.02	1.46
14.95	0.24	0.49	5.00	1.44	0.01	1.45

15.00	0.24	0.49	0.49*	1.44	0.00	1.44
15.05	0.24	0.49	0.50*	1.43	0.00	1.43
15.10	0.25	0.49	0.51*	1.42	0.00	1.42
15.15	0.25	0.49	0.52*	1.41	0.00	1.41
15.20	0.26	0.49	0.53*	1.40	0.00	1.40
15.25	0.27	0.49	0.54*	1.39	0.00	1.39
15.30	0.27	0.49	0.55*	1.39	0.00	1.39
15.35	0.28	0.50	0.56*	1.38	0.00	1.38
15.40	0.28	0.50	0.57*	1.37	0.00	1.37
15.45	0.29	0.50	0.58*	1.36	0.00	1.36
15.50	0.30	0.50	0.59*	1.35	0.00	1.35
15.55	0.30	0.50	0.60*	1.34	0.00	1.34
15.60	0.31	0.50	0.62*	1.33	0.00	1.33
15.65	0.31	0.50	0.63*	1.33	0.00	1.33
15.70	0.32	0.50	0.64*	1.32	0.00	1.32
15.75	0.33	0.50	0.65*	1.31	0.00	1.31
15.80	0.33	0.50	0.67*	1.30	0.00	1.30
15.85	0.34	0.50	0.68*	1.30	0.00	1.30
15.90	0.35	0.50	0.70*	1.29	0.00	1.29
15.95	0.36	0.50	0.71*	1.28	0.00	1.28
16.00	0.37	0.50	0.73*	1.28	0.00	1.28
16.05	0.37	0.51	0.74*	1.27	0.00	1.27
16.10	0.38	0.51	0.76*	1.26	0.00	1.26
16.15	0.39	0.51	0.78*	1.26	0.00	1.26
16.20	0.40	0.51	0.80*	1.25	0.00	1.25
16.25	0.42	0.51	0.82*	1.24	0.00	1.24
16.30	0.43	0.51	0.84*	1.24	0.00	1.24
16.35	0.44	0.51	0.86*	1.23	0.00	1.23
16.40	0.46	0.51	0.89*	1.23	0.00	1.23
16.45	0.47	0.51	0.93*	1.22	0.00	1.22
16.50	0.50	0.51	0.97*	1.22	0.00	1.22
16.55	0.54	0.51	1.05	1.21	0.00	1.21
16.60	0.63	0.51	1.22	1.21	0.00	1.21
16.65	0.63	0.51	1.22	1.21	0.00	1.21
16.70	0.63	0.51	1.22	1.20	0.00	1.20
16.75	0.63	0.52	1.22	1.20	0.00	1.20
16.80	0.63	0.52	1.22	1.20	0.00	1.20
16.85	0.63	0.52	1.21	1.20	0.00	1.20
16.90	0.63	0.52	1.21	1.20	0.00	1.20
16.95	0.63	0.52	1.21	1.20	0.00	1.20
17.00	0.63	0.52	1.21	1.19	0.00	1.19
17.05	0.63	0.52	1.21	1.19	0.00	1.19
17.10	0.63	0.52	1.21	1.19	0.00	1.19
17.15	0.63	0.52	1.21	1.19	0.00	1.19
17.20	0.63	0.52	1.20	1.19	0.00	1.19
17.25	0.63	0.52	1.20	1.19	0.00	1.19
17.30	0.63	0.52	1.20	1.19	0.00	1.19
17.35	0.63	0.52	1.20	1.19	0.00	1.19

17.40	0.63	0.52	1.20	1.19	0.00	1.19
17.45	0.63	0.53	1.20	1.19	0.00	1.19
17.50	0.63	0.53	1.19	1.19	0.00	1.19
17.55	0.63	0.53	1.19	1.19	0.00	1.19
17.60	0.63	0.53	1.19	1.19	0.00	1.19
17.65	0.63	0.53	1.19	1.19	0.00	1.19
17.70	0.63	0.53	1.19	1.19	0.00	1.19
17.75	0.63	0.53	1.19	1.19	0.00	1.19
17.80	0.63	0.53	1.19	1.19	0.00	1.19
17.85	0.63	0.53	1.18	1.19	0.00	1.19
17.90	0.63	0.53	1.18	1.19	0.00	1.19
17.95	0.63	0.53	1.18	1.19	0.00	1.19
18.00	0.63	0.53	1.18	1.19	0.00	1.19
18.05	0.63	0.53	1.18	1.19	0.00	1.19
18.10	0.63	0.53	1.18	1.19	0.00	1.19
18.15	0.63	0.53	1.18	1.19	0.00	1.19
18.20	0.63	0.53	1.17	1.19	0.00	1.19
18.25	0.63	0.54	1.17	1.19	0.00	1.19
18.30	0.63	0.54	1.17	1.19	0.00	1.19
18.35	0.63	0.54	1.17	1.19	0.00	1.19
18.40	0.63	0.54	1.17	1.19	0.00	1.19
18.45	0.63	0.54	1.17	1.19	0.00	1.19
18.50	0.63	0.54	1.17	1.19	0.00	1.19
18.55	0.63	0.54	1.16	1.19	0.00	1.19
18.60	0.63	0.54	1.16	1.19	0.00	1.19
18.65	0.63	0.54	1.16	1.19	0.00	1.19
18.70	0.63	0.54	1.16	1.19	0.00	1.19
18.75	0.63	0.54	1.16	1.19	0.00	1.19
18.80	0.63	0.54	1.16	1.19	0.00	1.19
18.85	0.63	0.54	1.16	1.19	0.00	1.19
18.90	0.63	0.54	1.16	1.19	0.00	1.19
18.95	0.63	0.54	1.15	1.19	0.00	1.19
19.00	0.63	0.54	1.15	1.19	0.00	1.19
19.05	0.63	0.55	1.15	1.19	0.00	1.19
19.10	0.63	0.55	1.15	1.19	0.00	1.19
19.15	0.63	0.55	1.15	1.19	0.00	1.19
19.20	0.63	0.55	1.15	1.19	0.00	1.19
19.25	0.63	0.55	1.15	1.19	0.00	1.19
19.30	0.63	0.55	1.15	1.19	0.00	1.19
19.35	0.63	0.55	1.14	1.19	0.00	1.19
19.40	0.63	0.55	1.14	1.19	0.00	1.19
19.45	0.63	0.55	1.14	1.19	0.00	1.19
19.50	0.63	0.55	1.14	1.19	0.00	1.19
19.55	0.63	0.55	1.14	1.19	0.00	1.19
19.60	0.63	0.55	1.14	1.19	0.00	1.19
19.65	0.63	0.55	1.14	1.19	0.00	1.19
19.70	0.63	0.55	1.14	1.19	0.00	1.19
19.75	0.63	0.55	1.13	1.19	0.00	1.19

19.80	0.63	0.55	1.13	1.19	0.00	1.19
19.85	0.63	0.55	1.13	1.19	0.00	1.19
19.90	0.63	0.56	1.13	1.19	0.00	1.19
19.95	0.63	0.56	1.13	1.19	0.00	1.19
20.00	0.63	0.56	1.13	1.19	0.00	1.19
20.05	0.63	0.56	1.13	1.19	0.00	1.19
20.10	0.63	0.56	1.13	1.19	0.00	1.19
20.15	0.63	0.56	1.12	1.19	0.00	1.19
20.20	0.63	0.56	1.12	1.19	0.00	1.19
20.25	0.63	0.56	1.12	1.19	0.00	1.19
20.30	0.63	0.56	1.12	1.19	0.00	1.19
20.35	0.63	0.56	1.12	1.19	0.00	1.19
20.40	0.63	0.56	1.12	1.19	0.00	1.19
20.45	0.63	0.56	1.12	1.19	0.00	1.19
20.50	0.63	0.56	1.12	1.19	0.00	1.19
20.55	0.63	0.56	1.12	1.19	0.00	1.19
20.60	0.63	0.56	1.11	1.19	0.00	1.19
20.65	0.63	0.56	1.11	1.19	0.00	1.19
20.70	0.63	0.56	1.11	1.19	0.00	1.19
20.75	0.63	0.56	1.11	1.19	0.00	1.19
20.80	0.63	0.57	1.11	1.19	0.00	1.19
20.85	0.63	0.57	1.11	1.19	0.00	1.19
20.90	0.63	0.57	1.11	1.19	0.00	1.19
20.95	0.63	0.57	1.11	1.19	0.00	1.19
21.00	0.63	0.57	1.11	1.19	0.00	1.19
21.05	0.63	0.57	1.11	1.19	0.00	1.19
21.10	0.63	0.57	1.10	1.19	0.00	1.19
21.15	0.63	0.57	1.10	1.19	0.00	1.19
21.20	0.63	0.57	1.10	1.19	0.00	1.19
21.25	0.63	0.57	1.10	1.19	0.00	1.19
21.30	0.63	0.57	1.10	1.19	0.00	1.19
21.35	0.63	0.57	1.10	1.19	0.00	1.19
21.40	0.63	0.57	1.10	1.19	0.00	1.19
21.45	0.63	0.57	1.10	1.19	0.00	1.19
21.50	0.63	0.57	1.10	1.19	0.00	1.19
21.55	0.63	0.57	1.10	1.19	0.00	1.19
21.60	0.63	0.57	1.09	1.19	0.00	1.19
21.65	0.63	0.57	1.09	1.19	0.00	1.19
21.70	0.63	0.57	1.09	1.19	0.00	1.19
21.75	0.63	0.58	1.09	1.19	0.00	1.19
21.80	0.63	0.58	1.09	1.19	0.00	1.19
21.85	0.63	0.58	1.09	1.19	0.00	1.19
21.90	0.63	0.58	1.09	1.19	0.00	1.19
21.95	0.63	0.58	1.09	1.19	0.00	1.19
22.00	0.63	0.58	1.09	1.19	0.00	1.19
22.05	0.63	0.58	1.09	1.19	0.00	1.19
22.10	0.63	0.58	1.08	1.19	0.00	1.19
22.15	0.63	0.58	1.08	1.19	0.00	1.19

22.20	0.63	0.58	1.08	1.19	0.00	1.19
22.25	0.63	0.58	1.08	1.19	0.00	1.19
22.30	0.63	0.58	1.08	1.19	0.00	1.19
22.35	0.55	0.58	0.95*	1.19	0.00	1.19
22.40	0.45	0.58	0.77*	1.18	0.00	1.18
22.45	0.40	0.58	0.69*	1.18	0.00	1.18
22.50	0.37	0.58	0.63*	1.17	0.00	1.17
22.55	0.37	0.58	0.64*	1.16	0.00	1.16
22.60	0.38	0.58	0.65*	1.16	0.00	1.16
22.65	0.38	0.58	0.66*	1.15	0.00	1.15
22.70	0.39	0.58	0.66*	1.14	0.00	1.14
22.75	0.39	0.59	0.67*	1.14	0.00	1.14
22.80	0.40	0.59	0.68*	1.13	0.00	1.13
22.85	0.40	0.59	0.68*	1.12	0.00	1.12
22.90	0.41	0.59	0.69*	1.12	0.00	1.12
22.95	0.41	0.59	0.70*	1.11	0.00	1.11
23.00	0.42	0.59	0.71*	1.10	0.00	1.10
23.05	0.42	0.59	0.72*	1.10	0.00	1.10
23.10	0.43	0.59	0.73*	1.09	0.00	1.09
23.15	0.43	0.59	0.74*	1.09	0.00	1.09
23.20	0.44	0.59	0.75*	1.08	0.00	1.08
23.25	0.45	0.59	0.76*	1.08	0.00	1.08
23.30	0.45	0.59	0.77*	1.07	0.00	1.07
23.35	0.46	0.59	0.78*	1.06	0.00	1.06
23.40	0.47	0.59	0.80*	1.06	0.00	1.06
23.45	0.48	0.59	0.81*	1.05	0.00	1.05
23.50	0.49	0.59	0.83*	1.05	0.00	1.05
23.55	0.50	0.59	0.85*	1.04	0.00	1.04
23.60	0.51	0.59	0.87*	1.04	0.00	1.04
23.65	0.53	0.59	0.90*	1.03	0.00	1.03
23.70	0.55	0.59	0.93*	1.03	0.00	1.03
23.75	0.59	0.59	1.00*	1.03	0.00	1.03
23.80	0.63	0.59	1.06	1.02	0.00	1.02
23.85	0.63	0.59	1.06	1.02	0.00	1.02
23.90	0.63	0.60	1.06	1.01	0.00	1.01
23.95	0.63	0.60	1.05	1.01	0.00	1.01
24.00	0.63	0.60	1.05	1.00	0.00	1.00
24.05	0.63	0.60	1.05	1.00	0.00	1.00
24.10	0.63	0.60	1.05	1.00	0.00	1.00
24.15	0.63	0.60	1.05	0.99	0.00	0.99
24.20	0.63	0.60	1.05	0.99	0.00	0.99
24.25	0.63	0.60	1.05	0.99	0.00	0.99
24.30	0.63	0.60	1.05	0.98	0.00	0.98
24.35	0.63	0.60	1.05	0.98	0.00	0.98
24.40	0.63	0.60	1.05	0.98	0.00	0.98
24.45	0.63	0.60	1.05	0.97	0.00	0.97
24.50	0.63	0.60	1.05	0.97	0.00	0.97
24.55	0.63	0.60	1.05	0.97	0.00	0.97

24.60	0.63	0.60	1.04	0.97	0.00	0.97
24.65	0.63	0.60	1.04	0.96	0.00	0.96
24.70	0.63	0.60	1.04	0.96	0.00	0.96
24.75	0.63	0.60	1.04	0.96	0.00	0.96
24.80	0.63	0.60	1.04	0.96	0.00	0.96
24.85	0.63	0.60	1.04	0.96	0.00	0.96
24.90	0.63	0.60	1.04	0.96	0.00	0.96
24.95	0.63	0.60	1.04	0.95	0.00	0.95
25.00	0.63	0.60	1.04	0.95	0.00	0.95
25.05	0.63	0.60	1.04	0.95	0.00	0.95
25.10	0.63	0.61	1.04	0.95	0.00	0.95
25.15	0.63	0.61	1.04	0.95	0.00	0.95
25.20	0.63	0.61	1.04	0.95	0.00	0.95
25.25	0.63	0.61	1.04	0.95	0.00	0.95
25.30	0.63	0.61	1.04	0.94	0.00	0.94
25.35	0.63	0.61	1.03	0.94	0.00	0.94
25.40	0.63	0.61	1.03	0.94	0.00	0.94
25.45	0.63	0.61	1.03	0.94	0.00	0.94
25.50	0.63	0.61	1.03	0.94	0.00	0.94
25.55	0.63	0.61	1.03	0.93	0.00	0.93
25.60	0.63	0.61	1.03	0.93	0.00	0.93
25.65	0.63	0.61	1.03	0.93	0.00	0.93
25.70	0.63	0.61	1.03	0.92	0.00	0.92
25.75	0.63	0.61	1.03	0.92	0.00	0.92
25.80	0.63	0.61	1.03	0.92	0.00	0.92
25.85	0.63	0.61	1.03	0.91	0.00	0.91
25.90	0.63	0.61	1.03	0.91	0.00	0.91
25.95	0.63	0.61	1.03	0.91	0.00	0.91
26.00	0.63	0.61	1.03	0.90	0.00	0.90
26.05	0.63	0.61	1.03	0.90	0.00	0.90
26.10	0.63	0.61	1.02	0.90	0.00	0.90
26.15	0.63	0.61	1.02	0.89	0.00	0.89
26.20	0.63	0.61	1.02	0.89	0.00	0.89
26.25	0.62	0.61	1.01	0.88	0.00	0.88
26.30	0.57	0.61	0.93*	0.88	0.00	0.88
26.35	0.54	0.61	0.88*	0.87	0.00	0.87
26.40	0.52	0.62	0.85*	0.87	0.00	0.87
26.45	0.51	0.62	0.83*	0.86	0.00	0.86
26.50	0.50	0.62	0.81*	0.86	0.00	0.86
26.55	0.49	0.62	0.79*	0.85	0.00	0.85
26.60	0.48	0.62	0.78*	0.85	0.00	0.85
26.65	0.47	0.62	0.77*	0.84	0.00	0.84
26.70	0.47	0.62	0.76*	0.84	0.00	0.84
26.75	0.46	0.62	0.74*	0.83	0.00	0.83
26.80	0.45	0.62	0.73*	0.83	0.00	0.83
26.85	0.45	0.62	0.73*	0.82	0.00	0.82
26.90	0.44	0.62	0.72*	0.82	0.00	0.82
26.95	0.44	0.62	0.71*	0.81	0.00	0.81

27.00	0.43	0.62	0.70*	0.81	0.00	0.81
27.05	0.43	0.62	0.69*	0.80	0.00	0.80
27.10	0.43	0.62	0.69*	0.79	0.00	0.79
27.15	0.42	0.62	0.68*	0.79	0.00	0.79
27.20	0.42	0.62	0.67*	0.78	0.00	0.78
27.25	0.41	0.62	0.67*	0.78	0.00	0.78
27.30	0.41	0.62	0.66*	0.77	0.00	0.77
27.35	0.41	0.62	0.65*	0.76	0.00	0.76
27.40	0.40	0.62	0.65*	0.76	0.00	0.76
27.45	0.40	0.62	0.64*	0.75	0.00	0.75
27.50	0.40	0.62	0.63*	0.74	0.00	0.74
27.55	0.40	0.62	0.64*	0.74	0.00	0.74
27.60	0.41	0.62	0.65*	0.73	0.00	0.73
27.65	0.41	0.62	0.66*	0.73	0.00	0.73
27.70	0.42	0.62	0.67*	0.72	0.00	0.72
27.75	0.42	0.62	0.68*	0.71	0.00	0.71
27.80	0.43	0.63	0.69*	0.71	0.00	0.71
27.85	0.44	0.63	0.70*	0.70	0.00	0.70
27.90	0.50	0.63	0.80*	0.69	0.00	0.69
27.95	0.52	0.63	0.83*	0.69	0.00	0.69
28.00	0.55	0.63	0.88*	0.69	0.00	0.69
28.05	0.61	0.63	0.98*	0.68	0.00	0.68
28.10	0.63	0.63	1.00	0.68	0.00	0.68
28.15	0.63	0.63	1.00	0.67	0.00	0.67
28.20	0.63	0.63	1.00	0.67	0.00	0.67
28.25	0.63	0.63	1.00	0.66	0.00	0.66
28.30	0.63	0.63	1.00*	0.66	0.00	0.66
28.35	0.63	0.63	1.00*	0.66	0.00	0.66
28.40	0.63	0.63	1.00*	0.65	0.00	0.65
28.45	0.63	0.63	1.00*	0.65	0.00	0.65
28.50	0.63	0.63	1.00*	0.65	0.00	0.65
28.55	0.63	0.63	1.00*	0.64	0.00	0.64
28.60	0.63	0.63	1.00*	0.64	0.00	0.64
28.65	0.63	0.63	1.00*	0.64	0.00	0.64
28.70	0.63	0.63	1.00*	0.64	0.00	0.64
28.75	0.63	0.63	0.99*	0.63	0.00	0.63
28.80	0.63	0.63	0.99*	0.63	0.00	0.63
28.85	0.63	0.63	0.99*	0.63	0.00	0.63
28.90	0.63	0.63	0.99*	0.63	0.00	0.63
28.95	0.63	0.63	0.99*	0.63	0.00	0.63
29.00	0.63	0.63	0.99*	0.63	0.00	0.63
29.05	0.63	0.63	0.99*	0.63	0.00	0.63
29.10	0.63	0.63	0.99*	0.62	0.00	0.62
29.15	0.63	0.63	0.99*	0.62	0.00	0.62
29.20	0.63	0.63	0.99*	0.62	0.00	0.62
29.25	0.63	0.63	0.99*	0.62	0.00	0.62
29.30	0.63	0.63	0.99*	0.62	0.00	0.62
29.35	0.63	0.63	0.99*	0.62	0.00	0.62

29.40	0.63	0.64	0.99*	0.62	0.00	0.62
29.45	0.63	0.64	0.99*	0.62	0.00	0.62
29.50	0.63	0.64	0.99*	0.62	0.00	0.62
29.55	0.63	0.64	0.99*	0.62	0.00	0.62
29.60	0.63	0.64	0.99*	0.62	0.00	0.62
29.65	0.63	0.64	0.99*	0.62	0.00	0.62
29.70	0.63	0.64	0.99*	0.62	0.00	0.62
29.75	0.63	0.64	0.99*	0.62	0.00	0.62
29.80	0.63	0.64	0.98*	0.62	0.00	0.62
29.85	0.63	0.64	0.98*	0.62	0.00	0.62
29.90	0.63	0.64	0.98*	0.62	0.00	0.62
29.95	0.63	0.64	0.98*	0.62	0.00	0.62
30.00	0.63	0.64	0.98*	0.62	0.00	0.62
30.05	0.63	0.64	0.98*	0.62	0.00	0.62
30.10	0.63	0.64	0.98*	0.62	0.00	0.62
30.15	0.63	0.64	0.98*	0.62	0.00	0.62
30.20	0.63	0.64	0.98*	0.62	0.00	0.62
30.25	0.63	0.64	0.98*	0.62	0.00	0.62
30.30	0.63	0.64	0.98*	0.62	0.00	0.62
30.35	0.63	0.64	0.98*	0.62	0.00	0.62
30.40	0.63	0.64	0.98*	0.61	0.00	0.61
30.45	0.63	0.64	0.98*	0.61	0.00	0.61
30.50	0.63	0.64	0.98*	0.61	0.00	0.61
30.55	0.63	0.64	0.98*	0.61	0.00	0.61
30.60	0.63	0.64	0.98*	0.61	0.00	0.61
30.65	0.63	0.64	0.98*	0.61	0.00	0.61
30.70	0.63	0.64	0.98*	0.61	0.00	0.61
30.75	0.63	0.64	0.98*	0.61	0.00	0.61
30.80	0.63	0.64	0.98*	0.61	0.00	0.61
30.85	0.63	0.64	0.98*	0.61	0.00	0.61
30.90	0.63	0.64	0.98*	0.61	0.00	0.61
30.95	0.63	0.64	0.98*	0.60	0.00	0.60
31.00	0.63	0.64	0.98*	0.60	0.00	0.60
31.05	0.63	0.64	0.98*	0.60	0.00	0.60
31.10	0.63	0.64	0.98*	0.60	0.00	0.60
31.15	0.63	0.64	0.98*	0.60	0.00	0.60
31.20	0.63	0.64	0.98*	0.59	0.00	0.59
31.25	0.63	0.64	0.98*	0.59	0.00	0.59
31.30	0.63	0.64	0.98*	0.59	0.00	0.59
31.35	0.63	0.64	0.98*	0.58	0.00	0.58
31.40	0.63	0.64	0.98*	0.58	0.00	0.58
31.45	0.63	0.64	0.98*	0.57	0.00	0.57
31.50	0.63	0.64	0.98*	0.57	0.00	0.57
31.55	0.58	0.64	0.90*	0.57	0.00	0.57
31.60	0.53	0.64	0.82*	0.56	0.00	0.56
31.65	0.50	0.64	0.78*	0.56	0.00	0.56
31.70	0.48	0.64	0.75*	0.55	0.00	0.55
31.75	0.47	0.64	0.73*	0.55	0.00	0.55

31.80	0.46	0.64	0.71*	0.54	0.00	0.54
31.85	0.45	0.64	0.70*	0.54	0.00	0.54
31.90	0.44	0.64	0.68*	0.53	0.00	0.53
31.95	0.43	0.64	0.67*	0.52	0.00	0.52
32.00	0.42	0.64	0.66*	0.52	0.00	0.52
32.05	0.41	0.64	0.65*	0.51	0.00	0.51
32.10	0.41	0.64	0.63*	0.51	0.00	0.51
32.15	0.40	0.64	0.62*	0.50	0.00	0.50
32.20	0.39	0.64	0.61*	0.49	0.00	0.49
32.25	0.39	0.64	0.60*	0.49	0.00	0.49
32.30	0.38	0.64	0.59*	0.48	0.00	0.48
32.35	0.38	0.64	0.59*	0.47	0.00	0.47
32.40	0.37	0.64	0.58*	0.47	0.00	0.47
32.45	0.36	0.64	0.57*	0.46	0.00	0.46
32.50	0.36	0.64	0.56*	0.45	0.00	0.45
32.55	0.37	0.64	0.57*	0.45	0.00	0.45
32.60	0.37	0.64	0.58*	0.44	0.00	0.44
32.65	0.38	0.64	0.60*	0.43	0.00	0.43
32.70	0.39	0.64	0.61*	0.43	0.00	0.43
32.75	0.40	0.64	0.62*	0.42	0.00	0.42
32.80	0.41	0.64	0.64*	0.41	0.00	0.41
32.85	0.42	0.64	0.65*	0.41	0.00	0.41
32.90	0.43	0.64	0.67*	0.40	0.00	0.40
32.95	0.44	0.64	0.69*	0.39	0.00	0.39
33.00	0.46	0.64	0.71*	0.39	0.00	0.39
33.05	0.47	0.64	0.74*	0.38	0.00	0.38
33.10	0.49	0.64	0.77*	0.38	0.00	0.38
33.15	0.53	0.64	0.82*	0.37	0.00	0.37
33.20	0.61	0.64	0.94*	0.37	0.00	0.37
33.25	0.63	0.64	0.98*	0.36	0.00	0.36
33.30	0.63	0.64	0.98*	0.36	0.00	0.36
33.35	0.63	0.64	0.98*	0.36	0.00	0.36
33.40	0.63	0.64	0.98*	0.35	0.00	0.35
33.45	0.63	0.64	0.98*	0.35	0.00	0.35
33.50	0.63	0.64	0.98*	0.35	0.00	0.35
33.55	0.63	0.64	0.98*	0.34	0.00	0.34
33.60	0.63	0.64	0.98*	0.34	0.00	0.34
33.65	0.63	0.64	0.98*	0.34	0.00	0.34
33.70	0.63	0.64	0.98*	0.34	0.00	0.34
33.75	0.63	0.64	0.98*	0.34	0.00	0.34
33.80	0.63	0.64	0.98*	0.33	0.00	0.33
33.85	0.63	0.64	0.98*	0.33	0.00	0.33
33.90	0.63	0.64	0.98*	0.33	0.00	0.33
33.95	0.63	0.64	0.98*	0.33	0.00	0.33
34.00	0.63	0.64	0.98*	0.33	0.00	0.33
34.05	0.63	0.64	0.98*	0.33	0.00	0.33
34.10	0.63	0.64	0.98*	0.33	0.00	0.33
34.15	0.63	0.64	0.98*	0.33	0.00	0.33

34.20	0.63	0.64	0.98*	0.33	0.00	0.33
34.25	0.63	0.64	0.98*	0.33	0.00	0.33
34.30	0.63	0.64	0.98*	0.33	0.00	0.33
34.35	0.63	0.64	0.98*	0.33	0.00	0.33
34.40	0.63	0.64	0.98*	0.33	0.00	0.33
34.45	0.63	0.64	0.98*	0.33	0.00	0.33
34.50	0.63	0.64	0.98*	0.33	0.00	0.33
34.55	0.63	0.64	0.98*	0.33	0.00	0.33
34.60	0.63	0.64	0.98*	0.33	0.00	0.33
34.65	0.63	0.64	0.98*	0.33	0.00	0.33
34.70	0.63	0.64	0.98*	0.33	0.00	0.33
34.75	0.63	0.64	0.98*	0.33	0.00	0.33
34.80	0.63	0.64	0.98*	0.33	0.00	0.33
34.85	0.63	0.64	0.98*	0.33	0.00	0.33
34.90	0.63	0.64	0.98*	0.33	0.00	0.33
34.95	0.63	0.64	0.98*	0.33	0.00	0.33
35.00	0.63	0.64	0.98*	0.33	0.00	0.33
35.05	0.63	0.64	0.98*	0.33	0.00	0.33
35.10	0.63	0.64	0.98*	0.33	0.00	0.33
35.15	0.63	0.64	0.98*	0.33	0.00	0.33
35.20	0.63	0.64	0.98*	0.33	0.00	0.33
35.25	0.63	0.64	0.98*	0.33	0.00	0.33
35.30	0.63	0.64	0.98*	0.33	0.00	0.33
35.35	0.63	0.64	0.98*	0.33	0.00	0.33
35.40	0.63	0.64	0.98*	0.33	0.00	0.33
35.45	0.63	0.64	0.98*	0.33	0.00	0.33
35.50	0.63	0.64	0.98*	0.33	0.00	0.33
35.55	0.63	0.64	0.98*	0.33	0.00	0.33
35.60	0.63	0.64	0.98*	0.33	0.00	0.33
35.65	0.63	0.64	0.98*	0.33	0.00	0.33
35.70	0.63	0.64	0.98*	0.33	0.00	0.33
35.75	0.63	0.64	0.98*	0.33	0.00	0.33
35.80	0.63	0.64	0.98*	0.33	0.00	0.33
35.85	0.63	0.64	0.98*	0.33	0.00	0.33
35.90	0.63	0.64	0.98*	0.33	0.00	0.33
35.95	0.63	0.64	0.98*	0.33	0.00	0.33
36.00	0.63	0.64	0.98*	0.33	0.00	0.33
36.05	0.63	0.64	0.98*	0.33	0.00	0.33
36.10	0.63	0.64	0.98*	0.33	0.00	0.33
36.15	0.63	0.64	0.98*	0.33	0.00	0.33
36.20	0.63	0.64	0.98*	0.33	0.00	0.33
36.25	0.63	0.64	0.98*	0.33	0.00	0.33
36.30	0.63	0.64	0.98*	0.33	0.00	0.33
36.35	0.63	0.64	0.98*	0.33	0.00	0.33
36.40	0.63	0.64	0.98*	0.33	0.00	0.33
36.45	0.63	0.64	0.98*	0.33	0.00	0.33
36.50	0.63	0.64	0.98*	0.33	0.00	0.33
36.55	0.63	0.64	0.98*	0.33	0.00	0.33

36.60	0.63	0.64	0.98*	0.33	0.00	0.33
36.65	0.63	0.64	0.98*	0.33	0.00	0.33
36.70	0.63	0.64	0.98*	0.33	0.00	0.33
36.75	0.63	0.64	0.98*	0.33	0.00	0.33
36.80	0.63	0.64	0.98*	0.33	0.00	0.33
36.85	0.63	0.64	0.98*	0.33	0.00	0.33
36.90	0.63	0.64	0.98*	0.33	0.00	0.33
36.95	0.63	0.64	0.98*	0.33	0.00	0.33
37.00	0.63	0.64	0.98*	0.33	0.00	0.33
37.05	0.63	0.64	0.98*	0.33	0.00	0.33
37.10	0.63	0.64	0.98*	0.33	0.00	0.33
37.15	0.63	0.64	0.98*	0.33	0.00	0.33
37.20	0.63	0.64	0.98*	0.33	0.00	0.33
37.25	0.63	0.64	0.98*	0.33	0.00	0.33
37.30	0.63	0.64	0.98*	0.33	0.00	0.33
37.35	0.63	0.64	0.98*	0.33	0.00	0.33
37.40	0.63	0.64	0.98*	0.33	0.00	0.33
37.45	0.63	0.64	0.98*	0.33	0.00	0.33
37.50	0.63	0.64	0.98*	0.33	0.00	0.33
37.55	0.63	0.64	0.98*	0.33	0.00	0.33
37.60	0.63	0.64	0.98*	0.33	0.00	0.33
37.65	0.63	0.64	0.98*	0.33	0.00	0.33
37.70	0.63	0.64	0.98*	0.33	0.00	0.33
37.75	0.63	0.64	0.98*	0.33	0.00	0.33
37.80	0.63	0.64	0.98*	0.33	0.00	0.33
37.85	0.63	0.64	0.98*	0.33	0.00	0.33
37.90	0.63	0.64	0.98*	0.33	0.00	0.33
37.95	0.63	0.64	0.98*	0.33	0.00	0.33
38.00	0.63	0.64	0.98*	0.33	0.00	0.33
38.05	0.63	0.64	0.98*	0.33	0.00	0.33
38.10	0.63	0.64	0.98*	0.33	0.00	0.33
38.15	0.63	0.64	0.98*	0.33	0.00	0.33
38.20	0.63	0.64	0.98*	0.33	0.00	0.33
38.25	0.63	0.64	0.98*	0.33	0.00	0.33
38.30	0.63	0.64	0.98*	0.33	0.00	0.33
38.35	0.63	0.64	0.98*	0.33	0.00	0.33
38.40	0.63	0.64	0.98*	0.33	0.00	0.33
38.45	0.63	0.64	0.98*	0.33	0.00	0.33
38.50	0.63	0.64	0.98*	0.33	0.00	0.33
38.55	0.63	0.64	0.98*	0.33	0.00	0.33
38.60	0.63	0.64	0.98*	0.33	0.00	0.33
38.65	0.63	0.64	0.98*	0.33	0.00	0.33
38.70	0.63	0.64	0.98*	0.33	0.00	0.33
38.75	0.63	0.64	0.98*	0.33	0.00	0.33
38.80	0.63	0.64	0.98*	0.33	0.00	0.33
38.85	0.63	0.64	0.98*	0.33	0.00	0.33
38.90	0.63	0.64	0.98*	0.33	0.00	0.33
38.95	0.63	0.64	0.98*	0.33	0.00	0.33

39.00	0.63	0.64	0.98*	0.33	0.00	0.33
39.05	0.63	0.64	0.98*	0.33	0.00	0.33
39.10	0.63	0.64	0.98*	0.33	0.00	0.33
39.15	0.63	0.64	0.98*	0.33	0.00	0.33
39.20	0.63	0.64	0.98*	0.33	0.00	0.33
39.25	0.63	0.64	0.98*	0.33	0.00	0.33
39.30	0.63	0.64	0.98*	0.33	0.00	0.33
39.35	0.63	0.64	0.98*	0.33	0.00	0.33
39.40	0.63	0.64	0.98*	0.33	0.00	0.33
39.45	0.63	0.64	0.98*	0.33	0.00	0.33
39.50	0.63	0.64	0.98*	0.33	0.00	0.33
39.55	0.63	0.64	0.98*	0.33	0.00	0.33
39.60	0.63	0.64	0.98*	0.33	0.00	0.33
39.65	0.63	0.64	0.98*	0.33	0.00	0.33
39.70	0.63	0.64	0.98*	0.33	0.00	0.33
39.75	0.63	0.64	0.98*	0.33	0.00	0.33
39.80	0.63	0.64	0.98*	0.33	0.00	0.33
39.85	0.63	0.64	0.99*	0.33	0.00	0.33
39.90	0.63	0.64	0.99*	0.33	0.00	0.33
39.95	0.63	0.64	0.99*	0.33	0.00	0.33
40.00	0.63	0.64	0.99*	0.33	0.00	0.33
40.05	0.63	0.64	0.99*	0.33	0.00	0.33
40.10	0.63	0.64	0.99*	0.33	0.00	0.33
40.15	0.63	0.64	0.99*	0.33	0.00	0.33
40.20	0.63	0.64	0.99*	0.33	0.00	0.33
40.25	0.63	0.64	0.99*	0.33	0.00	0.33
40.30	0.63	0.64	0.99*	0.33	0.00	0.33
40.35	0.63	0.64	0.99*	0.33	0.00	0.33
40.40	0.63	0.64	0.99*	0.33	0.00	0.33
40.45	0.63	0.64	0.99*	0.33	0.00	0.33
40.50	0.63	0.64	0.99*	0.33	0.00	0.33
40.55	0.63	0.64	0.99*	0.33	0.00	0.33
40.60	0.63	0.64	0.99*	0.33	0.00	0.33
40.65	0.63	0.64	0.99*	0.33	0.00	0.33
40.70	0.63	0.64	0.99*	0.33	0.00	0.33
40.75	0.63	0.64	0.99*	0.33	0.00	0.33
40.80	0.63	0.64	0.99*	0.33	0.00	0.33
40.85	0.63	0.64	0.99*	0.33	0.00	0.33
40.90	0.63	0.64	0.99*	0.33	0.00	0.33
40.95	0.63	0.64	0.99*	0.33	0.00	0.33
41.00	0.63	0.64	0.99*	0.33	0.00	0.33
41.05	0.63	0.64	0.99*	0.33	0.00	0.33
41.10	0.63	0.64	0.99*	0.33	0.00	0.33
41.15	0.63	0.63	0.99*	0.33	0.00	0.33
41.20	0.63	0.63	0.99*	0.33	0.00	0.33
41.25	0.63	0.63	0.99*	0.33	0.00	0.33
41.30	0.63	0.63	0.99*	0.33	0.00	0.33
41.35	0.63	0.63	0.99*	0.33	0.00	0.33

41.40	0.63	0.63	0.99*	0.33	0.00	0.33
41.45	0.63	0.63	0.99*	0.33	0.00	0.33
41.50	0.63	0.63	0.99*	0.33	0.00	0.33
41.55	0.63	0.63	0.99*	0.33	0.00	0.33
41.60	0.63	0.63	0.99*	0.33	0.00	0.33
41.65	0.63	0.63	0.99*	0.33	0.00	0.33
41.70	0.63	0.63	0.99*	0.33	0.00	0.33
41.75	0.63	0.63	0.99*	0.33	0.00	0.33
41.80	0.63	0.63	0.99*	0.33	0.00	0.33
41.85	0.63	0.63	0.99*	0.33	0.00	0.33
41.90	0.63	0.63	0.99*	0.33	0.00	0.33
41.95	0.63	0.63	0.99*	0.33	0.00	0.33
42.00	0.63	0.63	0.99*	0.33	0.00	0.33
42.05	0.63	0.63	0.99*	0.33	0.00	0.33
42.10	0.63	0.63	0.99*	0.33	0.00	0.33
42.15	0.63	0.63	0.99*	0.33	0.00	0.33
42.20	0.63	0.63	0.99*	0.33	0.00	0.33
42.25	0.63	0.63	0.99*	0.33	0.00	0.33
42.30	0.63	0.63	0.99*	0.33	0.00	0.33
42.35	0.63	0.63	0.99*	0.33	0.00	0.33
42.40	0.63	0.63	0.99*	0.33	0.00	0.33
42.45	0.63	0.63	0.99*	0.33	0.00	0.33
42.50	0.63	0.63	0.99*	0.33	0.00	0.33
42.55	0.63	0.63	0.99*	0.33	0.00	0.33
42.60	0.63	0.63	0.99*	0.33	0.00	0.33
42.65	0.63	0.63	0.99*	0.32	0.00	0.32
42.70	0.63	0.63	0.99*	0.32	0.00	0.32
42.75	0.63	0.63	0.99*	0.32	0.00	0.32
42.80	0.63	0.63	0.99*	0.32	0.00	0.32
42.85	0.63	0.63	0.99*	0.32	0.00	0.32
42.90	0.63	0.63	0.99*	0.32	0.00	0.32
42.95	0.63	0.63	0.99*	0.32	0.00	0.32
43.00	0.63	0.63	0.99*	0.32	0.00	0.32
43.05	0.63	0.63	0.99*	0.32	0.00	0.32
43.10	0.63	0.63	0.99*	0.32	0.00	0.32
43.15	0.63	0.63	0.99*	0.31	0.00	0.31
43.20	0.63	0.63	0.99*	0.31	0.00	0.31
43.25	0.63	0.63	0.99*	0.31	0.00	0.31
43.30	0.63	0.63	0.99*	0.31	0.00	0.31
43.35	0.63	0.63	0.99*	0.31	0.00	0.31
43.40	0.63	0.63	0.99*	0.31	0.00	0.31
43.45	0.63	0.63	0.99*	0.30	0.00	0.30
43.50	0.63	0.63	0.99*	0.30	0.00	0.30
43.55	0.63	0.63	0.99*	0.30	0.00	0.30
43.60	0.63	0.63	0.99*	0.30	0.00	0.30
43.65	0.63	0.63	0.99*	0.29	0.00	0.29
43.70	0.62	0.63	0.99*	0.29	0.00	0.29
43.75	0.62	0.63	0.99*	0.29	0.00	0.29

43.80	0.62	0.63	0.99*	0.28	0.00	0.28
43.85	0.62	0.63	0.99*	0.28	0.00	0.28
43.90	0.62	0.63	0.99*	0.28	0.00	0.28
43.95	0.62	0.63	0.99*	0.27	0.00	0.27
44.00	0.62	0.63	0.99*	0.27	0.00	0.27
44.05	0.62	0.63	0.99*	0.27	0.00	0.27
44.10	0.62	0.63	0.99*	0.26	0.00	0.26
44.15	0.62	0.63	0.99*	0.26	0.00	0.26
44.20	0.62	0.63	0.99*	0.25	0.00	0.25
44.25	0.61	0.63	0.97*	0.25	0.00	0.25
44.30	0.56	0.63	0.89*	0.24	0.00	0.24
44.35	0.53	0.63	0.85*	0.24	0.00	0.24
44.40	0.51	0.63	0.82*	0.23	0.00	0.23
44.45	0.50	0.63	0.80*	0.23	0.00	0.23
44.50	0.49	0.63	0.78*	0.23	0.00	0.23
44.55	0.48	0.63	0.77*	0.22	0.00	0.22
44.60	0.47	0.63	0.75*	0.22	0.00	0.22
44.65	0.46	0.63	0.74*	0.21	0.00	0.21
44.70	0.46	0.63	0.73*	0.20	0.00	0.20
44.75	0.45	0.63	0.72*	0.20	0.00	0.20
44.80	0.44	0.63	0.71*	0.19	0.00	0.19
44.85	0.44	0.63	0.70*	0.19	0.00	0.19
44.90	0.43	0.63	0.69*	0.18	0.00	0.18
44.95	0.43	0.63	0.69*	0.18	0.00	0.18
45.00	0.42	0.63	0.68*	0.17	0.00	0.17
45.05	0.42	0.63	0.68*	0.16	0.00	0.16
45.10	0.43	0.63	0.68*	0.16	0.00	0.16
45.15	0.43	0.63	0.69*	0.15	0.00	0.15
45.20	0.44	0.62	0.70*	0.15	0.00	0.15
45.25	0.44	0.62	0.71*	0.14	0.00	0.14
45.30	0.45	0.62	0.72*	0.14	0.00	0.14
45.35	0.45	0.62	0.73*	0.13	0.00	0.13
45.40	0.46	0.62	0.74*	0.12	0.00	0.12
45.45	0.47	0.62	0.75*	0.12	0.00	0.12
45.50	0.47	0.62	0.76*	0.11	0.00	0.11
45.55	0.48	0.62	0.78*	0.11	0.00	0.11
45.60	0.49	0.62	0.79*	0.10	0.00	0.10
45.65	0.51	0.62	0.81*	0.10	0.00	0.10
45.70	0.52	0.62	0.84*	0.09	0.00	0.09
45.75	0.55	0.62	0.88*	0.09	0.00	0.09
45.80	0.59	0.62	0.94*	0.08	0.00	0.08
45.85	0.62	0.62	1.00*	0.08	0.00	0.08
45.90	0.62	0.62	1.00*	0.08	0.00	0.08
45.95	0.62	0.62	1.00*	0.07	0.00	0.07
46.00	0.62	0.62	1.00*	0.07	0.00	0.07
46.05	0.62	0.62	1.00*	0.06	0.00	0.06
46.10	0.62	0.62	1.00*	0.06	0.00	0.06
46.15	0.62	0.62	1.00*	0.06	0.00	0.06

46.20	0.62	0.62	1.00*	0.05	0.00	0.05
46.25	0.62	0.62	1.00*	0.05	0.00	0.05
46.30	0.62	0.62	1.00*	0.05	0.00	0.05
46.35	0.62	0.62	1.00*	0.04	0.00	0.04
46.40	0.62	0.62	1.00*	0.04	0.00	0.04
46.45	0.62	0.62	1.00*	0.04	0.00	0.04
46.50	0.62	0.62	1.00*	0.03	0.00	0.03
46.55	0.62	0.62	1.00*	0.03	0.00	0.03
46.60	0.62	0.62	1.00*	0.03	0.00	0.03
46.65	0.62	0.62	1.00*	0.02	0.00	0.02
46.70	0.62	0.62	1.00*	0.02	0.00	0.02
46.75	0.62	0.62	1.00*	0.02	0.00	0.02
46.80	0.62	0.62	1.00*	0.02	0.00	0.02
46.85	0.62	0.62	1.00*	0.02	0.00	0.02
46.90	0.62	0.62	1.00*	0.02	0.00	0.02
46.95	0.62	0.62	1.00*	0.01	0.00	0.01
47.00	0.62	0.62	1.00*	0.01	0.00	0.01
47.05	0.62	0.62	1.00*	0.01	0.00	0.01
47.10	0.62	0.62	1.00*	0.01	0.00	0.01
47.15	0.62	0.62	1.00*	0.01	0.00	0.01
47.20	0.62	0.62	1.00*	0.01	0.00	0.01
47.25	0.62	0.62	1.00*	0.01	0.00	0.01
47.30	0.62	0.62	1.00	0.01	0.00	0.01
47.35	0.62	0.62	1.00	0.01	0.00	0.01
47.40	0.62	0.62	1.00	0.00	0.00	0.00
47.45	0.62	0.62	1.00	0.00	0.00	0.00
47.50	0.62	0.62	1.00	0.00	0.00	0.00
47.55	0.62	0.62	1.00	0.00	0.00	0.00
47.60	0.62	0.62	1.00	0.00	0.00	0.00
47.65	0.62	0.62	1.00	0.00	0.00	0.00
47.70	0.62	0.62	1.00	0.00	0.00	0.00
47.75	0.62	0.62	1.00	0.00	0.00	0.00
47.80	0.62	0.62	1.00	0.00	0.00	0.00
47.85	0.62	0.62	1.00	0.00	0.00	0.00
47.90	0.62	0.62	1.00	0.00	0.00	0.00
47.95	0.62	0.62	1.00	0.00	0.00	0.00
48.00	0.62	0.62	1.00	0.00	0.00	0.00
48.05	0.62	0.62	1.00	0.00	0.00	0.00
48.10	0.62	0.62	1.00	0.00	0.00	0.00
48.15	0.62	0.62	1.00	0.00	0.00	0.00
48.20	0.62	0.61	1.00	0.00	0.00	0.00
48.25	0.62	0.61	1.00	0.00	0.00	0.00
48.30	0.62	0.61	1.00	0.00	0.00	0.00
48.35	0.62	0.61	1.00	0.00	0.00	0.00
48.40	0.62	0.61	1.00	0.00	0.00	0.00
48.45	0.62	0.61	1.00	0.00	0.00	0.00
48.50	0.62	0.61	1.00	0.00	0.00	0.00
48.55	0.62	0.61	1.00	0.00	0.00	0.00

48.60	0.62	0.61	1.00	0.00	0.00	0.00
48.65	0.62	0.61	1.00	0.00	0.00	0.00
48.70	0.62	0.61	1.00	0.00	0.00	0.00
48.75	0.62	0.61	1.00	0.00	0.00	0.00
48.80	0.62	0.61	1.00	0.00	0.00	0.00
48.85	0.62	0.61	1.00	0.00	0.00	0.00
48.90	0.62	0.61	1.00	0.00	0.00	0.00
48.95	0.62	0.61	1.00	0.00	0.00	0.00
49.00	0.61	0.61	1.00	0.00	0.00	0.00
49.05	0.61	0.61	1.00	0.00	0.00	0.00
49.10	0.61	0.61	1.01	0.00	0.00	0.00
49.15	0.61	0.61	1.01	0.00	0.00	0.00
49.20	0.61	0.61	1.01	0.00	0.00	0.00
49.25	0.61	0.61	1.01	0.00	0.00	0.00
49.30	0.61	0.61	1.01	0.00	0.00	0.00
49.35	0.61	0.61	1.01	0.00	0.00	0.00
49.40	0.61	0.61	1.01	0.00	0.00	0.00
49.45	0.61	0.61	1.01	0.00	0.00	0.00
49.50	0.61	0.61	1.01	0.00	0.00	0.00
49.55	0.61	0.61	1.01	0.00	0.00	0.00
49.60	0.61	0.61	1.01	0.00	0.00	0.00
49.65	0.61	0.61	1.01	0.00	0.00	0.00
49.70	0.61	0.61	1.01	0.00	0.00	0.00
49.75	0.61	0.61	1.01	0.00	0.00	0.00
49.80	0.61	0.61	1.01	0.00	0.00	0.00
49.85	0.61	0.61	1.01	0.00	0.00	0.00
49.90	0.61	0.61	1.01	0.00	0.00	0.00
49.95	0.61	0.61	1.01	0.00	0.00	0.00
50.00	0.61	0.61	1.01	0.00	0.00	0.00

---

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

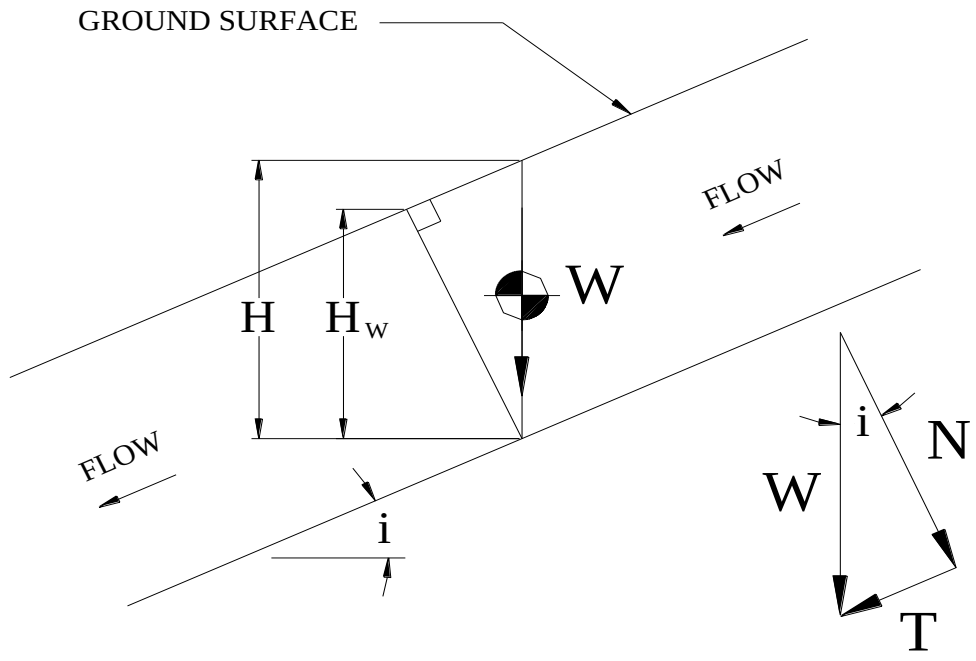
APPENDIX E

STABILITY ANALYSIS

SURFICIAL STABILITY ANALYSIS RESULTS
GLOBAL STABILITY ANALYSIS

SURFICIAL STABILITY OF SATURATED SLOPE - B1@35'

(INFINITE SLOPE ANALYSIS)



INPUT PARAMETERS

Saturated Thickness, H (ft) =	4
Slope Angle, *i* (deg) =	26.6
Cohesion, c (psf) =	220
Friction Angle, ϕ (deg) =	33
Saturated Unit Weight, γ (pcf) =	110

STABILITY CALCULATION PARAMETERS

Tangential (Driving) Force: $T = \gamma H \sin i \cos i$

Effective Normal Force: $N' = \gamma' H \cos^2 i$

Resisting Shear Force = $\tau = N' \tan\phi + c$

$\tau = \gamma' H \cos^2 i \tan\phi + c$

FACTOR OF SAFETY

$$\text{Factor of Safety} = \frac{\text{Resisting Force}}{\text{Driving Force}} = \frac{\tau}{T} = \frac{\gamma' H \cos^2 i \tan\phi + c}{\gamma H \sin i \cos i}$$

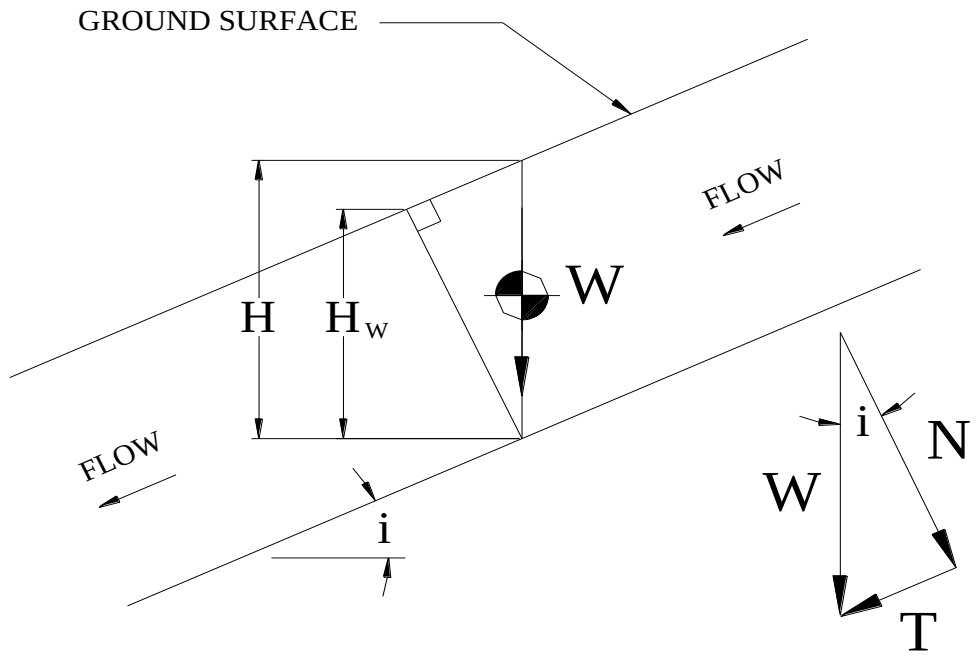
$$\textbf{Factor of Safety} = \frac{\textbf{319}}{\textbf{176}} = \textbf{1.8}$$

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June, 2016

SURFICIAL STABILITY OF SATURATED SLOPE - B1@50'

(INFINITE SLOPE ANALYSIS)



INPUT PARAMETERS

Saturated Thickness, H (ft) =	4
Slope Angle, *i* (deg) =	26.6
Cohesion, c (psf) =	240
Friction Angle, ϕ (deg) =	34
Saturated Unit Weight, γ (pcf) =	105

STABILITY CALCULATION PARAMETERS

Tangential (Driving) Force: $T = \gamma H \sin i \cos i$

Effective Normal Force: $N' = \gamma' H \cos^2 i$

Resisting Shear Force = $\tau = N' \tan\phi + c$

$\tau = \gamma' H \cos^2 i \tan\phi + c$

FACTOR OF SAFETY

$$\text{Factor of Safety} = \frac{\text{Resisting Force}}{\text{Driving Force}} = \frac{\tau}{T} = \frac{\gamma' H \cos^2 i \tan\phi + c}{\gamma H \sin i \cos i}$$

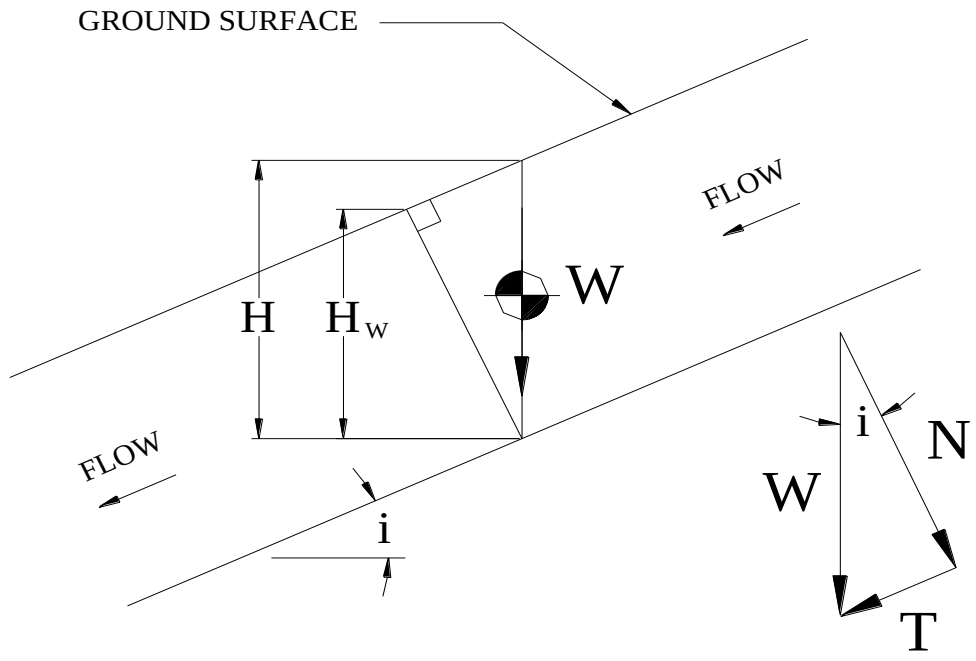
$$\textbf{Factor of Safety} = \frac{\textbf{332}}{\textbf{168}} = \textbf{2.0}$$

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SURFICIAL STABILITY OF SATURATED SLOPE - B2@30'

(INFINITE SLOPE ANALYSIS)



INPUT PARAMETERS

Saturated Thickness, H (ft) =	4
Slope Angle, *i* (deg) =	26.6
Cohesion, c (psf) =	360
Friction Angle, ϕ (deg) =	20
Saturated Unit Weight, γ (pcf) =	120

STABILITY CALCULATION PARAMETERS

Tangential (Driving) Force: $T = \gamma H \sin i \cos i$

Effective Normal Force: $N' = \gamma' H \cos^2 i$

Resisting Shear Force = $\tau = N' \tan\phi + c$

$\tau = \gamma' H \cos^2 i \tan\phi + c$

FACTOR OF SAFETY

$$\text{Factor of Safety} = \frac{\text{Resisting Force}}{\text{Driving Force}} = \frac{\tau}{T} = \frac{\gamma' H \cos^2 i \tan\phi + c}{\gamma H \sin i \cos i}$$

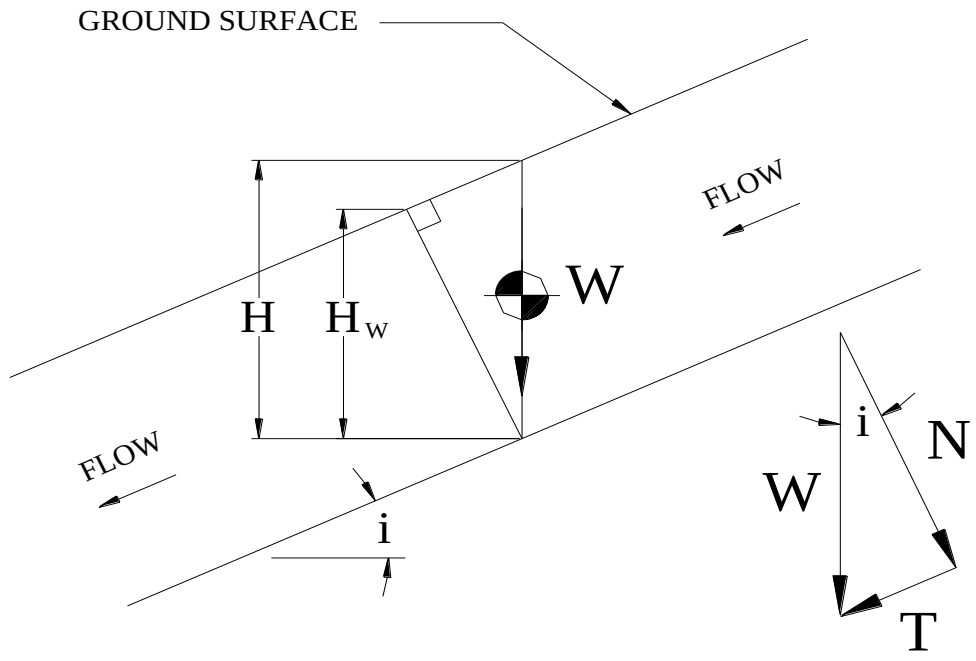
$$\textbf{Factor of Safety} = \frac{\textbf{427}}{\textbf{192}} = \textbf{2.2}$$

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SURFICIAL STABILITY OF SATURATED SLOPE - B3@60'

(INFINITE SLOPE ANALYSIS)



INPUT PARAMETERS

Saturated Thickness, H (ft) =	4
Slope Angle, *i* (deg) =	26.6
Cohesion, c (psf) =	270
Friction Angle, ϕ (deg) =	32
Saturated Unit Weight, γ (pcf) =	104

STABILITY CALCULATION PARAMETERS

Tangential (Driving) Force: $T = \gamma H \sin i \cos i$

Effective Normal Force: $N' = \gamma' H \cos^2 i$

Resisting Shear Force = $\tau = N' \tan\phi + c$

$\tau = \gamma' H \cos^2 i \tan\phi + c$

FACTOR OF SAFETY

$$\text{Factor of Safety} = \frac{\text{Resisting Force}}{\text{Driving Force}} = \frac{\tau}{T} = \frac{\gamma' H \cos^2 i \tan\phi + c}{\gamma H \sin i \cos i}$$

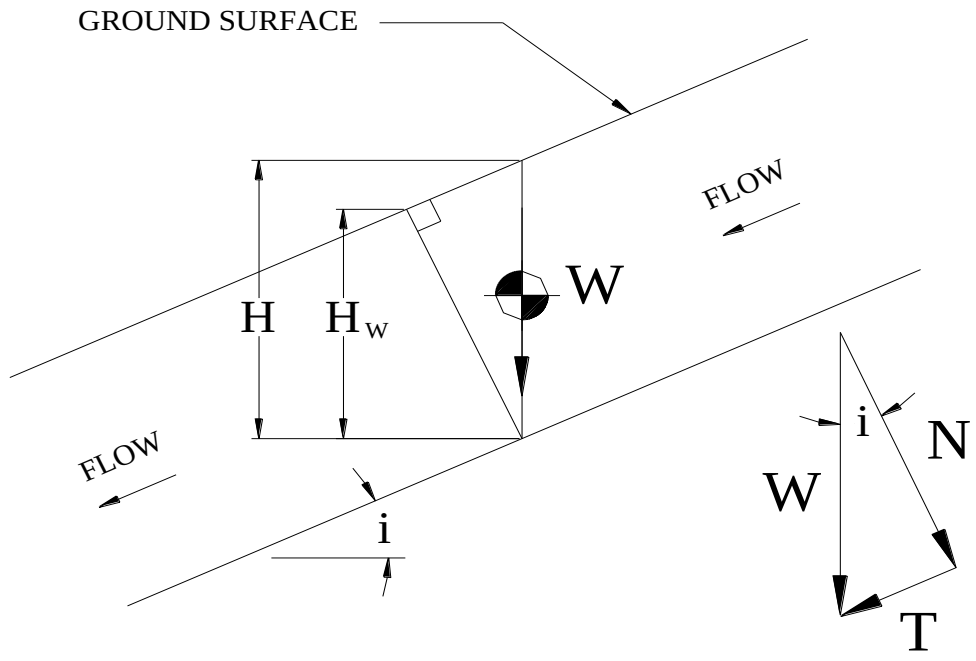
$$\textbf{Factor of Safety} = \frac{\textbf{353}}{\textbf{167}} = \textbf{2.1}$$

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SURFICIAL STABILITY OF SATURATED SLOPE - B1@49'

(INFINITE SLOPE ANALYSIS)



INPUT PARAMETERS

Saturated Thickness, H (ft) =	4
Slope Angle, *i* (deg) =	26.6
Cohesion, c (psf) =	120
Friction Angle, ϕ (deg) =	34
Saturated Unit Weight, γ (pcf) =	133

STABILITY CALCULATION PARAMETERS

Tangential (Driving) Force: $T = \gamma H \sin i \cos i$

Effective Normal Force: $N' = \gamma' H \cos^2 i$

Resisting Shear Force = $\tau = N' \tan\phi + c$

$\tau = \gamma' H \cos^2 i \tan\phi + c$

FACTOR OF SAFETY

$$\text{Factor of Safety} = \frac{\text{Resisting Force}}{\text{Driving Force}} = \frac{\tau}{T} = \frac{\gamma' H \cos^2 i \tan\phi + c}{\gamma H \sin i \cos i}$$

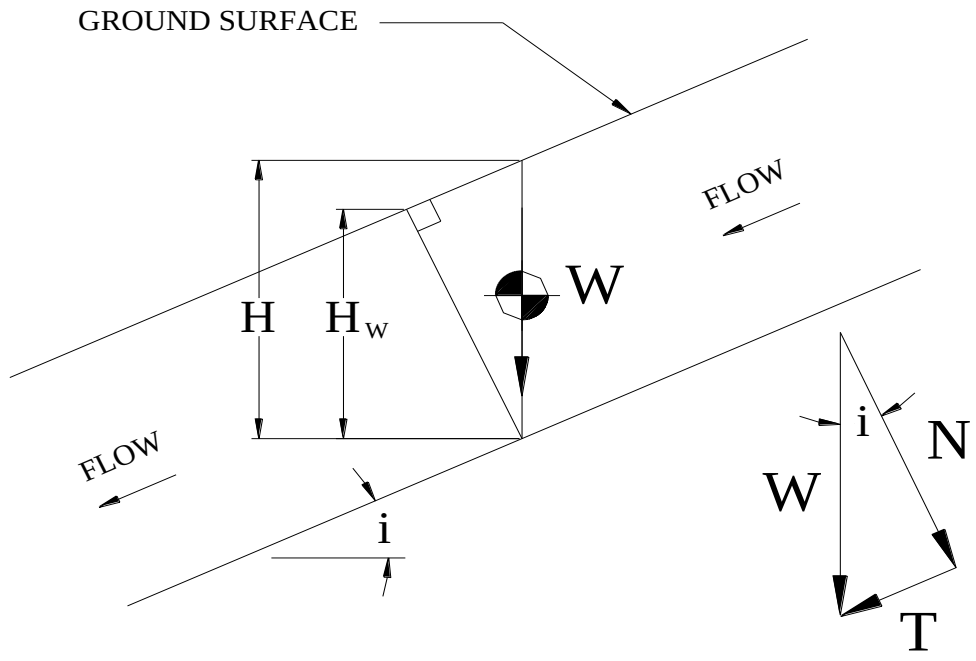
$$\textbf{Factor of Safety} = \frac{\textbf{272}}{\textbf{213}} = \textbf{1.3}$$

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SURFICIAL STABILITY OF SATURATED SLOPE - B3@12'

(INFINITE SLOPE ANALYSIS)



INPUT PARAMETERS

Saturated Thickness, H (ft) =	4
Slope Angle, *i* (deg) =	26.6
Cohesion, c (psf) =	80
Friction Angle, ϕ (deg) =	31
Saturated Unit Weight, γ (pcf) =	128

STABILITY CALCULATION PARAMETERS

Tangential (Driving) Force: $T = \gamma H \sin i \cos i$

Effective Normal Force: $N' = \gamma' H \cos^2 i$

Resisting Shear Force = $\tau = N' \tan\phi + c$

$\tau = \gamma' H \cos^2 i \tan\phi + c$

FACTOR OF SAFETY

$$\text{Factor of Safety} = \frac{\text{Resisting Force}}{\text{Driving Force}} = \frac{\tau}{T} = \frac{\gamma' H \cos^2 i \tan\phi + c}{\gamma H \sin i \cos i}$$

$$\textbf{Factor of Safety} = \frac{\textbf{206}}{\textbf{205}} = \textbf{1.0}$$

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June, 2016

XSTABL File: 16G63-1 6-23-16 12:08

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*                using the              *
*            Method of Slices           *
*                                       *
*        Copyright (C) 1992 - 2013      *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.209                 96 - 2086 *
*****************************************
```

Problem Description : Circular Section 1

SEGMENT BOUNDARY COORDINATES

---

4 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1571.0	115.0	1545.0	1
2	115.0	1545.0	920.0	1541.0	1
3	920.0	1541.0	978.0	1511.0	1
4	978.0	1511.0	1130.0	1507.0	1

ISOTROPIC Soil Parameters

---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Water Constant (psf)	Surface No.

1 110.0 120.0 200.0 33.00 .000 .0
0

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 978.0 ft
and x = 978.0 ft

Each surface terminates between x = 900.0 ft
and x = 920.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

4.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 20 coordinate points

Point	x-surf	y-surf

No.	(ft)	(ft)
1	978.00	1511.00
2	974.01	1510.74
3	970.01	1510.71
4	966.01	1510.91
5	962.04	1511.33
6	958.09	1511.97
7	954.18	1512.84
8	950.33	1513.92
9	946.55	1515.22
10	942.84	1516.73
11	939.23	1518.44
12	935.72	1520.36
13	932.32	1522.47
14	929.05	1524.77
15	925.91	1527.25
16	922.92	1529.91
17	920.08	1532.72
18	917.40	1535.70
19	914.90	1538.81
20	913.31	1541.03

**** Simplified BISHOP FOS = 2.117 ****

The following is a summary of the TEN most critical surfaces

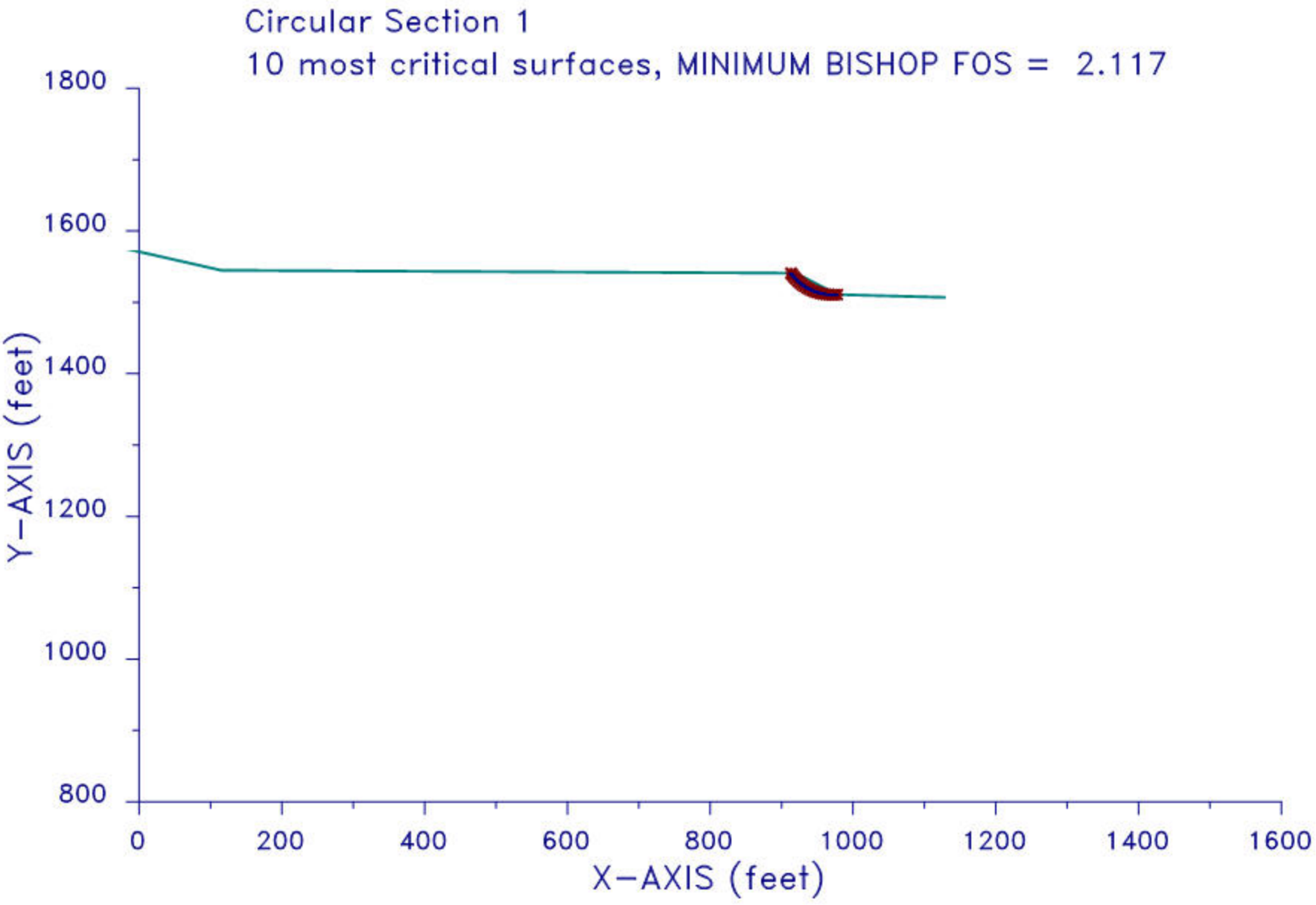
Problem Description : Circular Section 1

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	2.117	971.47	1581.88	71.18	978.00	913.31	3.767E+06
2.	2.119	971.75	1579.51	68.79	978.00	915.04	3.445E+06
3.	2.120	971.55	1578.13	67.44	978.00	915.44	3.355E+06
4.	2.121	974.81	1586.84	75.91	978.00	914.34	3.625E+06
5.	2.121	974.21	1584.29	73.39	978.00	914.96	3.481E+06
6.	2.122	975.29	1590.02	79.07	978.00	913.24	3.868E+06

7.	2.127	971.86	1588.00	77.24	978.00	910.81	4.334E+06
8.	2.127	970.99	1585.34	74.67	978.00	910.93	4.255E+06
9.	2.130	969.19	1580.24	69.80	978.00	911.42	4.097E+06
10.	2.132	968.17	1576.38	66.12	978.00	912.35	3.892E+06

* * * END OF FILE * * *

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XSTABL File: 16G63-1S 6-23-16 12:09

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*                using the              *
*            Method of Slices           *
*                                       *
*        Copyright (C) 1992 - 2013      *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.209                 96 - 2086 *
*****************************************
```

Problem Description : Seismic Section 1

SEGMENT BOUNDARY COORDINATES

---

4 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1571.0	115.0	1545.0	1
2	115.0	1545.0	920.0	1541.0	1
3	920.0	1541.0	978.0	1511.0	1
4	978.0	1511.0	1130.0	1507.0	1

ISOTROPIC Soil Parameters

---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Water Constant (psf)	Surface No.

1 110.0 120.0 200.0 33.00 .000 .0
0

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 978.0 ft
and x = 978.0 ft

Each surface terminates between x = 900.0 ft
and x = 920.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

4.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	978.00	1511.00
2	974.01	1510.78
3	970.01	1510.78
4	966.01	1510.98
5	962.03	1511.39
6	958.08	1512.00
7	954.16	1512.82
8	950.30	1513.85
9	946.49	1515.07
10	942.75	1516.49
11	939.09	1518.11
12	935.52	1519.91
13	932.05	1521.89
14	928.68	1524.06
15	925.44	1526.40
16	922.32	1528.90
17	919.33	1531.56
18	916.49	1534.38
19	913.80	1537.33
20	911.26	1540.43
21	910.81	1541.05

**** Simplified BISHOP FOS = 1.555 ****

The following is a summary of the TEN most critical surfaces

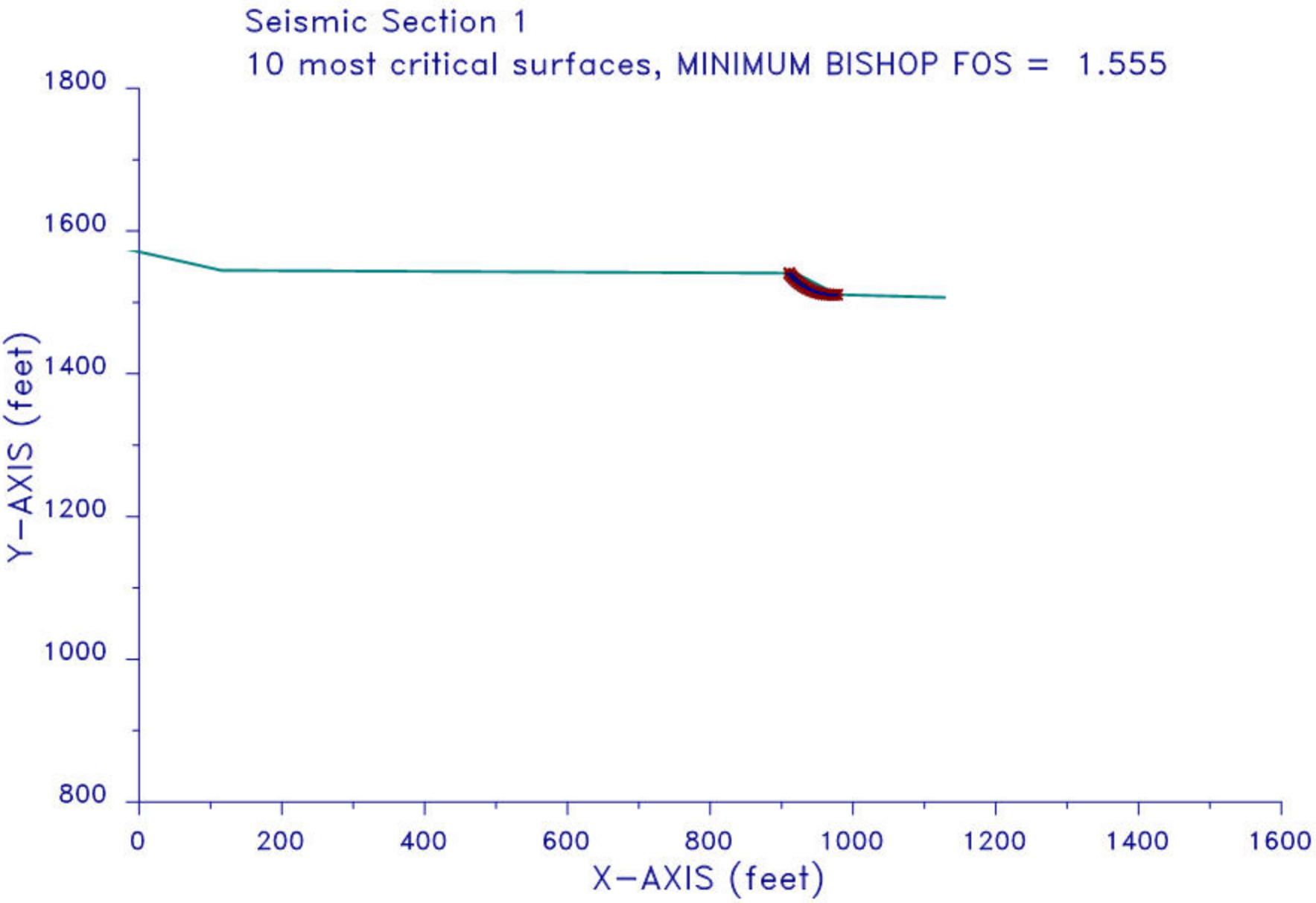
Problem Description : Seismic Section 1

FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)

1.	1.555	971.86	1588.00	77.24	978.00	910.81	4.151E+06
2.	1.556	970.99	1585.34	74.67	978.00	910.93	4.076E+06
3.	1.558	971.47	1581.88	71.18	978.00	913.31	3.607E+06
4.	1.559	976.80	1599.60	88.60	978.00	910.29	4.406E+06
5.	1.559	975.29	1590.02	79.07	978.00	913.24	3.702E+06
6.	1.561	969.19	1580.24	69.80	978.00	911.42	3.926E+06
7.	1.563	974.81	1586.84	75.91	978.00	914.34	3.469E+06
8.	1.564	971.75	1579.51	68.79	978.00	915.04	3.298E+06
9.	1.564	975.53	1603.81	92.85	978.00	907.12	5.146E+06
10.	1.564	973.67	1600.17	89.28	978.00	906.75	5.148E+06

* * * END OF FILE * * *

16G63-1S 6-23-16 12:09



XSTABL File: 16G63-2 6-22-16 8:43

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*****************************************
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*                                       *
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*****************************************
```

Problem Description : Circular Section 2

SEGMENT BOUNDARY COORDINATES

---

9 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1566.0	113.0	1566.0	1
2	113.0	1566.0	125.0	1568.0	1
3	125.0	1568.0	141.0	1570.0	1
4	141.0	1570.0	203.0	1590.0	1
5	203.0	1590.0	276.0	1625.0	1
6	276.0	1625.0	314.0	1630.0	1
7	314.0	1630.0	342.0	1630.0	1
8	342.0	1630.0	347.0	1633.0	1
9	347.0	1633.0	500.0	1633.0	1

ISOTROPIC Soil Parameters

---

1 Soil unit(s) specified

Soil	Unit Weight	Cohesion	Friction	Pore Pressure Water

Unit No.	Moist (pcf)	Sat. (pcf)	Intercept (psf)	Angle (deg)	Parameter Ru	Constant (psf)	Surface No.
1	100.0	120.0	200.0	33.00	.000	.0	0

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 125.0 ft
and x = 125.0 ft

Each surface terminates between x = 350.0 ft
and x = 450.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

7.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 36 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	125.00	1568.00
2	132.00	1567.99
3	139.00	1568.09
4	146.00	1568.32
5	152.99	1568.66
6	159.97	1569.12
7	166.95	1569.70
8	173.91	1570.40
9	180.87	1571.22
10	187.80	1572.15
11	194.72	1573.20
12	201.62	1574.37
13	208.51	1575.66
14	215.36	1577.06
15	222.20	1578.58
16	229.00	1580.21
17	235.78	1581.96
18	242.53	1583.83
19	249.24	1585.81
20	255.92	1587.90
21	262.57	1590.11
22	269.17	1592.42
23	275.74	1594.85
24	282.26	1597.39
25	288.74	1600.05
26	295.17	1602.81
27	301.55	1605.68
28	307.89	1608.65
29	314.17	1611.74
30	320.40	1614.93
31	326.58	1618.22
32	332.70	1621.62
33	338.76	1625.13
34	344.76	1628.73
35	350.70	1632.44
36	351.56	1633.00

**** Simplified BISHOP FOS = 2.528 ****

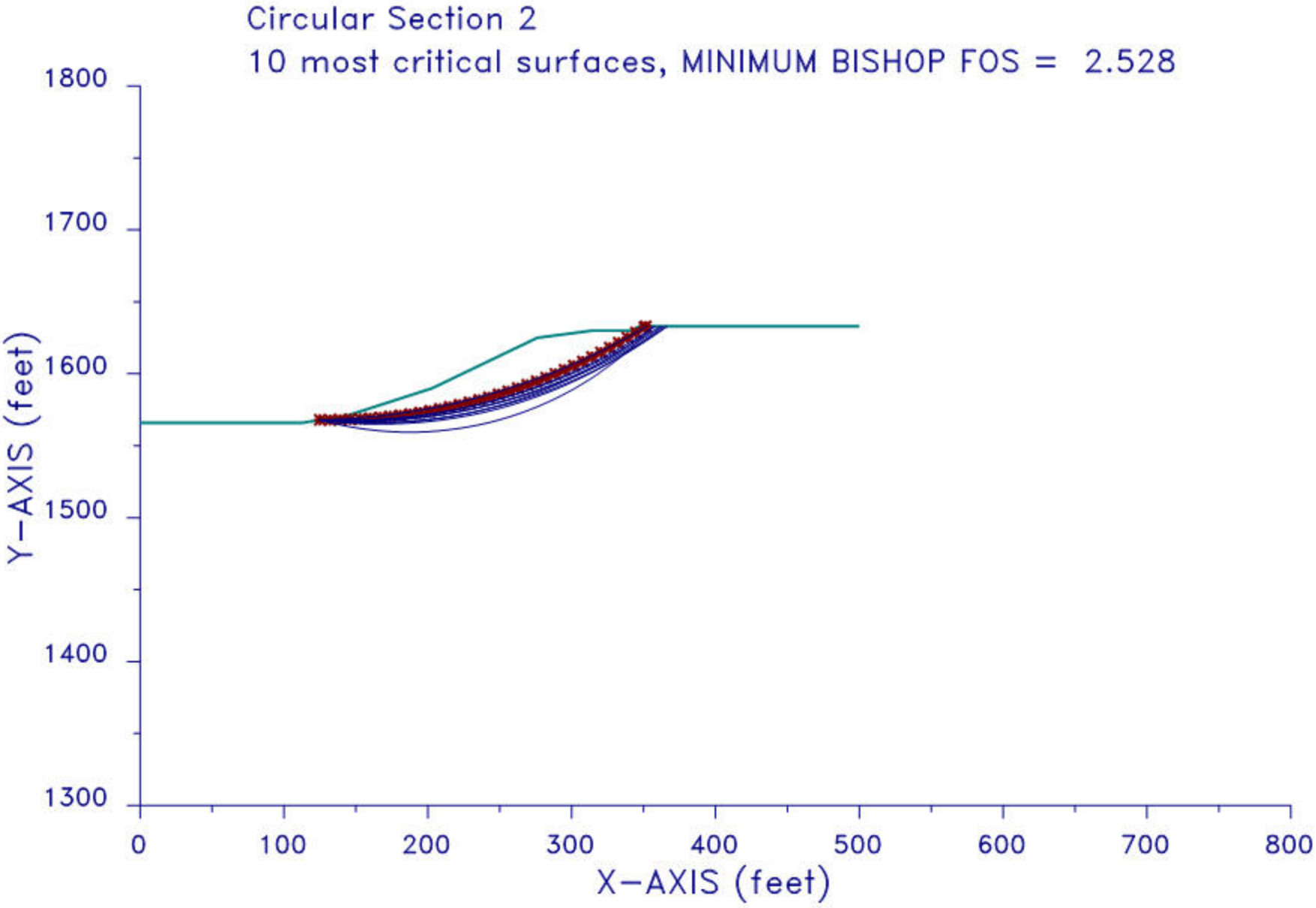
The following is a summary of the TEN most critical surfaces

Problem Description : Circular Section 2

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	2.528	129.28	1980.52	412.54	125.00	351.56	1.127E+08
2.	2.538	162.41	1883.15	317.36	125.00	357.70	1.153E+08
3.	2.553	143.10	1953.02	385.45	125.00	357.83	1.217E+08
4.	2.560	115.18	2031.11	463.22	125.00	352.06	1.182E+08
5.	2.581	142.69	1965.29	397.68	125.00	361.21	1.292E+08
6.	2.587	150.57	1942.52	375.40	125.00	362.97	1.302E+08
7.	2.588	167.42	1883.26	318.10	125.00	363.78	1.261E+08
8.	2.589	187.31	1791.31	231.84	125.00	356.69	1.092E+08
9.	2.609	161.23	1914.52	348.41	125.00	366.38	1.338E+08
10.	2.611	151.30	1949.27	382.17	125.00	365.84	1.363E+08

* * * END OF FILE * * *

16G63-2 6-22-16 8:43



XSTABL File: 16G63-2S 6-22-16 8:48

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Problem Description : Seismic Section 2

SEGMENT BOUNDARY COORDINATES

---

9 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1566.0	113.0	1566.0	1
2	113.0	1566.0	125.0	1568.0	1
3	125.0	1568.0	141.0	1570.0	1
4	141.0	1570.0	203.0	1590.0	1
5	203.0	1590.0	276.0	1625.0	1
6	276.0	1625.0	314.0	1630.0	1
7	314.0	1630.0	342.0	1630.0	1
8	342.0	1630.0	347.0	1633.0	1
9	347.0	1633.0	500.0	1633.0	1

ISOTROPIC Soil Parameters

---

1 Soil unit(s) specified

Soil	Unit Weight	Cohesion	Friction	Pore Pressure Water

Unit No.	Moist (pcf)	Sat. (pcf)	Intercept (psf)	Angle (deg)	Parameter Ru	Constant (psf)	Surface No.
1	100.0	120.0	200.0	33.00	.000	.0	0

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 125.0 ft
and x = 125.0 ft

Each surface terminates between x = 350.0 ft
and x = 450.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

7.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 37 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	125.00	1568.00
2	131.96	1567.25
3	138.93	1566.66
4	145.92	1566.22
5	152.91	1565.93
6	159.91	1565.80
7	166.91	1565.82
8	173.91	1565.99
9	180.90	1566.33
10	187.89	1566.81
11	194.86	1567.45
12	201.81	1568.24
13	208.75	1569.19
14	215.66	1570.28
15	222.55	1571.53
16	229.41	1572.94
17	236.23	1574.49
18	243.02	1576.19
19	249.77	1578.04
20	256.48	1580.05
21	263.14	1582.19
22	269.76	1584.49
23	276.32	1586.93
24	282.82	1589.51
25	289.27	1592.24
26	295.66	1595.11
27	301.98	1598.12
28	308.23	1601.26
29	314.41	1604.55
30	320.52	1607.97
31	326.55	1611.52
32	332.50	1615.21
33	338.37	1619.02
34	344.15	1622.97
35	349.85	1627.04
36	355.45	1631.23
37	357.70	1633.00

**** Simplified BISHOP FOS = 1.666 ****

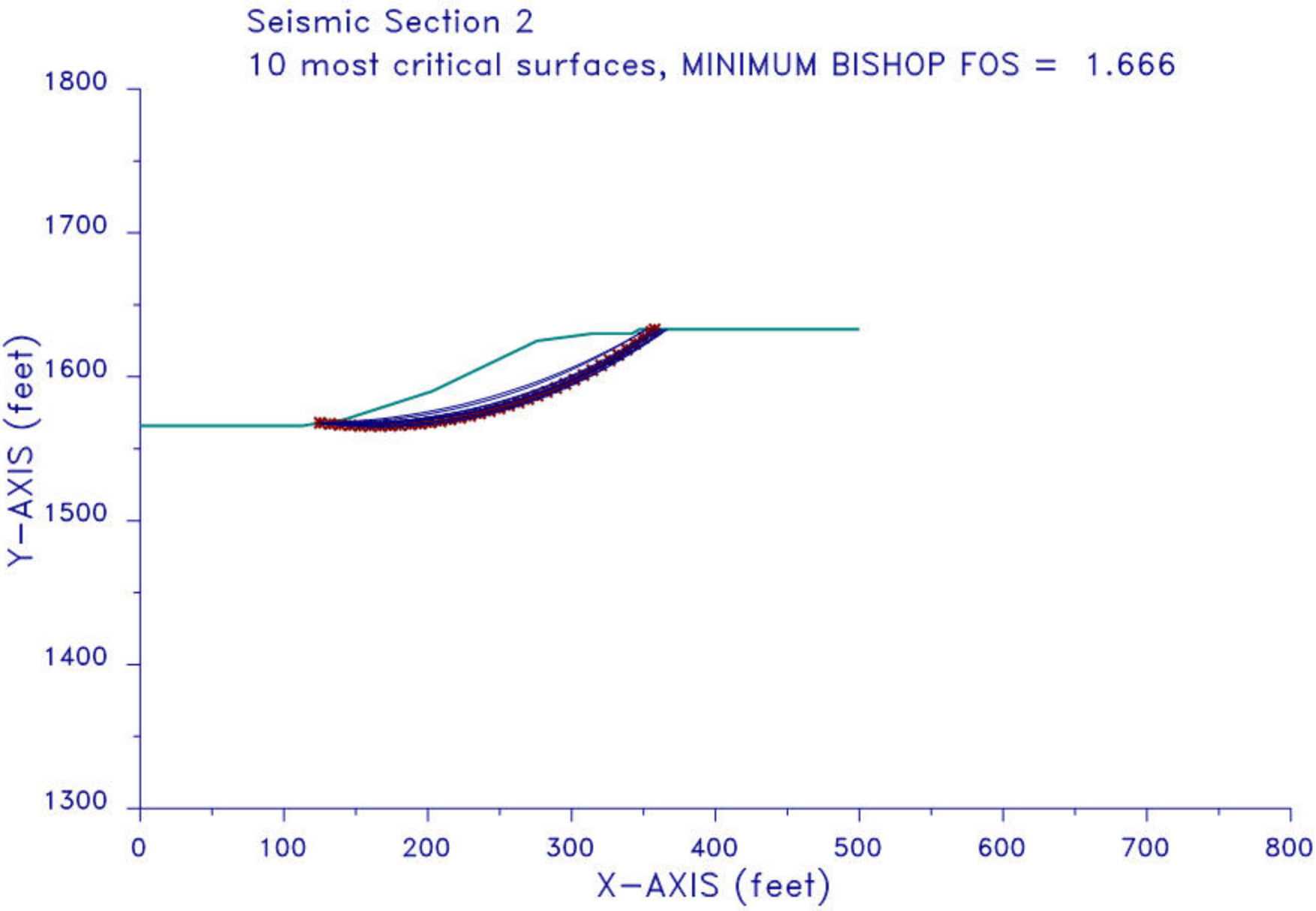
The following is a summary of the TEN most critical surfaces

Problem Description : Seismic Section 2

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.666	162.41	1883.15	317.36	125.00	357.70	1.112E+08
2.	1.667	129.28	1980.52	412.54	125.00	351.56	1.085E+08
3.	1.672	143.10	1953.02	385.45	125.00	357.83	1.173E+08
4.	1.683	142.69	1965.29	397.68	125.00	361.21	1.246E+08
5.	1.684	150.57	1942.52	375.40	125.00	362.97	1.255E+08
6.	1.686	115.18	2031.11	463.22	125.00	352.06	1.139E+08
7.	1.687	167.42	1883.26	318.10	125.00	363.78	1.217E+08
8.	1.693	151.30	1949.27	382.17	125.00	365.84	1.316E+08
9.	1.694	161.23	1914.52	348.41	125.00	366.38	1.291E+08
10.	1.696	149.00	1959.27	392.01	125.00	366.21	1.334E+08

* * * END OF FILE * * *

16G63-2S 6-22-16 8:48



XSTABL File: 16G63-3 6-22-16 8:46

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*****************************************
```

Problem Description : Circular Section 3

SEGMENT BOUNDARY COORDINATES

---

8 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1634.0	45.0	1634.0	1
2	45.0	1634.0	73.0	1632.0	1
3	73.0	1632.0	79.0	1634.0	1
4	79.0	1634.0	225.0	1634.0	1
5	225.0	1634.0	261.0	1615.0	1
6	261.0	1615.0	363.0	1615.0	1
7	363.0	1615.0	528.0	1552.0	1
8	528.0	1552.0	627.0	1552.0	1

ISOTROPIC Soil Parameters

---

1 Soil unit(s) specified

Soil Unit	Unit Weight Moist	Sat.	Cohesion Intercept	Friction Angle	Pore Pressure Parameter	Water Surface Constant

No.	(pcf)	(pcf)	(psf)	(deg)	Ru	(psf)	No.
1	110.0	120.0	200.0	33.00	.000	.0	0

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 528.0 ft
and x = 528.0 ft

Each surface terminates between x = 79.0 ft
and x = 225.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

9.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface

is specified by 37 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	528.00	1552.00
2	519.00	1552.20
3	510.01	1552.53
4	501.02	1552.99
5	492.04	1553.57
6	483.07	1554.27
7	474.11	1555.11
8	465.16	1556.07
9	456.22	1557.15
10	447.30	1558.36
11	438.40	1559.70
12	429.52	1561.16
13	420.66	1562.74
14	411.83	1564.45
15	403.02	1566.29
16	394.23	1568.24
17	385.47	1570.32
18	376.75	1572.53
19	368.05	1574.85
20	359.39	1577.30
21	350.77	1579.87
22	342.18	1582.56
23	333.63	1585.37
24	325.12	1588.29
25	316.65	1591.34
26	308.23	1594.51
27	299.85	1597.80
28	291.52	1601.20
29	283.23	1604.72
30	275.00	1608.36
31	266.82	1612.11
32	258.69	1615.97
33	250.62	1619.95
34	242.60	1624.04
35	234.65	1628.25
36	226.75	1632.57
37	224.21	1634.00

**** Simplified BISHOP FOS = 3.113 ****

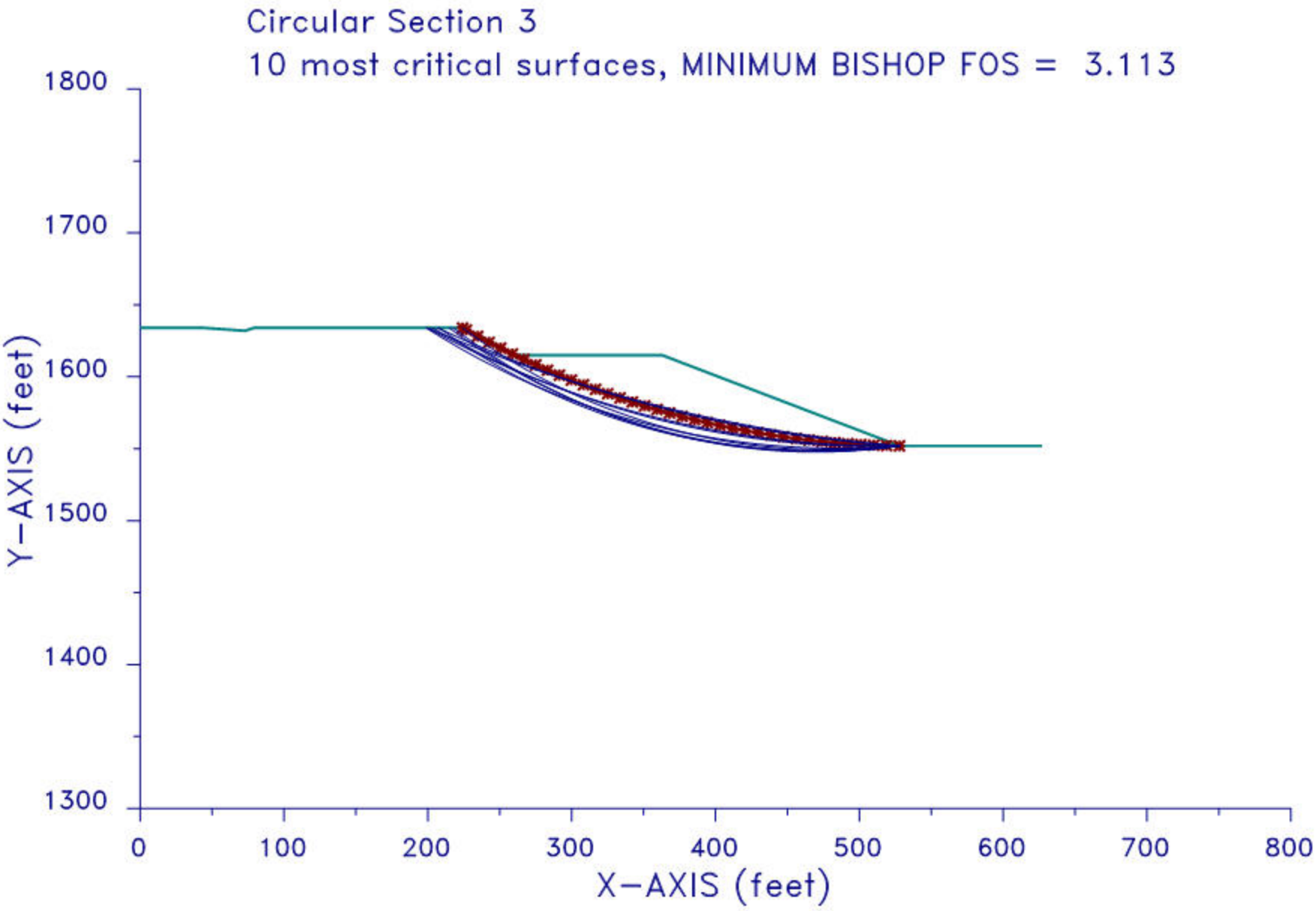
The following is a summary of the TEN most critical surfaces

Problem Description : Circular Section 3

	FOS (BISHOP)	Circle Center x-coord (ft)	y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	3.113	537.91	2192.77	640.85	528.00	224.21	3.075E+08
2.	3.150	479.07	1974.55	425.38	528.00	224.12	2.735E+08
3.	3.154	587.73	2456.42	906.39	528.00	206.70	4.357E+08
4.	3.156	510.38	2166.65	614.90	528.00	203.26	3.825E+08
5.	3.166	519.45	2215.50	663.55	528.00	199.83	4.076E+08
6.	3.170	472.39	1978.69	430.30	528.00	214.92	3.045E+08
7.	3.174	469.83	1960.14	412.26	528.00	217.78	2.925E+08
8.	3.185	471.20	1995.65	447.27	528.00	207.99	3.307E+08
9.	3.186	615.38	2598.92	1050.56	528.00	199.90	5.052E+08
10.	3.189	485.50	2082.64	532.34	528.00	199.00	3.803E+08

* * * END OF FILE * * *

16G63-3 6-22-16 8:46



XSTABL File: 16G63-3S 6-22-16 8:51

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*****************************************
*              X S T A B L              *
*                                       *
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*****************************************
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Problem Description : Seismic Section 3

SEGMENT BOUNDARY COORDINATES

---

8 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1634.0	45.0	1634.0	1
2	45.0	1634.0	73.0	1632.0	1
3	73.0	1632.0	79.0	1634.0	1
4	79.0	1634.0	225.0	1634.0	1
5	225.0	1634.0	261.0	1615.0	1
6	261.0	1615.0	363.0	1615.0	1
7	363.0	1615.0	528.0	1552.0	1
8	528.0	1552.0	627.0	1552.0	1

ISOTROPIC Soil Parameters

---

1 Soil unit(s) specified

Soil Unit	Unit Weight Moist	Unit Weight Sat.	Cohesion Intercept	Friction Angle	Pore Pressure Parameter	Water Surface Constant

No.	(pcf)	(pcf)	(psf)	(deg)	Ru	(psf)	No.
1	110.0	120.0	200.0	33.00	.000	.0	0

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 528.0 ft
and x = 528.0 ft

Each surface terminates between x = 79.0 ft
and x = 225.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

9.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 37 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	528.00	1552.00
2	519.00	1552.20
3	510.01	1552.53
4	501.02	1552.99
5	492.04	1553.57
6	483.07	1554.27
7	474.11	1555.11
8	465.16	1556.07
9	456.22	1557.15
10	447.30	1558.36
11	438.40	1559.70
12	429.52	1561.16
13	420.66	1562.74
14	411.83	1564.45
15	403.02	1566.29
16	394.23	1568.24
17	385.47	1570.32
18	376.75	1572.53
19	368.05	1574.85
20	359.39	1577.30
21	350.77	1579.87
22	342.18	1582.56
23	333.63	1585.37
24	325.12	1588.29
25	316.65	1591.34
26	308.23	1594.51
27	299.85	1597.80
28	291.52	1601.20
29	283.23	1604.72
30	275.00	1608.36
31	266.82	1612.11
32	258.69	1615.97
33	250.62	1619.95
34	242.60	1624.04
35	234.65	1628.25
36	226.75	1632.57
37	224.21	1634.00

**** Simplified BISHOP FOS = 1.880 ****

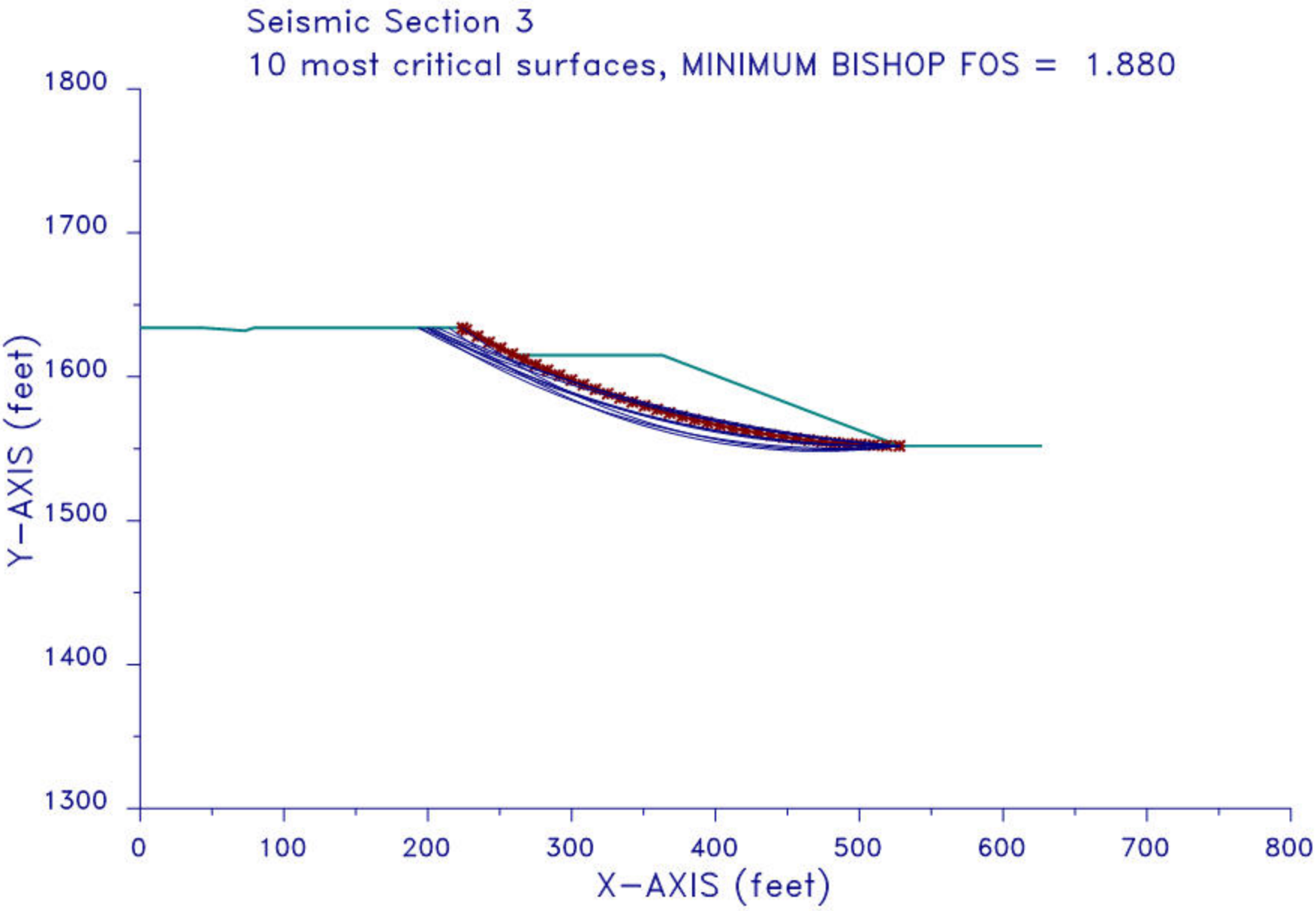
The following is a summary of the TEN most critical surfaces

Problem Description : Seismic Section 3

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.880	537.91	2192.77	640.85	528.00	224.21	2.980E+08
2.	1.885	510.38	2166.65	614.90	528.00	203.26	3.710E+08
3.	1.888	519.45	2215.50	663.55	528.00	199.83	3.953E+08
4.	1.893	587.73	2456.42	906.39	528.00	206.70	4.223E+08
5.	1.895	521.20	2247.50	695.53	528.00	193.44	4.293E+08
6.	1.897	479.07	1974.55	425.38	528.00	224.12	2.654E+08
7.	1.899	485.50	2082.64	532.34	528.00	199.00	3.691E+08
8.	1.903	472.39	1978.69	430.30	528.00	214.92	2.956E+08
9.	1.905	595.31	2544.58	994.86	528.00	194.55	5.025E+08
10.	1.905	615.38	2598.92	1050.56	528.00	199.90	4.899E+08

* * * END OF FILE * * *

16G63-3S 6-22-16 8:51



APPENDIX F

REFERENCES

RMA GeoScience
Every Project Matters | www.rmageoscience.com

APPENDIX F

REFERENCES

1. Squires, R.L. (1997), Geologic profile of Simi Valley. In: Havens, P. and B. Appleton (eds.) Simi Valley - A Journey Through Time. Simi Valley Historical Society and Museum. Pp. 293-301

2. Dibblee, Thomas W. (1992), Geologic Map of the Moorpark Quadrangle, Ventura County, California. Dibblee Geology Center Map #DF-40.

3. Bowers, Stephen (1888), Ventura County, California: California Mining Bureau. Report 8: 679-690.

4. Historical Aerials.com copyright 2009-2016 Nationwide Environmental Title Research, LLC. NETR online, Aerial photographs: 1947, 1967, 1969, 1978, 1980, 1994, 2002, 2005, 2009, 2010, 2012.

5. Historical Aerials.com copyright 2009-2016 Nationwide Environmental Title Research, LLC. NETR online, Historic Topos: 1903, 1909, 1912, 1925, 1927, 1937, 1944, 1952, 1963, 1968, 1970, 1978, 1979.

6. California Division of Mines and Geology, Earthquake Fault Zone Map, Moorpark Quadrangle, Effective date May 1, 1999.

7. California Division of Mines and Geology, Seismic Hazard Zones Map, Moorpark Quadrangle, Effective date November 17, 2000.

8. Federal Emergency Management Agency, 2010, Flood Insurance Rate Maps (FIRM) 06111C0816E and 06111C0817E, effective dates January 20, 2010.
9. California Building Standards Commission, 2013 California Building Code.

10. Google Earth, Aerial Photographs, 1989-2015.

11. California Geologic Survey, Special Publication 117 Guidelines for Evaluating and Mitigating Seismic Hazards in California, 2008.

12. State of California, Department of Conservation, http://www.conservation.ca.gov/cgs/Pages/Index.aspx

13. U.S. Geological Survey, U.S. Seismic Design Maps, htpp://earthquake.usgs.gov/research/hazmaps/design.

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PLATES

ALT. "E"

SUMMARY		
	LOTS	GROSS AREA (AC)
ESTATE LOTS (5 AC MIN.)	5	27.37
SINGLE FAMILY RESIDENCE (6,000 SF MIN.) W/STREETS AND SLOPES	133	30.74
RECREATIONAL LOT W/SLOPES	1	3.17
OFFSITE STREETS / SLOPES		6.68
TOTAL		67.96

SCALE: 1"=200'

0 250' 500'

TRACT 5147

LOT 6 LOT 7 LOT 8 LOT 9 LOT 10

Geologic Map

North Hills - Moorpark, CA

RMA GeoScience

Plate 1

RMA Job No:	16-G63-0
Date:	June 2016
Prepared By:	AMS

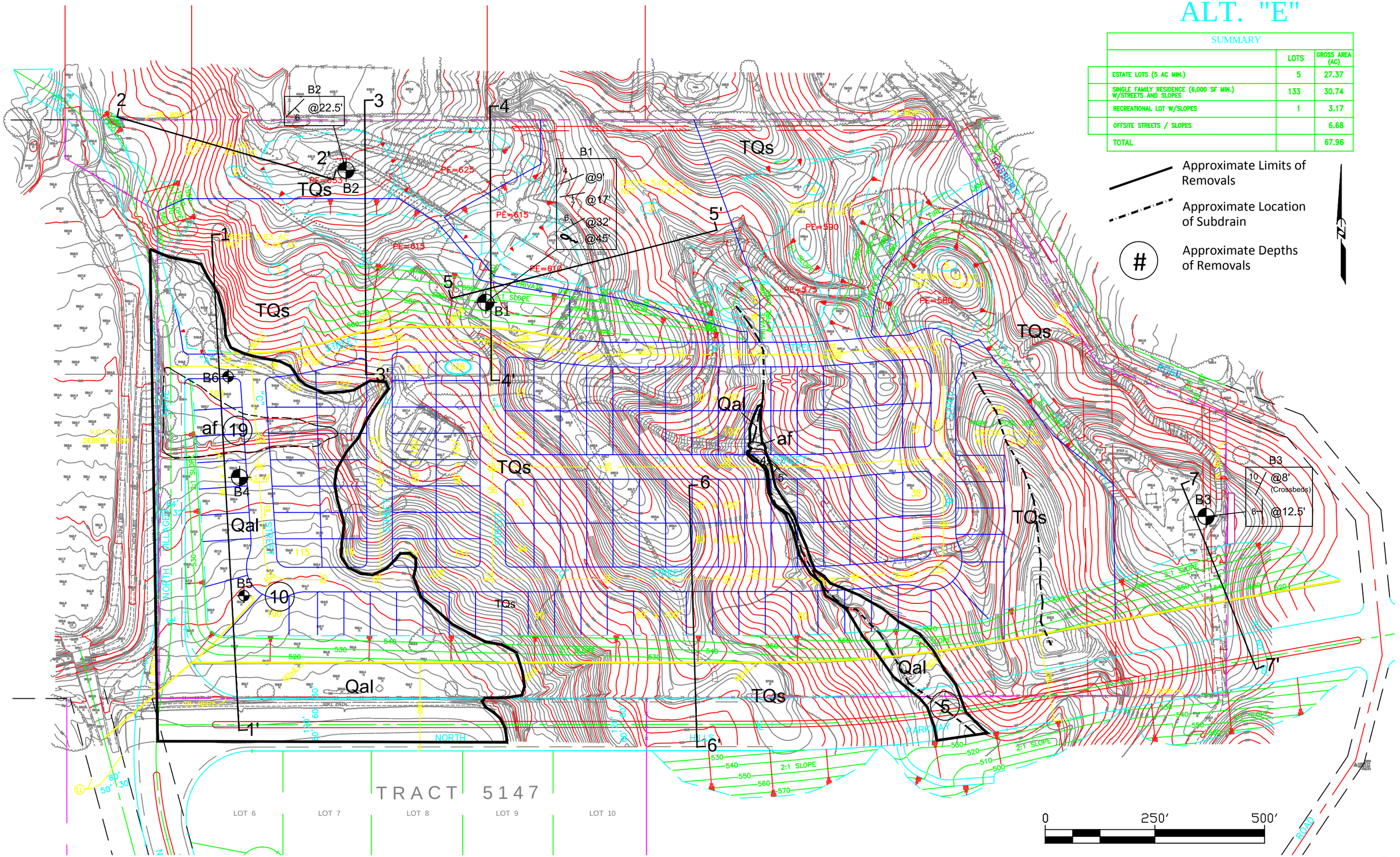
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TOTAL		67.96

Approximate Limits of Removals

Approximate Location of Subdrain

(#) Approximate Depths of Removals



Limits of Removals & Subdrains

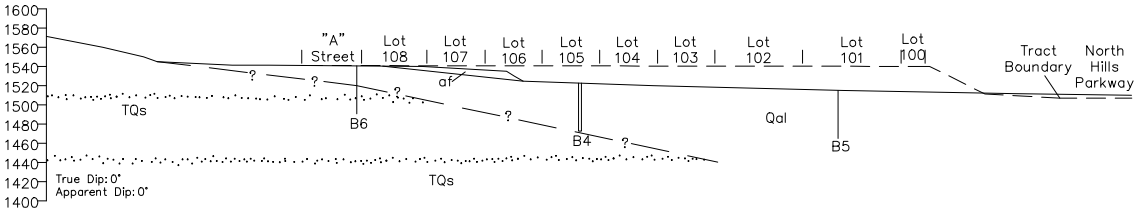
North Hills - Moorpark, CA

RMA GeoScience

Plate 3

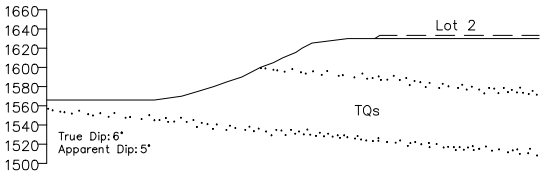
RMA Job No:	16-G63-0
Date:	June 2016
Prepared By:	AMS

1



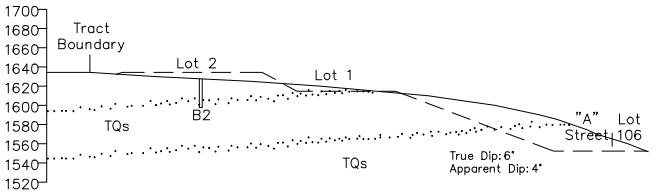
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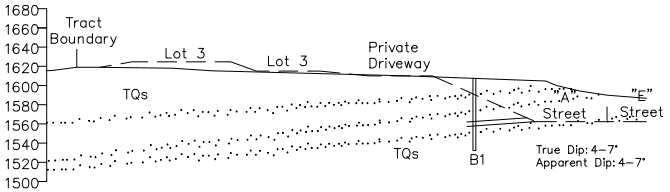
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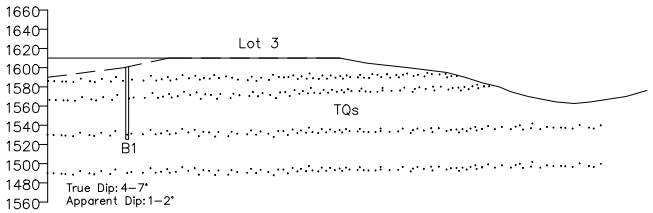
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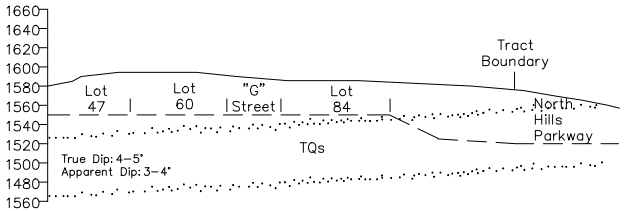
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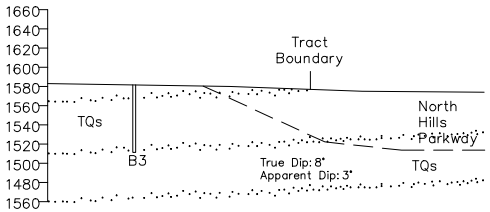
5'

6



6'

7



7'

SCALE: 1"=200'

RMA GeoScience

Geologic Cross Sections

North Hills - Moorpark, CA

Plate 2

RMA Job No:	16-G63-0
Date:	June 2016
Prepared By:	AMS

APPENDIX H
Drainage Report

PRELIMINARY
DRAINAGE REPORT

FOR

Vesting Tentative Tract Map 5972

MOORPARK, CALIFORNIA

Prepared for:

RASSMUSSEN DEVELOPMENT
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DELANE ENGINEERING

2812 Santa Monica Blvd, Suite 206
Santa Monica, CA 90404

Contact Person:
Scott Uhles, P.E., Project Manager
JN 01-100115



October 21, 2015

TABLE OF CONTENTS

PURPOSE OF REPORT **1**

LOCATION **1**

BACKGROUND **2**

METHOD OF ANALYSIS **2**

Hydrology *2*
Hydraulic Analysis *3*
Stormwater/ NPDES Requirements *4*
Detention/ Retention Requirements *4*
100-year Flood Protection *4*

ANALYSIS **4**

HYDROLOGY 4
Existing Condition *4*
Proposed Condition *6*
HYDRAULICS 7
100-YR FLOOD PROTECTION 8
Detention Requirements *8*
100-yr Overflow *8*
NPDES REQUIREMENTS 9

RESULTS **11**

CONCLUSIONS **11**

REFERENCES **12**

APPENDICIES

Appendix A: Existing Conditions
Appendix B: Proposed Conditions
Appendix C: Storm Water BMPs
Appendix D: Hydraulic Calculations
Appendix E: Reference

PURPOSE OF REPORT

The purpose of this report is to outline the existing drainage conditions of the site and present a description of the proposed Project, associated drainage improvements, drainage impacts and necessary mitigation measures. Significant on-site and off-site facilities, as applicable, shall be described and analyzed. This report has been prepared in accordance with the requirements of the City of Moorpark and Ventura County regulations based on the proposed grading and drainage improvement plans for the project site.

LOCATION

The project site is located North of Los Angeles Avenue (State Highway 118), West of Gabbert Road, East and adjacent to the Ventura County Watershed Protection District (VCWPD) Gabbert Rd Debris Basin in the City of Moorpark, California. The approximate geographic position of the project is 32.2886 degrees latitude and -118.9060 degrees longitude. See Figure A below:

Figure A.



BACKGROUND

The owner proposes to develop the subject property which is currently undeveloped terrain and covers an area of approximately 68 acres from into Master Planned Residential Community. The entire property predominantly consists of sparse vegetation over rolling hills and valleys that range in elevation from 1,500 to 1,640 in elevation (NAVD 88).

There are existing improvements on the site that include, graded pads, concrete roadways, an existing residence which include abandoned pool, tennis courts and shed. Along the Southeast corner of the site there are existing High Voltage Transmission lines that rung North -South.

METHOD OF ANALYSIS

The methodology used in this Hydrology report is to show that the proposed project will comply with the guidelines presented in the Ventura County Watershed Protection District Hydrology Manual -2010 and the County of Ventura Storm Water Quality Urban Impact Mitigation Management Plan (SQUIMP), NPDES Permit No. CAS004002, Order 2010-0108. In order to accomplish the following are addressed:

- Improve water quality and mitigate potential water quality impacts caused by the land development, through the implementation of Best Management Practices (BMPs), prior to discharging off-site. Based on the proposed improvements, the development will disturb an area greater than one acre and will add more than 10,000 square feet of impervious surface area.

- Minimize the impacts of the development on the existing drainage system by attenuating the developed condition peak flows to the existing condition peak flows. Mitigation of any increase in flow rate can be achieved by on-site detention.

Hydrology

The hydrologic analysis was based on research that included on-site investigations, review of available existing and proposed storm drain plans, and review of aerial and field surveyed topography. Detailed hydrology maps were prepared based on topography and project site plans in the existing and proposed conditions.

Watershed subarea boundaries were defined based on existing drainage patterns and proposed drainage system layouts. The tributary area of each subarea was calculated to the nearest hundredth of an acre. Points of flow concentration based on drainage patterns

were identified. Site characteristics such as soil number, rainfall zone, and land use were identified.

The hydrology analysis was conducted using available Hydrology Data provided by the VCWPD from their 2003 Calleguas Watershed Hydrology Model. This was used to develop Existing Condition Flow Rates from the project site. The data from the 2003 study was replicated in a VCRat model for the project for the 100-year storm event; a unit flow rate was then calculated and Total Q's for the drainage sub-areas within the limits of the project were calculated. 10-year and 50-year storm event Q's were calculated using Hydrologic Multipliers.

For the Proposed Condition analysis, the Ventura County Watershed Protection District (VCWPD) 2006 Hydrology Manual, VCRat 2.6, and the Tc calculator were used to calculate the proposed developed condition Peak Flows and Volumes. The project was divided into Major sub-areas to design overall drainage intent for Detention/ Retention and Stormwater Quality design.

Hydraulic Analysis

Hydraulic capacity analysis is accomplished using Hydraflow Express Extension for AutoCAD Civil 3D by Autodesk Inc., which uses manning's equations to calculate depth of flow given design flow rates. Local residential and private streets were designed to have at least one (1) dry travel lane available during a ten (10) year frequency storm. Collector streets were designed to have a minimum of one (1) dry travel lane in each direction available during a ten (10) year frequency storm. The road way section was designed so that a Q50 storm occurrence can be contained within the street right-of-way. The onsite catch basins where sized so that the hydraulic grade line within any catch basin may not extend higher than nine (9) inches below the flow line grade elevation at the inlet.

Hydraulic analysis of underground pipeline facilities was performed utilizing the Ventura County TC calculator and AutoCAD Hydraflow Express Extension. The program computes uniform and non-uniform steady flow water surface profiles and pressure gradients in open channels or closed conduits. Pipes are designed to carry the 10-year frequency storm with the intent that pressure manholes for storm drains are avoided. As design progresses, some reaches of the proposed storm drain system may need to be under pressure and in such cases those sections will have rubber gasket joints. In general, pipes are size to carry the design flow at 0.7 the diameter of the conduit. Pipes under pressure are designed so that the hydraulic grade line does not rise above the ground surface and restrict the capacity of the inlets. To meet these requirements the pipes are designed so that the HGL is at least

12 inches below the grate or flow line of the upstream inlet. The maximum velocity in any storm drain system may not exceed twenty (20) feet per second.

Stormwater/ NPDES Requirements

The City of Moorpark requires all new development within the city to incorporate stormwater quality control measures into the proposed improvement plans as part of the County Storm Water Quality Urban Impact Mitigation Management Plan (SQUIMP), NPDES Permit No. CAS004002, Order 2010-0108. Drainage from the proposed project development is subject to this requirement and will be designed in accordance with the Ventura County Technical Guidance Manual, July 2011 per the above-mentioned Order.

Detention/ Retention Requirements

The detention system will follow and meet the requirements of the City of Moorpark, which is to detain the difference between pre and post development flows such that all storm event flows between the 10-year and 100-year do not increase the discharge in the proposed condition. (17.76.050 Development standards)

100-year Flood Protection

The Projects location straddles two FEMA FIRM Maps, (Panel 06111C0816E eff. 1/20/2010 and Panel 06111C0817E eff. 1/20/2010) and is in an area designated as Zone X which is defined as areas outside the 0.2% annual chance flood plain.

ANALYSIS

Hydrology

Existing Condition

The existing conditions of the site are such that it can be divided in to 4 distinct drainage sub-areas. Starting on the eastside of the site where it abuts Gabbert Road and labeled as sub-area A1 (7.65 acres) is mostly grassy hillside terrain and is the site where the only occupied existing residence exists and is also the site of the towers for the existing High Voltage Transmission Lines. This drainage sub-area is part of a larger drainage area labeled as 1601C in the 2003 Calleguas Watershed Report (2003 Report) which is also in series with upstream sub-areas 1598C, 1599C and 1600C, all which confluence 199 cfs (235 acres) and are conveyed on Gabbert Road. Gabbert Road drains in the southerly direction and discharges into Walnut Canyon Drain, a rectangular concrete red line channel that runs

parallel to Los Angeles Avenue. Gabbert Road is also shows within an area designated as Zone A in FEMA FIRM Map Panel 06111C0817E, eff. 1/20/2010. Zone A is defined as a Special Flood Hazard Area subject to inundation by the annual 1%(100-yr) chance of flood.

Moving westward is sub-area B and is divided into sub-areas B1 & B2 to distinguish between onsite and offsite contributing flows. Sub-area B is a portion of sub-area 1609C in the 2003 report and drains towards Walnut Canyon Drain via natural valleys.

Sub-Area C1 is a portion of sub-area 1672C and drains via natural valleys and Gabbert Drain which begins at the southwest corner of the site and is the discharge line to the Gabbert Rad Debris Basin. This rectangular concrete channel is a red line channel that is also within an area designated as Zone A in FEMA FIRM Map Panel 06111C0816E, eff 1/20/2010.

Finally, Sub-Area A1, is located on the Northwest corner of the site and is 1.61 acres of hillside and discharges directly into the Gabbert Debris Basin.

Table 1.0 shows a summary of the existing condition hydrology.

Table 1.0: Existing Condition Hydrology

Sub-Area Name	Area (acres)	Q10	Q50	Q100
D1	1.61	2.47	3.30	3.78
C1	27.2	41.74	55.81	63.78
B1 (offsite)	5.22	10.22	13.35	15.21
B2	31.49	61.63	80.52	91.77
A1	7.65	14.17	18.56	21.39
Total	73.17	130.22	171.54	195.93

Proposed Condition

Drainage improvement plans include streets with curb and gutter, area inlets, and underground drain pipes. The proposed project will have significant impact on the existing area as most of the natural valleys will be fill in to create buildable pad and the hillside peaks trimmed off to generate fill material and balance the earthwork within the project limits.

Starting on the east side of the project where the site abuts Gabbert road, the proposed project will have limited impact on this area. The drainage area, sub-area A1, will be reduced from 7.65 acres to 7.33 acres which is a result of grading the estate lots. Drainage from that developed portion will be conveyed to the proposed detention basins and stormwater BMP's as part of sub-area B.

Sub-Area A2 is comprised of the eastern portion of North Hills Parkway. Drainage from the street and the perimeter slopes of the project will be treated in proprietary structural bio-retention BMPs to storm drain pipes within the street and discharge to the southside of Northhills parkway where the concentrated flows would discharge to the surface and dissipated by rip-rap. Drainage will merge with the remaining part of 1609C which ends up in Walnut Canyon Drain. Detention for this area will be accounted for in the project detention basin located in sub-area B.

Sub-Area B which now represents most the project, comprises of graded residential pads and estate lots with long private driveways that will surface drain onto the proposed streets and enter a storm drain system via curb opening catch basins. Sub-Area B1 will continue to drain onto the project property as it did in the existing condition but will be collected in a drainage basin that will take the flow into the projects storm drain system. All drainage from Sub-area B1 and B2 will be conveyed to an Infiltration Basin located at the entrance of the project at the proposed North Village Drive. The proposed Detention basin will also provide stormwater infiltration to meet the NPDES requirements. The Detention basin will drain via a storm drain pipe and make a direct connection to the Gabbert Debris Basin Drain, a rectangular concrete line channel that runs in the southerly direction towards Los Angeles Avenue.

Sub-Area C1 is comprised of the western portion of North Hills Parkway and North Village Parkway. Drainage from the street and the perimeter slopes of the project will be treated in proprietary structural bio-retention BMPs and discharge into the storm drain system of sub-area B that make a connection to the Gabbert Canyon Drain. Detention for this area will be accounted for in the project detention basin located in sub-area Below.

Table 1.1: Proposed Conditions Hydrology

Developed Condition Hydrology				
		q10	q50	q100
		1.90	3.04	3.79
Sub-Area Name	Area (acres)	Q10	Q50	Q100
D1 (existing)	1.78	2.73	3.65	4.17
C1 (North Hills & North Village Pkwy)	13.19	25.01	40.12	50.02
B1	5.22	10.22	13.35	15.21
B2	47.88	90.77	145.64	181.58
A1 (existing)	7.33	13.57	17.78	20.50
A2 (North Hills Pkwy)	4.44	8.42	13.51	16.84
	79.84	150.72	234.04	288.33

Hydraulics

Hydraulic analysis of all drainage facilities began with a definition of drainage patterns and design flows based on a unit flowrate developed using the Total Q and Total Area for the project. Next, these results were evaluated against the City of Moorpark drainage design criteria which required a dry lane of travel during the 10-year storm event. The site was divided into smaller sub-areas, of no more than 2 acres in size, with W=7' wide catch basin inlets. This allowed for the maximum drainage spread to have a top width measured from the curb face toward the crown to be no more than 12 feet wide in each direction which leaves a 12 ft wide dry lane centered on the street for a 36 ft wide street. The maximum peak design flows for proposed onsite catch basin inlets and storm drain pipes was defined to be the peak runoff from the 10-year storm event. The street capacity limits the 50-year storm within the Right of Way and Pads are elevated so that they are at least 1 ft above the highest lot grade at Right of Way. Hydraulic analysis of the proposed streets and drainage catch basins was performed using the Hydraflow Express Extension for AutoCAD Civil 3D 2012 by Autodesk, Inc. (Hydraflow Express). The program calculated the resultant spread and depth of ponding given inlet geometry and design flow based on weir and orifice flow formulas.

100-yr Flood Protection

Detention Requirements

Detention is required for the site since the developed condition runoff quantities for storm events between the 10-year and 100-year were found to be larger than that calculated for the proposed condition. This is mainly attributed to the redevelopment of the site from an Undeveloped property to a Residential project. Detention will be addressed in an Infiltration Basin for the Residential area. Peak flows from the perimeter of the site will not be processed through the project detention basin but will be accounted for by minimizing the allowable outflow from the residential tract.

100-yr Overflow

Should there be a storm event greater than from a 100-year storm event; an overflow path through the site has been provided. The analysis was performed using Hydraflow Express. The 100-year overflow path is via A Street. A cross-sectional area of this street was modeled with the full Q_{100} that can be developed by the site.

NPDES Requirements

The City of Moorpark requires all new development projects within the city to incorporate stormwater quality control measures as part of the County Storm Water Quality Urban Impact Mitigation Management Plan (SQUIMP), NPDES Permit No. CAS004002, Order 2010-0108. The Ventura County Technical Guidance Manual, 2011 shall be used to demonstrate how the proposed BMPS for this project meet the design criteria of the SQUIMP.

The project is a new development that is greater than 1 acre in size and proposes to add more than 10,000 square feet of impervious surface area and therefore falls into one of the categories making it applicable to comply with conditioning approval for the design and implementation of post-construction stormwater management control measure as contained in subpart 4.E.11 or Order R4-2010-0108.

Table 1.3: Project Characteristics

Area Name	
Total Project Site Area	68 Acres
Pre-developed Impervious Area	10 acres (15%)
Post Project Impervious Area	17 acres (25%)

The site is proposed to be redeveloped into a multi-family residential project. The topography is flat with 100% of the site draining south towards the Arroyo Simi. The soil type is classified as Ventura County Soil number 4 or NRCS Soil Group B which is expected to have moderate infiltration rates with a layer that allow downward movement of water. The site is also located in an area of Moorpark that has had historically high ground water. There is no offsite drainage that passes over the site, and there are no environmentally sensitive areas onsite and no known geotechnical hazardous features.

Table 1.4: Land Use Pollutants of Concern

Activity	**Pollutants**
Residential Development	Sediment, Nutrients, Metals, Oxygen Demanding Substances, Toxic Organics, Bacteria, Trash & Debris
Roadways and Parking Lot	Sediment, Metals, Oils & Grease, Trash & Debris
Landscaping	Pesticides, Sediment, Organics

The site indirectly discharges to the Arroyo Simi via the Gabbert Canyon Drain and Walnut Canyon Channel, which are concrete lined channels. The portion that of the Arroyo Simi

where the site is tributary to is also known as Calleguas Creek Reach 6 (was Arroyo Las Posas Reaches 1 and 2 on 1998 303d list)

Table 1.5: Ventura County 2010 303(d)-Listed Water Quality Pollutants for Receiving Water (Calleguas Creek Reach 6)

Class of Pollutant	Specific Pollutants
Sediment (TSS Turbidity)	Sedimentation/ Siltation
Nutrients	Ammonia, Nitrate, Nitrites,
Pesticides	Chlordane, Chlorpyrifos, DDT, Diazinon, Dieldrin,
Trash and Debris (Gross Solids and Floatables)	Total Dissolved Solids
Bacteria and Viruses	Fecal Coliform
Salinity	Chloride
Toxicity	Toxicity
Miscellaneous	Sulfates

Since the site discharges into an impaired water body and that water body has more than one pollutant of concern, the project shall choose a BMP that is on the top 3 list of top BMPs used to treat said pollutant as listed in Table 3-4 of the TGM 2011. Biofiltration BMPs are among those listed in the top 3 of recommended BMPs and is chosen for the project. Proprietary Biofiltration BMPs such as Filterra by Contech Engineered Solutions and Modular Wetlands by Bioclean Environmental Services Inc. meet the performance standards listed in Attachment C in Order R4-2010-0108 (Appendix D of TGM 2011) and are considered for the project.

EIA Reduction to < 5%

Order R4-2010-0108 requires applicable projects to reduce the Effective Impervious Area (EIA) to less than or equal to five percent of the total project area, unless infeasible.

An Infiltration Basin and Biofiltration BMPS shall be used to achieve the 5% EIA standard and as required, the Biofiltration BMPs must be designed to bio-filter the required retention volume multiplied by a factor of 1.5. The proposed Biofiltration BMPs shall also treat flows from the site landscape areas but the SQDF contributed from those areas are not penalized the 1.5 factor. The total SQDF are added and prorated to size each BMP for their respective Sub-area.

The proposed Biofiltration BMP for the project shall be located on the inlets at Norht Hills Parkway and North Village Drive. The site and shall treat all stormwater within each sub-areas prior to leaving the site via the Infiltration Basin located at the entrance of the project.

RESULTS

Preliminary hydraulic analysis shows that the proposed project can meet the City of Moorpark's drainage design standards. Storm drain main line pipe sizes range from 24" to 48" and can convey flows in open flow conditions.

Inlet and street capacities have also been checked using Hydraflow Express, with results that verify the proposed sizing to be adequate to capture the design flows. The calculations show the capture of the 50-year storm event and maintained 1 dry lane path of travel within the backbone streets 'A'.

100-year analysis shows that the site is in Zone X and not subject to 100-year storm flooding and the project proposes to grade elevated pads would ensure that this will continue to be the case.

CONCLUSIONS

The proposed project improvements will provide adequate storm water collection and treatment control measures, and local flooding protection in compliance with all City of Moorpark and Ventura County Standards.

Onsite features such as that of paved gutters, driveway section and curb and gutters show capacity to safely convey drainage through the site. Detention is required for the project and reduction of peak flows are expected as the site has been transformed from an Undeveloped site to a Residential development with detention basin provided.

The proposed BMP's are sized to meet the Ventura County requirements as outlined in the Storm Water Quality Urban Impact Mitigation Management Plan (SQUIMP), in conformance with the guidelines provided in the Ventura County Technical Guidance Manual, 2011. Additionally, the proposed Proprietary Bio-filtration BMP's are in sync with the current standards for natural treatment of pollutants and represent treatment of storm water to the Maximum Extent Practicable. The BMP's require simple maintenance which will ensure that they are maintained and thus function as intended.

All Structures will be protected during a 100-year storm event in the case where all inlets become plugged by elevating pads and providing surface overflow. Building structures will also be elevated above the FEMA BFE elevations.

Drainage from the project site will be controlled in a manner, which will allow the development to occur as intended without conflicting with any applicable State, County, or City of Moorpark regulations and without adversely affecting adjacent properties and/or the project itself.

REFERENCES

- *Ventura County Watershed Protection District Hydrology Manual, December 2006*
- *Ventura County Technical Guidance Manual for Stormwater Quality Control Measures, 2011*
- *FEMA, National Flood Insurance Rate Maps*

APPENDIX

APPENDIX A

Existing Conditions

Nobin

VENTURA COUNTY PUBLIC WORKS AGENCY

HYDROLOGIC MULTIPLIERS
STORM DURATION, PRECIP. FREQ.
PEAK FLOW FREQ. DEV., UNDEV.

STORM DURATION

DURATION (HOURS)	1	3	6	9	12	18	24	36	48	72
MULTIPLIER	0.28	0.44	0.58	0.68	0.76	0.89	1.00	1.18	1.32	1.56

PRECIPITATION FREQUENCY

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.43	0.61	0.73	0.88	1.00	1.11

PEAK FLOWS FROM DEVELOPED WATERSHEDS: $P_{FREQ} = Q_{FREQ}$

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.16	0.45	0.68	0.83	1.00	1.20

PEAK FLOWS FROM UNDEVELOPED WATERSHEDS: Q_{FREQ}

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.08	0.23	0.50	0.70	1.00	1.38

Existing Condition Hydrology				
Multipliers		0.5	1	1.38
		q10	q50	q100
		0.97	1.94	2.68
Sub-Area Name	Area (acres)	Q10	Q50	Q100
D1	1.61	1.56	3.12	3.78
C1	27.2	26.39	52.78	63.78
B1	5.22	5.06	10.13	15.21
B2	31.49	30.55	61.10	91.77
A1	7.65	7.42	14.84	21.39
Total	73.17	70.99	141.98	195.93

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 115 Project: Tract 5847

Project Description

Existing Condition Model - Q100
Model Data from 2003 VCWPD Calleguas Creek Hydrology Model
Prepared by: Delane Engineering
Rainfall Zone K (B98)

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 115 Project: Tract 5847

Model Results

SUBAREA DATA AND RESULTS							ACCUMULATED DATA			ROUTING AFTER ACCUMULATION								
NODE ID	SOIL TYPE	RAIN ZONE	TC (MIN)	% IMP	AREA (AC)	FLOW (CFS)	AREA (AC)	FLOW (CFS)	TIME (MIN)	CHANNEL TYPE	LENGTH (FT)	SLOPE (FT/FT)	SIZE (FT)	H:V (Z)	N VALUES CHNL	N VALUES SIDES	VEL (FT/S)	DEPTH (FT)
1A : 1598C																		
1A	040	K100	10	0	54	146	54	146	1154	MOUNTAIN	3800	0.04000	---	----	-----	-----	--	--
2A : 1599C																		
2A	040	K100	11	0	71	180	125	195	1155	MOUNTAIN	1700	0.04120	---	----	-----	-----	--	--
3A : 1600C																		
3A	040	K100	9	15	56	165	181	288	1157	#PIPE	1900	0.03950	4.00	----	-----	-----	--	--
4A : 1601C																		
4A	040	K100	10	15	54	151	235	404	1158	-------	----	-------	---	----	-----	-----	--	--
5A : Total Q Sub-Area A																		
5A	---	---	--	--	---	---	235	404	1158	-------	----	-------	---	----	-----	-----	--	--
6B : 1609C																		
6B	020	K100	11	15	70	204	70	204	1154	CHANNEL	1275	0.00470	12	0.00	0.000	0.000	--	--
7B	---	---	--	--	---	---	70	195	1158	-------	----	-------	---	----	-----	-----	--	--
8C : 1672C																		
8C	050	K100	12	15	58	136	58	136	1154	CHANNEL	720	0.01850	8	1.50	0.000	0.000	--	--
9C	---	---	--	--	---	---	58	135	1156	-------	----	-------	---	----	-----	-----	--	--

Issue/Warning Messages

TYPE	ERR NO	PROCEDURE	LOCATION	MESSAGE

NO ISSUES OR WARNINGS DETECTED

15031 1587DE	27.	75.	144.	296.	0	0.	0.00000	0.00	0.00	0.	50	0	B98	0.00	

***

15031 1621D	48.	117.	173.	376.	0	0.	0.00000	0.00	0.00	0.	40	10	A97	0.70	

***

15031 1655DE	519.	801.	1177.	1691.	5	1900.	0.02370	11.00	0.00	0.	20	0	B98	0.00
15031 1656D	40.	115.	1217.	1691.	0	0.	0.00000	0.00	0.00	0.	40	9	B98	0.05
15031 1657CD	1217.	1691.	1746.	2213.	2	1500.	0.02600	0.00	0.00	0.	40	0	B98	0.00
15031 1658C	87.	239.	1833.	2223.	2	1950.	0.02560	0.00	0.00	0.	30	11	B98	0.10
15031 1659C	89.	219.	1922.	2224.	0	0.	0.00000	0.00	0.00	0.	40	12	B98	0.10
15031 1660D	64.	155.	64.	155.	3	750.	0.04530	0.00	0.00	0.	40	12	B98	0.05
15031 1661D	61.	148.	125.	297.	4	1300.	0.02150	4.50	0.00	0.	40	12	B98	0.05
15031 1662D	52.	133.	177.	414.	4	1875.	0.01870	5.25	0.00	0.	40	11	B98	0.05
15031 1663D	52.	133.	229.	516.	0	0.	0.00000	0.00	0.00	0.	40	11	B98	0.05

***

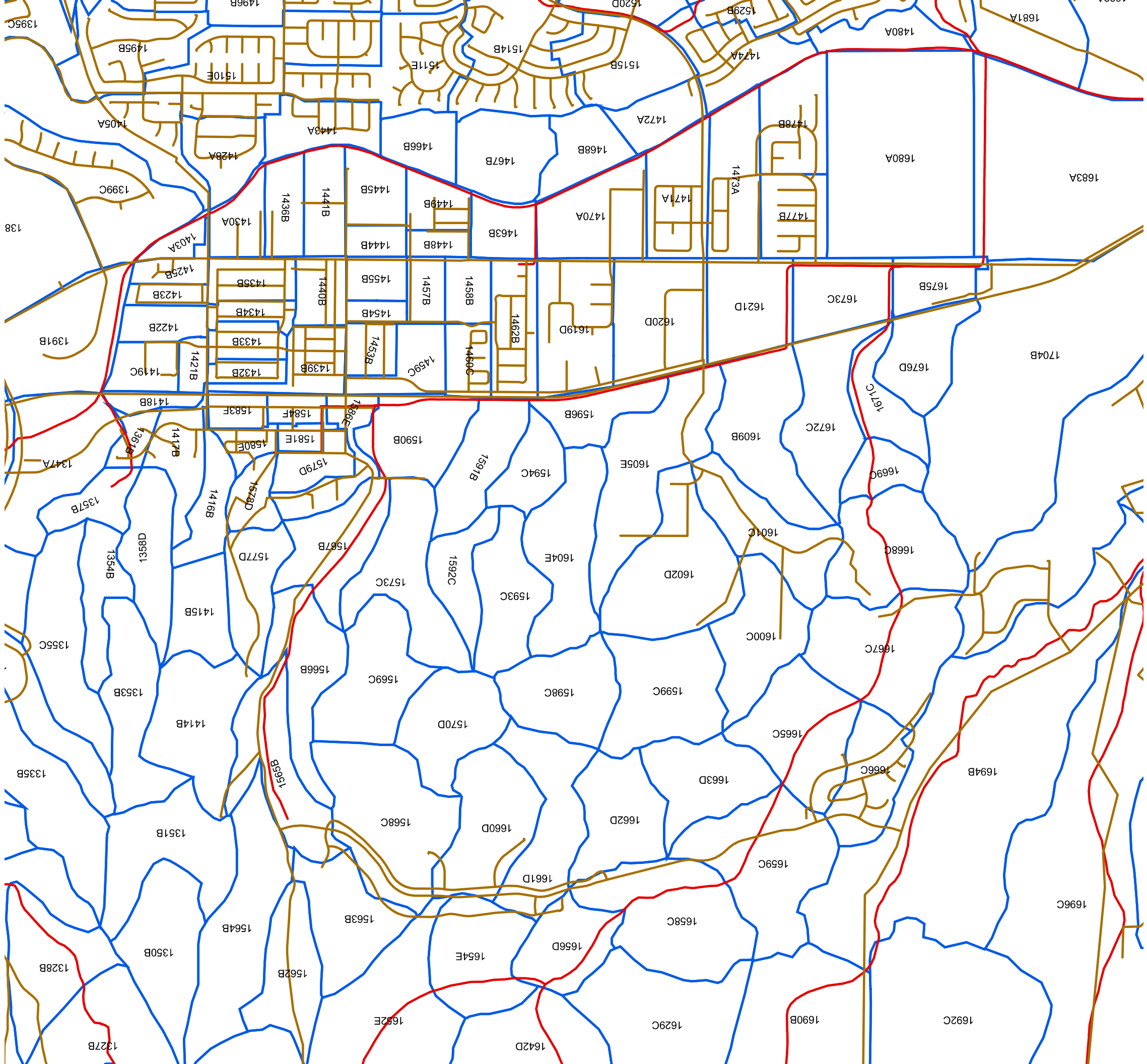
Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

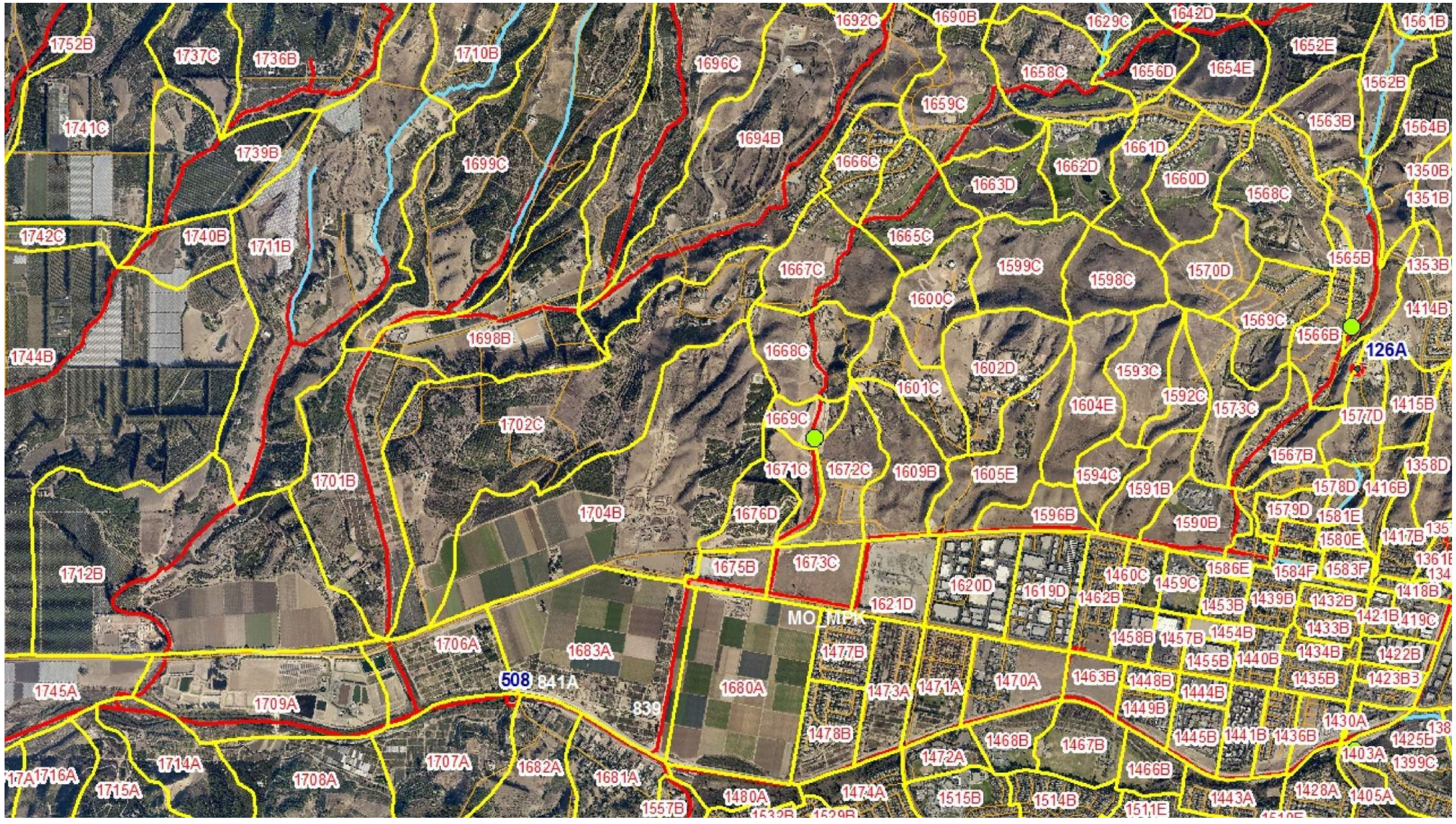
Job: 115 Project: Tract 5847

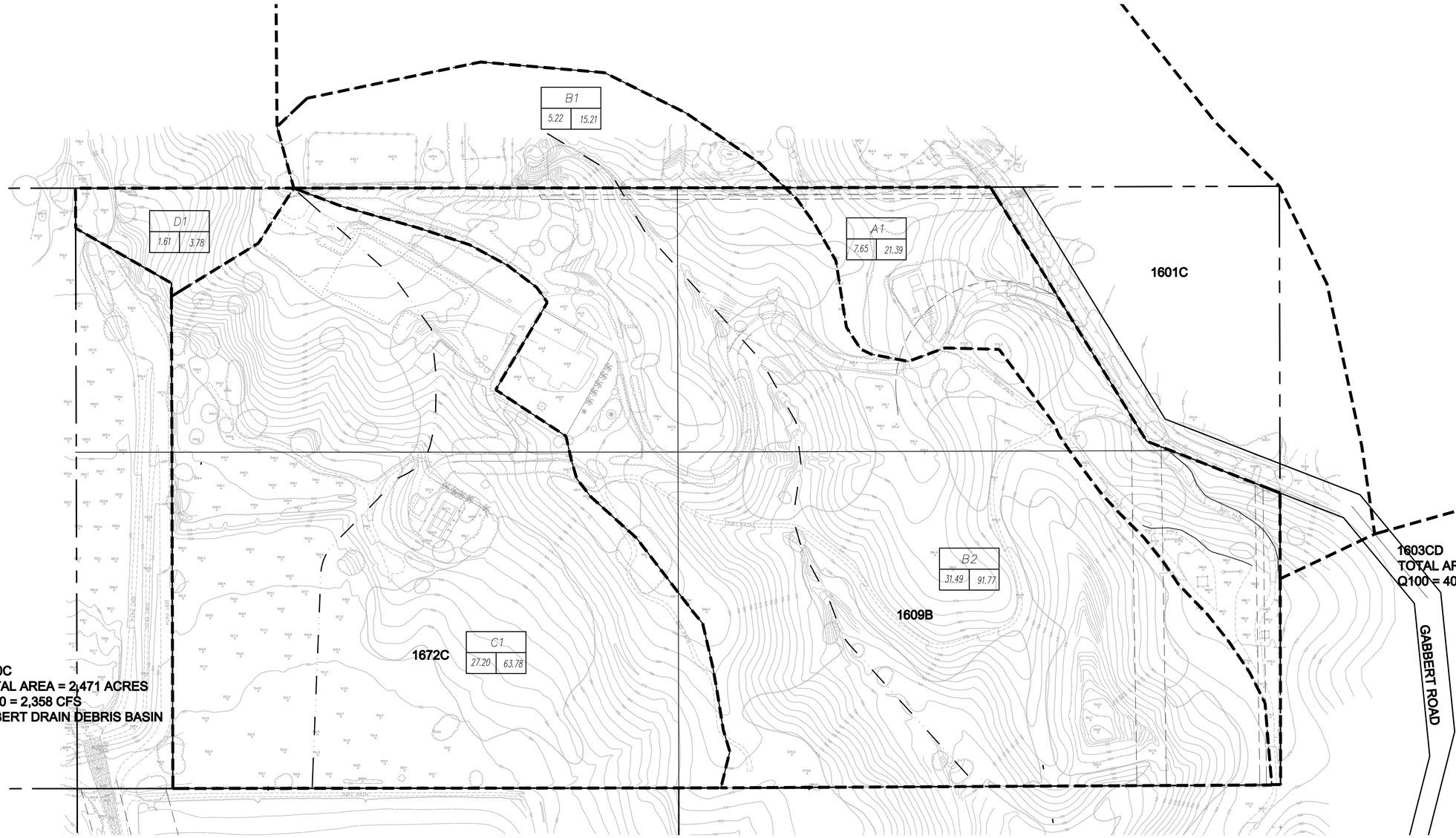
VCRat Model Input

Model Lines

```
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005   115  004A Header place holder
005   115  009C Header place holder
999
999
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006   115  002A 040000007111B98101700004120
006   115  003A 040015005609B98 01900003950
006   115  004A 040015005410B98                              1
006   115  005A 010      099A97
006   115  006B 020015007011B98501275000470   001200               000000
006   115  007B 010      099A97
006   115  008C 050015005812B9850072000185015000080O               000000
006   115  009C 010      099A97                              1  2
999
```


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1529B
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1495B
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1515B
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1405A
1443A
1428A
1466B
1467B
1468B
1472A
1478B
1680A
1683A
1399C
1436B
1441B
1445B
1449B
1473A
1477B
1430A
1403A
1444B
1448B
1463B
1470A
1471A
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1457B
1458B
1462B
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1620D
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1391B
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1439B
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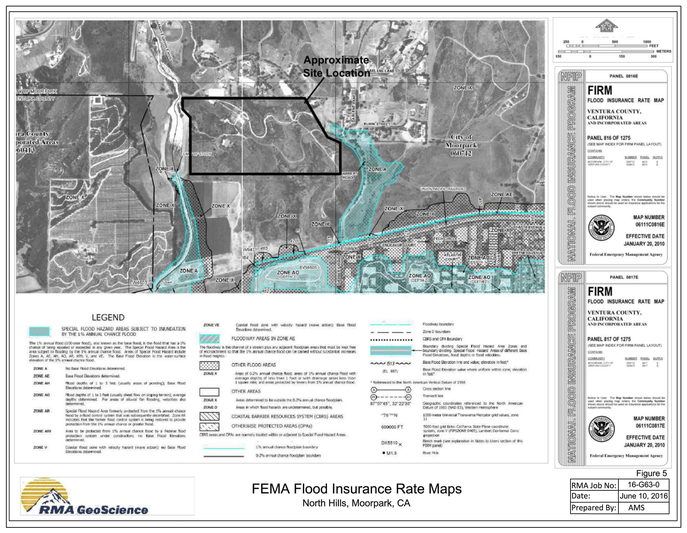


Figure 5

FEMA Flood Insurance Rate Maps

North Hills, Moorpark, CA

RMA Job No:	16-G63-0
Date:	June 10, 2016
Prepared By:	AMS

Existing Condition Hydrology				
Multipliers		0.5	1	1.38
		q10	q50	q100
		0.97	1.94	2.68
Sub-Area Name	Area (acres)	Q10	Q50	Q100
D1	1.61	1.56	3.12	3.78
C1	27.2	26.39	52.78	63.78
B1	5.22	5.06	10.13	15.21
B2	31.49	30.55	61.10	91.77
A1	7.65	7.42	14.84	21.39
Total	73.17	70.99	141.98	195.93

LEGEND

EXISTING WATERSHED BOUNDARY

FLOW DIRECTION

EXISTING CONTOUR 12

CONCENTRATION POINT (0)

B2 — DRAINAGE AREA DESIGNATION

31.49 / 91.77 — Q100 (CFS) / AREA (AC)

1601C — SUBAREA DESIGNATION FROM 2003 STUDY

ABBREVIATIONS

CFS CUBIC FEET PER SECOND
Q100 100 YEAR STORM RUNOFF
AC ACRES

DRAINAGE EXHIBITS

VTTM NO. 5847

EXISTING CONDITION DRAINAGE MAP

PREPARED BY
DELANE ENGINEERING
2812 SANTA MONICA BLVD. SUITE 206
SANTA MONICA, CA 90404
PHONE: 310.546.5711-WWW.DELANEENGINEERING.COM

OWNER/SUBDIVIDER

WEST POINTE HOMES
RASMUSSEN DEVELOPMENT
26500 WEST AGOURA ROAD #652
CALABASAS, CA 91302 OFFICE:
805.370.0075 FAX:
805.370.0165
JAMES RASMUSSEN

SHEET 1 OF 1 SHEETS

PLOT DATE:11/2/16 4:05 PM FILE NAME: H:\PUB\TA\201015\CAD\LAND\TA-VVPDR01\15-TNM-HYD-EX.DWG
SAVE DATE:10/27/16 CSOLIS

APPENDIX B

Proposed Conditions

Developed Condition Hydrology				
		q10	q50	q100
		1.90	3.04	3.79
Sub-Area Name	Area (acres)	Q10	Q50	Q100
D1	1.78	2.73	3.65	4.17
C1	13.19	25.01	40.12	50.02
B1	5.22	10.22	13.35	15.21
B2	47.88	90.77	145.64	181.58
A1	7.33	13.57	17.78	20.50
A2	4.44	8.42	13.51	16.84
	79.84	150.72	234.04	288.33

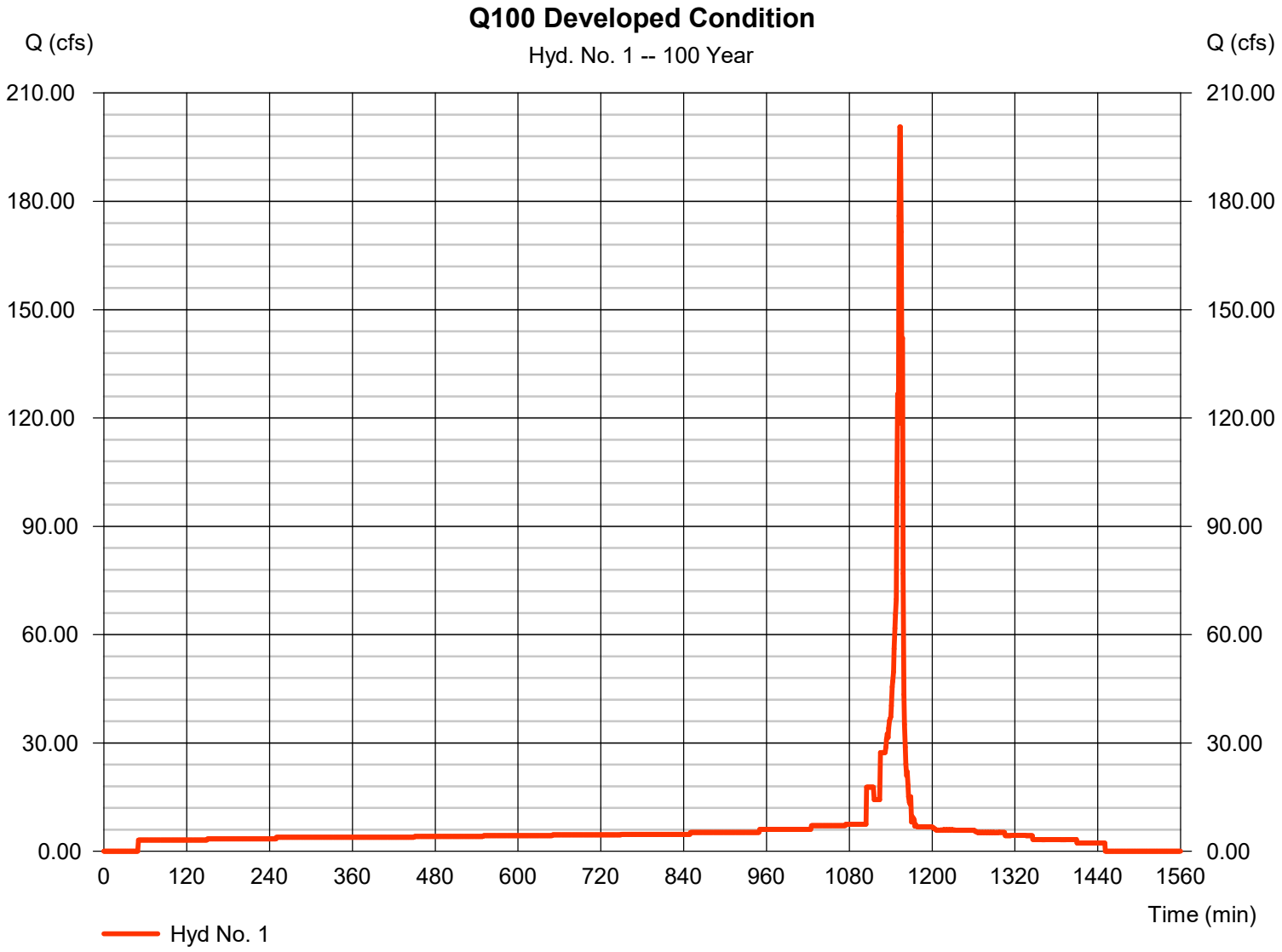
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 11 / 2 / 2016

Hyd. No. 1

Q100 Developed Condition

Hydrograph type	= Manual	Peak discharge	= 200.58 cfs
Storm frequency	= 100 yrs	Time to peak	= 1153 min
Time interval	= 1 min	Hyd. volume	= 538,849 cuft



Hydrograph Report

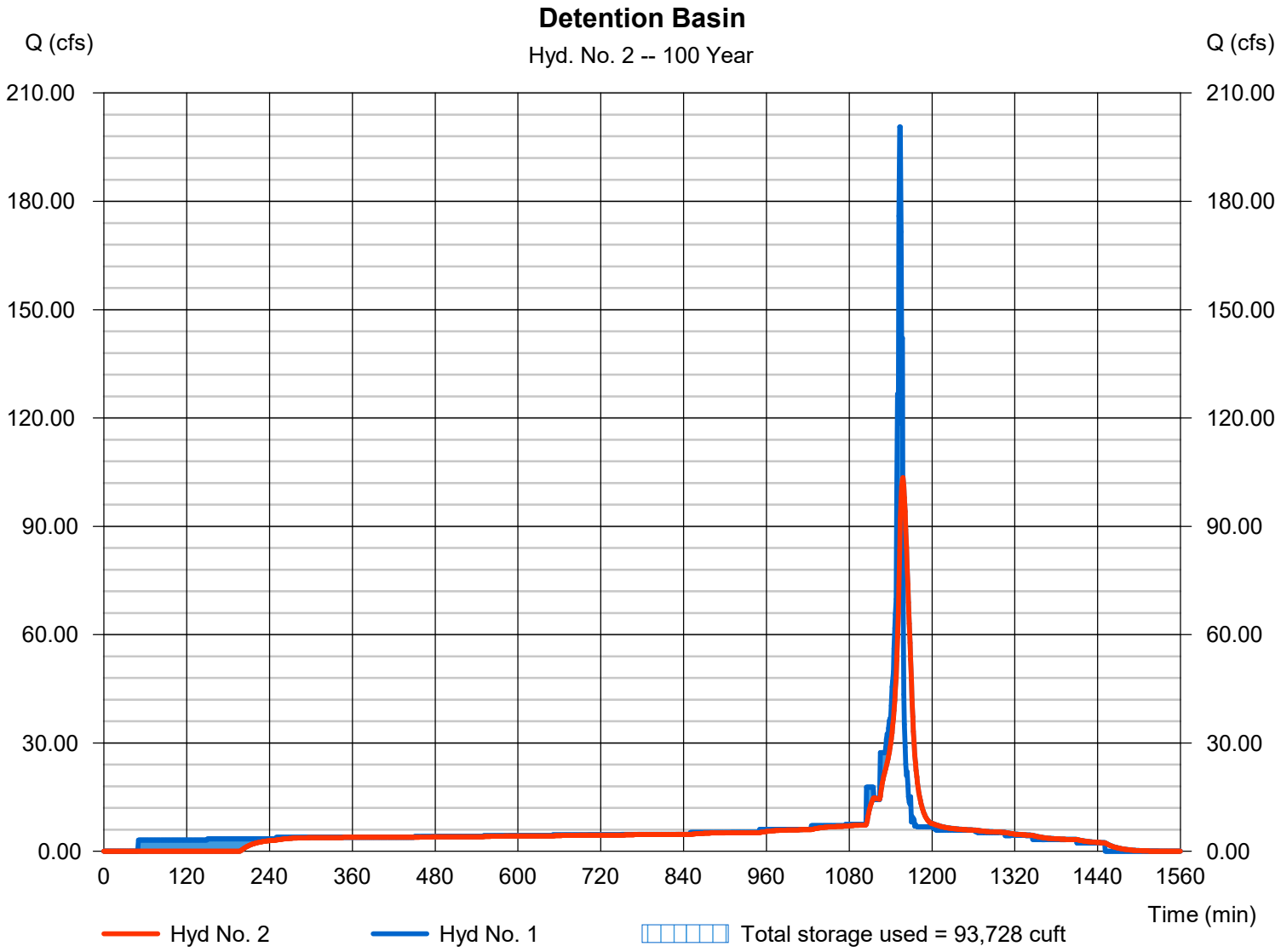
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Wednesday, 11 / 2 / 2016

Hyd. No. 2

Detention Basin

Hydrograph type	=	Reservoir	Peak discharge	=	103.46 cfs
Storm frequency	=	100 yrs	Time to peak	=	1158 min
Time interval	=	1 min	Hyd. volume	=	505,359 cuft
Inflow hyd. No.	=	1 - Q100 Developed Condition	Max. Elevation	=	540.00 ft
Reservoir name	=	Detention Basin	Max. Storage	=	93,728 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 2 - Detention Basin

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 533.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	530.00	5,060	0	0
10.00	540.00	14,632	94,312	94,312

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 42.00	Inactive	Inactive	Inactive
Span (in)	= 42.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 533.00	0.00	0.00	0.00
Length (ft)	= 1250.00	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)	Inactive	Inactive	Inactive	Inactive
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) = 0.500 (by Contour)

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 cuft	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	530.00	0.00	---	---	---	---	---	---	---	0.000	---	0.000
1.00	9,431	531.00	0.00	---	---	---	---	---	---	---	0.017	---	0.017
2.00	18,862	532.00	0.00	---	---	---	---	---	---	---	0.034	---	0.034
3.00	28,294	533.00	0.00	---	---	---	---	---	---	---	0.051	---	0.051
4.00	37,725	534.00	7.75 ic	---	---	---	---	---	---	---	0.068	---	7.816
5.00	47,156	535.00	27.40 ic	---	---	---	---	---	---	---	0.085	---	27.48
6.00	56,587	536.00	51.78 ic	---	---	---	---	---	---	---	0.102	---	51.88
7.00	66,019	537.00	69.48 ic	---	---	---	---	---	---	---	0.119	---	69.60
8.00	75,450	538.00	83.50 ic	---	---	---	---	---	---	---	0.135	---	83.64
9.00	84,881	539.00	95.49 ic	---	---	---	---	---	---	---	0.152	---	95.64
10.00	94,312	540.00	103.99 oc	---	---	---	---	---	---	---	0.169	---	104.16

VENTURA COUNTY WATERSHED PROTECTION DISTRICT
TIME OF CONCENTRATION
TC Program Version: 2.6.2009.7
Project: 01-10115
Date: 12:00:00 AM
Engineer: CMS
Consultant: Delane Engineering

S U M M A R Y O F C O M P U T A T I O N S

Watershed Name: Watershed

Name	Zone	Storm	Soil	Area (acres)	TC (min)
SubArea	K	10	4.00	53.1 / 53	9.140 / 9
SubArea	K	25	4.00	53.1 / 53	7.834 / 8
SubArea	K	50	4.00	53.1 / 53	6.982 / 7
SubArea	K	100	4.00	53.1 / 53	5.807 / 6

Watershed Name: Watershed

Sub-Area Name: SubArea
Computing Tc for all rainfall frequencies for sub-area SubArea...

Tc for frequency = 10.00: 9.140 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 9.140 min. = 9 min.

SUB AREA INPUT DATA

Sub Area Name: SubArea
Total Area (ac): 53.1
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 10
Development Type: Residential
Soil Type: 4.00
Percent Impervious: 23
SUB AREA OUTPUT

Intensity (in/hr): 2.680
C Total: 0.761
Sum Q Segments (cfs): 108.30
Q Total (cfs): 108.30
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 548.37
Time of Concentration (min): 9.140

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 5.3177
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 640
Bottom Elevation (ft): 623
Contributing Area (acres): 2
Percent of Sub-Area (%): 3.8
Overland Type: Mountain
Development Type: Undeveloped
Map Slope: 0.0850
Effective Slope: 0.0850
Q for Flow Path (cfs): 4.08
Avg Velocity (ft/s): 0.63
Passed Scour Check: YES
Scour Velocity (ft/sec): 2.55
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 2.2806
Flow Type: Natural Channel

Length (ft): 1200
Top Elevation (ft): 630
Bottom Elevation (ft): 576
Contributing Area (acres): 15.22
Percent of Sub-Area (%): 28.7
Overland Type: Valley
Map Slope: 0.0450
Effective Slope: 0.0450
Q for Flow Path (cfs): 31.04
Q Top (cfs): 4.08
Q Bottom (cfs): 35.12
Velocity Top (ft/s): 4.27
Velocity Bottom (ft/s): 7.42
Avg Velocity (ft/s): 5.85
Wave Velocity (ft/s): 8.77
DATA FOR FLOW PATH 3

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 1.5413
Flow Type: Pipe
Length (ft): 1270
Top Elevation (ft): 576
Bottom Elevation (ft): 530
Contributing Area (acres): 35.88
Percent of Sub-Area (%): 67.6
Initial Pipe Diameter (in): 48
Calculated Pipe Diameter (in): 36
Used Pipe Diameter (in): 48
Manning's N: 0.013
Map Slope: 0.0362
Q for Flow Path (cfs): 73.18
Q Top (cfs): 35.12
Q Bottom (cfs): 108.30
Avg Velocity (ft/s): 10.40
Wave Velocity (ft/s): 13.73

Tc for frequency = 25.00: 7.834 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 7.834 min. = 8 min.

SUB AREA INPUT DATA

Sub Area Name: SubArea
Total Area (ac): 53.1
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 25
Development Type: Residential
Soil Type: 4.00
Percent Impervious: 23
SUB AREA OUTPUT

Intensity (in/hr): 3.191
C Total: 0.786
Sum Q Segments (cfs): 133.13
Q Total (cfs): 133.13
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 470.05
Time of Concentration (min): 7.834

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 4.4300
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 640
Bottom Elevation (ft): 623
Contributing Area (acres): 2
Percent of Sub-Area (%): 3.8
Overland Type: Mountain
Development Type: Undeveloped
Map Slope: 0.0850
Effective Slope: 0.0850
Q for Flow Path (cfs): 5.01
Avg Velocity (ft/s): 0.75
Passed Scour Check: YES
Scour Velocity (ft/sec): 2.72
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 2.1592
Flow Type: Natural Channel
Length (ft): 1200
Top Elevation (ft): 630
Bottom Elevation (ft): 576
Contributing Area (acres): 15.22
Percent of Sub-Area (%): 28.7
Overland Type: Valley

Map Slope: 0.0450
Effective Slope: 0.0450
Q for Flow Path (cfs): 38.16
Q Top (cfs): 5.01
Q Bottom (cfs): 43.17
Velocity Top (ft/s): 4.48
Velocity Bottom (ft/s): 7.87
Avg Velocity (ft/s): 6.18
Wave Velocity (ft/s): 9.26
DATA FOR FLOW PATH 3

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 1.2450
Flow Type: Pipe
Length (ft): 1270
Top Elevation (ft): 576
Bottom Elevation (ft): 530
Contributing Area (acres): 35.88
Percent of Sub-Area (%): 67.6
Initial Pipe Diameter (in): 48
Calculated Pipe Diameter (in): 39
Used Pipe Diameter (in): 48
Manning's N: 0.013
Map Slope: 0.0362
Q for Flow Path (cfs): 89.96
Q Top (cfs): 43.17
Q Bottom (cfs): 133.13
Avg Velocity (ft/s): 12.88
Wave Velocity (ft/s): 17.00

Tc for frequency = 50.00: 6.982 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 6.982 min. = 7 min.

SUB AREA INPUT DATA

Sub Area Name: SubArea
Total Area (ac): 53.1
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 50
Development Type: Residential
Soil Type: 4.00
Percent Impervious: 23
SUB AREA OUTPUT

Intensity (in/hr): 3.771
C Total: 0.805
Sum Q Segments (cfs): 161.22
Q Total (cfs): 161.22
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 418.94
Time of Concentration (min): 6.982

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 3.9082
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 640
Bottom Elevation (ft): 623
Contributing Area (acres): 2
Percent of Sub-Area (%): 3.8
Overland Type: Mountain
Development Type: Undeveloped
Map Slope: 0.0850
Effective Slope: 0.0850
Q for Flow Path (cfs): 6.07
Avg Velocity (ft/s): 0.85
Passed Scour Check: YES
Scour Velocity (ft/sec): 2.90
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 2.0506
Flow Type: Natural Channel
Length (ft): 1200
Top Elevation (ft): 630
Bottom Elevation (ft): 576
Contributing Area (acres): 15.22
Percent of Sub-Area (%): 28.7
Overland Type: Valley

Map Slope: 0.0450
Effective Slope: 0.0450
Q for Flow Path (cfs): 46.21
Q Top (cfs): 6.07
Q Bottom (cfs): 52.28
Velocity Top (ft/s): 4.69
Velocity Bottom (ft/s): 8.32
Avg Velocity (ft/s): 6.50
Wave Velocity (ft/s): 9.75
DATA FOR FLOW PATH 3

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 1.0235
Flow Type: Pipe
Length (ft): 1270
Top Elevation (ft): 576
Bottom Elevation (ft): 530
Contributing Area (acres): 35.88
Percent of Sub-Area (%): 67.6
Initial Pipe Diameter (in): 48
Calculated Pipe Diameter (in): 42
Used Pipe Diameter (in): 48
Manning's N: 0.013
Map Slope: 0.0362
Q for Flow Path (cfs): 108.94
Q Top (cfs): 52.28
Q Bottom (cfs): 161.22
Avg Velocity (ft/s): 15.65
Wave Velocity (ft/s): 20.68

Tc for frequency = 100.00: 5.807 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 5.807 min. = 6 min.

SUB AREA INPUT DATA

Sub Area Name: SubArea
Total Area (ac): 53.1
Flood Zone: 3
Rainfall Zone: K
Storm Frequency (years): 100
Development Type: Residential
Soil Type: 4.00
Percent Impervious: 23
SUB AREA OUTPUT

Intensity (in/hr): 4.590
C Total: 0.824
Sum Q Segments (cfs): 200.91
Q Total (cfs): 200.91
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 348.44
Time of Concentration (min): 5.807

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 3.1450
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 640
Bottom Elevation (ft): 623
Contributing Area (acres): 2
Percent of Sub-Area (%): 3.8
Overland Type: Mountain
Development Type: Undeveloped
Map Slope: 0.0850
Effective Slope: 0.0850
Q for Flow Path (cfs): 7.57
Avg Velocity (ft/s): 1.06
Passed Scour Check: YES
Scour Velocity (ft/sec): 3.11
DATA FOR FLOW PATH 2

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 1.9306
Flow Type: Natural Channel
Length (ft): 1200
Top Elevation (ft): 630
Bottom Elevation (ft): 576
Contributing Area (acres): 15.22
Percent of Sub-Area (%): 28.7
Overland Type: Valley

Map Slope: 0.0450
Effective Slope: 0.0450
Q for Flow Path (cfs): 57.59
Q Top (cfs): 7.57
Q Bottom (cfs): 65.16
Velocity Top (ft/s): 4.94
Velocity Bottom (ft/s): 8.87
Avg Velocity (ft/s): 6.91
Wave Velocity (ft/s): 10.36
DATA FOR FLOW PATH 3

Flow Path Name: FlowPath
FLOW PATH TRAVEL TIME (min): 0.7318
Flow Type: Pipe
Length (ft): 1270
Top Elevation (ft): 576
Bottom Elevation (ft): 530
Contributing Area (acres): 35.88
Percent of Sub-Area (%): 67.6
Initial Pipe Diameter (in): 48
Calculated Pipe Diameter (in): 48
Used Pipe Diameter (in): 48
Manning's N: 0.013
Map Slope: 0.0362
Q for Flow Path (cfs): 135.76
Q Top (cfs): 65.16
Q Bottom (cfs): 200.91
Avg Velocity (ft/s): 21.68
Wave Velocity (ft/s): 28.92

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 115 Project: Tract 5847

Project Description

Developed Condition Model - Q10
Date Prepared: 2016-10-26
Prepared by: Delane Engineering
Rainfall Zone K (B98)

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 115 Project: Tract 5847

Model Results

NODE ID	SOIL TYPE	RAIN ZONE	TC (MIN)	% IMP	SUBAREA AREA (AC)	SUBAREA FLOW (CFS)	ACCUMULATED AREA (AC)	ACCUMULATED FLOW (CFS)	ACCUMULATED TIME (MIN)	CHANNEL TYPE	LENGTH (FT)	SLOPE (FT/FT)	SIZE (FT)	H:V (Z)	N VALUES CHNL	N VALUES SIDES	VEL (FT/S)	DEPTH (FT)
1A : 1672C- A (Developed)																		
1A	040	K10	10	23	48	91	48	91	1154	-------	----	-------	---	----	-----	-----	--	--
2A	---	---	--	--	---	---	48	91	1154	-------	----	-------	---	----	-----	-----	--	--

Issue/Warning Messages

TYPE	ERR NO	PROCEDURE	LOCATION	MESSAGE
NO ISSUES OR WARNINGS DETECTED				

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2A

TOTAL AREA TO HYDROGRAPH: 48 acres
HYDROGRAPH PEAK: 91 cfs
TIME OF PEAK: 1154 minutes
HYDROGRAPH VOLUME: 5.71 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	0.63	200	0.69	300	0.88	400	1.07
500	1.35	600	1.54	700	1.95	800	2.39	900	2.96
1000	4.10	1050	4.56	1100	4.95	1110	6.23	1120	6.80
1130	7.31	1131	8.20	1132	9.08	1133	9.97	1134	10.86
1135	11.75	1136	13.19	1137	14.64	1138	16.08	1139	17.53
1140	18.97	1141	20.30	1142	21.63	1143	22.96	1144	24.28
1145	25.58	1146	26.99	1147	28.41	1148	32.36	1149	37.73
1150	44.51	1151	58.00	1152	78.92	1153	90.83	1154	91.20
1155	90.25	1156	88.45	1157	86.66	1158	82.56	1159	77.17
1160	70.51	1161	54.93	1162	30.10	1163	14.20	1164	11.16
1165	9.53	1166	8.20	1167	6.87	1168	6.54	1169	6.26
1170	5.98	1171	5.84	1172	5.70	1173	5.56	1174	5.42
1175	5.29	1176	5.15	1177	5.01	1178	4.87	1179	4.73
1180	4.59	1181	4.56	1182	4.53	1183	4.50	1184	4.47
1185	4.44	1186	4.41	1187	4.37	1188	4.34	1189	4.31
1190	4.28	1191	4.26	1192	4.25	1193	4.23	1194	4.22
1195	4.20	1196	4.18	1197	4.17	1198	4.15	1199	4.14
1200	4.12	1201	4.12	1202	4.12	1203	4.12	1204	4.12
1205	4.12	1206	4.12	1207	4.12	1208	4.12	1209	4.12
1210	4.12	1211	4.02	1212	3.92	1213	3.82	1214	3.72
1215	3.62	1216	3.52	1217	3.42	1218	3.32	1219	3.22
1220	3.11	1221	3.11	1222	3.11	1223	3.11	1224	3.11
1225	3.11	1226	3.11	1227	3.11	1228	3.11	1229	3.11
1230	3.11	1231	3.04	1232	2.97	1233	2.90	1234	2.83
1235	2.76	1236	2.69	1237	2.62	1238	2.55	1239	2.48
1240	2.41	1241	2.41	1242	2.41	1243	2.41	1244	2.41
1245	2.41	1246	2.41	1247	2.41	1248	2.41	1249	2.41
1250	2.41	1251	2.41	1252	2.41	1253	2.41	1254	2.41
1255	2.41	1256	2.41	1257	2.41	1258	2.41	1259	2.41
1260	2.41	1261	2.38	1262	2.34	1263	2.30	1264	2.27
1265	2.23	1266	2.19	1267	2.16	1268	2.12	1269	2.08

1270	2.05	1271	2.05	1272	2.05	1273	2.05	1274	2.05
1275	2.05	1276	2.05	1277	2.05	1278	2.05	1279	2.05
1280	2.05	1281	2.05	1282	2.05	1283	2.05	1284	2.05
1285	2.05	1286	2.05	1287	2.05	1288	2.05	1289	2.05
1290	2.05	1291	2.05	1292	2.05	1293	2.05	1294	2.05
1295	2.05	1296	2.05	1297	2.05	1298	2.05	1299	2.05
1300	2.04	1310	1.49	1320	1.49	1330	1.49	1340	1.49
1350	0.94	1360	0.94	1370	0.94	1380	0.94	1390	0.94
1400	0.94	1420	0.63	1440	0.63	1460	0.00	1500	0.00

VCRat Model Input

Model Lines

```
005   115  001A Header place holder
005   115  002A Header place holder
999
999
006   115  001A 040023004810K10                              G1
006   115  002A 010      099J10                           1  2
999
```

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 115 Project: Tract 5847

Project Description

Developed Condition Model - Q50
Date Prepared: 2016-10-26
Prepared by: Delane Engineering
Rainfall Zone K (B98)

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 115 Project: Tract 5847

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 : 1672C- A (Developed)																		
1A	040	K50	7	23	48	146	48	146	1154	-------	----	-------	---	----	-----	-----	--	--
2A	---	---	--	--	---	---	48	146	1154	-------	----	-------	---	----	-----	-----	--	--

Issue/Warning Messages

TYPE	ERR NO	PROCEDURE	LOCATION	MESSAGE
NO ISSUES OR WARNINGS DETECTED				

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2A

TOTAL AREA TO HYDROGRAPH: 48 acres
HYDROGRAPH PEAK: 146 cfs
TIME OF PEAK: 1153 minutes
HYDROGRAPH VOLUME: 8.49 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	0.63	200	1.13	300	1.45	400	1.89
500	2.33	600	2.89	700	3.37	800	3.74	900	4.41
1000	5.48	1050	5.59	1100	6.63	1110	8.79	1120	14.35
1130	16.37	1131	16.74	1132	17.12	1133	17.49	1134	17.86
1135	18.23	1136	21.49	1137	24.73	1138	27.56	1139	30.38
1140	33.21	1141	37.97	1142	42.73	1143	44.67	1144	46.61
1145	48.44	1146	51.38	1147	54.33	1148	55.87	1149	58.89
1150	67.06	1151	92.09	1152	123.34	1153	145.82	1154	145.82
1155	141.71	1156	134.61	1157	122.22	1158	92.54	1159	58.01
1160	29.17	1161	21.45	1162	17.74	1163	15.67	1164	13.61
1165	11.54	1166	9.42	1167	7.31	1168	7.31	1169	7.31
1170	7.31	1171	6.89	1172	6.74	1173	6.65	1174	6.56
1175	6.47	1176	6.38	1177	6.29	1178	6.29	1179	6.29
1180	6.29	1181	6.29	1182	6.29	1183	6.29	1184	6.29
1185	6.29	1186	6.29	1187	6.29	1188	6.29	1189	6.29
1190	6.29	1191	6.16	1192	6.02	1193	5.89	1194	5.75
1195	5.62	1196	5.48	1197	5.35	1198	5.35	1199	5.35
1200	5.35	1201	5.35	1202	5.35	1203	5.35	1204	5.35
1205	5.35	1206	5.35	1207	5.35	1208	5.35	1209	5.35
1210	5.35	1211	5.21	1212	5.08	1213	4.94	1214	4.81
1215	4.67	1216	4.54	1217	4.40	1218	4.40	1219	4.40
1220	4.40	1221	4.40	1222	4.40	1223	4.40	1224	4.40
1225	4.40	1226	4.40	1227	4.40	1228	4.40	1229	4.40
1230	4.40	1231	4.32	1232	4.23	1233	4.14	1234	4.05
1235	3.96	1236	3.87	1237	3.78	1238	3.78	1239	3.78
1240	3.78	1241	3.78	1242	3.78	1243	3.78	1244	3.78
1245	3.78	1246	3.78	1247	3.78	1248	3.78	1249	3.78
1250	3.78	1251	3.78	1252	3.78	1253	3.78	1254	3.78
1255	3.78	1256	3.78	1257	3.78	1258	3.78	1259	3.78
1260	3.78	1261	3.73	1262	3.69	1263	3.64	1264	3.60
1265	3.55	1266	3.51	1267	3.46	1268	3.46	1269	3.46

1270	3.46	1271	3.46	1272	3.46	1273	3.46	1274	3.46
1275	3.46	1276	3.46	1277	3.46	1278	3.46	1279	3.46
1280	3.46	1281	3.46	1282	3.46	1283	3.46	1284	3.46
1285	3.46	1286	3.46	1287	3.46	1288	3.46	1289	3.46
1290	3.46	1291	3.46	1292	3.46	1293	3.46	1294	3.46
1295	3.46	1296	3.46	1297	3.46	1298	3.46	1299	3.46
1300	3.46	1310	2.52	1320	2.52	1330	2.52	1340	2.52
1350	1.57	1360	1.57	1370	1.57	1380	1.57	1390	1.57
1400	1.57	1420	0.79	1440	0.79	1460	0.00	1500	0.00

VCRat Model Input

Model Lines

```
005   115  001A Header place holder
005   115  002A Header place holder
999
999
006   115  001A 040023004807K50                              G1
006   115  002A 010      099J50                            1  2
999
```

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 115 Project: Tract 5847

Project Description

Developed Condition Model - Q100
Date Prepared: 2016-10-26
Prepared by: Delane Engineering
Rainfall Zone K (B98)

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

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 : 1598C																		
1A	040	K100	10	0	54	146	54	146	1154	MOUNTAIN	3800	0.04000	---	----	-----	-----	--	--
2A : 1599C																		
2A	040	K100	11	0	71	180	125	195	1155	MOUNTAIN	1700	0.04120	---	----	-----	-----	--	--
3A : 1600C																		
3A	040	K100	9	15	56	165	181	288	1157	#PIPE	1900	0.03950	4.00	----	-----	-----	--	--
4A : 1601C																		
4A	040	K100	10	15	54	151	235	404	1158	-------	----	-------	---	----	-----	-----	--	--
5A : Total Q Sub-Area A																		
5A	---	---	--	--	---	---	235	404	1158	-------	----	-------	---	----	-----	-----	--	--
6B : 1609C																		
6B	020	K100	11	15	70	204	70	204	1154	CHANNEL	1275	0.00470	12	0.00	0.000	0.000	--	--
7B	---	---	--	--	---	---	70	195	1158	-------	----	-------	---	----	-----	-----	--	--
8C : 1672C- A (Developed)																		
8C	050	K100	9	23	48	137	48	137	1153	CHANNEL	720	0.01850	8	1.50	0.000	0.000	--	--
9C	---	---	--	--	---	---	48	136	1155	-------	----	-------	---	----	-----	-----	--	--

Issue/Warning Messages

TYPE	ERR NO	PROCEDURE	LOCATION	MESSAGE

NO ISSUES OR WARNINGS DETECTED

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 4A

DESCRIPTION: 1601C
TOTAL AREA TO HYDROGRAPH: 235 acres
HYDROGRAPH PEAK: 404 cfs
TIME OF PEAK: 1158 minutes
HYDROGRAPH VOLUME: 28.72 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	4.63	200	4.99	300	5.65	400	5.67
500	5.93	600	6.23	700	6.50	800	6.79	900	7.42
1000	8.56	1050	9.89	1100	12.37	1110	31.19	1120	33.81
1130	57.55	1131	59.91	1132	61.85	1133	64.33	1134	67.14
1135	70.12	1136	71.87	1137	75.65	1138	79.01	1139	82.76
1140	87.25	1141	93.21	1142	99.27	1143	104.62	1144	109.76
1145	117.73	1146	128.53	1147	138.35	1148	148.81	1149	174.16
1150	204.40	1151	221.30	1152	274.77	1153	314.72	1154	350.07
1155	372.04	1156	384.96	1157	395.12	1158	404.31	1159	392.98
1160	372.77	1161	369.42	1162	318.19	1163	271.20	1164	246.28
1165	228.92	1166	216.05	1167	203.84	1168	191.80	1169	179.84
1170	163.90	1171	152.95	1172	143.43	1173	135.83	1174	127.31
1175	122.67	1176	118.18	1177	114.32	1178	110.57	1179	106.39
1180	102.62	1181	98.44	1182	94.14	1183	89.90	1184	85.80
1185	81.90	1186	78.10	1187	74.57	1188	71.25	1189	68.11
1190	65.07	1191	62.17	1192	59.35	1193	56.83	1194	54.46
1195	52.22	1196	50.08	1197	48.04	1198	46.11	1199	44.23
1200	42.65	1201	41.07	1202	39.62	1203	38.14	1204	36.78
1205	35.43	1206	34.18	1207	32.99	1208	31.78	1209	30.72
1210	29.61	1211	28.64	1212	27.72	1213	26.90	1214	26.04
1215	25.26	1216	24.63	1217	23.97	1218	23.30	1219	22.59
1220	22.00	1221	21.43	1222	20.88	1223	20.41	1224	20.07
1225	19.76	1226	19.39	1227	19.05	1228	18.78	1229	18.53
1230	18.20	1231	17.88	1232	17.64	1233	17.36	1234	17.05
1235	16.78	1236	16.50	1237	16.23	1238	15.99	1239	15.69
1240	15.44	1241	15.24	1242	14.97	1243	14.74	1244	14.57
1245	14.32	1246	14.11	1247	13.96	1248	13.73	1249	13.54
1250	13.41	1251	13.19	1252	13.02	1253	12.90	1254	12.69
1255	12.54	1256	12.44	1257	12.25	1258	12.11	1259	12.02
1260	11.84	1261	11.71	1262	11.55	1263	11.34	1264	11.21

1265	11.09	1266	10.86	1267	10.69	1268	10.56	1269	10.37
1270	10.19	1271	10.01	1272	9.94	1273	9.87	1274	9.72
1275	9.59	1276	9.56	1277	9.52	1278	9.39	1279	9.28
1280	9.26	1281	9.24	1282	9.13	1283	9.03	1284	9.02
1285	9.00	1286	8.90	1287	8.81	1288	8.81	1289	8.80
1290	8.70	1291	8.63	1292	8.64	1293	8.59	1294	8.55
1295	8.47	1296	8.48	1297	8.48	1298	8.40	1299	8.33
1300	8.35	1310	7.19	1320	6.75	1330	6.61	1340	6.46
1350	5.34	1360	4.86	1370	4.85	1380	4.86	1390	4.78
1400	4.81	1420	4.06	1440	4.06	1460	2.55	1500	2.55

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 9C

TOTAL AREA TO HYDROGRAPH: 48 acres
HYDROGRAPH PEAK: 136 cfs
TIME OF PEAK: 1155 minutes
HYDROGRAPH VOLUME: 11.04 acre-ft

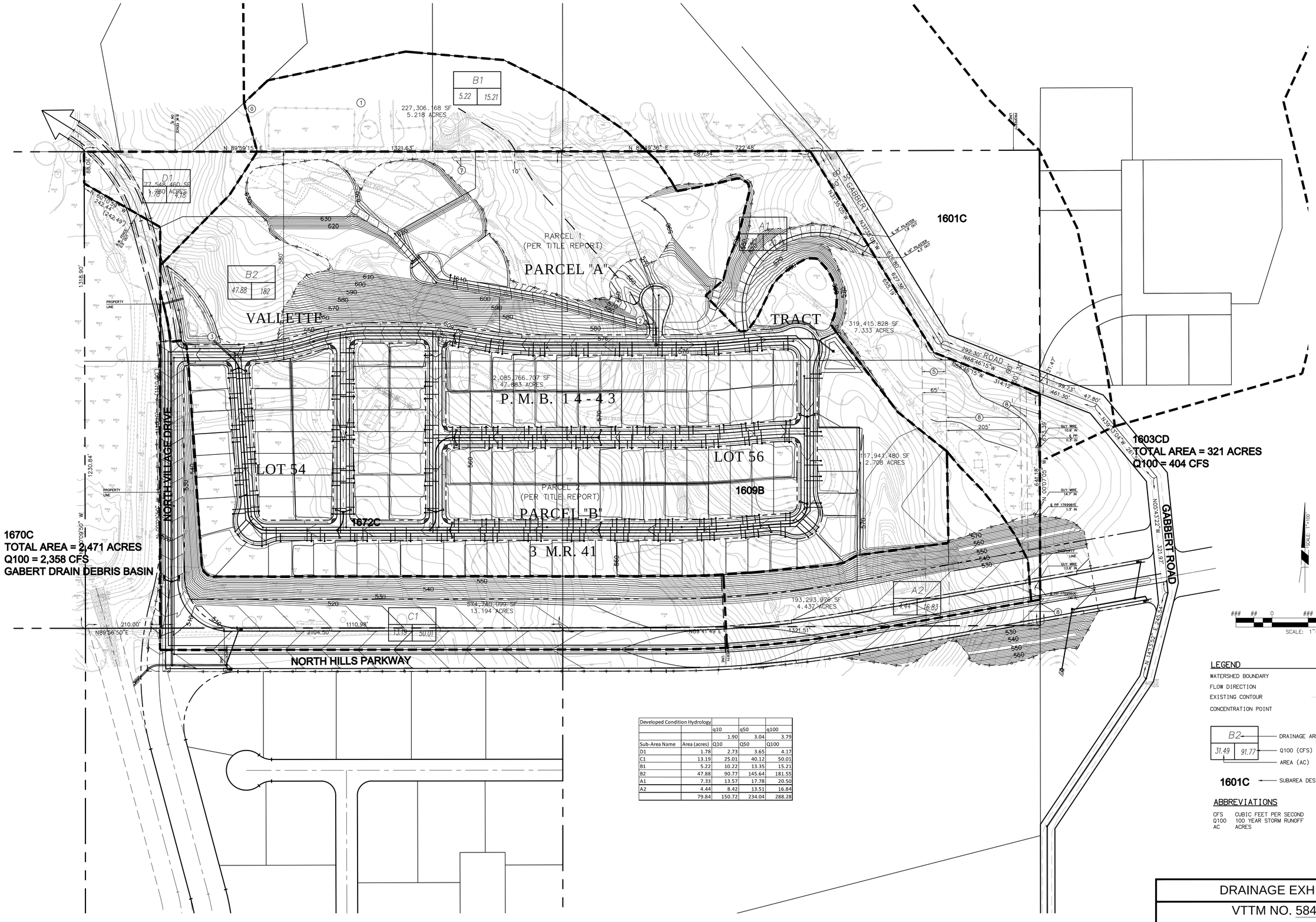
TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)	TIME (min)	FLOW (cfs)
0	0.00	100	2.83	200	3.07	300	3.51	400	3.53
500	3.70	600	3.90	700	4.07	800	4.28	900	4.69
1000	5.45	1050	6.33	1100	6.78	1110	9.14	1120	9.45
1130	17.15	1131	19.06	1132	20.33	1133	20.94	1134	21.46
1135	22.46	1136	23.57	1137	24.10	1138	24.61	1139	25.72
1140	26.97	1141	28.39	1142	30.33	1143	32.42	1144	34.09
1145	35.83	1146	39.46	1147	44.15	1148	47.97	1149	52.85
1150	63.39	1151	76.80	1152	88.88	1153	108.70	1154	129.30
1155	136.22	1156	133.96	1157	130.72	1158	124.33	1159	111.72
1160	96.61	1161	85.05	1162	66.76	1163	44.86	1164	31.58
1165	25.42	1166	21.10	1167	17.70	1168	14.60	1169	11.97
1170	9.57	1171	9.04	1172	8.60	1173	8.26	1174	7.94
1175	7.63	1176	7.40	1177	7.23	1178	7.10	1179	6.91
1180	6.71	1181	6.57	1182	6.47	1183	6.38	1184	6.31
1185	6.23	1186	6.18	1187	6.14	1188	6.13	1189	6.13
1190	6.14	1191	6.14	1192	6.12	1193	6.11	1194	6.10
1195	6.09	1196	6.10	1197	6.10	1198	6.10	1199	6.09
1200	6.09	1201	6.09	1202	6.08	1203	6.05	1204	6.00
1205	5.93	1206	5.85	1207	5.77	1208	5.68	1209	5.60
1210	5.51	1211	5.44	1212	5.39	1213	5.35	1214	5.33
1215	5.32	1216	5.32	1217	5.32	1218	5.32	1219	5.33
1220	5.33	1221	5.33	1222	5.35	1223	5.35	1224	5.34
1225	5.34	1226	5.35	1227	5.36	1228	5.35	1229	5.34
1230	5.35	1231	5.36	1232	5.35	1233	5.34	1234	5.34
1235	5.33	1236	5.31	1237	5.31	1238	5.30	1239	5.29
1240	5.27	1241	5.26	1242	5.25	1243	5.25	1244	5.25
1245	5.25	1246	5.25	1247	5.24	1248	5.24	1249	5.24
1250	5.24	1251	5.24	1252	5.24	1253	5.24	1254	5.24
1255	5.24	1256	5.24	1257	5.24	1258	5.24	1259	5.24
1260	5.24	1261	5.24	1262	5.24	1263	5.23	1264	5.18
1265	5.13	1266	5.09	1267	5.04	1268	4.98	1269	4.92

1270	4.86	1271	4.82	1272	4.77	1273	4.75	1274	4.74
1275	4.74	1276	4.72	1277	4.72	1278	4.73	1279	4.73
1280	4.72	1281	4.71	1282	4.72	1283	4.73	1284	4.72
1285	4.71	1286	4.72	1287	4.73	1288	4.72	1289	4.71
1290	4.72	1291	4.73	1292	4.72	1293	4.71	1294	4.72
1295	4.71	1296	4.70	1297	4.70	1298	4.72	1299	4.72
1300	4.71	1310	4.21	1320	3.90	1330	3.98	1340	3.92
1350	3.33	1360	2.86	1370	2.95	1380	2.95	1390	2.92
1400	2.93	1420	2.83	1440	2.83	1460	2.83	1500	2.83

VCRat Model Input

Model Lines

```
005   115  001A Header place holder
005   115  004A Header place holder
005   115  009C Header place holder
999
999
006   115  001A 040000005410B98103800004000                    G1
006   115  002A 040000007111B98101700004120
006   115  003A 040015005609B98 01900003950
006   115  004A 040015005410B98                              1
006   115  005A 010      099A97
006   115  006B 020015007011B98501275000470   001200               000000
006   115  007B 010      099A97
006   115  008C 050023004809B9850072000185015000080O              000000
006   115  009C 010      099A97                              1  2
999
```



Developed Condition Hydrology				
		q10	q50	q100
		1.90	3.04	3.79
Sub-Area Name	Area (acres)	Q10	Q50	Q100
D1	1.78	2.73	3.65	4.17
C1	13.19	25.01	40.12	50.01
B1	5.22	10.22	13.35	15.21
B2	47.88	90.77	145.64	181.55
A1	7.33	13.57	17.78	20.50
A2	4.44	8.42	13.51	16.84
	79.84	150.72	234.04	288.28

LEGEND

WATERSHED BOUNDARY

FLOW DIRECTION

EXISTING CONTOUR 12

CONCENTRATION POINT (0)

B2 — DRAINAGE AREA DESIGNATION
31.49 / 91.77 — Q100 (CFS) / AREA (AC)

1601C — SUBAREA DESIGNATION FROM 2003 STUDY

ABBREVIATIONS

CFS CUBIC FEET PER SECOND
Q100 100 YEAR STORM RUNOFF
AC ACRES

DRAINAGE EXHIBITS

VTTM NO. 5847

PROPOSED CONDITION DRAINAGE MAP

PREPARED BY
DELANE ENGINEERING
2812 SANTA MONICA BLVD. SUITE 206
SANTA MONICA, CA 90404
PHONE: 310.566.5711-WWW.DELANEENGINEERING.COM

OWNER/SUBDIVIDER
WEST POINTE HOMES
RASMUSSEN DEVELOPMENT
26500 WEST AGOURA ROAD #652
CALABASAS, CA 91302 OFFICE:
805.370.0075 FAX:
805.370.0165
JAMES RASMUSSEN

SHEET 1 OF 1 SHEETS

PLOT DATE: 11/2/16 4:10 PM FILE NAME: H:\PDATA\101015\CAD\LAND\DLV\HYDRO\115-TTM-HYD-PRO.DWG

SAVE DATE:10/27/16 CSOUS

APPENDIX C

Storm Water BMP Calculation

Sizing Worksheet

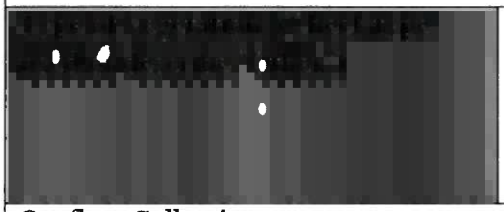
Designer: DELANE ENGINEERING

Project Proponent:

Date: 10/26/16

Project: TRACT 5847

Location: MCCARRICK, CA



____ Native Grasses

____ Irrigated Turf Grass

____ Other

Outflow Collection:

Step 1: Determine water quality design volume

1-1. Enter Project area (acres), $A_{project}$	$A_{project}$ = 66 acres
1-2. Enter the maximum allowable percent of the Project area that may be effective impervious area (%) (refer to permit), ranges from 5-30%, $\%_{allowable}$	$\%_{allowable}$ = 5 %
1-3. Determine the maximum allowable effective impervious area (acres), $EIA_{allowable} = (A_{project})*(\%_{allowable})$	$EIA_{allowable}$= acres (66)(5) = 3.4
1-4. Enter Project impervious fraction, *Imp* (e.g. 60% = 0.60)	Imp= 0.23
1-5. Determine the Project Total Impervious area (acres), $TIA=A_{project}*Imp$	TIA= acres 15.64
1-6. Determine the total area from which runoff must be retained (acres), $A_{retain}=TIA-EIA_{allowable}$	A_{retain} = acres 12.24
1-7. Determine pervious runoff coefficient using Table E-1, C_p	C_p = 0.05
1-8. Calculate runoff coefficient, $C = 0.95*imp + C_p\ (1-imp)$	C = 0.95(0.23) + 0.05(1−0.23) = 0.257
1-9. Enter design rainfall depth of the storm (in), P_i	P_i = 3/4 in

1-10. Calculate rainfall depth (ft), $P = P_i/12$	P = ft 0.0625
1-11. Calculate water quality design volume (ft³), $SQDV=43560\times C^*P^*A_{retain}$	SQDV= ft³ 8,564.11
Step 2: Determine the design percolation rate	
2-1. Enter measured soil percolation rate (in/hr, 0.5 in/hr min.), $P_{measured}$	$P_{measured}$ = 2.5 in/hr
2-2. Determine percolation rate correction factor, S_A based on suitability assessment (see Section 6 INF-1)	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 combined safety factor, $S = S_A \times S_b$	S = 6
2-5. Calculate the design percolation rate (in/hr), $P_{design} = P_{measured}/S$	P_{design} = in/hr 0.41
Step 3: Calculate the surface area	
3-1. Enter required drain time(hours,72 hrs max.), t	t = 72 hrs
3-2. Calculate max. depth of runoff that can be infiltrated within the t (ft), $d_{max} = P_{design}\ t/12$	d_{max} = ft 2.5
3-3. For basins, select ponding depth (ft), d_p, such that $d_p \le d_{max}$	d_p = 2 ft
3-4. For trenches, enter trench fill aggregate porosity, n_t	n_t = N/A
3-5. For trenches, enter depth of trench fill (ft), d_t	d_t = N/A ft
3-5. For trenches, select ponding depth d_p such that $d_p \le d_{max} - n_t d_t$	d_p= N/A ft
3-6. Enter the time to fill infiltration basin or trench with water (Use 2 hours for most designs), T	T = 2 hrs

3-7. Calculate infiltrating surface area for infiltration basin (ft²): $A_b = SQDV/((T\,P_{design}/12)+d_p)$ OR Calculate infiltrating surface area for infiltration trenches or aggregate- filled drywells (ft²): $A_t = SQDV/((T\,P_{design}/12)+n_t d_t+dp)$	$= \frac{8564}{\frac{72}{12}+2} = 1,070.50$ sf $A_b =$ ft² $A_t =$ N/A ft²
Step 4: Size the forebay (infiltration basins or trenches)	
If a separate pre-treatment unit is designed for the infiltration facility, skip to Step 5. If not, continue through 4-1 through 4-4.	
4-1. Calculate the volume of the forebay (ft³), $V_{forebay}$=0.25*SQDV	$V_{forebay}=$ ft³
4-2. Determine forebay depth (ft), $d_{forebay}$	$d_{forebay}=$ ft
4-3. Calculate forebay bottom surface area (ft²), $A_{forebay}=V_{forebay}/d_{forebay}$	$A_{forebay}=$ ft²
4-4. Provide outlet pipe such that the forebay drains to the infiltration facility within 10 minutes.	
Step 5: Provide conveyance capacity for filter clogging	
5-1.The infiltration facility should be placed off-line, but an emergency overflow must still be provided in the event the filter becomes clogged. Design emergency overflow in accordance with applicable standards of the Ventura County Flood Control District or local jurisdiction.	

Table 6-8: Design Related Considerations for Infiltration Facility Safety Factors

Consideration	High Concern	Medium Concern	Low Concern
Tributary area size	Greater than 10 acres.	Greater than 2 acres but less than 10 acres.	2 acres or less.
Level of pre-treatment/ expected influent sediment loads	Pre-treatment from gross solids removal devices only, such as hydrodynamic separators, racks and screens, AND tributary area includes landscaped areas, steep slopes, high traffic areas, or any other areas expected to produce high sediment, trash, or debris loads.	Good pre-treatment with BMPs that mitigate coarse sediments such as vegetated swales AND influent sediment loads from the tributary area are expected to be relatively low (e.g., low traffic, mild slopes, disconnected impervious areas, etc.).	Excellent pre-treatment with BMPs that mitigate fine sediments such as bioretention or media filtration OR sedimentation or facility only treats runoff from relatively clean surfaces, such as rooftops.
Redundancy of treatment	No redundancy in BMP treatment train.	Medium redundancy, other BMPs available in treatment train to maintain at least 50% of function of facility in event of failure.	High redundancy, multiple components capable of operating independently and in parallel, maintaining at least 90% of facility functionality in event of failure.
Compaction during construction	Construction of facility on a compacted site or elevated probability of unintended/ indirect compaction.	Medium probability of unintended/ indirect compaction.	Heavy equipment actively prohibited from infiltration areas during construction and low probability of unintended/ indirect compaction.

Table 6-4: Infiltration Facility Safety Factor Determination Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w x v
A	Suitability Assessment	Soil assessment methods	0.25	3	0.75
		Predominant soil texture	0.25	2	0.50
		Site soil variability	0.25	2	0.50
		Depth to groundwater / impervious layer	0.25	1	0.25
		Suitability Assessment Safety Factor, $S_A = \Sigma p$			2.0
B	Design	Tributary area size	0.25	3	0.75
		Level of pre-treatment/ expected sediment loads	0.25	3	0.75
		Redundancy	0.25	3	0.75
		Compaction during construction	0.25	3	0.75
		Design Safety Factor, $S_B = \Sigma p$			3
Combined Safety Factor = $S_A \times S_B$					6

Table 6-2: Suitability Assessment Related Considerations for Infiltration Facility Safety Factors

Consideration	High Concern	Medium Concern	Low Concern
Assessment methods	Use of soil survey maps or simple texture analysis to estimate short-term infiltration rates	Direct measurement of ≥ 20 percent of infiltration area with localized infiltration measurement methods (e.g., infiltrometer)	Direct measurement of ≥ 50 percent of infiltration area with localized infiltration measurement methods or Use of extensive test pit infiltration measurement methods
Ventura Hydrology Manual soil number (measured infiltration rate)	3 (f = 0.5 – 0.64)	4 or 5 (f = 0.65 –0.91)	6 or 7 (f = 0.92 or higher)
Site soil variability	Highly variable soils indicated from site assessment or limited soil borings collected during site assessment	Soil borings/test pits indicate moderately homogeneous soils	Multiple soil borings/test pits indicate relatively homogeneous soils
Depth to groundwater/ impervious layer	<10 ft below facility bottom	10-30 ft below facility bottom	>30 below facility bottom

Calculation Procedure

1) Determine the area from which runoff must be retained on-site (A_{retain}) using method above.

2) Determine the runoff coefficient per the following method:

$$C = 0.95*imp + C_p (1-imp) \quad \text{(Equation E-7)}$$

Where:

C = runoff coefficient

imp = impervious fraction of watershed

C_p = pervious runoff coefficient, determined using table below

Table E-1: Pervious Runoff Coefficient Based on Ventura Soil Type

Ventura Soil Type (Soil Number)	Cp value
1	0.15
2	0.10
3	0.10
4	0.05
5	0.05
6	0
7	0

← Cp

3) The volume can be calculated using equation E-8 below:

$$SQDV = C*(0.75/12)*A_{retain} \quad \text{(Equation E-8)}$$

Where:

SQDV = the water quality design volume (acre-feet)

C = runoff coefficient, calculated by equation (E-7) above

0.75 = the design rainfall depth (in) [based on sizing method (c)]

A_{retain} = the drainage area from which runoff must be retained (acres)

APPENDIX D

Hydraulic Calculations

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Nov 2 2016

18in RCP SD, S=0.0200, dept= 0.75 full

Circular

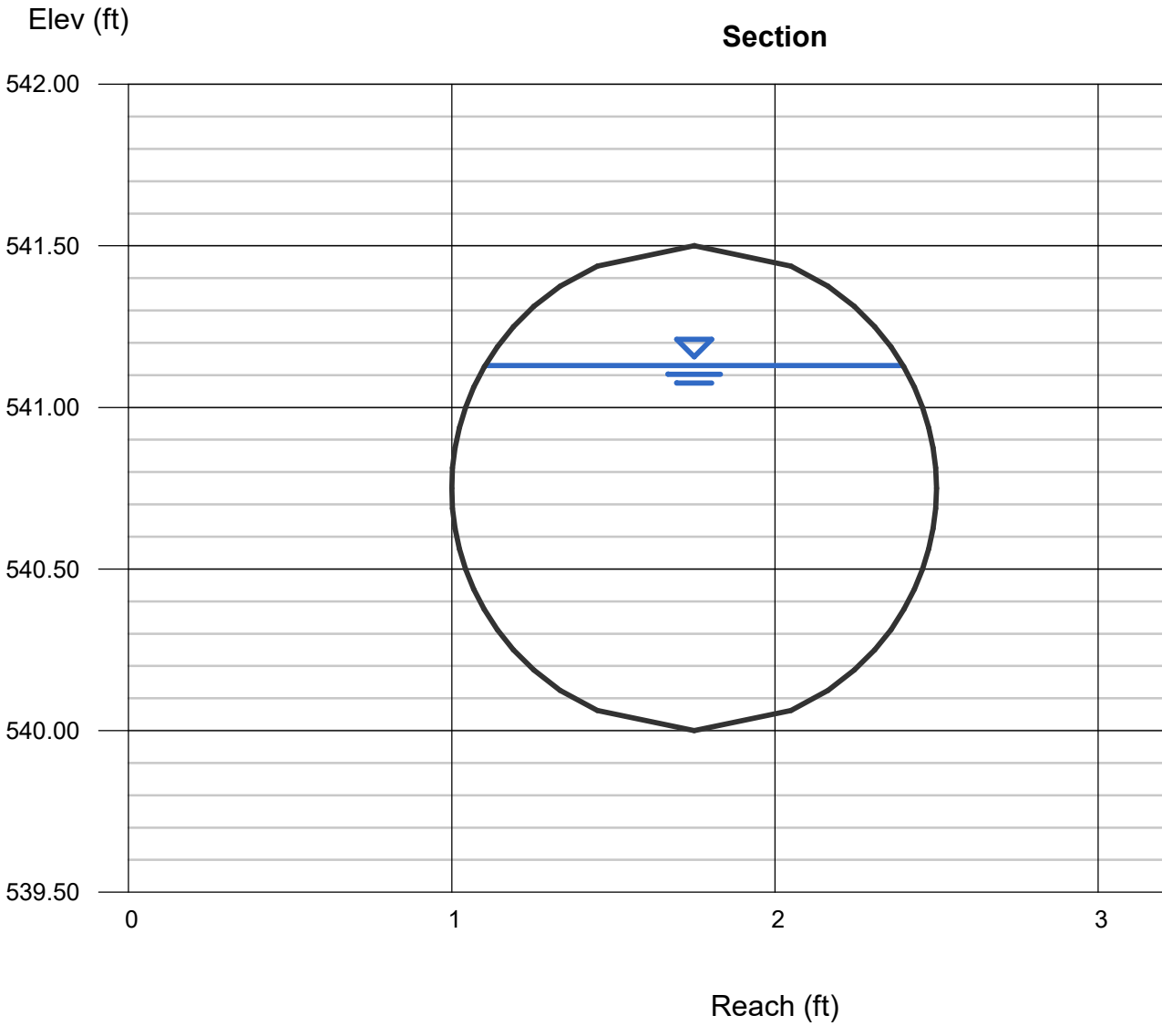
Diameter (ft)	= 1.50
Invert Elev (ft)	= 540.00
Slope (%)	= 2.00
N-Value	= 0.010

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.13

Highlighted

Depth (ft)	= 1.13
Q (cfs)	= 17.73
Area (sqft)	= 1.43
Velocity (ft/s)	= 12.39
Wetted Perim (ft)	= 3.16
Crit Depth, Yc (ft)	= 1.45
Top Width (ft)	= 1.29
EGL (ft)	= 3.52



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Nov 2 2016

24in RCP SD, S=0.0200, dept= 0.75 full

Circular

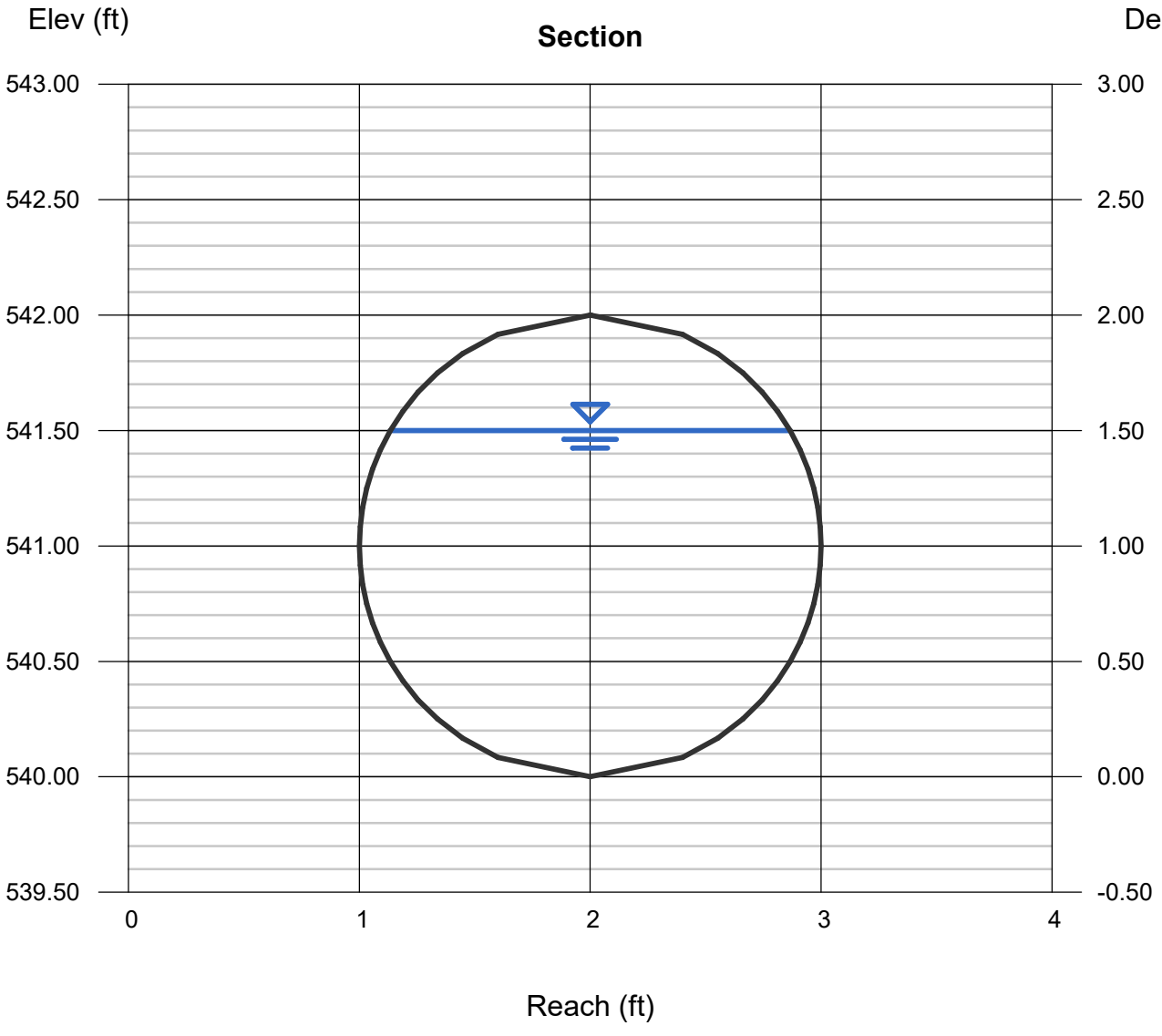
Diameter (ft)	= 2.00
Invert Elev (ft)	= 540.00
Slope (%)	= 2.00
N-Value	= 0.010

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.50

Highlighted

Depth (ft)	= 1.50
Q (cfs)	= 37.93
Area (sqft)	= 2.53
Velocity (ft/s)	= 15.00
Wetted Perim (ft)	= 4.19
Crit Depth, Yc (ft)	= 1.95
Top Width (ft)	= 1.73
EGL (ft)	= 5.00



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Nov 2 2016

36in RCP SD, S=0.0200, dept= 0.75 full

Circular

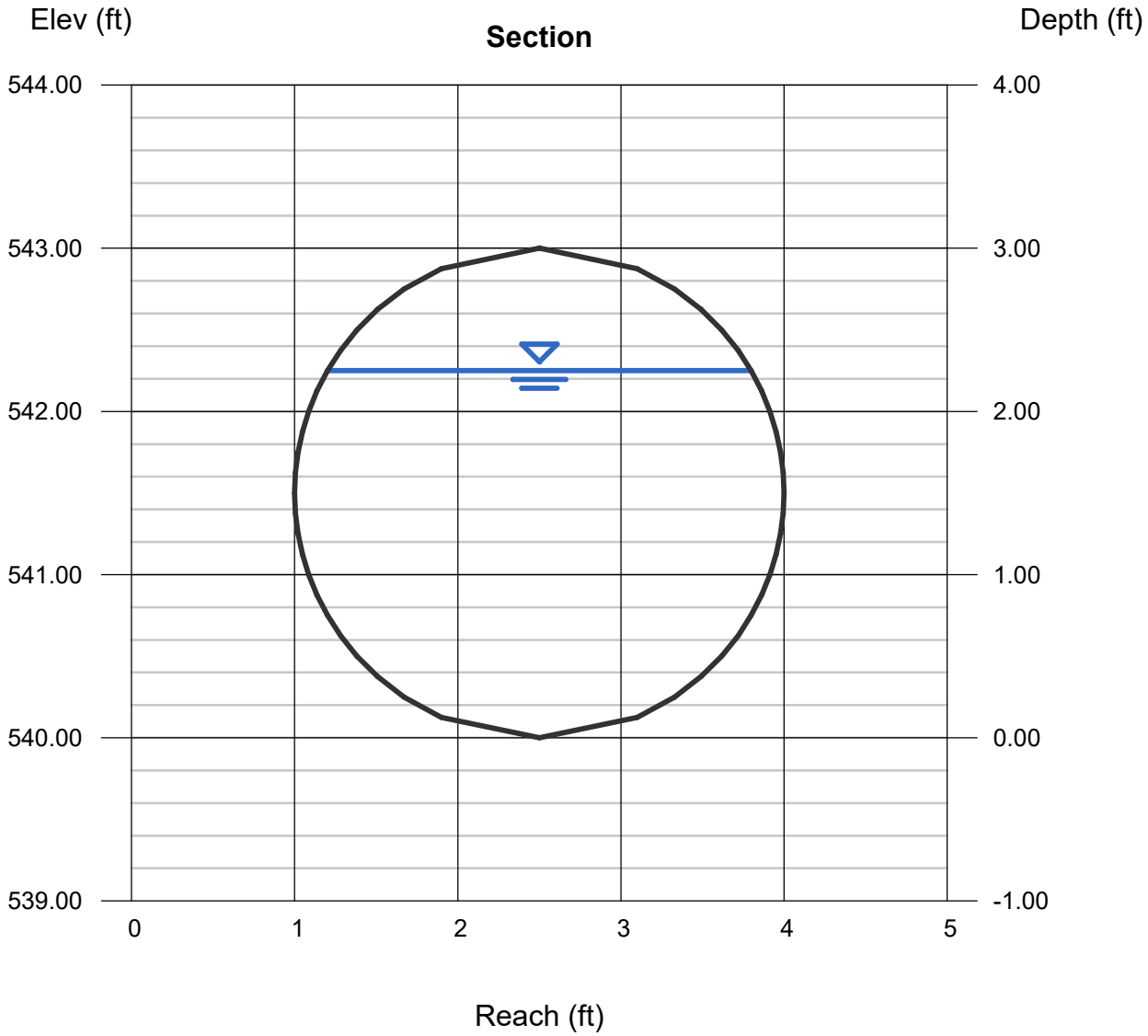
Diameter (ft)	= 3.00
Invert Elev (ft)	= 540.00
Slope (%)	= 2.00
N-Value	= 0.010

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 2.25

Highlighted

Depth (ft)	= 2.25
Q (cfs)	= 111.86
Area (sqft)	= 5.69
Velocity (ft/s)	= 19.66
Wetted Perim (ft)	= 6.29
Crit Depth, Yc (ft)	= 2.94
Top Width (ft)	= 2.60
EGL (ft)	= 8.26



Inlet Report

W=7, S=0.0020 for A=2ac

Curb Inlet

Location	= On grade
Curb Length (ft)	= 7.00
Throat Height (in)	= 6.00
Grate Area (sqft)	= -0-
Grate Width (ft)	= -0-
Grate Length (ft)	= -0-

Gutter

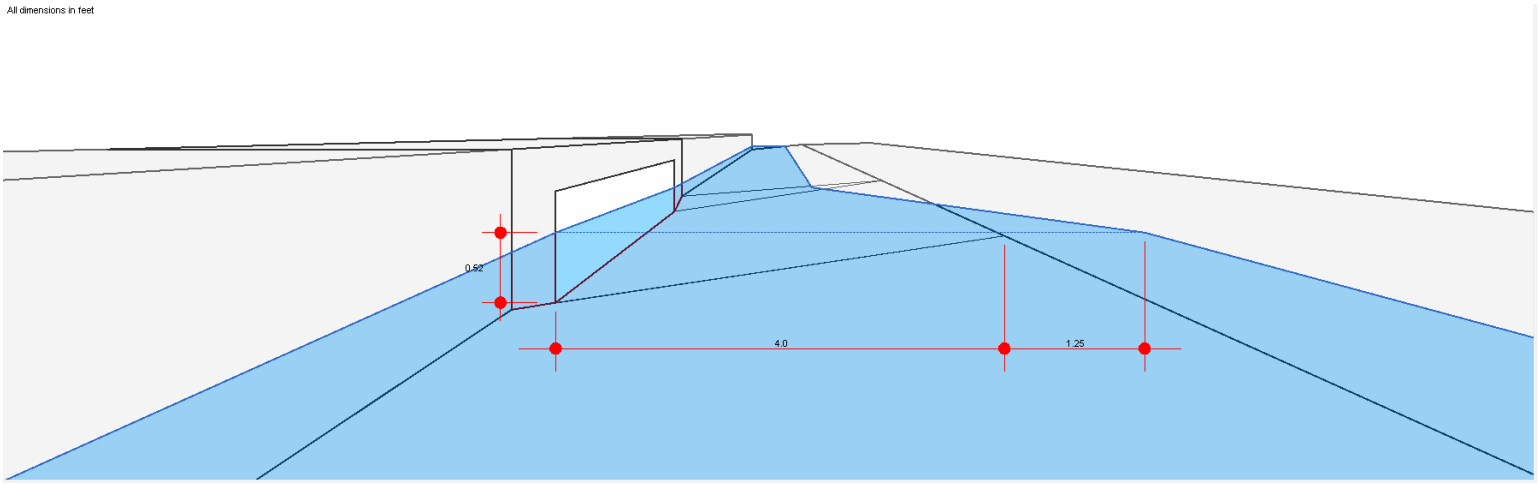
Slope, Sw (ft/ft)	= 0.083
Slope, Sx (ft/ft)	= 0.020
Local Depr (in)	= 2.00
Gutter Width (ft)	= 4.00
Gutter Slope (%)	= 2.00
Gutter n-value	= 0.016

Calculations

Compute by:	Known Q
Q (cfs)	= 3.80

Highlighted

Q Total (cfs)	= 3.80
Q Capt (cfs)	= 2.77
Q Bypass (cfs)	= 1.03
Depth at Inlet (in)	= 6.28
Efficiency (%)	= 73
Gutter Spread (ft)	= 5.25
Gutter Vel (ft/s)	= 4.87
Bypass Spread (ft)	= 2.65
Bypass Depth (in)	= 2.64



Inlet Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Nov 2 2016

W=14, S=0.0020 for Q=8cfs

Curb Inlet

Location	= On grade
Curb Length (ft)	= 14.00
Throat Height (in)	= 6.00
Grate Area (sqft)	= -0-
Grate Width (ft)	= -0-
Grate Length (ft)	= -0-

Gutter

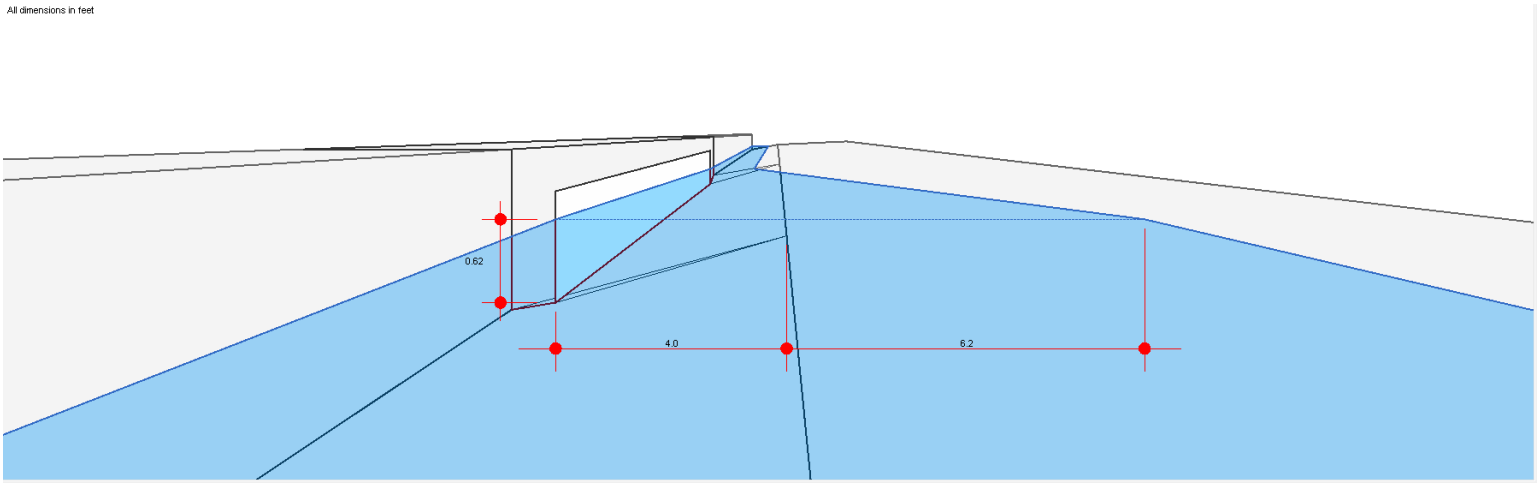
Slope, Sw (ft/ft)	= 0.083
Slope, Sx (ft/ft)	= 0.020
Local Depr (in)	= 2.00
Gutter Width (ft)	= 4.00
Gutter Slope (%)	= 2.00
Gutter n-value	= 0.016

Calculations

Compute by:	Known Q
Q (cfs)	= 8.00

Highlighted

Q Total (cfs)	= 8.00
Q Capt (cfs)	= 7.15
Q Bypass (cfs)	= 0.85
Depth at Inlet (in)	= 7.47
Efficiency (%)	= 89
Gutter Spread (ft)	= 10.20
Gutter Vel (ft/s)	= 5.18
Bypass Spread (ft)	= 2.53
Bypass Depth (in)	= 2.52



Weir Report

Q100= Inflow to Detention Basin from Street Q100-Q10

Rectangular Weir

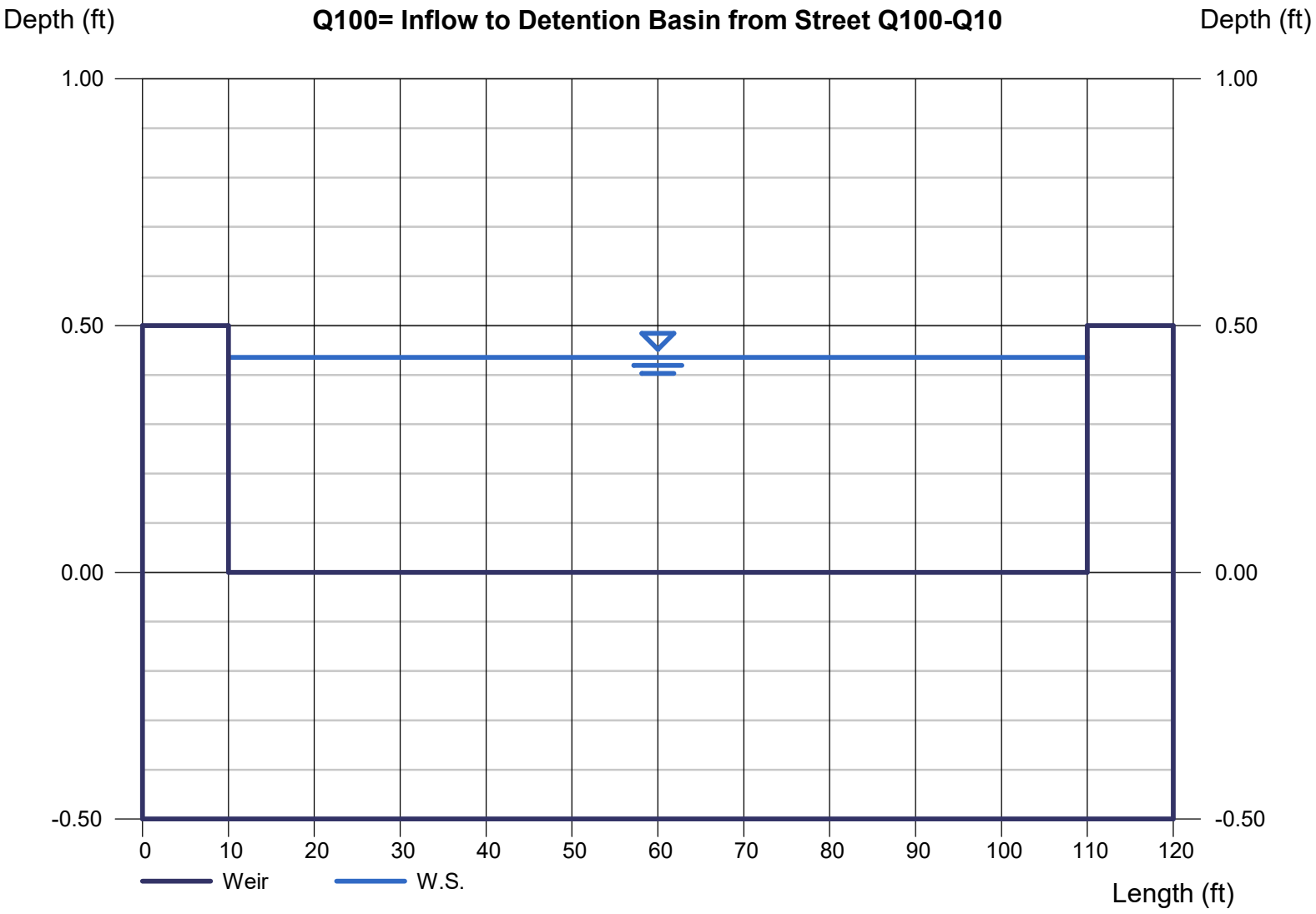
Crest	= Sharp
Bottom Length (ft)	= 100.00
Total Depth (ft)	= 0.50

Calculations

Weir Coeff. Cw	= 3.33
Compute by:	Known Q
Known Q (cfs)	= 95.80

Highlighted

Depth (ft)	= 0.44
Q (cfs)	= 95.80
Area (sqft)	= 43.56
Velocity (ft/s)	= 2.20
Top Width (ft)	= 100.00



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Nov 2 2016

Street Dry Lane Calc- Max 10-yr Tributary Q

User-defined

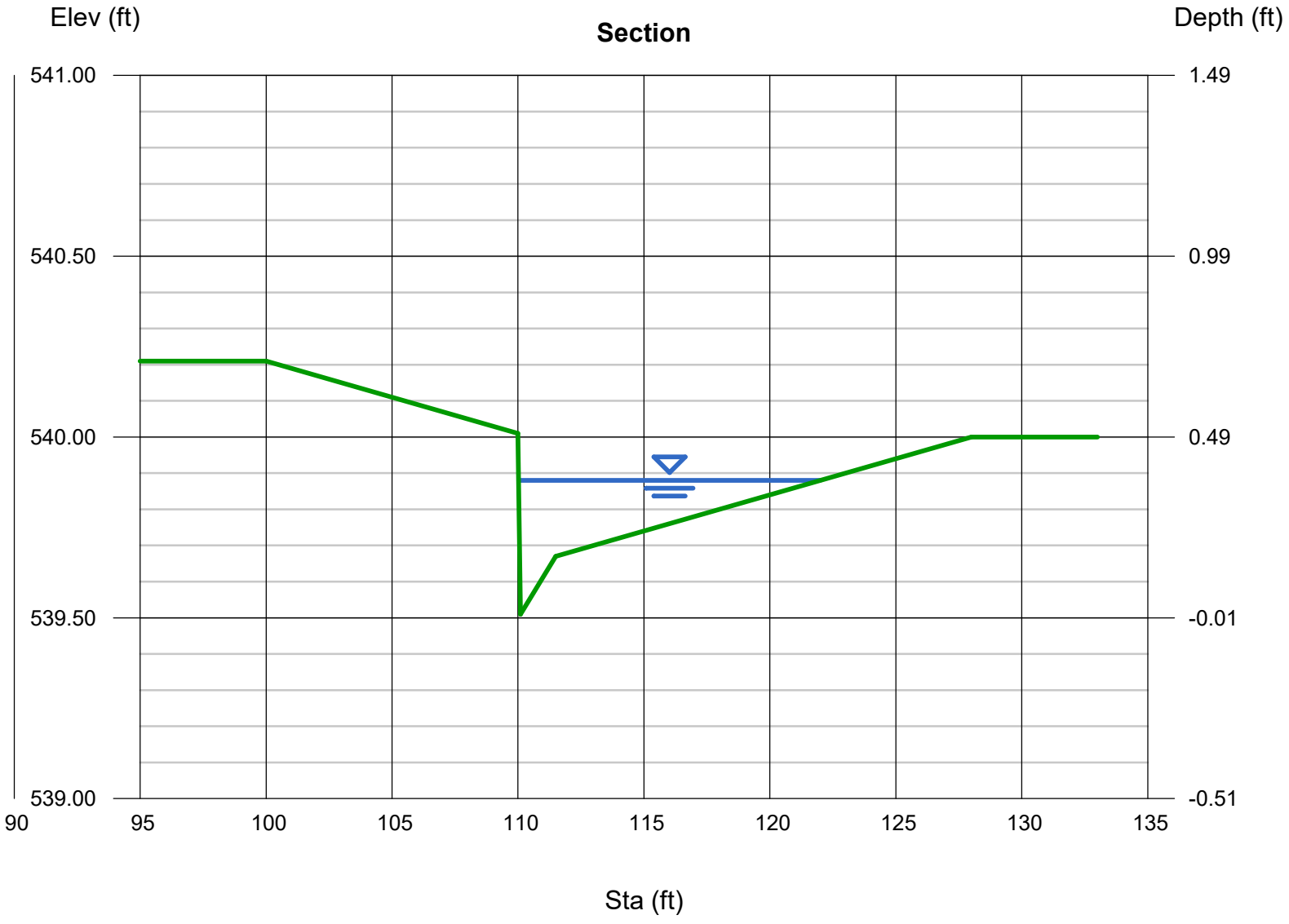
Invert Elev (ft)	= 539.51
Slope (%)	= 2.00
N-Value	= 0.010

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.37

Highlighted

Depth (ft)	= 0.37
Q (cfs)	= 7.963
Area (sqft)	= 1.52
Velocity (ft/s)	= 5.23
Wetted Perim (ft)	= 12.29
Crit Depth, Yc (ft)	= 0.49
Top Width (ft)	= 11.97
EGL (ft)	= 0.80



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Nov 2 2016

Street Right of Way Q50- Capacity

User-defined

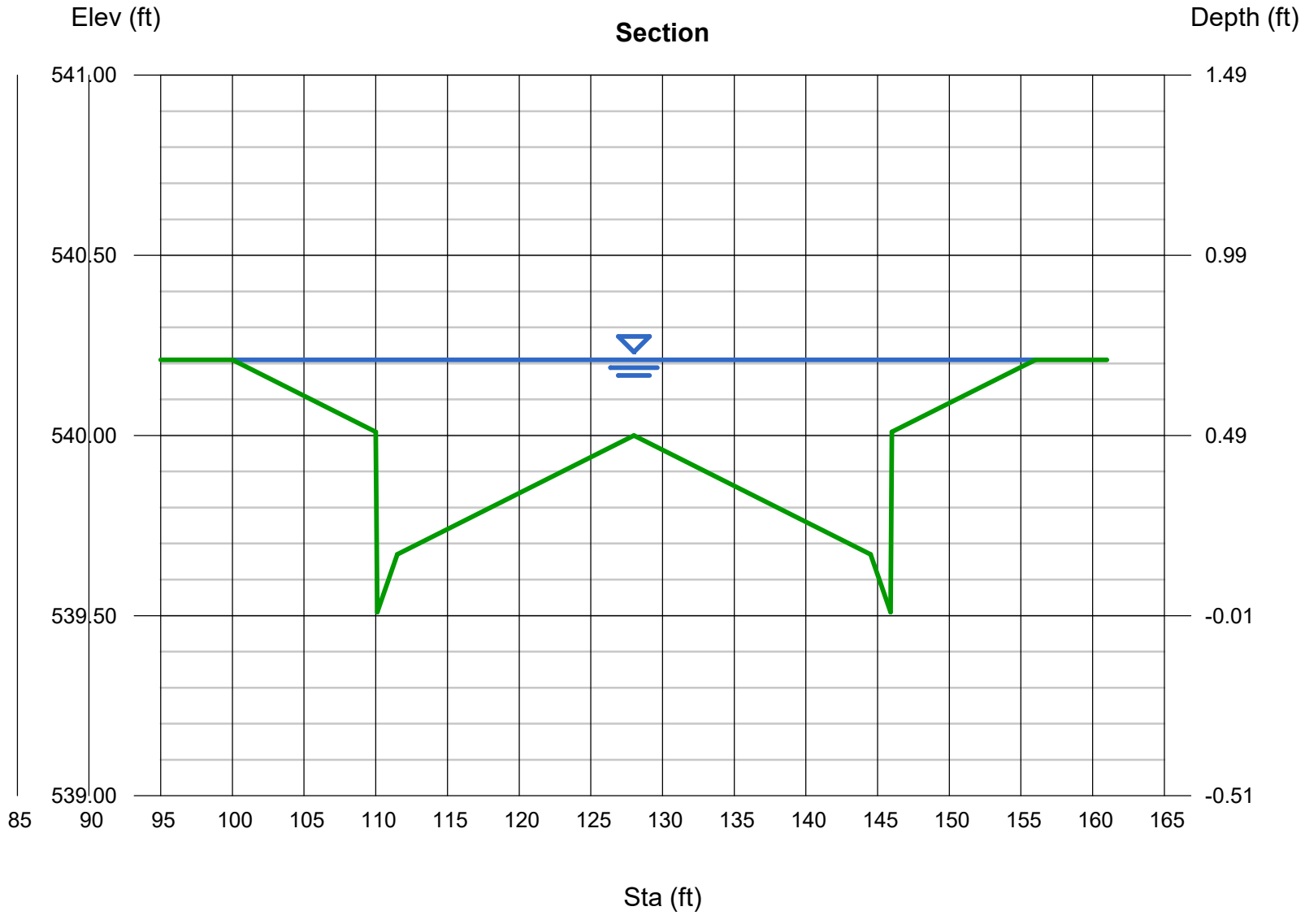
Invert Elev (ft)	= 539.51
Slope (%)	= 2.00
N-Value	= 0.013

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.70

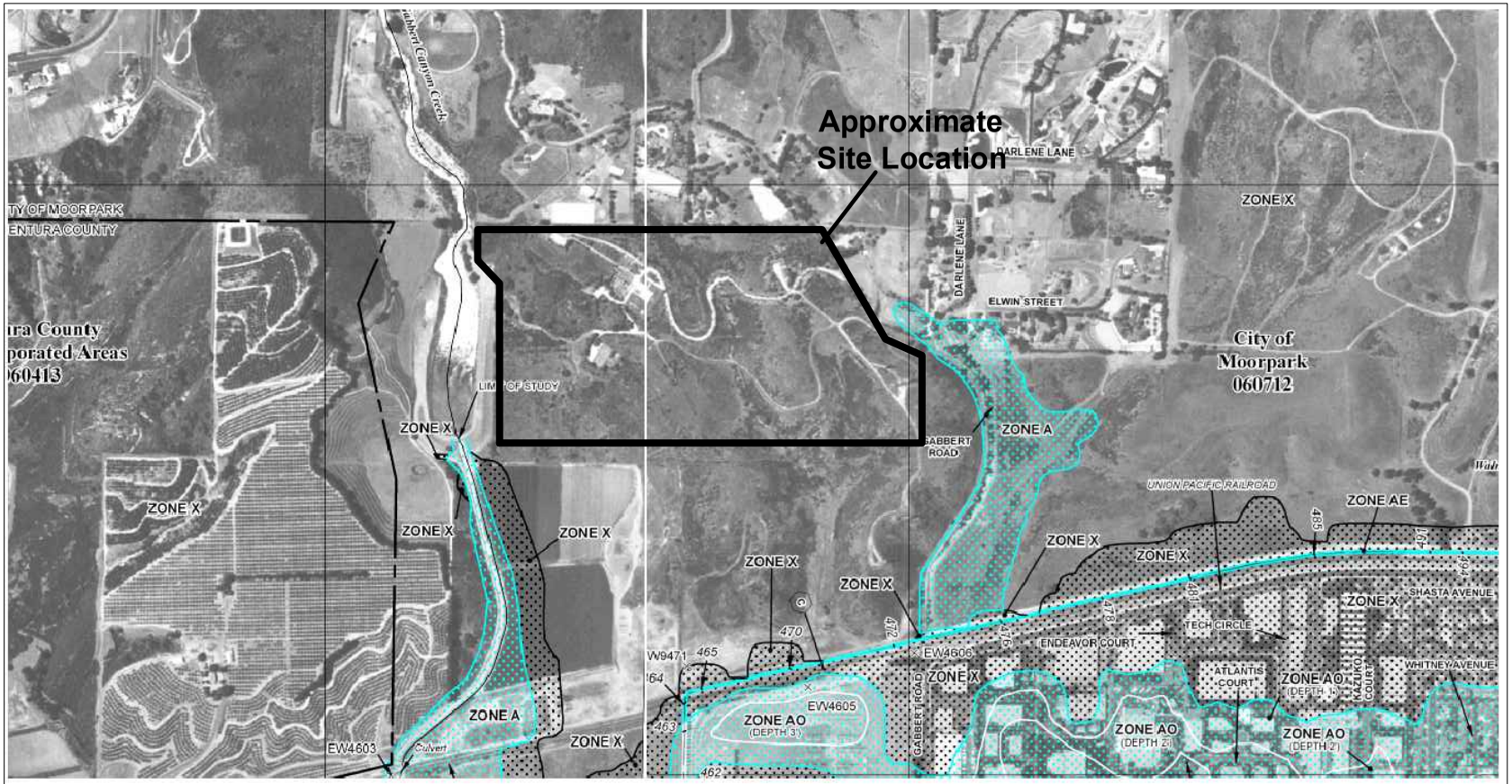
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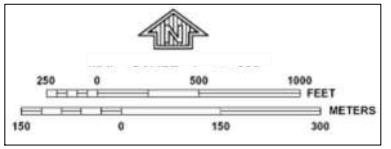
Depth (ft)	= 0.70
Q (cfs)	= 113.63
Area (sqft)	= 16.20
Velocity (ft/s)	= 7.01
Wetted Perim (ft)	= 56.85
Crit Depth, Yc (ft)	= 0.70
Top Width (ft)	= 56.00
EGL (ft)	= 1.46

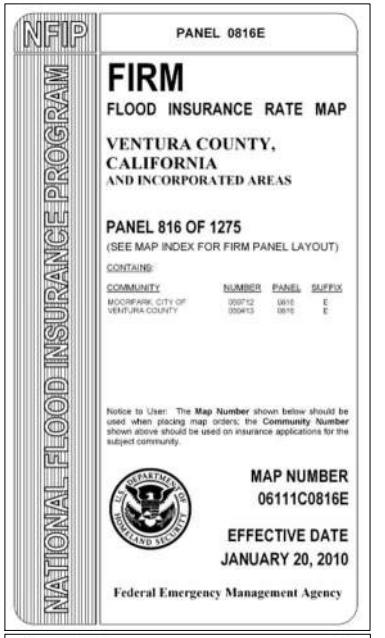


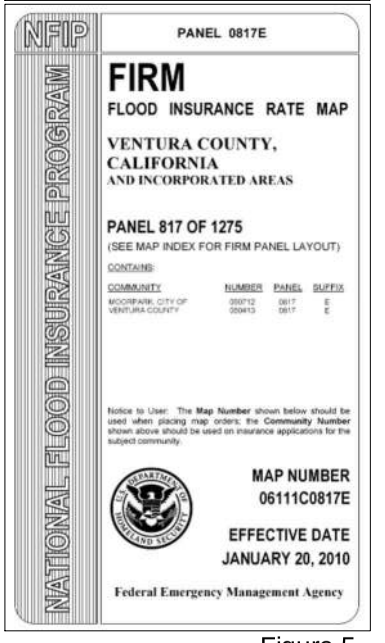
APPENDIX E

Reference









LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

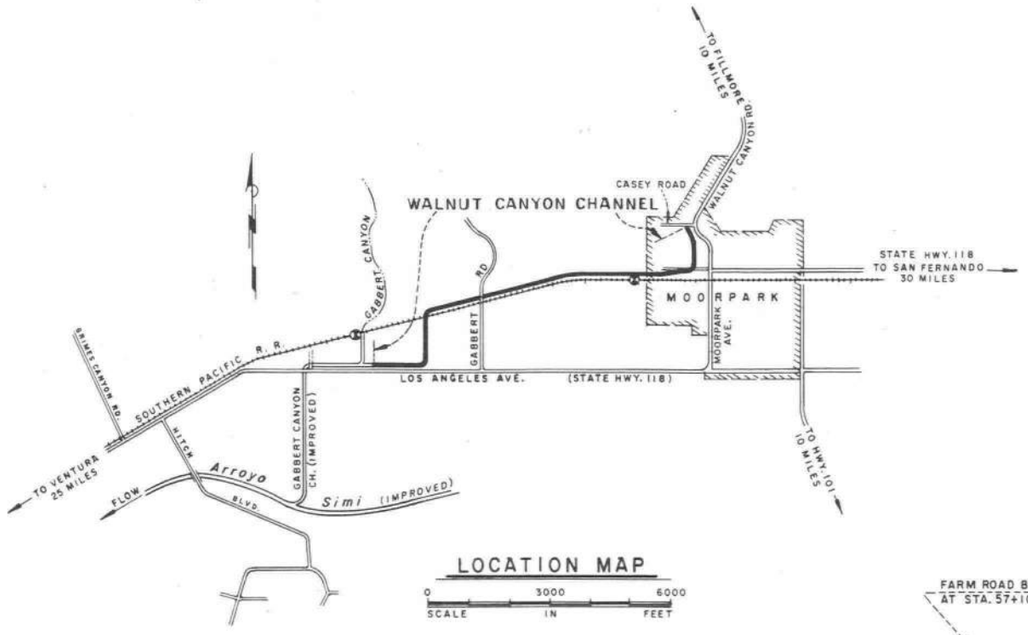
- Cross section line
- Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4276000mN — 1000-meter Universal Transverse Mercator grid values, zone 11
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

Figure 5

FEMA Flood Insurance Rate Maps

North Hills, Moorpark, CA

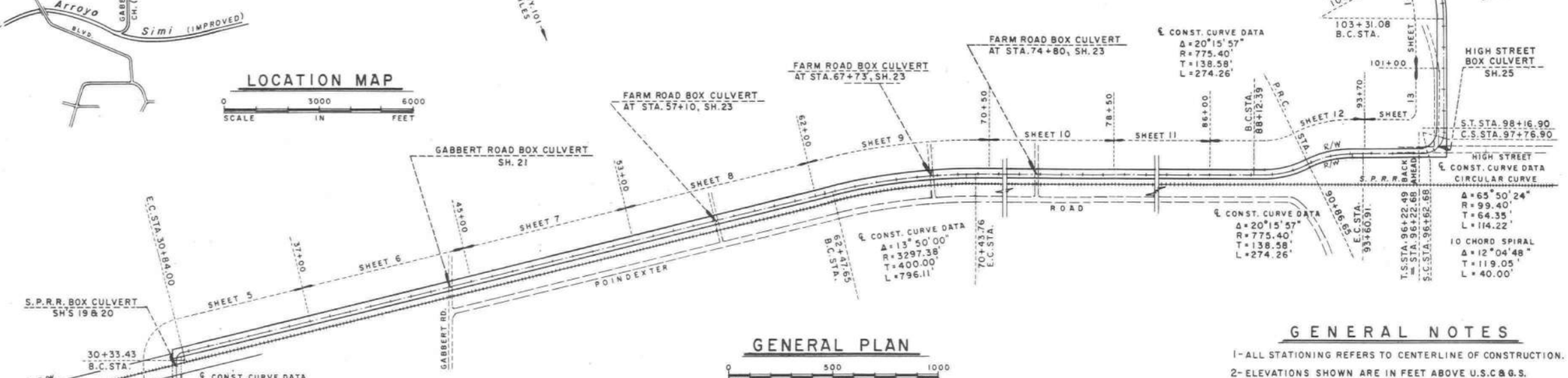
RMA Job No:	16-G63-0
Date:	June 10, 2016
Prepared By:	AMS





LOCATION MAP

SCALE 0 3000 6000 IN FEET



GENERAL PLAN

SCALE 0 500 1000 IN FEET

INDEX TO DRAWINGS

DWG. NO.-SH.	TITLE	DWG. NO.-SH.	TITLE
7-E-15518-1	LOCATION MAP, GENERAL PLAN AND INDEX	7-E-15518-17	TRANSITIONS - BOTTOM WIDTH AND WALL HEIGHT
2	PLAN, PROFILE, AND SECTIONS - STA. 3+43 TO STA. 12+00	18	FARM ROAD BOX CULVERTS, STATIONS 5+96 AND 16+44.23
3	PLAN, PROFILE, AND SECTIONS - STA. 12+00 TO STA. 20+00	19	S.P.R.R. CULVERT - STRUCTURAL DETAILS
4	PLAN, PROFILE, AND SECTIONS - STA. 20+00 TO STA. 29+00	20	S.P.R.R. CULVERT - STEEL DETAILS.
5	PLAN, PROFILE, AND SECTIONS - STA. 29+00 TO STA. 37+00	21	GABBERT ROAD BOX CULVERT.
6	PLAN, PROFILE, AND SECTIONS - STA. 37+00 TO STA. 45+00	22	SMALL CANYON SIDE INLET.
7	PLAN, PROFILE, AND SECTIONS - STA. 45+00 TO STA. 53+00	23	FARM ROAD BOX CULVERTS, STATIONS 57+10, 67+73, AND 74+80.
8	PLAN, PROFILE, AND SECTIONS - STA. 53+00 TO STA. 62+00	24	GUARD RAIL DETAILS.
9	PLAN, PROFILE, AND SECTIONS - STA. 62+00 TO STA. 70+50	25	HIGH STREET BOX CULVERT
10	PLAN, PROFILE, AND SECTIONS - STA. 70+50 TO STA. 78+50	26	HIGH STREET PAVING AND SIDE DRAIN INLET DETAILS
11	PLAN, PROFILE, AND SECTIONS - STA. 78+50 TO STA. 86+00	27	HIGH SCHOOL BOX CULVERT AND WALKWAY PAVING DETAILS
12	PLAN, PROFILE, AND SECTIONS - STA. 86+00 TO STA. 93+70	28	BOX CULVERT TRANSITION STRUCTURE
13	PLAN, PROFILE, AND SECTIONS - STA. 93+70 TO STA. 101+00	29	CHAIN LINK FENCE AND GATE DETAILS
14	PLAN, PROFILE, AND SECTIONS - STA. 101+00 TO STA. 108+88.44	30	PIPE INLET STRUCTURES - LOCATION AND DETAILS
15	TYPICAL CROSS-SECTIONS - HYDRAULIC ELEMENTS	31	LOG OF BORINGS - STA. 3+43 TO STA. 50+00
16	OPEN RECTANGULAR CHANNEL SECTIONS	32	LOG OF BORINGS - STA. 50+00 TO STA. 108+88
		33	SIDE DRAIN INLET AT STA. 17+25

BENCH MARKS

U.S.C.&G.S. MEAN SEA LEVEL DATUM

U.S.C.&G.S. STD. MARK E31 - ON S. CORNER OF W. ABUTMENT OF S.P.R.R. BRIDGE NO. 425.34 ABT. 1.7 MI. W. OF MOORPARK STA., RESET 1920, EL. 470.396.

U.S.C.&G.S. STD. MARK T609 - ON W. ABUTMENT OF S.P.R.R. BRIDGE 24 FT. S. OF ℄ MAIN TRACK ABT. 0.4 MI. W. OF MOORPARK STA., 1942, EL. 498.756

GENERAL NOTES

1. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION.
2. ELEVATIONS SHOWN ARE IN FEET ABOVE U.S.C.&G.S. MEAN SEA LEVEL DATUM, 1929.
3. TOPOGRAPHIC FEATURES, BOTH CONTOURS AND CULTURE, ARE PER SURVEY COMPLETED IN 1961.
4. EXCEPT AS OTHERWISE SHOWN ALL UTILITIES ARE TO BE MAINTAINED IN PLACE.
5. EXISTING PRIVATE IMPROVEMENTS WHICH LIE WITHIN THE RIGHTS-OF-WAY FOR THE CHANNEL IMPROVEMENT, UNLESS OTHERWISE SHOWN, WILL BE REMOVED BY THE OWNERS THEREOF OR ABANDONED IN PLACE.
6. FOR TABLE OF HYDRAULIC ELEMENTS SEE SH. 15
7. FOR SUMMARY OF PRINCIPAL EARTHWORK QUANTITIES SEE SHEET 2
8. INDICATED CHANNEL GRADE ELEVATIONS ARE THE ELEVATION OF THE INVERT AT THE BASE OF THE WALLS.

APPROVED:
VENTURA COUNTY FLOOD CONTROL DISTRICT
BY C. White
ENGINEER-MANAGER

WALNUT CANYON CHANNEL

LOCATION MAP, GENERAL PLAN AND INDEX

CALLEGUAS CREEK W.P.P.

SIMI VALLEY AND CALLEGUAS S.C. DISTRICTS - CALIFORNIA

REVISIONS

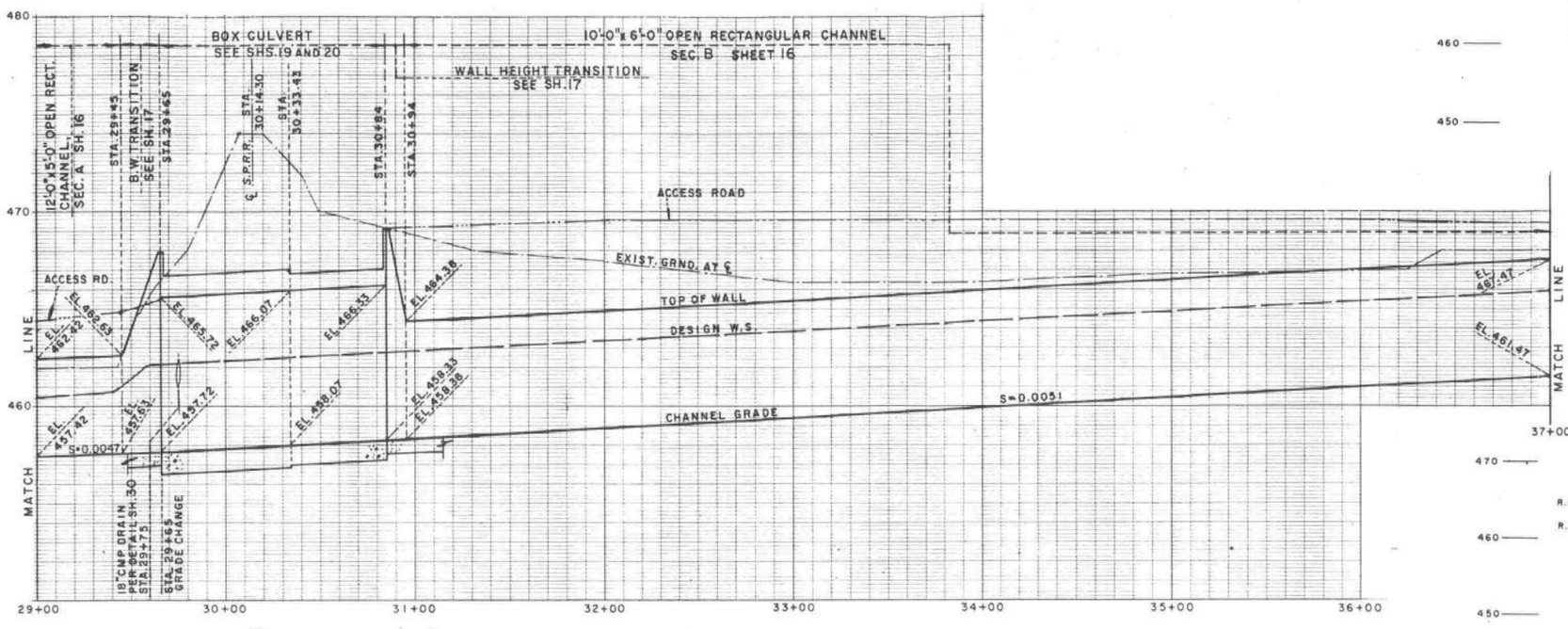
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SOIL CONSERVATION SERVICE

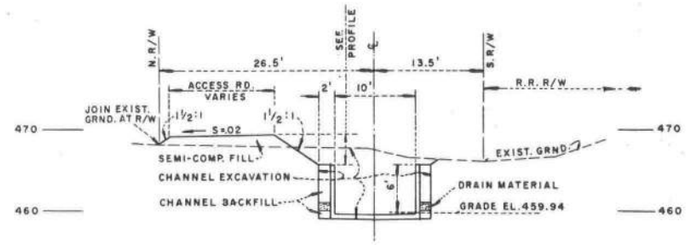
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TRACED	J.R. & C.E.R.	11/61-3/62	APPROVED BY	J. K. Mavis
CHECKED	W.H.P. & C.F.B.	3/62	TITLE: ☆ HEAD, E. & W.P. UNIT	
			SHEET NO. 1 OF 33	DRAWING NO. 7-E-15518

USDA SCS PORTLAND ORE. 1962 M-3688

PROFILE

HORIZ. SCALE: 1"=40'
VERT. SCALE: 1"= 4'

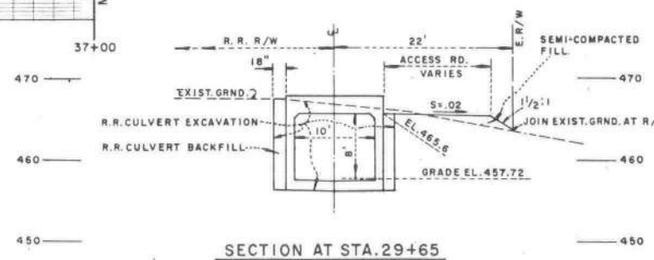




SECTION AT STA. 34+00

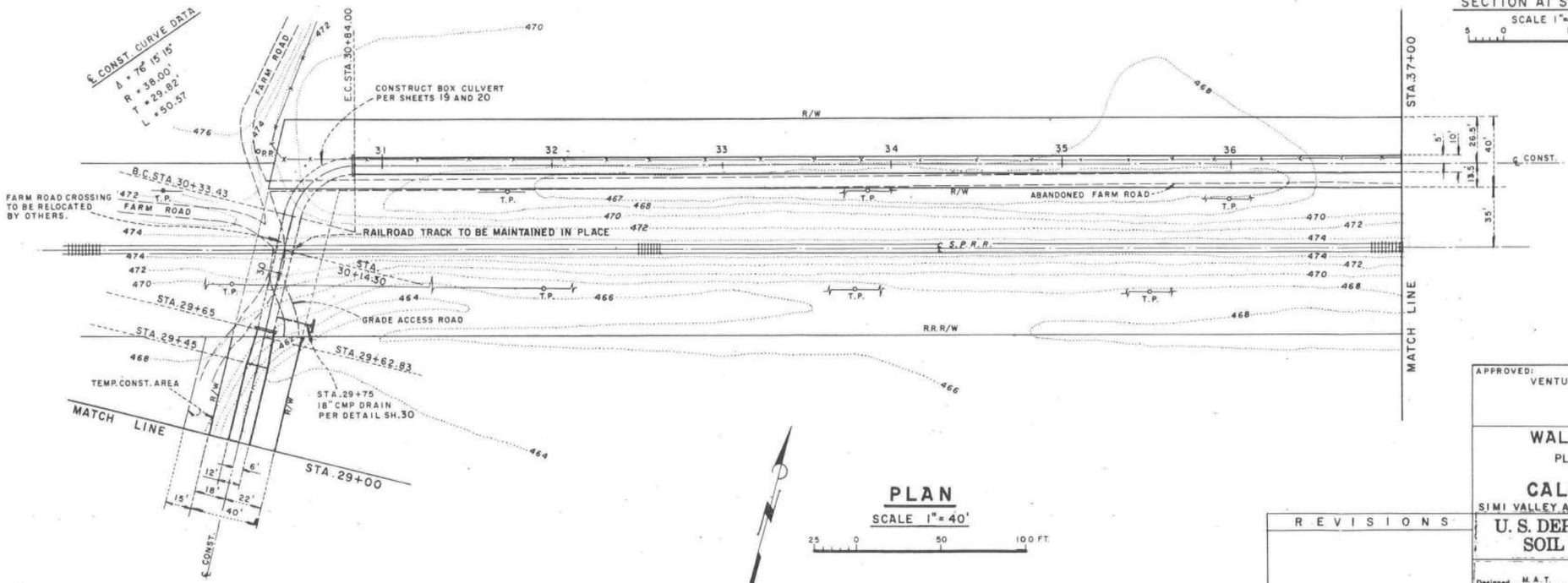
SCALE 1"=10'

PRINCIPAL EARTHWORK QUANTITIES	
STATION 29+00 TO STATION 37+00	
EXCAVATION, CHANNEL & BOX CULVERTS	3,265 C.Y.
EXCAVATION, RAILROAD CULVERT	915 C.Y.
COMP. FILL & BACKFILL, CHANNEL & BOX CULVERTS	463 C.Y.
COMP. FILL & BACKFILL, RAILROAD CULVERT	375 C.Y.
SEMI-COMPACTED FILL	472 C.Y.



SECTION AT STA. 29+65

SCALE 1"=10'



PLAN

SCALE 1"= 40'

APPROVED:
VENTURA COUNTY FLOOD CONTROL DISTRICT
BY C. White
ENGINEER - MANAGER

WALNUT CANYON CHANNEL

PLAN, PROFILE & SECTIONS
STA. 29+00 TO STA. 37+00

CALLEGUAS CREEK W.P.P.

SIMI VALLEY AND CALLEGUAS S.C. DISTRICTS - CALIFORNIA

REVISIONS

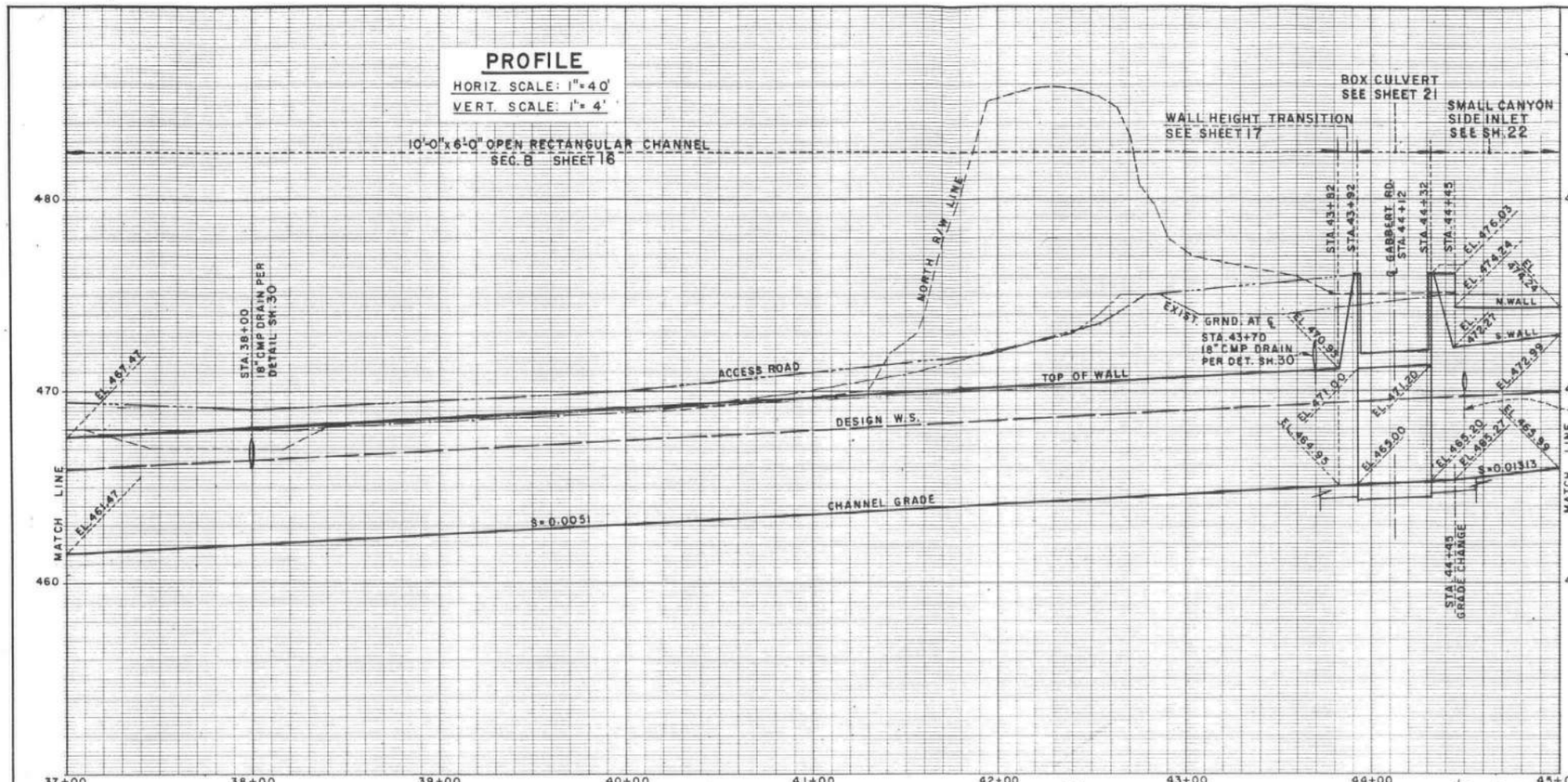
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SOIL CONSERVATION SERVICE

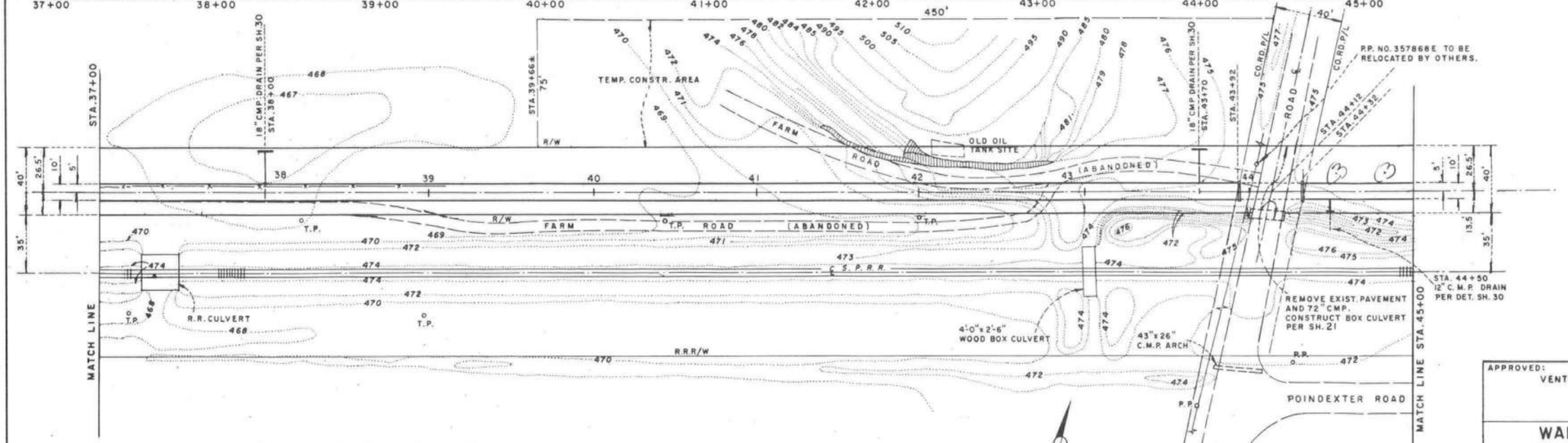
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Drawn J. R. & C. E. R.	12/61-3/62	Title FOR STATE CONSERVATION ENGINEER	
Traced J. R. & C. E. R.	12/61-3/62	APPROVED BY F. K. Thurow acting	
Checked W. H. P. & C. F. B.	3/62	Title HEAD E. & W. P. UNIT	
		SHEET NO. 5 OF 33	DRAWING NO. 7-E-15518

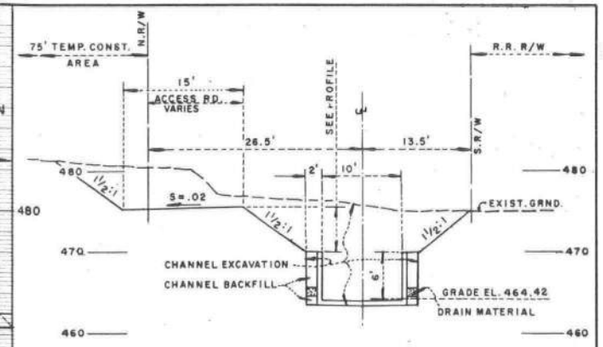
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PROFILE

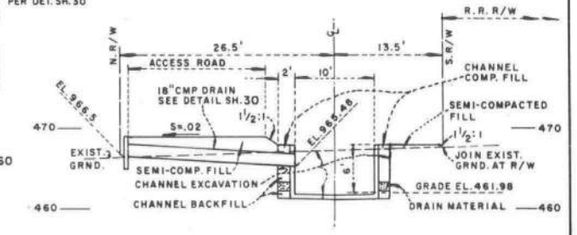
HORIZ. SCALE: 1"=40'
VERT. SCALE: 1"= 4'







SECTION AT STA. 42+80
SCALE 1"=10'



SECTION AT STA. 38+00
SCALE 1"=10'

5 0 10 20

PRINCIPAL EARTHWORK QUANTITIES	
STATION 37+00 TO STATION 45+00	
EXCAVATION, CHANNEL & BOX CULVERTS	5,109 C.Y.
COMP. FILL & BACKFILL, CHANNEL & BOX CULVERTS	581 C.Y.
SEMI-COMPACTED FILL	470 C.Y.

PLAN

SCALE 1"= 40'

25 0 50 100 FT.

APPROVED:
VENTURA COUNTY FLOOD CONTROL DISTRICT
BY C. White
ENGINEER-MANAGER

WALNUT CANYON CHANNEL

PLAN, PROFILE & SECTIONS
STA. 37+00 TO STA. 45+00

CALLEGUAS CREEK W.P.P.

SIMI VALLEY AND CALLEGUAS S.C. DISTRICTS - CALIFORNIA

REVISIONS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

		DATE	
DESIGNED	M.A.T.	10/61	APPROVED BY W. R. Payne
DRAWN	J.R. & C.E.R.	12/61-3/62	TITLE FOR STATE CONSERVATION ENGINEER
TRACED	J.R. & C.E.R.	12/61-3/62	APPROVED BY F. K. Thurmond acting
CHECKED	W.H.P. & C.F.B.	3/62	TITLE HEAD E. & W.P. UNIT
			SHEET NO. 6 OF 33
			DRAWING NO. 7-E-15518

USDA-SCS-PORTLAND, OREG. 1962 M-3688

37-429

21-60 > 37-929

COUNTY OF VENTURA

DEPARTMENT OF PUBLIC WORKS

VENTURA COUNTY FLOOD CONTROL DISTRICT

ZONE 3

GABBERT CANYON CHANNEL LINING

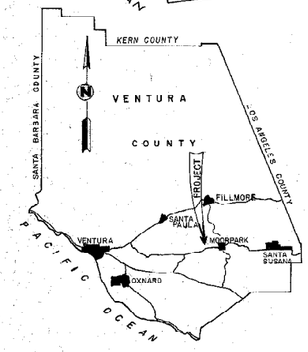
FROM S.P.R.R. TO DEBRIS BASIN.

LENGTH OF PROJECT 0.41 MILES

SPECIFICATION NO. 64-3

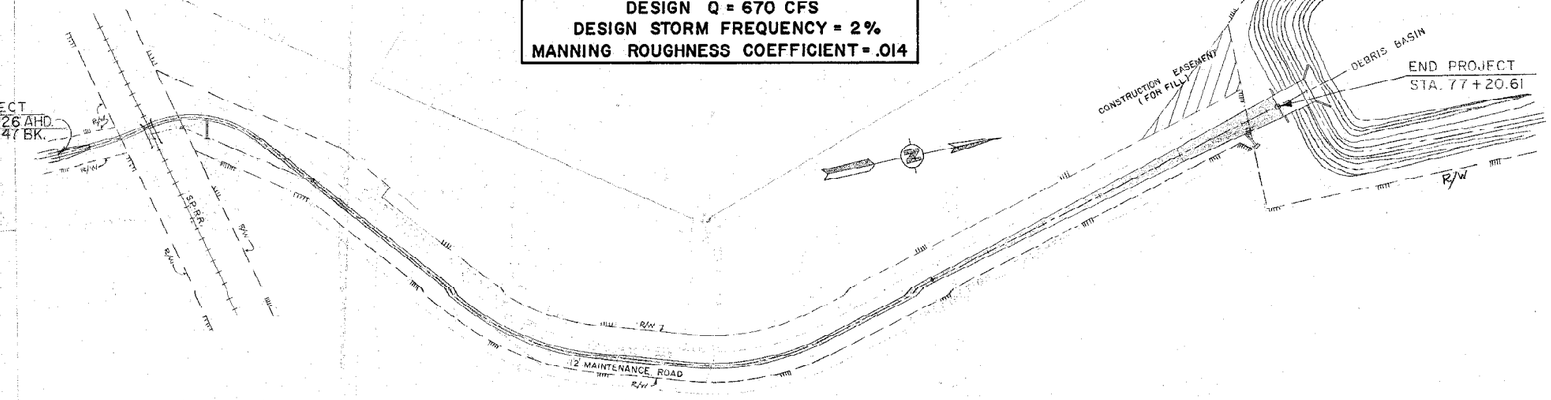
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DESIGN STORM FREQUENCY = 2%
MANNING ROUGHNESS COEFFICIENT = .014





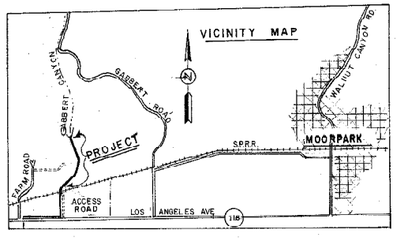
EQUATE

BEGIN PROJECT
STA. 55+46.26 AHD.
STA. 55+65.47 BK.



GENERAL PLAN

100 0 100 200 300
SCALE OF FEET



INDEX OF SHEET'S

1. COVER SHEET
2. PLAN & PROFILE STA. 55+46.26 TO STA. 66+82.33 WITH GENERAL NOTES
3. PLAN & PROFILE STA. 66+82.33 TO STA. 77+20.61
4. TRANSITIONS, TYPICAL SECTIONS & DETAILS
5. CROSS SECTIONS & DETAILS

REGISTERED PROFESSIONAL ENGINEER WILLIAM G. CRAIG No. 18169 CIVIL STATE OF CALIFORNIA

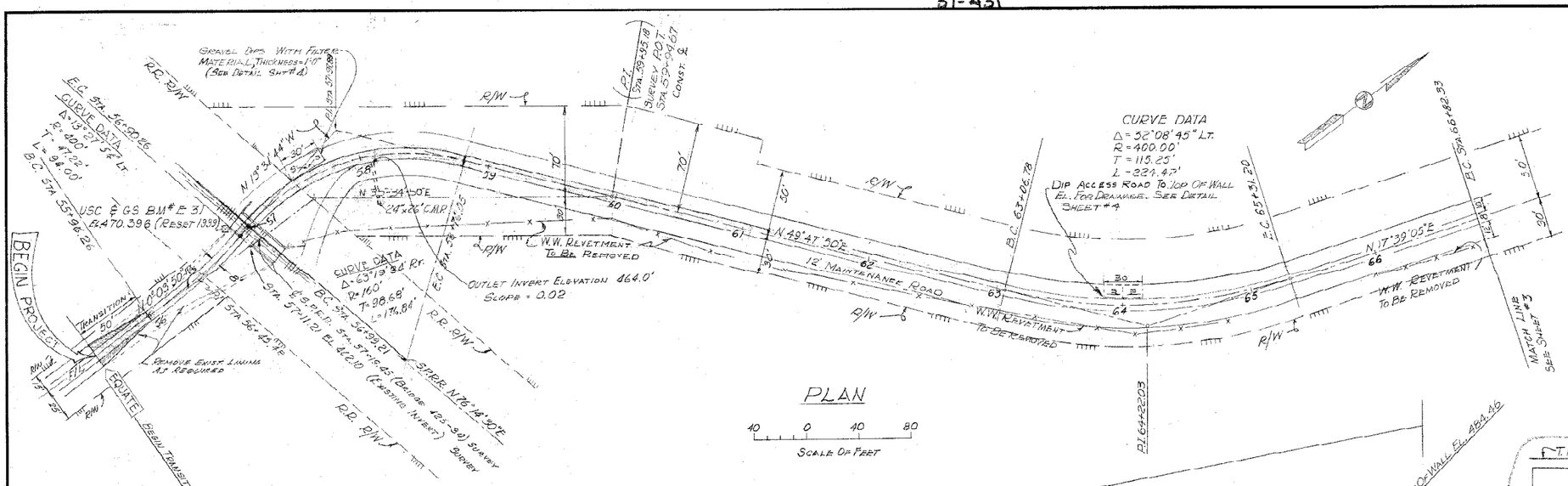
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NOV, 64

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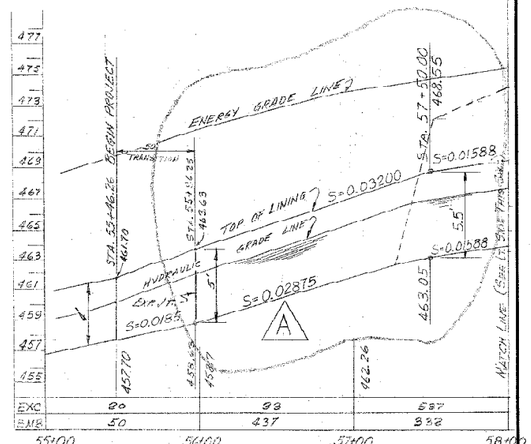
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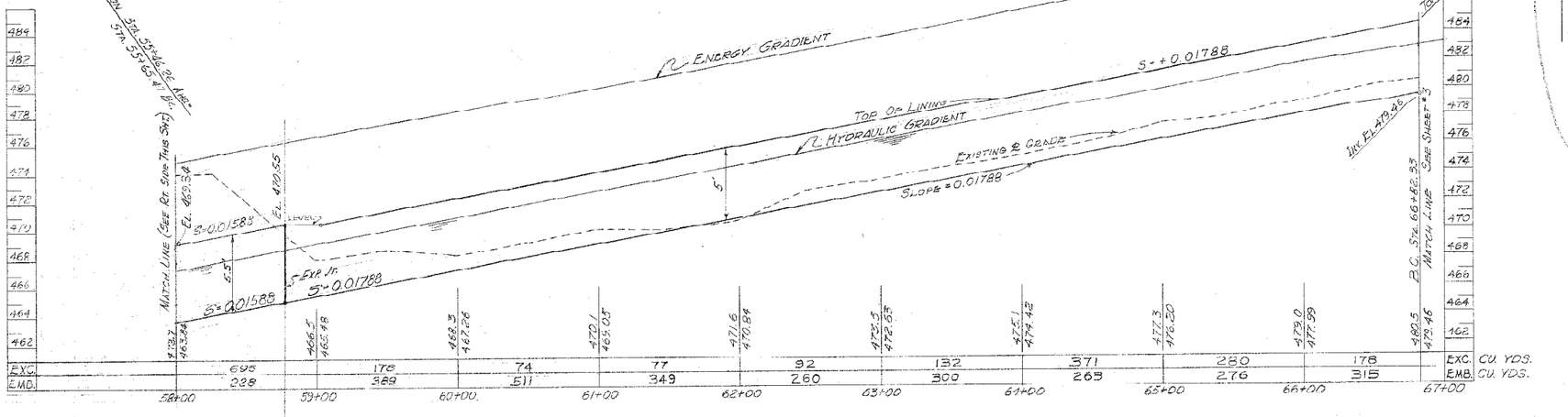
37-431 A 21-508



PLAN

SCALE OF FEET
40 0 40 80





PROFILE

GENERAL NOTES

1. REINFORCING STEEL: SHALL BE ROUND DEFORMED BARS, INTERMEDIATE GRADE & SHALL CONFORM TO A.S.T.M. A-15 & A-105.
2. MESH REINFORCEMENT: SHALL BE WELDED STEEL WIRE FABRIC AND SHALL CONFORM TO A.S.T.M. A-185
3. ½" EXPANSION JOINT, SHALL BE CONSTRUCTED BETWEEN LINING, TRANSITIONS AND EXISTING STRUCTURES

AS BUILT. DATE None Available
Nov. 64

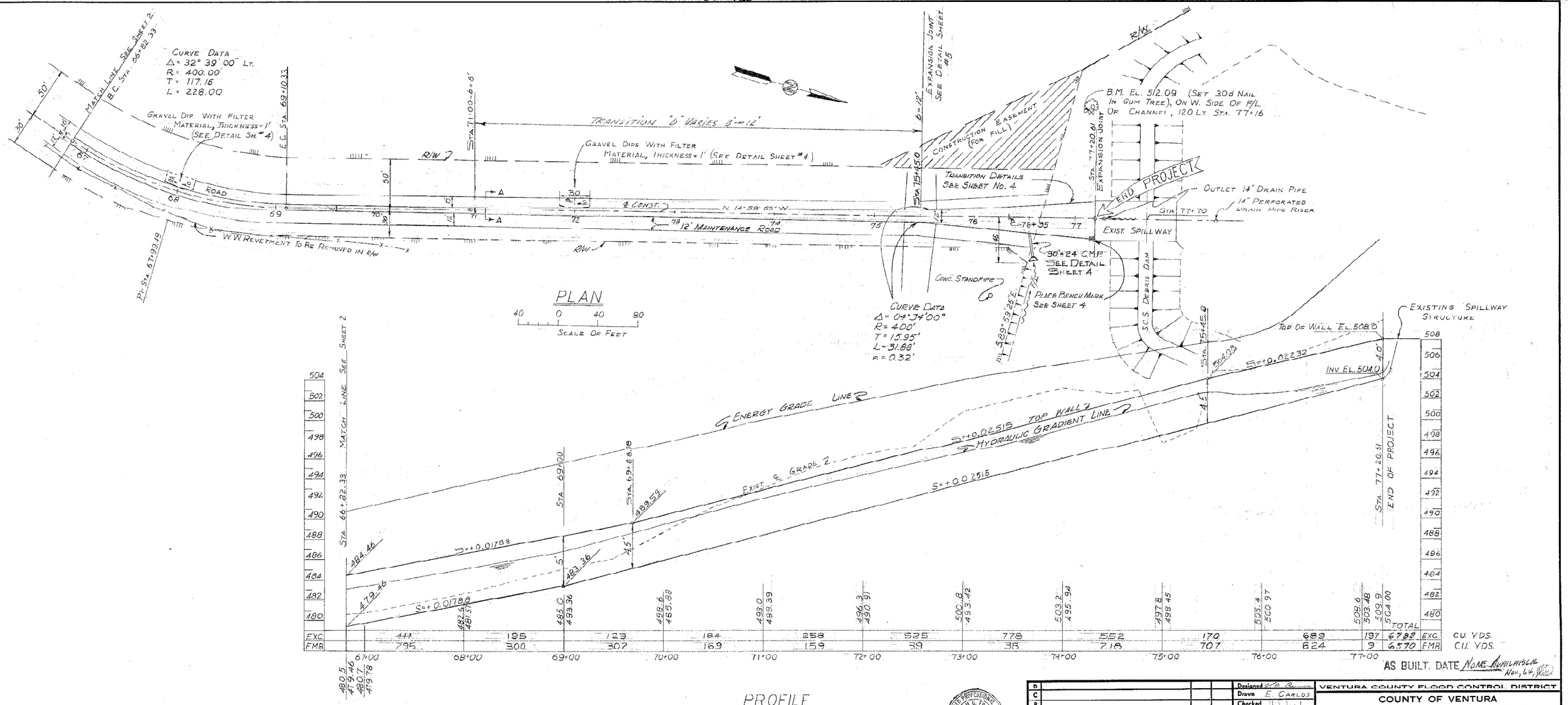
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C				Drawn
B				Checked
A	App Sec - S.P.R.R. Bridge & Change Profile		10/63	Spec. No. FC 6413
Δ	Revisions	By	Date	Datum MEAN SEA LEVEL
Approved 7-30-63 By			Chief Engr.	Field Books 1140, 1189,
Approved 7-30-63 By			Engr. Mgr.	1262, 1284, 1349
Scale AS NOTED			Date	Project No 4801

VENTURA COUNTY FLOOD CONTROL DISTRICT
COUNTY OF VENTURA
DEPARTMENT OF PUBLIC WORKS
GABBERT CANYON CHANNEL LINING
STA. 55+46.26 TO STA. 66+82.33
PLAN, PROFILE & GENERAL NOTES
Sheet 2 of 5 Sheets | Drawing No. Y-3-193

37-430

37-430 A

21-509



D				Designed	
C				Drawn	E. Carlos
B				Checked	
A				Spec. No.	FC 64-3
△	Revisions	By	Date	Datum	MEAN SEA LEVEL
Approved 7-24-65 By				Chief Engr.	Field Books 1148, 1189,
Approved 7-30-65 By				Engr. Mgr.	1262, 1284, 1349
Scale As Noted		Date			Project No. 4801

VENTURA COUNTY FLOOD CONTROL DISTRICT

COUNTY OF VENTURA
DEPARTMENT OF PUBLIC WORKS

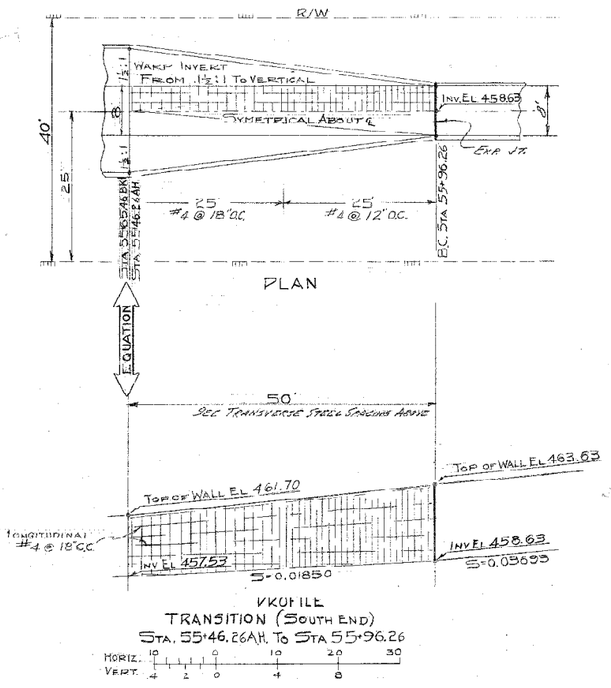
GABBERT CANYON CHANNEL LINING
STA. 66+82.33 TO STA. 77+20.61
PLAN & PROFILE

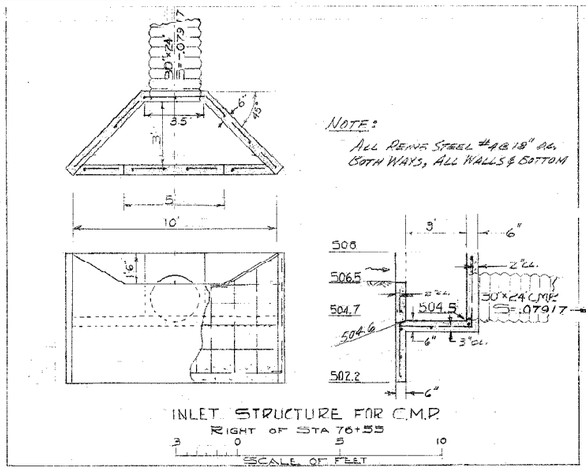
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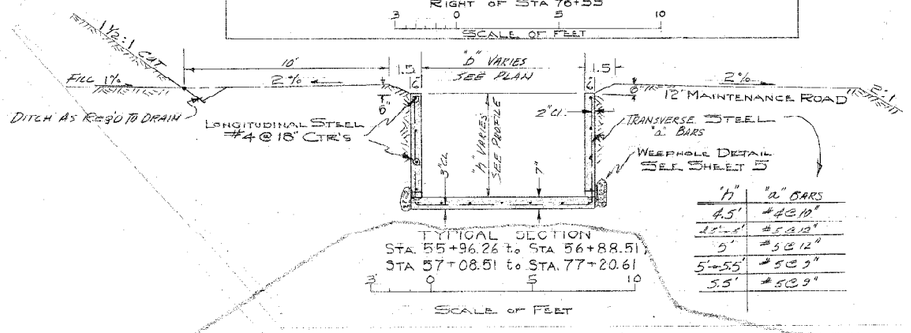
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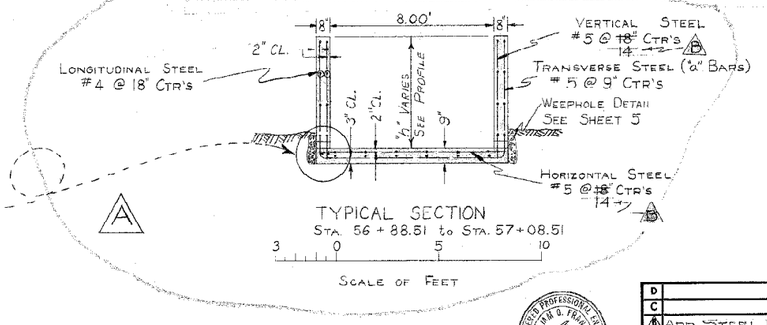
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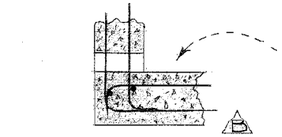
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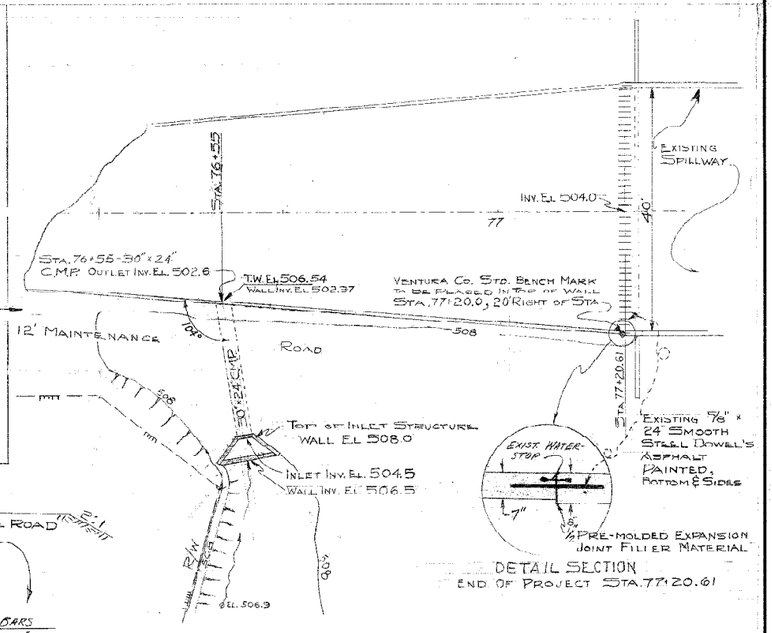


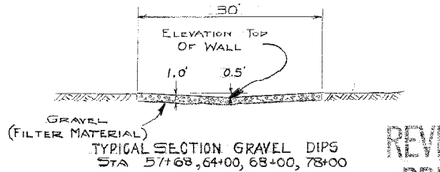












REVISED PRINT

AS BUILT. DATE None Available

D				Designed T.C. Curran
C				Drawn CURL
B	ADD STEEL DETAIL	TMF	11/63	Checked
A	ADD TYPICAL SECTION	VC	10/63	Spec. No. FC 64-3
△	Revisions	By	Date	Datum SEA LEVEL
Approved 7-20-63 By				Chief Engr. Field Books: 1148, 1189
Approved 7-30-63 By				Engr. Mgr. 1262, 1284, 1349
Scale AS NOTED		Date		Project No 4201

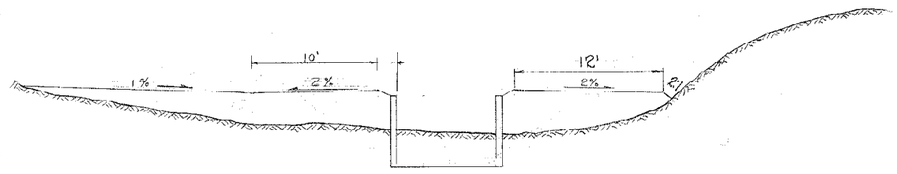
VENTURA COUNTY FLOOD CONTROL DIST
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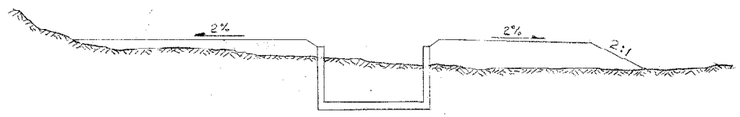
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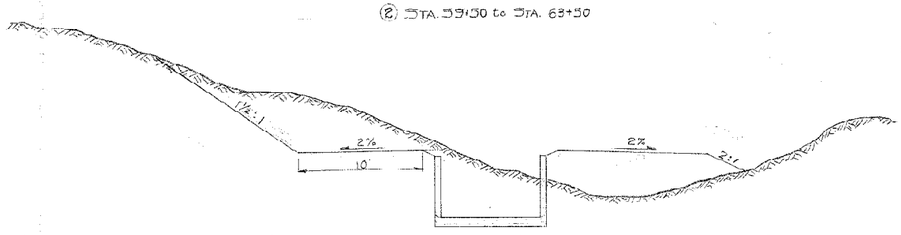
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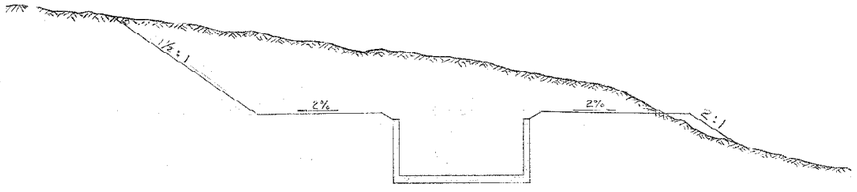
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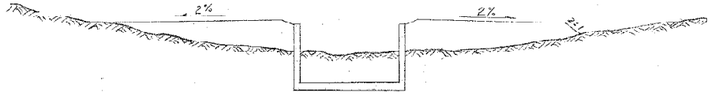
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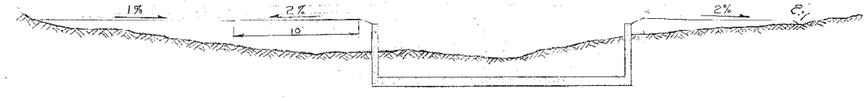
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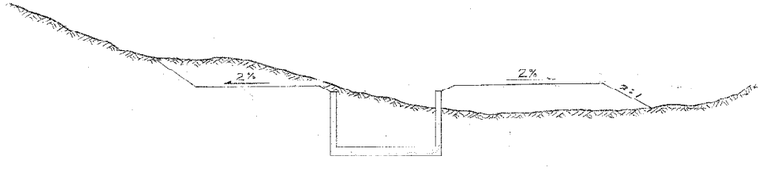
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(4) STA. 69+00 to STA 69+50



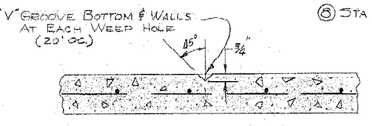
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(5) STA. 70+00 to STA. 71+00

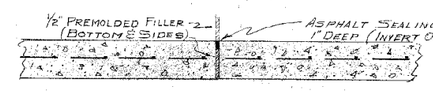
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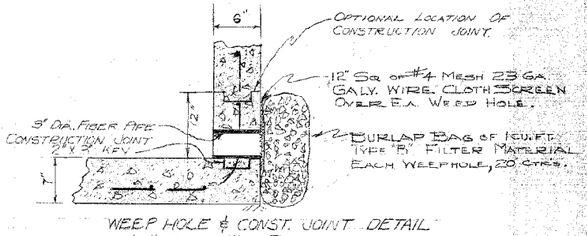
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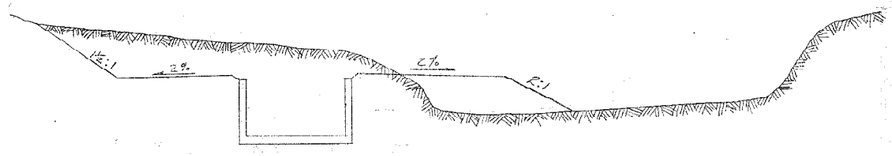
EXPANSION JOINT DETAIL

STA. 55+96.26, 58+76.05 AND 77+20.61 (BOTTOM & SIDES)



WEEP HOLE & CONST. JOINT DETAIL IN VERTICAL WALL SECTION

NOT TO SCALE



(1) STA. 57+55 to STA. 59+00

AS BUILT. DATE Notes Available Nov. 66

D				Designed W.C. Cowan	VENTURA COUNTY FLOOD CONTROL DISTRICT
C				Drawn C.U.R.L.	COUNTY OF VENTURA
B				Checked	DEPARTMENT OF PUBLIC WORKS
A				Spec. No. F.C.-64-3	
△	Revisions	By	Date	Datum MEAN SEA LEVEL	GABBERT CANYON CHANNEL LINING
Approved 7-30-63 By				Chief Engr. Field Books 1140, 1189,	CROSS SECTIONS & DETAILS
Approved 7-30-63 By				Engr. Mgr. 1262, 1284, 1349	
Scale NONE		Date		Project No. 4801	Sheet 5 of 5 Sheets Drawing No. Y-3-196

REGISTERED PROFESSIONAL ENGINEER WILLIAM E. EVANS No. 12133 CIVIL State of California

APPENDIX I
Traffic Impact Analysis

TRAFFIC IMPACT ANALYSIS

North Ranch Residential Development

5979 Gabbert Road

In the City of Moorpark

Date: December 17, 2021

Prepared For:

Land Design Consultants, Inc.

2700 E. Foothill Blvd, Suite 200

Pasadena, CA 91101

(626) 578-7000

Prepared By:

K2 Traffic Engineering, Inc.

1442 Irvine Blvd, Suite 210

Tustin, CA 92780

(714) 832-2116

TABLE OF CONTENTS

EXECUTIVE SUMMARY 2

INTRODUCTION 3

STUDY SCENARIOS 6

EXISTING CONDITIONS 8

TRIP GENERATION 13

TRIP DISTRIBUTION 14

TRAFFIC ASSIGNMENT 14

EXISTING CONDITIONS PLUS PROJECT 17

CUMULATIVE PROJECTS 19

OPENING YEAR WITH CUMULATIVE PROJECTS 22

OPENING YEAR WITH CUMULATIVE PROJECTS PLUS PROJECT 24

SIGNIFICANT DEGRADATION 26

SITE ACCESS 28

LIST OF EXHIBITS

Exhibit 1. Vicinity Map 4
Exhibit 2. Site Plan 5
Exhibit 3. Lane Configurations 11
Exhibit 4. Existing Conditions Traffic Volumes 12
Exhibit 5. Trip Distribution 15
Exhibit 6. Traffic Assignment 16
Exhibit 7. Existing Conditions plus Project Traffic Volumes 18
Exhibit 8. Cumulative Projects Location Map 20
Exhibit 9. Cumulative Projects Traffic Volumes 21
Exhibit 10. Opening Year with Cumulative Projects Traffic Volumes 23
Exhibit 11. Opening Year with Cumulative Projects plus Project Traffic Volumes 25

LIST OF TABLES

Table 1. LOS Definitions – ICU Analysis 7
Table 2. Existing Conditions Analysis 10
Table 3. Trip Generation Rate 13
Table 4. Project Trip Generation 13
Table 5. Existing Conditions plus Project 17
Table 6. Summary of Cumulative Development Projects 19
Table 7. Opening Year (2025) with Cumulative Projects 22
Table 8. Opening Year ((2025) Cumulative Conditions plus Project 24
Table 9. Significant Degradation Analysis – Existing Conditions 26
Table 10. Significant Degradation Analysis – Opening Year (2025) Conditions 27

Traffic Impact Analysis

Proposed North Ranch

5979 Gabbert Road, Moorpark



Prepared under the supervision of

Jende Kay Hsu, P.E., T. E.

Lic. # T2285

EXECUTIVE SUMMARY

The purpose of this analysis is to evaluate the traffic impact of the proposed residential development of 144 residential units, including 139 single-family homes and 5 estate lots, on vacant and unimproved lots (APN# 5110190285 & 5110190305) located at 5979 Gabbert Road in the City of Moorpark.

The project is expected to produce 107 trips in the AM peak hour, including 27 inbound trips and 80 outbound trips, 143 trips in the PM peak hour, including 90 inbound trips and 53 outbound trips, and 1,359 daily trips.

The study found that the following intersections will operate at LOS D for the opening year (2025) scenario:

- Gabbert Road/Tierra Rejada Road at E. Los Angeles Avenue (#3)
- Moorpark Avenue at Poindexter Avenue/First Street (#5)
- Moorpark Avenue at E. Los Angeles Avenue (#6)

However, the project's contribution to this pre-existing condition is negligible. Project traffic will not cause the intersection ICU to increase more than 0.10; therefore, mitigation measures are not required.

Site access will be provided to Gabbert Road via the proposed North Hills Parkway that terminates at Gabbert Road, forming a new T intersection. This new intersection of North Hills Parkway and Gabbert Road will be controlled by a STOP sign on North Hills Parkway for the eastbound traffic.

INTRODUCTION

The purpose of this analysis is to evaluate the traffic impact of the proposed residential development of 144 residential units, including 139 single-family homes and 5 estate lots, on vacant and unimproved lots (APN# 5110190285 & 5110190305) located at 5979 Gabbert Road in the City of Moorpark. The vicinity map is shown in **Exhibit 1**. Site plan is provided in **Exhibit 2**.

Site access will be provided to Gabbert Road via the proposed North Hills Parkway that terminates at Gabbert Road, forming a new T intersection. This new intersection of North Hills Parkway and Gabbert Road will be controlled by a STOP sign on North Hills Parkway for the eastbound traffic.

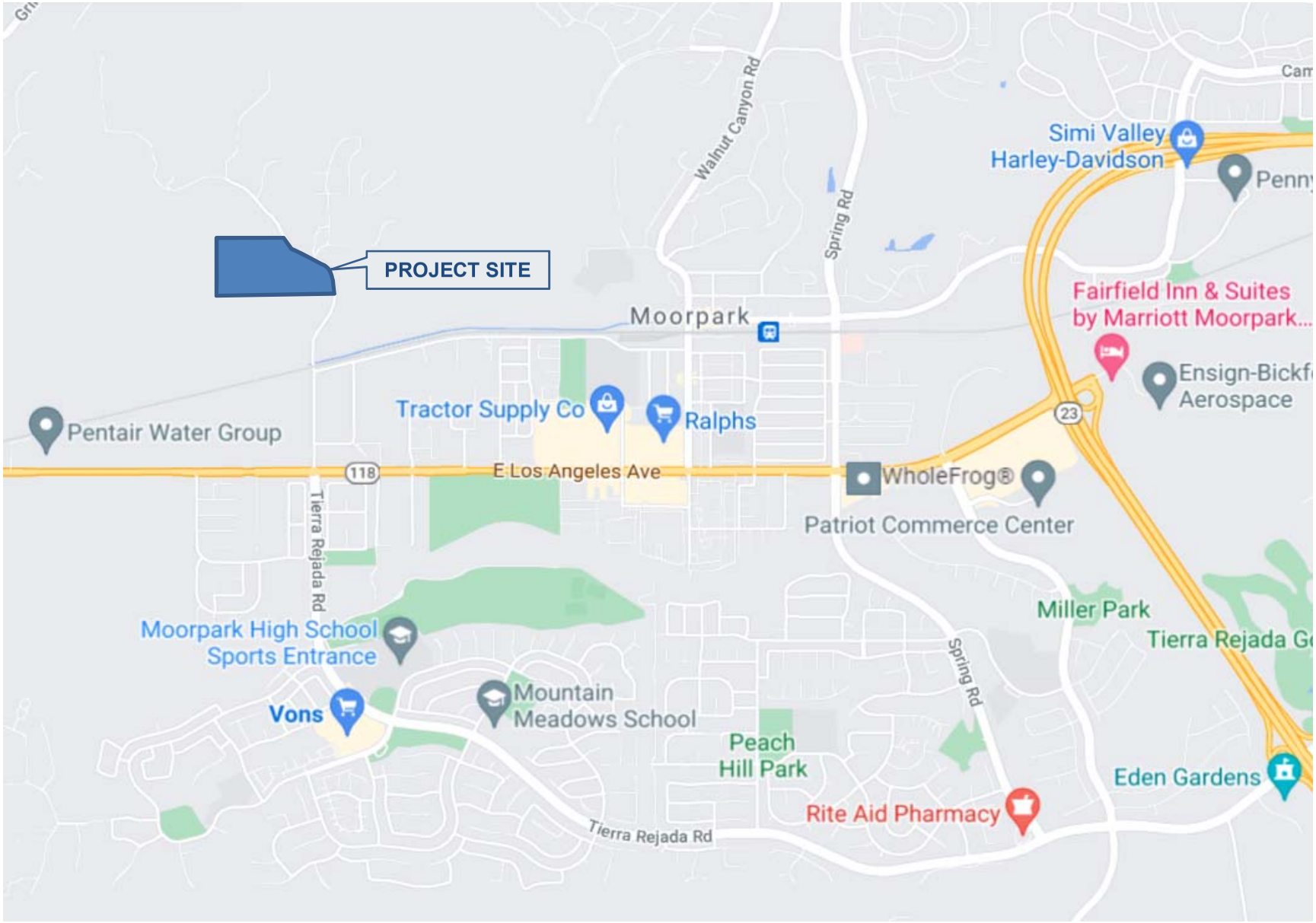
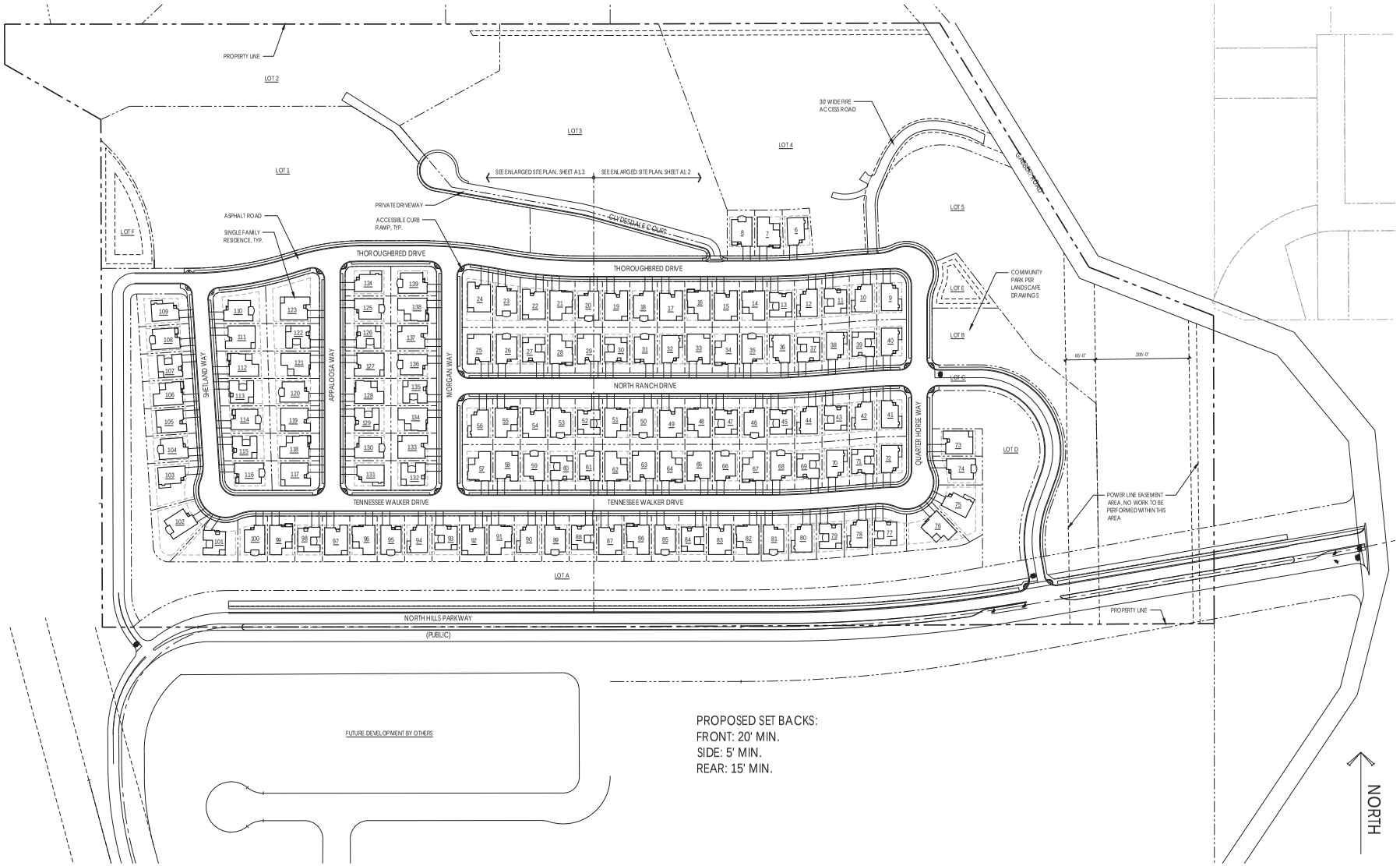


EXHIBIT 1. VICINITY MAP

Not To Scale



SITE PLAN

SCALE: 1" = 80'-0"

1

MOORPARK PROPERTY 67, LLC
26500 WEST AGOURA ROAD #652
CALABASAS, CA 91302
PHONE: (805) 370-0075

NORTH RANCH
5979 GABBERT ROAD
MOORPARK, CA 93021

ISSUE DATES:
6/4/2020
11/16/2020

SHEET #
A1-1
SITE PLAN

EXHIBIT 2. SITE PLAN

STUDY SCENARIOS

In compliance with the City of Moorpark "*Guidelines for Preparing Traffic and Circulation Studies*", dated November 1993, the following scenarios are included in this analysis:

i. Existing Conditions
ii. Existing Conditions plus Project
iii. Opening Year (2025) plus Cumulative Projects
iv. Opening Year (2025) plus Cumulative Projects plus Project
v. Opening Year (2025) plus Cumulative Projects plus Project plus Mitigation, If Necessary

According to the scoping agreement submitted to the City, provided in **Appendix A**, the following intersections are studied for level of service analysis to evaluate potential traffic impacts:

1. Gabbert Road at Poindexter Avenue
2. Gabbert Road/Tierra Rejada Road at Los Angeles Avenue
3. Moorpark Avenue at High Street
4. Moorpark Avenue at Poindexter Avenue
5. Moorpark Avenue at Los Angeles Avenue
6. Gabbert Road at North Hills Parkway

Except for the proposed intersection of Gabbert Road at North Hills Parkway and the existing intersection of Gabbert Road at Poindexter Avenue, which are stop-controlled, all other study intersections are controlled by traffic signals.

The Level of Service (LOS) Analysis is performed using the Intersection Capacity Utilization (ICU) method. **Table 1** provides the definition for LOS associated with the values of volume-to-capacity ratios (V/C).

Table 1. LOS Definitions – ICU Analysis

LOS	V/C Ratio
A	0.00 – 0.60
B	0.61 – 0.70
C	0.71 – 0.80
D	0.81 – 0.90
E	0.91 – 1.00
F	> 100

EXISTING CONDITIONS

The project site is located west of Gabbert Road and north of Poindexter Avenue in the City of Moorpark. Gabbert Road is a Local Collector running north-southerly with one lane in each direction. Gabbert Road connects southerly with Tierra Rejada Road at Los Angeles Avenue. The posted speed limit is 30 mph north of Poindexter Road and 40 mph between Poindexter Road and Los Angeles Avenue. On-street parking is generally prohibited.

Poindexter Avenue is classified as a Local Collector street running east-westerly with one lane in each direction. This roadway connects Moorpark Avenue on the east with Gabbert Road on the west. The posted speed limit is 40 mph. On-street parking is generally prohibited.

Los Angeles Avenue is classified as a Six Lane Arterial between Gabbert Road and Moorpark Avenue in General Plan's Circulation Element. It runs east-westerly with three lanes in each direction and left turn lanes at major intersections. The posted speed limit is 45 mph near the study intersections. On-street parking is generally prohibited.

Tierra Rejada Road is designated as a Four Lane Arterial road running primarily east westerly with two lanes and a bicycle lane in each direction divided by a raised median. The roadway connects Los Angeles Avenue with Moorpark Freeway (SR-23) to the east. The posted speed limit is 45 mph. On-street parking is generally prohibited.

Moorpark Avenue is designated as a Local Collector running north-southerly with one lane in each direction and left-turn lanes at major intersections. There are bicycle lanes south of Los Angeles Avenue. The posted speed limit is 30 mph. On-street parking is prohibited.

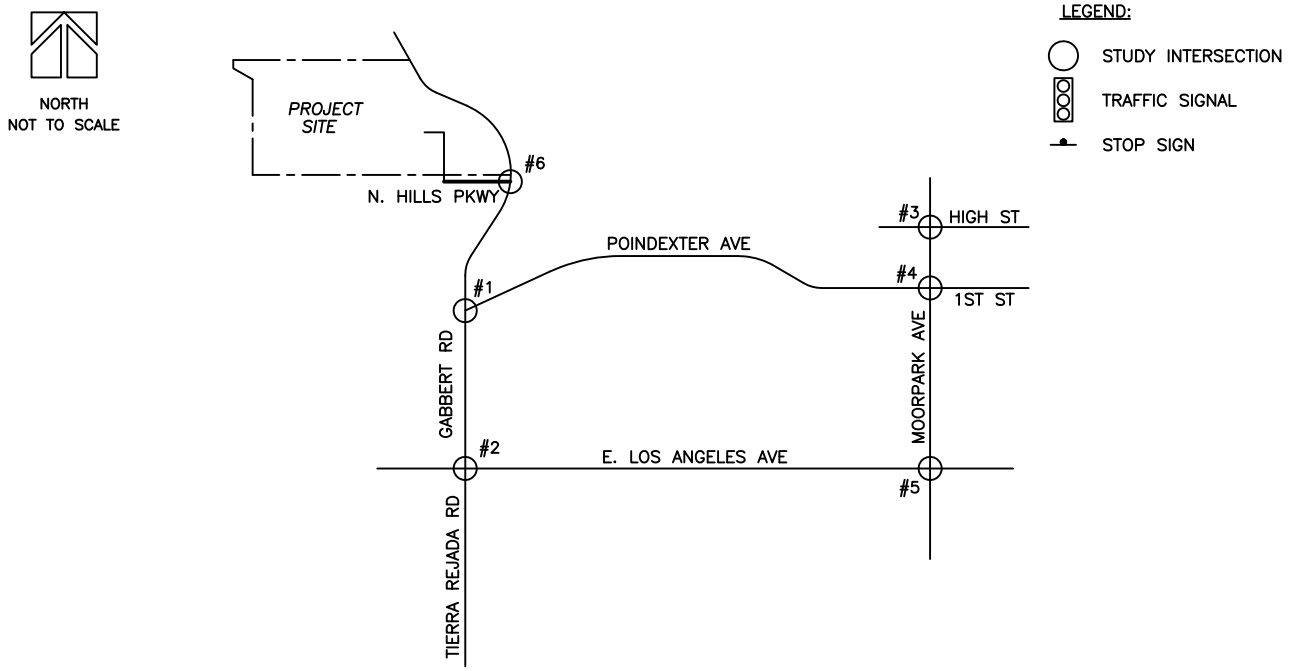
High Street is a Local Collector road running east-westerly with one vehicle lane and one bicycle lane in each direction. High Street terminates approximately 700 feet west of Moorpark Avenue. The posted speed limit is 30 mph. On-street parking is permitted.

Historical turning movement counts conducted for the Hitch Ranch Developments in April 2019 were applied with the annual growth rate of one percent (1%) to simulate existing conditions in this study. Lane configurations and existing traffic volumes for the study intersections are provided in **Exhibits 3** and **4**, respectively. Complete traffic count data can be found in **Appendix B**.

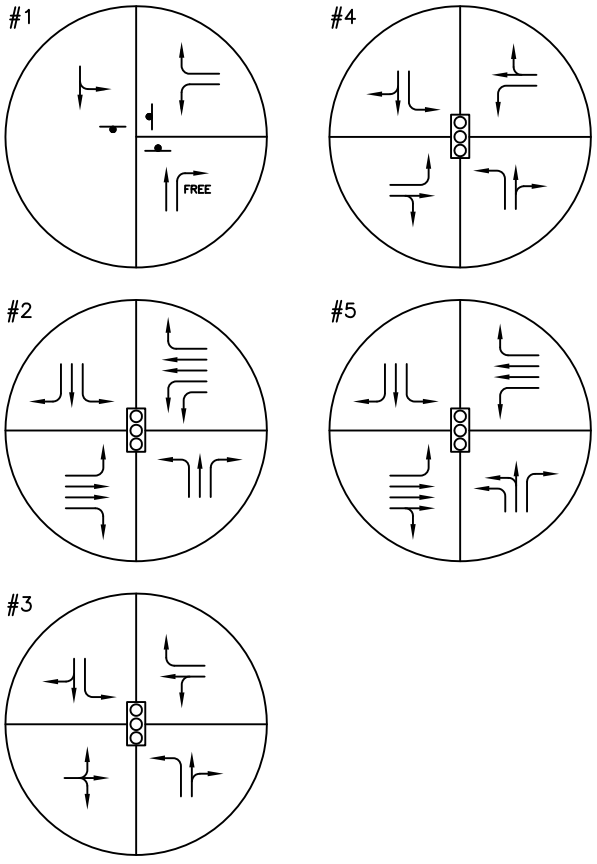
Level of service (LOS) and V/C ratio of the study intersections for existing conditions are shown in **Table 2**. The study intersections operate at LOS C or better in both the AM and PM peak hours under existing conditions. The analysis worksheets are provided in **Appendix C**.

Table 2. Existing Conditions Analysis

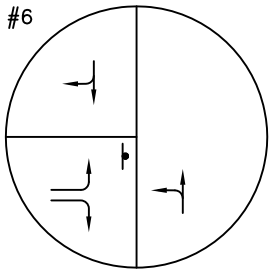
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	V/C	LOS	V/C
1. Gabbert Rd at Poindexter Ave	A	0.381	A	0.349
2. Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	C	0.738	B	0.658
3. Moorpark Ave at High St	A	0.482	A	0.495
4. Moorpark Ave at Poindexter Ave/First St	B	0.679	B	0.659
5. Moorpark Ave at Los Angeles Ave	B	0.637	B	0.675



EXISTING



PROPOSED



North Ranch Residential Development
5979 Gabbert Road, Moorpark

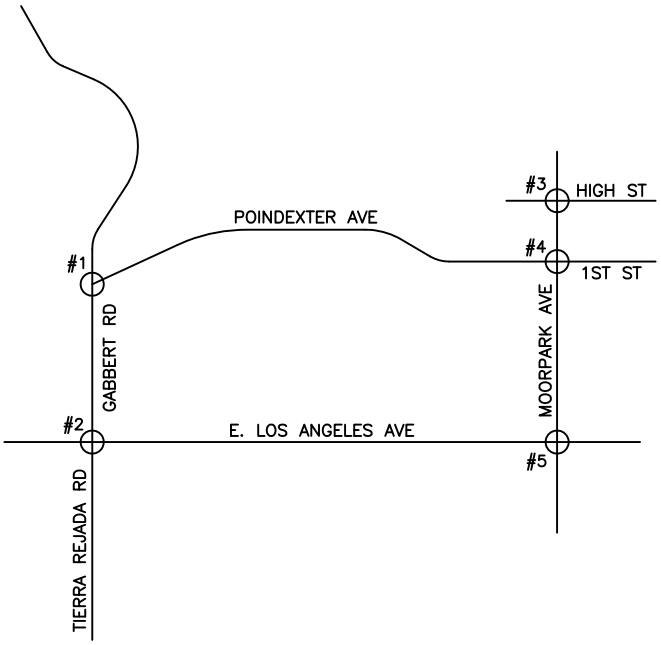
LANE CONFIGURATIONS

K2 TRAFFIC ENGINEERING

EXHIBIT 3

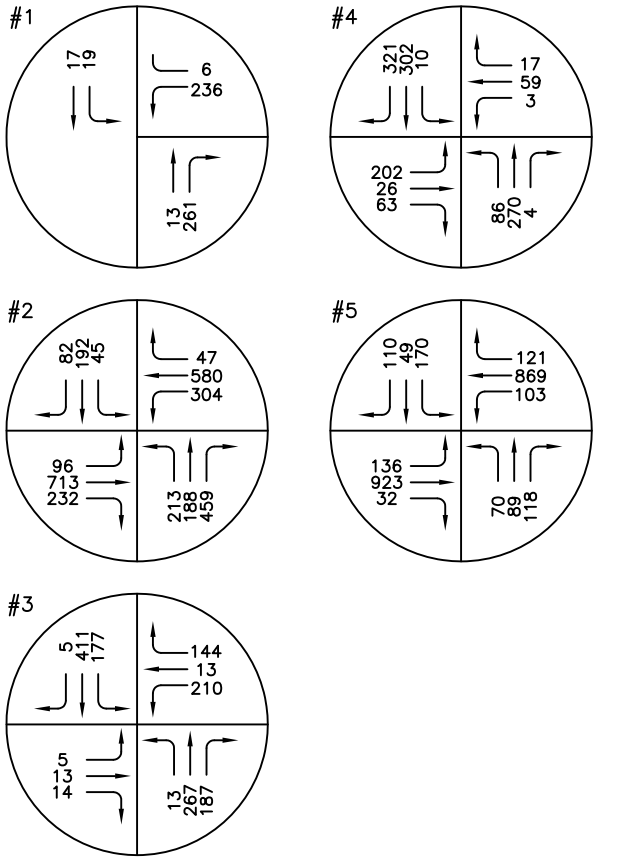
LEGEND:

- STUDY INTERSECTION
- TRAFFIC SIGNAL
- STOP SIGN

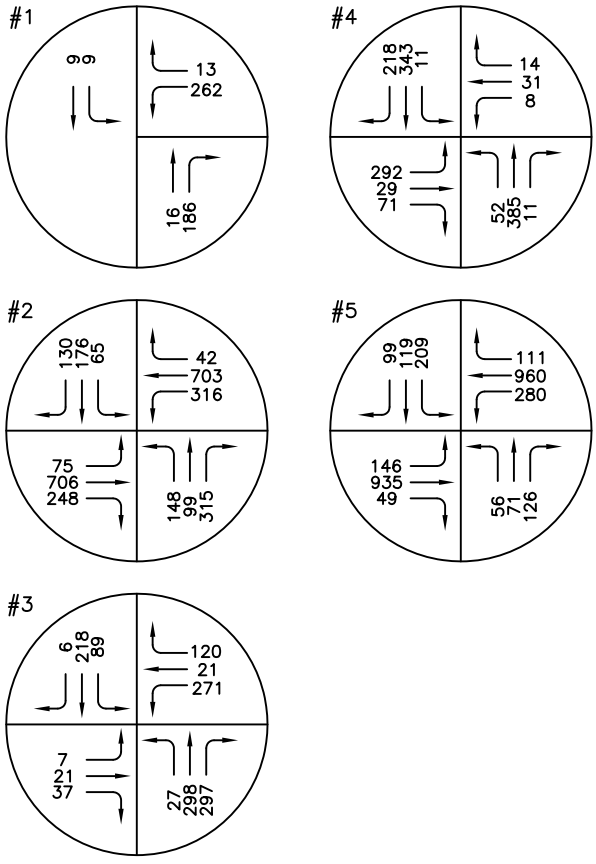


NORTH
NOT TO SCALE

AM PEAK HOUR



PM PEAK HOUR



North Ranch Residential Development
5979 Gabbert Road, Moorpark

EXISTING CONDITIONS
TRAFFIC VOLUMES

TRIP GENERATION

Trip generation represents the amount of traffic attracted and produced by the project development. Based upon the recommendations from "*Trip Generation*, *10th Edition*," published by the Institute of Transportation Engineers (ITE), applicable trip generation rates are shown in **Table 3**.

Table 3. Trip Generation Rate

Land Use	Unit	Daily	AM Peak			PM Peak		
			Total	In	Out	Total	In	Out
Single-Family Detached Housing (210)	Dwelling Units	9.44	0.74	25%	75%	0.99	63%	37%

Project trip calculation is calculated and summarized in **Table 4**. The project is expected to produce 107 trips in the AM peak hour, including 27 inbound trips and 80 outbound trips, 143 trips in the PM peak hour, including 90 inbound trips and 53 outbound trips, and 1,359 daily trips.

Table 4. Project Trip Generation

Land Use	Unit	Quantity	AM Peak			PM Peak			Daily
			Total	In	Out	Total	In	Out	
Single-Family Detached Housing (210)	Dwelling Units	144	107	27	80	143	90	53	1,359

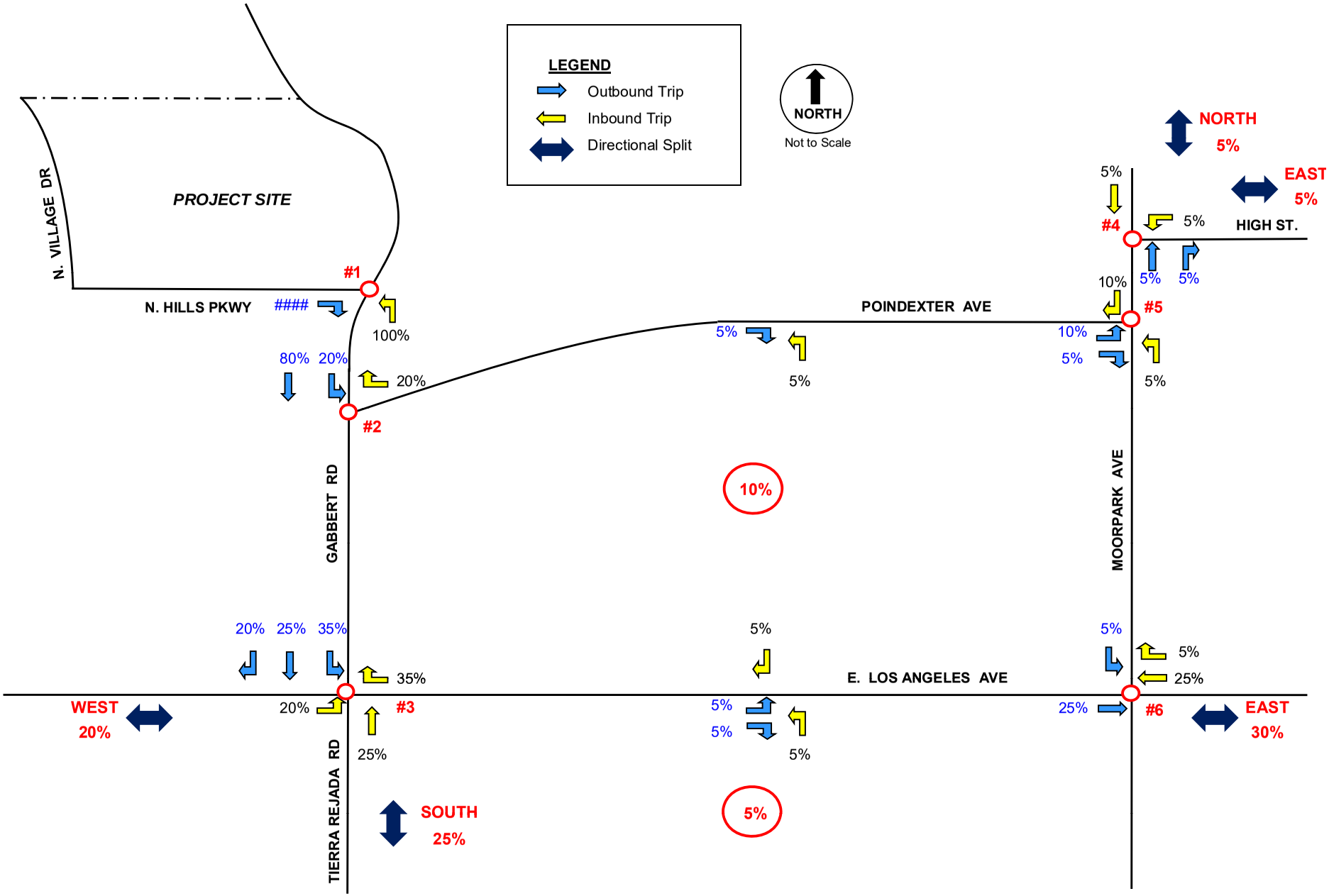
TRIP DISTRIBUTION

Trip distribution represents the directional orientation of traffic to and from the proposed project. Directional orientation is largely influenced by the geographical location of the site, among many other factors. The trip distribution pattern for the project is illustrated in **Exhibit 5**.

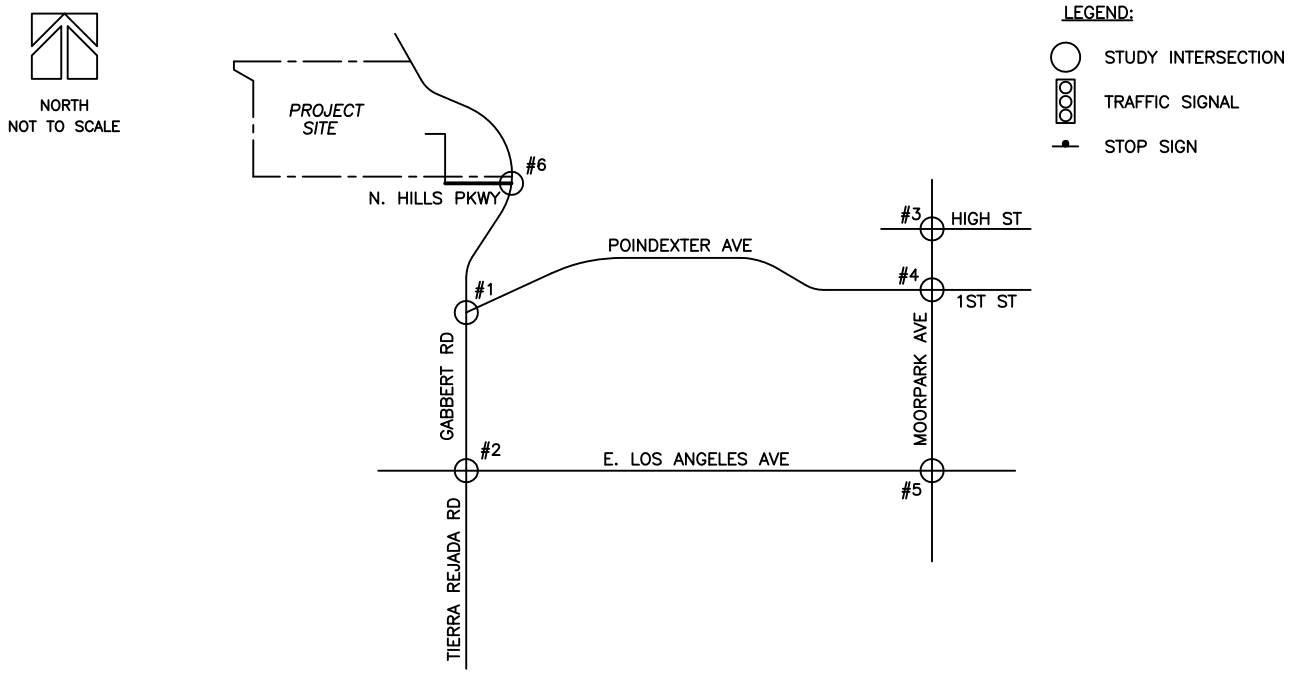
TRAFFIC ASSIGNMENT

The traffic assignment to and from the site has been based upon the results of trip generation, trip distribution, and access layouts. **Exhibit 6** illustrates the traffic assignment of the proposed project in the AM and PM peak hour.

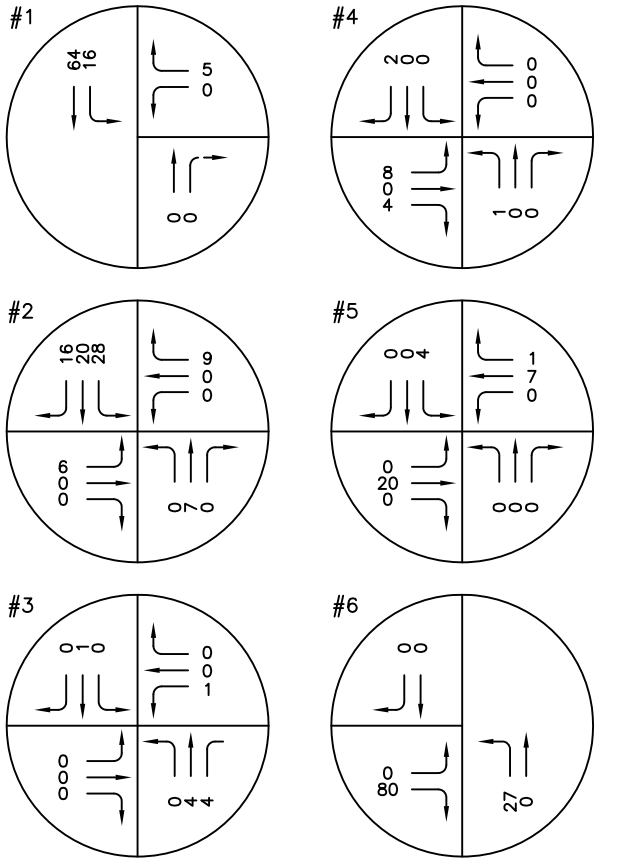
EXHIBIT 5. TRIP DISTRIBUTION



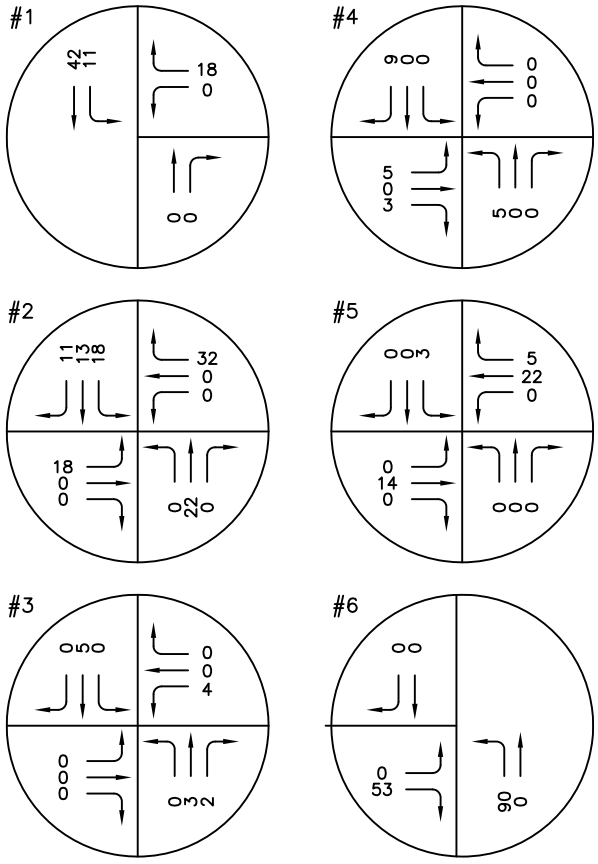
K2 Traffic Engineering, Inc.



AM PEAK HOUR



PM PEAK HOUR



North Ranch Residential Development
5979 Gabbert Road, Moorpark

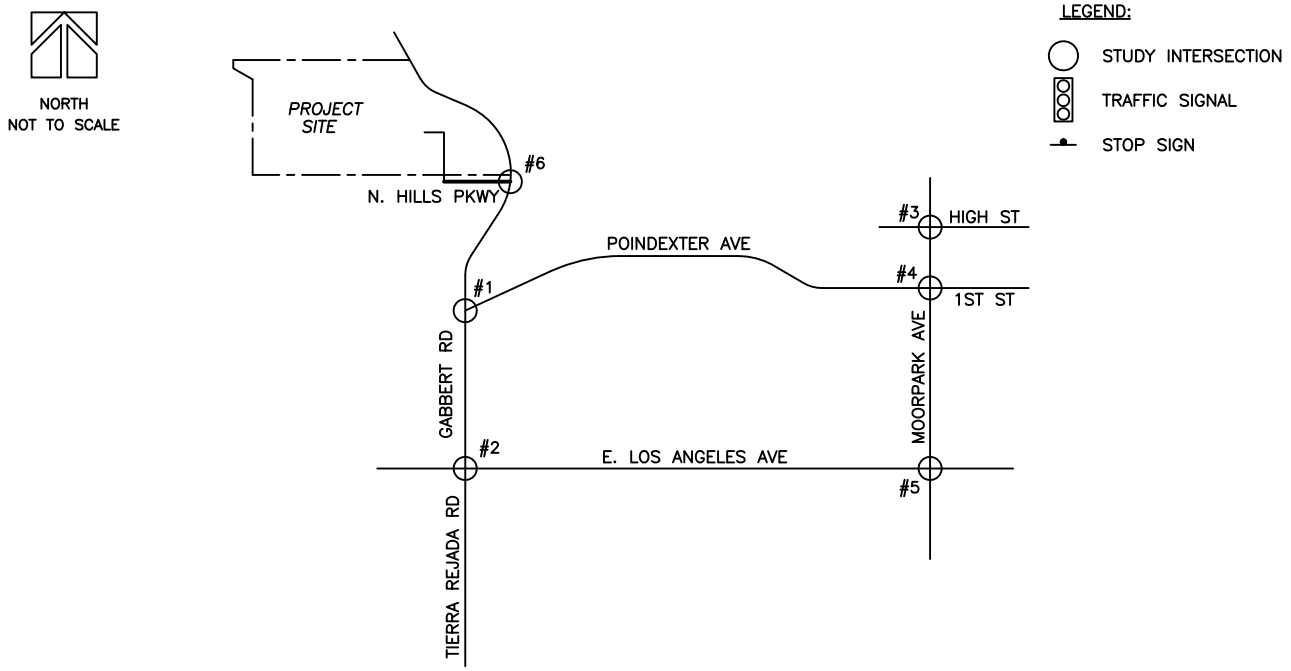
TRAFFIC ASSIGNMENT

EXISTING CONDITIONS PLUS PROJECT

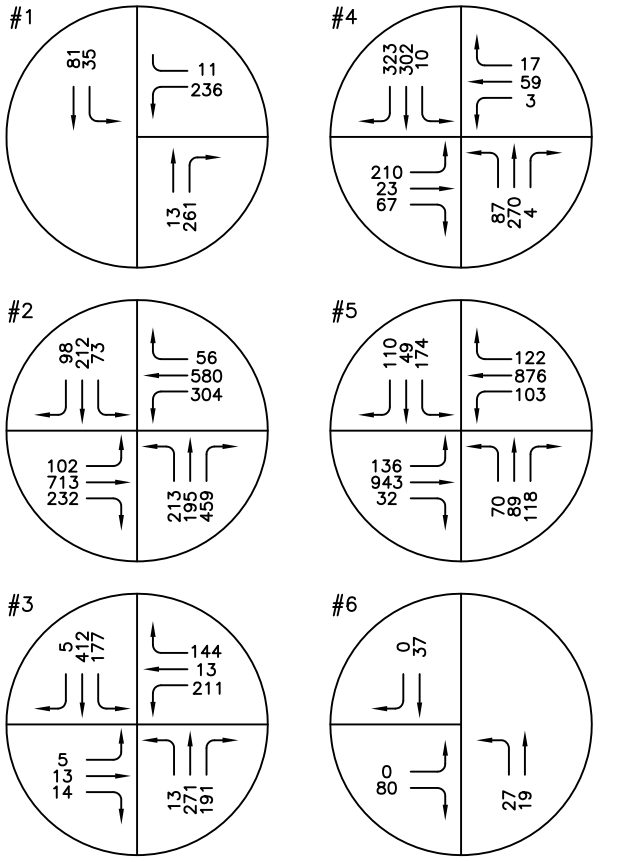
Traffic volumes at the study intersections for existing conditions plus project are shown in **Exhibit 7**. The level of service and delays are shown in **Table 5**. All study intersections will remain operating at LOS C or better for the AM and PM peak hours in this scenario. The analysis worksheets can be found in **Appendix C**.

Table 5. Existing Conditions plus Project

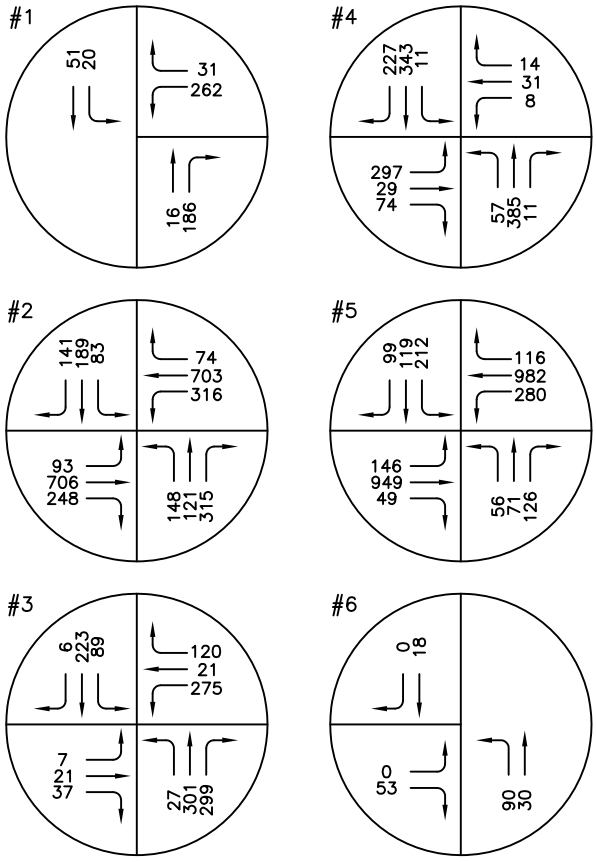
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	V/C	LOS	V/C
1. Gabbert Rd at Poindexter Ave	A	0.381	A	0.349
2. Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	C	0.757	B	0.670
3. Moorpark Ave at High St	A	0.486	A	0.499
4. Moorpark Ave at Poindexter Ave/First St	B	0.687	B	0.670
5. Moorpark Ave at Los Angeles Ave	B	0.642	B	0.684
6. Gabbert Road at North Hills Pkwy	A	0.126	A	0.104



AM PEAK HOUR



PM PEAK HOUR



North Ranch Residential Development
5979 Gabbert Road, Moorpark

EXISTING CONDITIONS PLUS PROJECT TRAFFIC VOLUMES

CUMULATIVE PROJECTS

Other approved projects within a one-mile radius were taken into consideration for the opening year conditions. Based upon the information provided by the City's Community Development Department, cumulative development projects are listed in **Table 6**.

Exhibit 8 illustrates the locations of the cumulative projects. **Exhibit 9** provides the traffic generated by these cumulative developments at the intersection.

Table 6. Summary of Cumulative Development Projects

No.	Project	Land Use	Quantity
1	Triliad Development	Movie Studio	37 Acres
2	Pacific Communities	Single Family Residential	283 Units
3	Essex Moorpark, LLC	Multi-Family Residential	200 Units
4	Spring Road LLC	Condominiums	95 Units
5	City Ventures	Single Family Residential	110 Units
6	Oakmond Senior Living	Senior Residential	77 Units
7	Birdsall Group, LLC	Single Family Residential	21 Units
8	Aldersgate Senior Housing	Senior Residential	390 Units
9	High Street Depot/Daly Group	Downtown Mixed-Use	13,656 SF Retail & 79 Apartments
10	Grand Moorpark/Kozar	Condominiums	63 Units
11	John C, Chiu, FLP-N	Condominiums	60 Units
12	Beltramo Ranch	Single Family Residential	52 Units
13	AHA Scattered Sites	Multi-Family Residential	56 Units
14	Hitch Ranch	Single and Multi-Family	255 Units
15	Amazon Distribution Venter	Industrial	Reuse of 189,364 SF Industrial
16	National Ready Mix	Batch Plant	10 acres
17	CEMEX	Quarry	N/A
18	Wayne J. Sand & Gravel	Quarry	N/A
19	Grimes Rock	Quarry	N/A

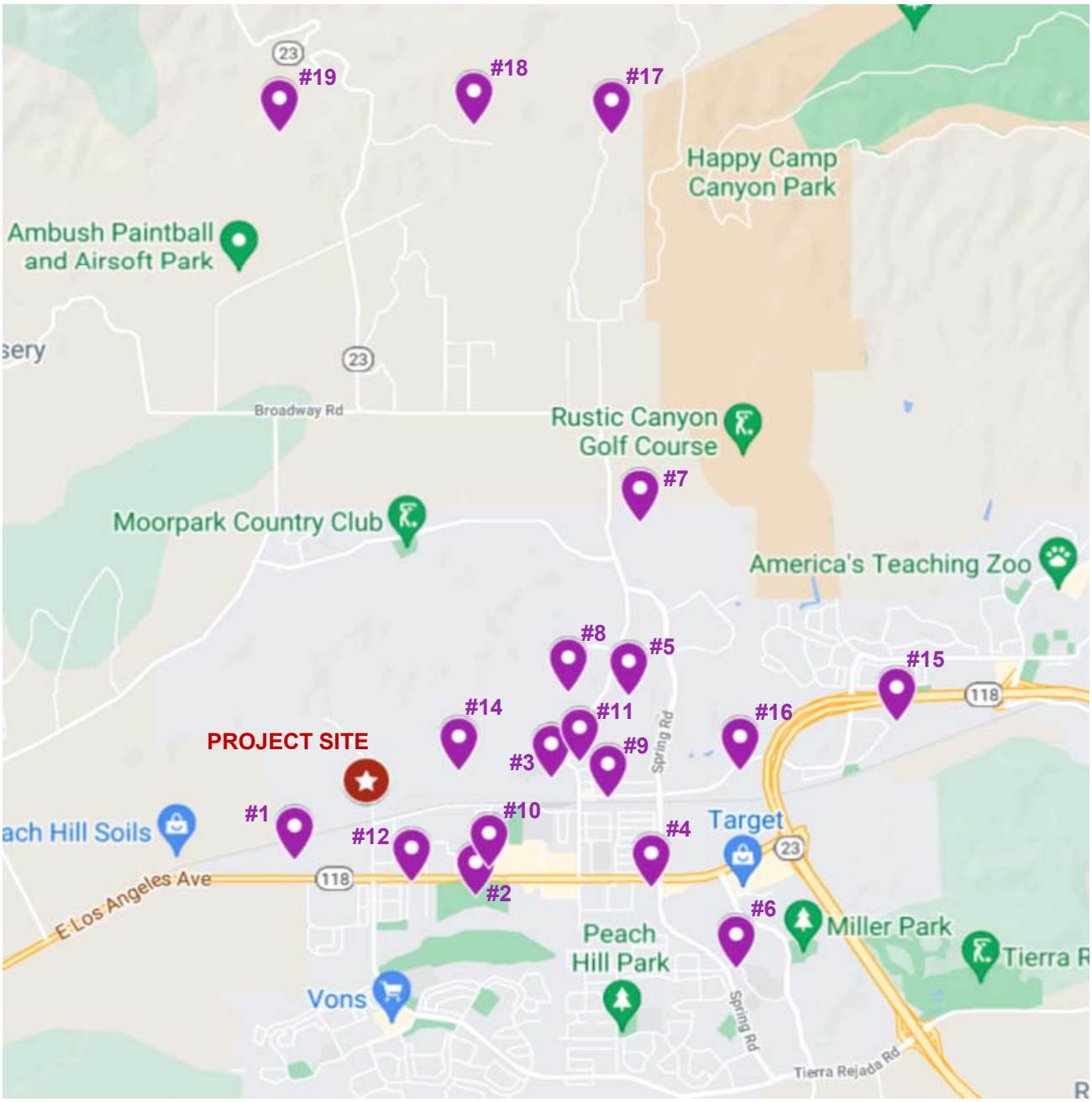
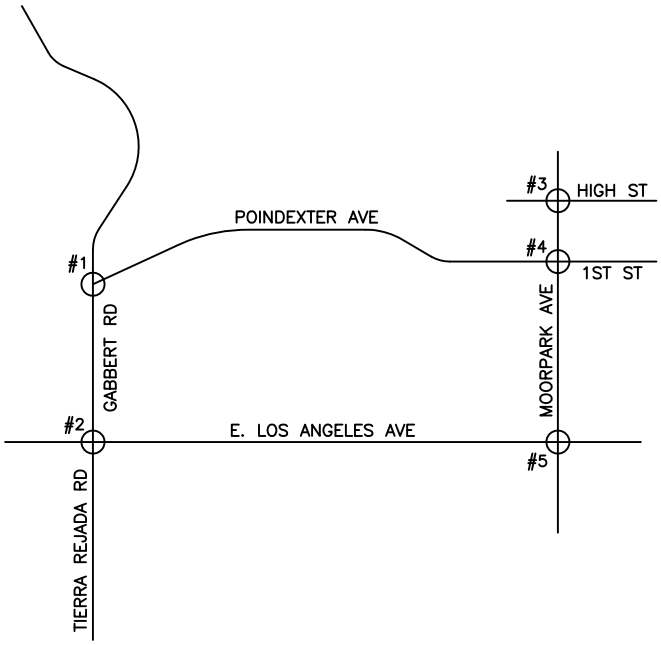


EXHIBIT 8. CUMULATIVE PROJECTS LOCATION MAP

Not To Scale

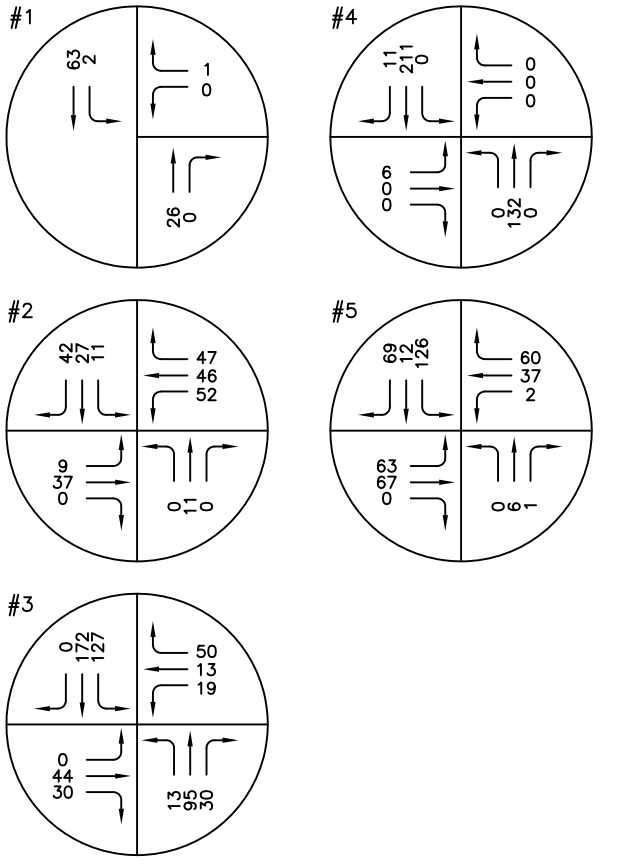
LEGEND:

- STUDY INTERSECTION
- TRAFFIC SIGNAL
- STOP SIGN

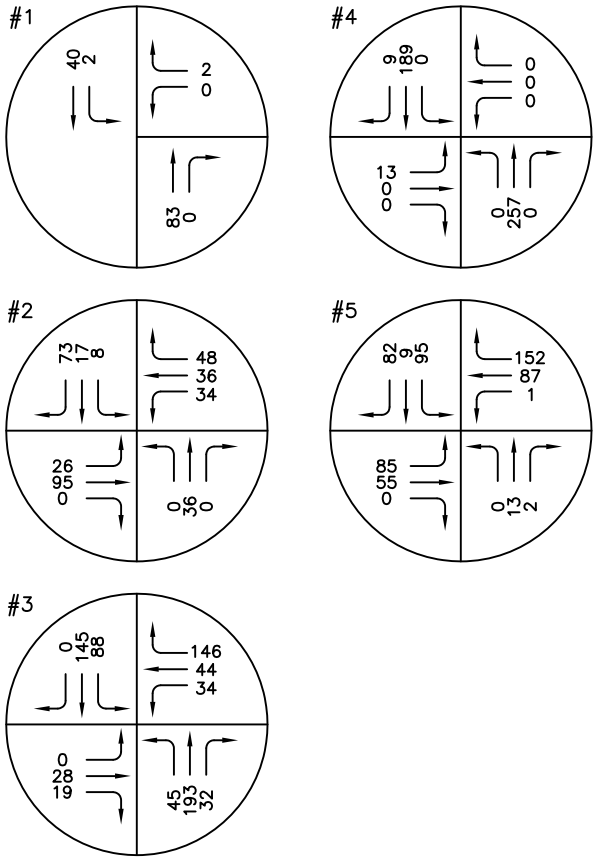


NORTH
NOT TO SCALE

AM PEAK HOUR



PM PEAK HOUR



North Ranch Residential Development
5979 Gabbert Road, Moorpark

CUMULATIVE PROJECTS
TRAFFIC VOLUMES

OPENING YEAR WITH CUMULATIVE PROJECTS

For the project opening year 2025, the annual ambient growth rate of one percent (1%) is used. This factor represents traffic increases resulting from regional growth. Traffic volumes for the project opening year with related projects are illustrated in **Exhibit 10**.

The level of service in the AM and PM peak hour for this scenario are shown in **Table 7**. All study intersections will operate at acceptable LOS C or better for the AM and PM peak hours except for the following intersections:

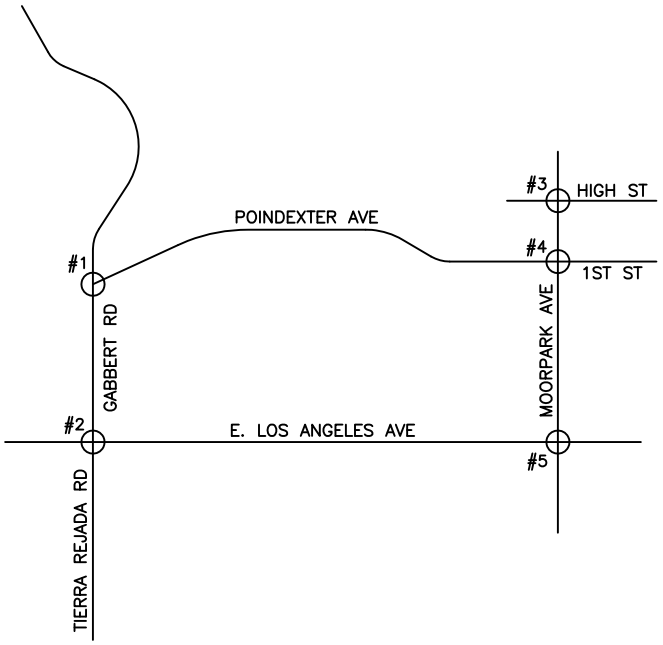
- Gabbert Road/Tierra Rejada Road at E. Los Angeles Avenue (#2): LOS D in the AM peak hour
- Moorpark Avenue at Poindexter Avenue/First Street (#4): LOS D in the AM and PM peak hour
- Moorpark Avenue at E. Los Angeles Avenue (#5): LOS D in the AM and PM peak hour

Table 7. Opening Year (2025) with Cumulative Projects

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	V/C	LOS	V/C
1. Gabbert Rd at Poindexter Ave	A	0.395	A	0.361
2. Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	D	0.807	C	0.733
3. Moorpark Ave at High St	B	0.673	C	0.770
4. Moorpark Ave at Poindexter Ave/First St	D	0.846	D	0.815
5. Moorpark Ave at Los Angeles Ave	D	0.807	D	0.864

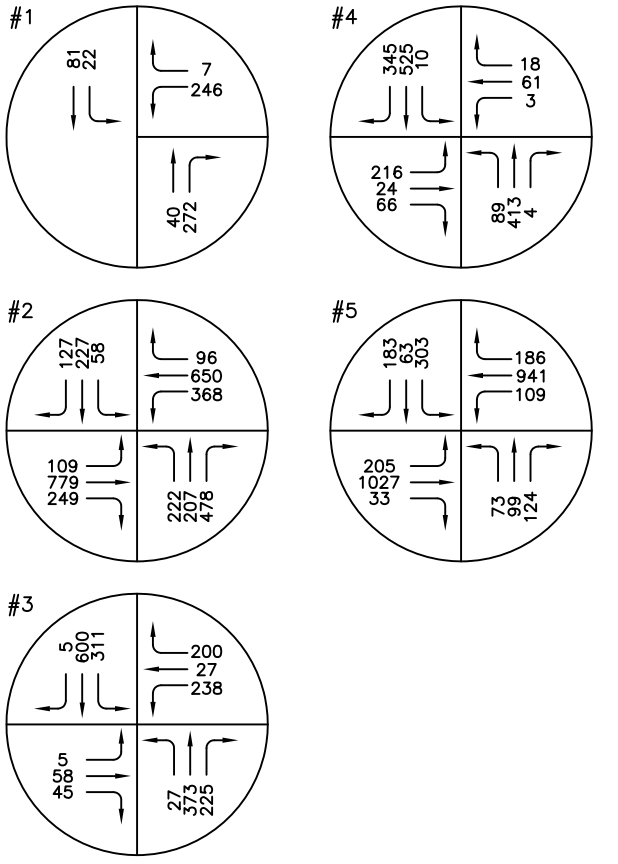
LEGEND:

- STUDY INTERSECTION
- TRAFFIC SIGNAL
- STOP SIGN

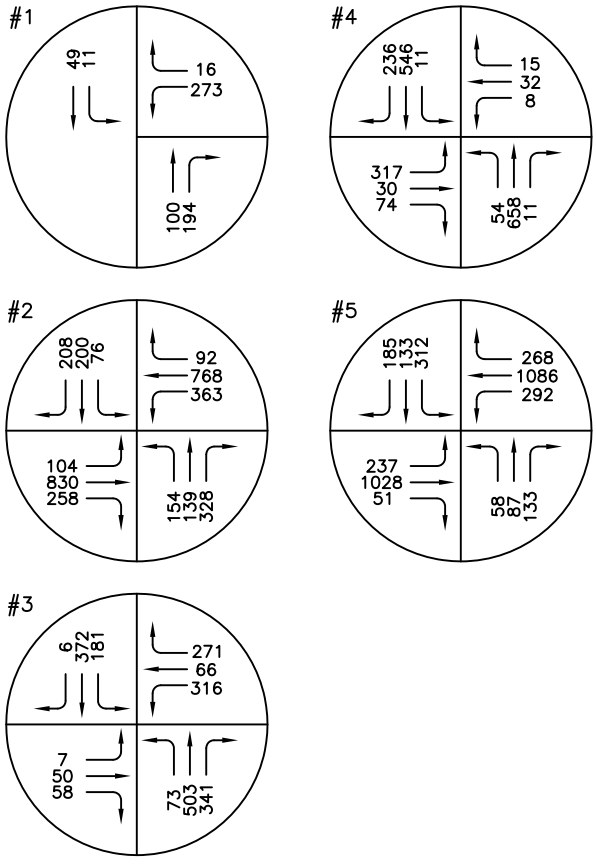


NORTH
NOT TO SCALE

AM PEAK HOUR



PM PEAK HOUR



North Ranch Residential Development
5979 Gabbert Road, Moorpark

OPENING YEAR WITH CUMULATIVE PROJECTS TRAFFIC VOLUMES

OPENING YEAR WITH CUMULATIVE PROJECTS PLUS PROJECT

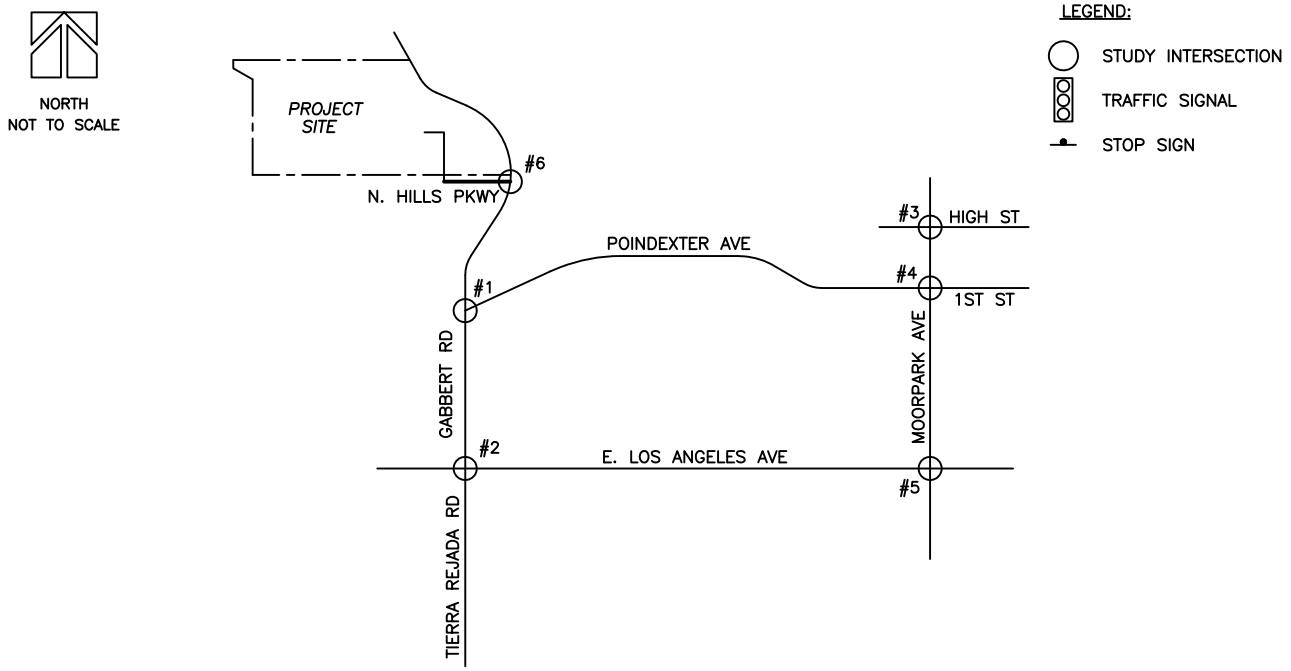
Traffic volumes for the project opening year with cumulative projects plus project traffic volumes are illustrated in **Exhibit 11**. Analysis worksheets can be found in **Appendix C**.

The level of services and V/C ratios at the study intersections under this scenario are shown in **Table 8**. All study intersections remain operating at acceptable LOS C or better except for the following intersections:

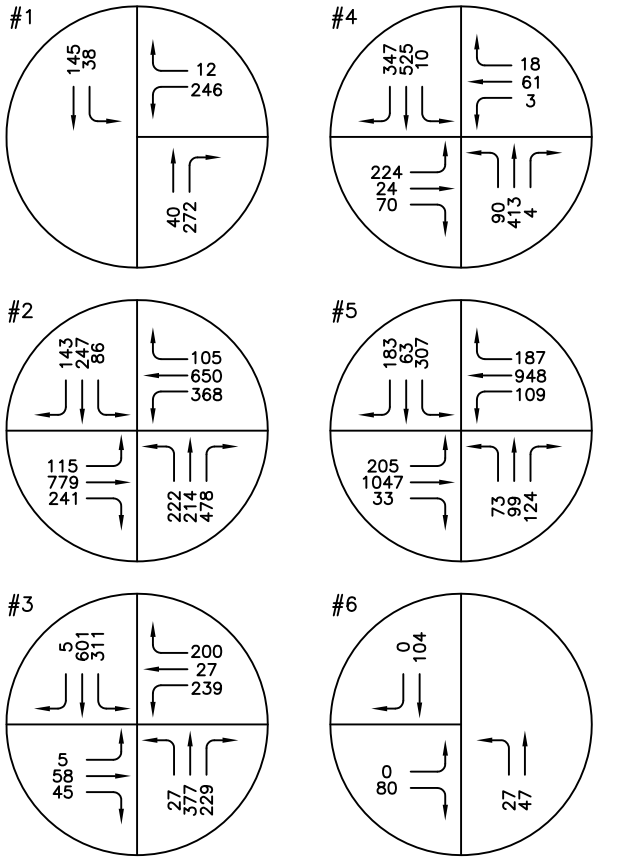
- Gabbert Road/Tierra Rejada Road at E. Los Angeles Avenue (#2): LOS D in the AM peak hour
- Moorpark Avenue at Poindexter Avenue/First Street (#4): LOS D in the AM and PM peak hour
- Moorpark Avenue at E. Los Angeles Avenue (#5): LOS D in the AM and PM peak hour

Table 8. Opening Year ((2025) Cumulative Conditions plus Project

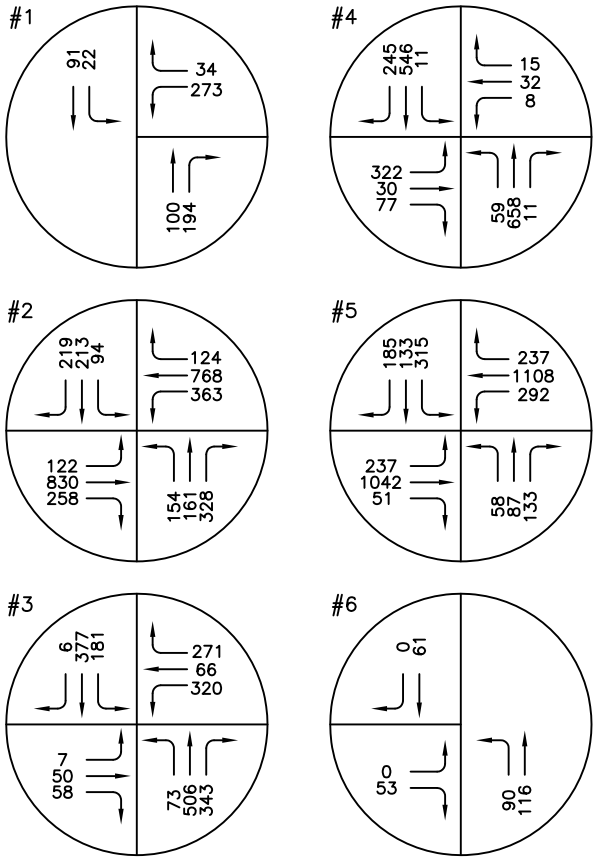
Intersection	AM Peak Hour		PM Peak Hour	
	LOS	V/C	LOS	V/C
1. Gabbert Rd at Poindexter Ave	A	0.395	A	0.361
2. Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	D	0.825	C	0.745
3. Moorpark Ave at High St	B	0.676	C	0.774
4. Moorpark Ave at Poindexter Ave/First St	D	0.853	D	0.827
5. Moorpark Ave at Los Angeles Ave	D	0.812	D	0.873
6. Gabbert Road at North Hills Pkwy	A	0.168	A	0.158



AM PEAK HOUR



PM PEAK HOUR



North Ranch Residential Development
5979 Gabbert Road, Moorpark

OPENING YEAR WITH CUMULATIVE PROJECTS
PLUS PROJECT TRAFFIC VOLUMES

SIGNIFICANT DEGRADATION

According to the City of Moorpark's "*Guidelines for Preparing Traffic and Circulation Studies*," mitigation measures are required when for the following conditions:

I. The intersection capacity utilization value is changed by 0.10 or more, or
II. An existing or future intersection LOS crosses the threshold from C to D due to the addition of project traffic

Based on existing conditions, shown in **Table 9**, project traffic does not cause a significant degradation and mitigation measures are not required.

Table 9. Significant Degradation Analysis – Existing Conditions

Intersection	Without Project		With Project			Delay Increase	Significant Degradation
	LOS	V/C	LOS	Delay	Target LOS		
AM Peak Hour							
1. Gabbert Rd at Poindexter Ave	A	0.381	A	0.381	C	-	No
2. Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	C	0.738	C	0.757	C	-	No
3. Moorpark Ave at High St	A	0.482	A	0.486	C	-	No
4. Moorpark Ave at Poindexter Ave/First St	B	0.679	B	0.687	C	-	No
5. Moorpark Ave at Los Angeles Ave	B	0.637	B	0.642	C	-	No
6. Gabbert Road at North Hills Pkwy	-	-	A	0.126	C	-	No
PM Peak Hour							
1. Gabbert Rd at Poindexter Ave	A	0.349	A	0.349	C	-	No
2. Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	B	0.658	B	0.670	C	-	No
3. Moorpark Ave at High St	A	0.495	A	0.499	C	-	No
4. Moorpark Ave at Poindexter Ave/First St	B	0.659	B	0.670	C	-	No
5. Moorpark Ave at Los Angeles Ave	B	0.675	B	0.684	C	-	No
6. Gabbert Road at North Hills Pkwy	-	-	A	0.104	C	-	No

At the project opening year (2025), the project does not cause a significant degradation at the study intersections, as shown in **Table 10**. The study found that the following intersections will operate at LOS D for the opening year (2025) scenario:

- Gabbert Road/Tierra Rejada Road at E. Los Angeles Avenue (#3)
- Moorpark Avenue at Poindexter Avenue/First Street (#5)
- Moorpark Avenue at E. Los Angeles Avenue (#6)

However, the project's contribution to the pre-existing condition is negligible. Project traffic will not cause the intersection ICU to increase more than 0.10; therefore, mitigation measures are not required.

Table 10. Significant Degradation Analysis – Opening Year (2025) Conditions

Intersection	Without Project		With Project			Delay Increase	Significant Degradation
	LOS	V/C	LOS	Delay	Target LOS		
AM Peak Hour							
1. Gabbert Rd at Poindexter Ave	A	0.395	A	0.395	C	-	No
2. Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	D	0.807	D	0.825	C	0.019 (<0.10, OK)	No
3. Moorpark Ave at High St	B	0.673	B	0.676	C	-	No
4. Moorpark Ave at Poindexter Ave/First St	D	0.846	D	0.853	C	0.007 (<0.10, OK)	No
5. Moorpark Ave at Los Angeles Ave	D	0.807	D	0.812	C	0.005 (<0.10, OK)	No
6. Gabbert Road at North Hills Pkwy	-	-	A	0.168	C	-	No
PM Peak Hour							
1. Gabbert Rd at Poindexter Ave	A	0.361	A	0.361	C	-	No
2. Gabbert Rd/Tierra Rejada Rd at Los Angeles Ave	C	0.733	C	0.745	C	-	No
3. Moorpark Ave at High St	C	0.770	C	0.774	C	-	No
4. Moorpark Ave at Poindexter Ave/First St	D	0.815	D	0.827	C	0.012 (<0.10, OK)	No
5. Moorpark Ave at Los Angeles Ave	D	0.864	D	0.873	C	0.009 (<0.10, OK)	No
6. Gabbert Road at North Hills Pkwy	-	-	A	0.158	C	-	No

SITE ACCESS

Site access will be provided to Gabbert Road via the proposed North Hills Parkwat that terminates at Gabbert Road, forming a new T intersection. This new intersection of North Hills Parkway and Gabbert Road will be controlled by a STOP sign on North Hills Parkway for eastbound traffic.

APPENDIX A
SCOPING AGREEMENT

CITY OF MOORPARK
SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This study acknowledges and follows City of Moorpark Guidelines for Preparing Traffic and Circualtion Studies dated Nobember 22, 1993.

Project Name:	Proposed 144-Unit Residential Development
Project Address:	West of Gabbert Road and north of Poindexter Avenue and the future alignment of North Hills Parkway. (APN# 5110190285 & 5110190305)
Project Description:	Proposed 144-unit residential units including 139 single-family homes and 5 estate lots (See Exhibit 1 for the site plan)

	Consultant	Developer
Name:	Kay Hsu, PE, TE (K2 Traffic Engineering)	Land Design Consultants, Inc.
Address:	1442 Irvine Blvd, Ste 210	2700 E. Foothill Blvd, Suite 200
	Tustin, CA 92780	Pasadena CA 91101
Phone:	714-832-2116	(626) 578-7000
Email:	khsu@k2traffic.com	james@rasmussendevelopment.com

A. Trip Generation Source: ITE Trip Generation Manual, Tenth Edition

Current Land Use	RL=Rural Low Density (1DU/5AC)	Proposed Land Use	H=High Density Residential (7DU/AC)
Current Zoning	A-E	Proposed Zoning	RPD
Total Daily Trips	1359		

	In	Out	Total
AM Trips	27	80	107
PM Trips	90	53	143

(See Exhibit 2 for Trip Generation)

Internal Trip Allowance [ ] Yes [X] No (0% Trip Discount)
Pass-By Trip Allowance [ ] Yes [X] No (0% Trip Discount)
See Table 1 & 2 for Trip Generation

B. Trip Distribution: See Exhibit 3

C. Background Traffic

Project Completion Year: 2025 Annual Ambient Growth Rate: 1%
Model/Forecast methodology Apply growth onto existing traffic

D. Study Intersections: *Use historical data or new count with necessary adjustments for COVID-19*

1. Gabbert Road at North Hills Parkway
2. Gabbert Road at Poindexter Avenue
3. Gabbert Road at East Los Angeles Avenue
4. Moorpark Avenue at High Street
5. Moorpark Avenue at East Los Angeles Avenue
6. Moorpark Avenue at Poindexter Avenue

E. Study Scenario *(ICU methodology)*

1. Existing Conditions
2. Existing Conditions + Project
3. Opening Year + Cumulative
4. Opening Year + Cumulative + Project
5. Opening Year + Cumulative + Project + Mitigation

(See Exhibit 4 for list of Cumulative Development Projects)

F. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline)

Upon request by the City, prepare a separate Addendum for level of service anlaysis at two future intersections: (1) Moorpark Avenue at High Street and (2) Gabbert Road at High Street when related traffic data and roadway information are complete and provided by Hitch Ranch Developments.

Recommended by:



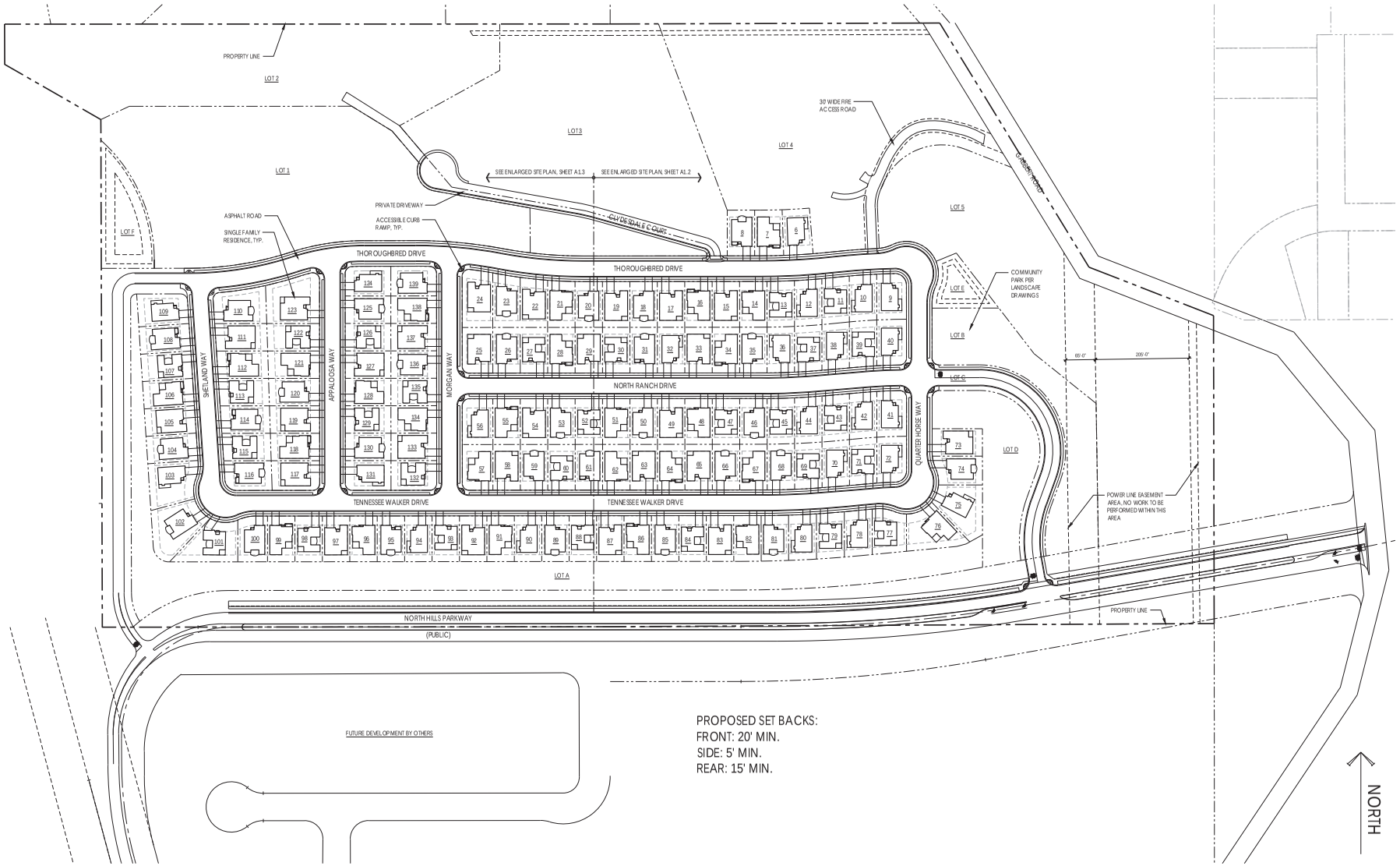
Consultant's Representative — Date: 5/5/2021

Scoping Agreement Submitted on — Date: 5/5/2021

Scoping Agreement Resubmitted on — Date: 11/1/2021

Approved Scoping Agreement:

City of Moorpark — Date



SITE PLAN

SCALE: 1" = 80'-0"

1

MOORPARK PROPERTY 67, LLC
26500 WEST AGOURA ROAD #652
CALABASAS, CA 91302
PHONE: (805) 370-0075

NORTH RANCH
5979 GABBERT ROAD
MOORPARK, CA 93021

ISSUE DATES:
6/4/2020
11/16/2020

SHEET #
A1-1
SITE PLAN

EXHIBIT 1. PROPOSED SITE PLAN

EXHIBIT 2. TRIP GENERATION

TABLE 1. TRIP GENERATION RATE (ITE)

LAND USE	UNIT	Daily	AM Peak			PM Peak		
			Total	IN	OUT	Total	IN	OUT
Single-Family Detatched Housing (210)	Dwelling Units	9.44	0.74	25%	75%	0.99	63%	37%

Source: Trip Generation Manual, 10th Edition

TABLE 2. NET TRIP GENERATION

LAND USE	UNIT	Quantity	AM Peak			PM Peak			Daily
			Total	IN	OUT	Total	IN	OUT	
Single-Family Detatched Housing (210)	Dwelling Units	144	107	27	80	143	90	53	1,359

EXHIBIT 3. TRIP DISTRIBUTION

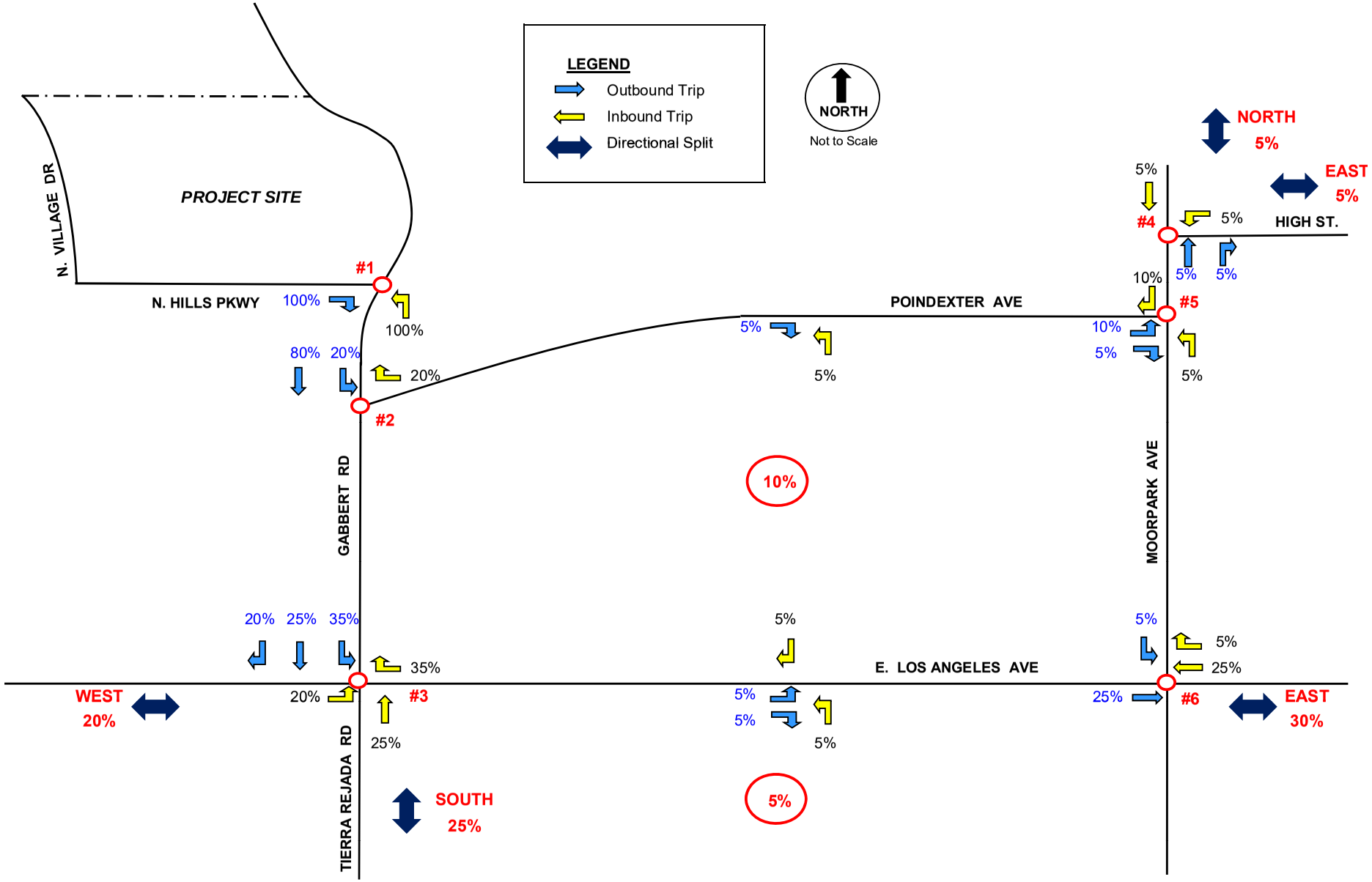


EXHIBIT 4

Cumulative Development Projects Trip Generation (As of April 2, 2021)

Project	Land Use	Size	ADT	A.M. Peak Hour	P.M. Peak Hour	Note
Triliad Development	Movie Studio	37 Acres	100	10	10	Approved
Pacific Communities	Single Family Residential	283 Units	2,694	212	283	Approved
Essex Moorpark, LLC	Multi-Family Residential	200 Units	1,318	92	57	Approved
Spring Road, LLC	Condominiums	95 Units	552	42	49	Approved
City Ventures	Single Family Residential	110 Units	1,047	82	110	Approved
Oakmont Senior Living	Senior Residential	77 units/beds				Approved/Under Construction
Birdsall Group, LLC	Single Family Residential	21 Units	200	16	12	Approved
Aldersgate Senior Housing	Senior Residential	390 Units				Approved
High Street Depot/Daly Group	Downtown Mixed-Use	13,656 sf retail and 79 apartments				Approved
Grand Moorpark/Kozar	Condominiums	63 Units	383	29	34	Approved
John C. Chiu, FLP-N	Condominiums	60 Units	349	26	31	Proposed
Beltramo Ranch	Single Family Res	52 units				Proposed
AHA Scattered Sites	Multi-family	56 units				Proposed
Hitch Ranch	Single and Multi-Family	755 units				Proposed
Moorpark 67/Rasmussen	Single Family Residential	139 Units				Proposed
**Amazon Distribution Center	Industrial	Reuse of 189,364 sf industrial	994	-17	12	Under Construction
*National Ready Mix	Batch Plant	10 acres	600	20	20	Unknown
***CEMEX	Quarry	N/A	980	276	148	Unknown
***Wayne J. Sand & Gravel	Quarry	N/A	504	92	34	Unknown
***Grimes Rock	Quarry	N/A	480	35	14	Unknown
Total Trips						

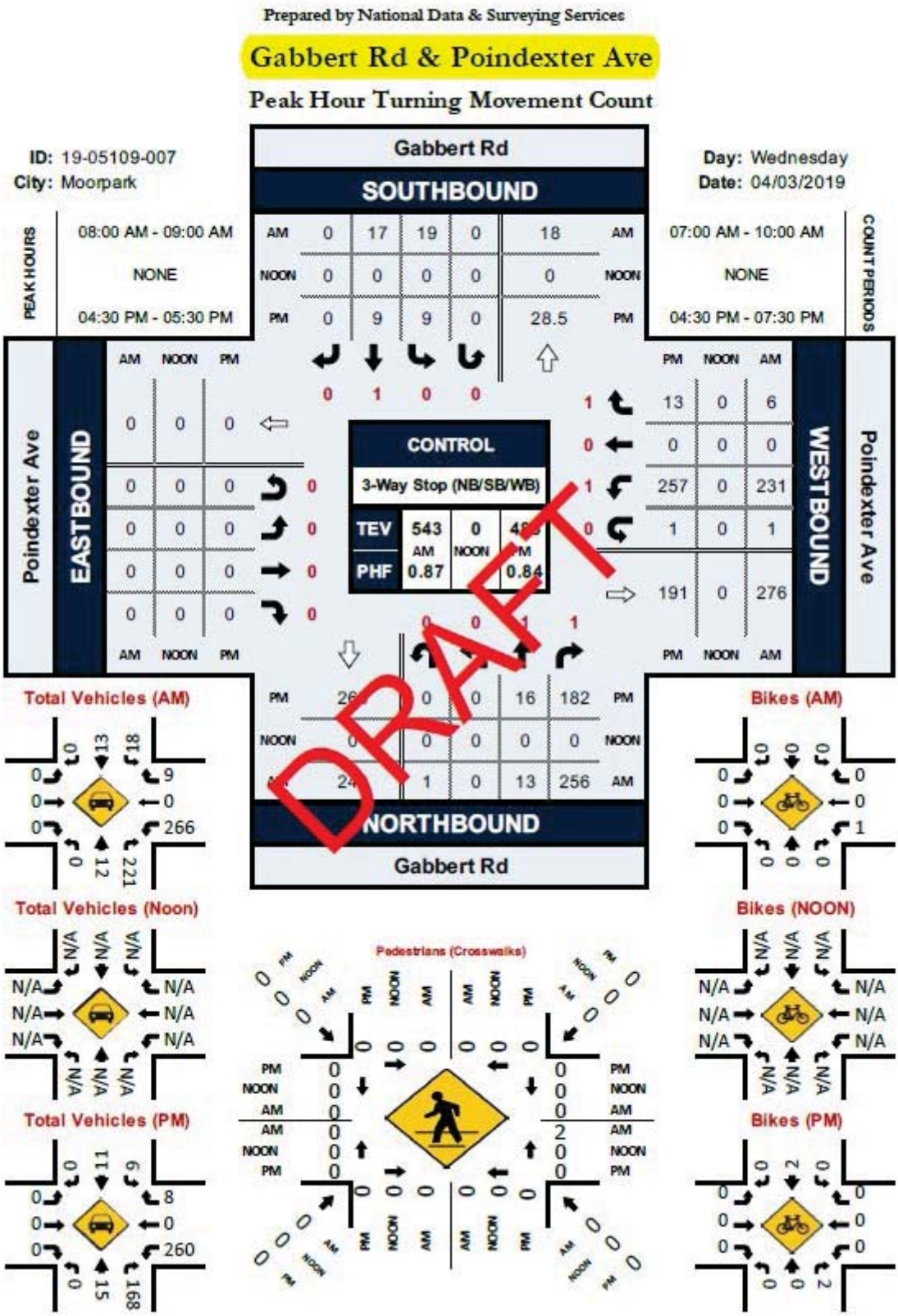
*No proposal to change or expand operations. Existing use creates significant truck traffic through Moorpark.

**Trip calculations include baseline of existing industrial use (site is developed). ADT is a gross figure and A.M./P.M. are net figures based on previous use.

***Operations under County jurisdiction but bring significant truck traffic through Moorpark. Please contact Ventura County to determine whether any active permits for expansion are being reviewed or processed.

APPENDIX B
TURNING MOVEMENT COUNT DATA

INTERSECTION #1



INTERSECTION #2

National Data & Surveying Services

Intersection Turning Movement Count

Location: Tierra Rejada Rd & Los Angeles Ave
City: Moorpark
Control: Signalized

Project ID: 19-05109-011
Date: 4/17/19

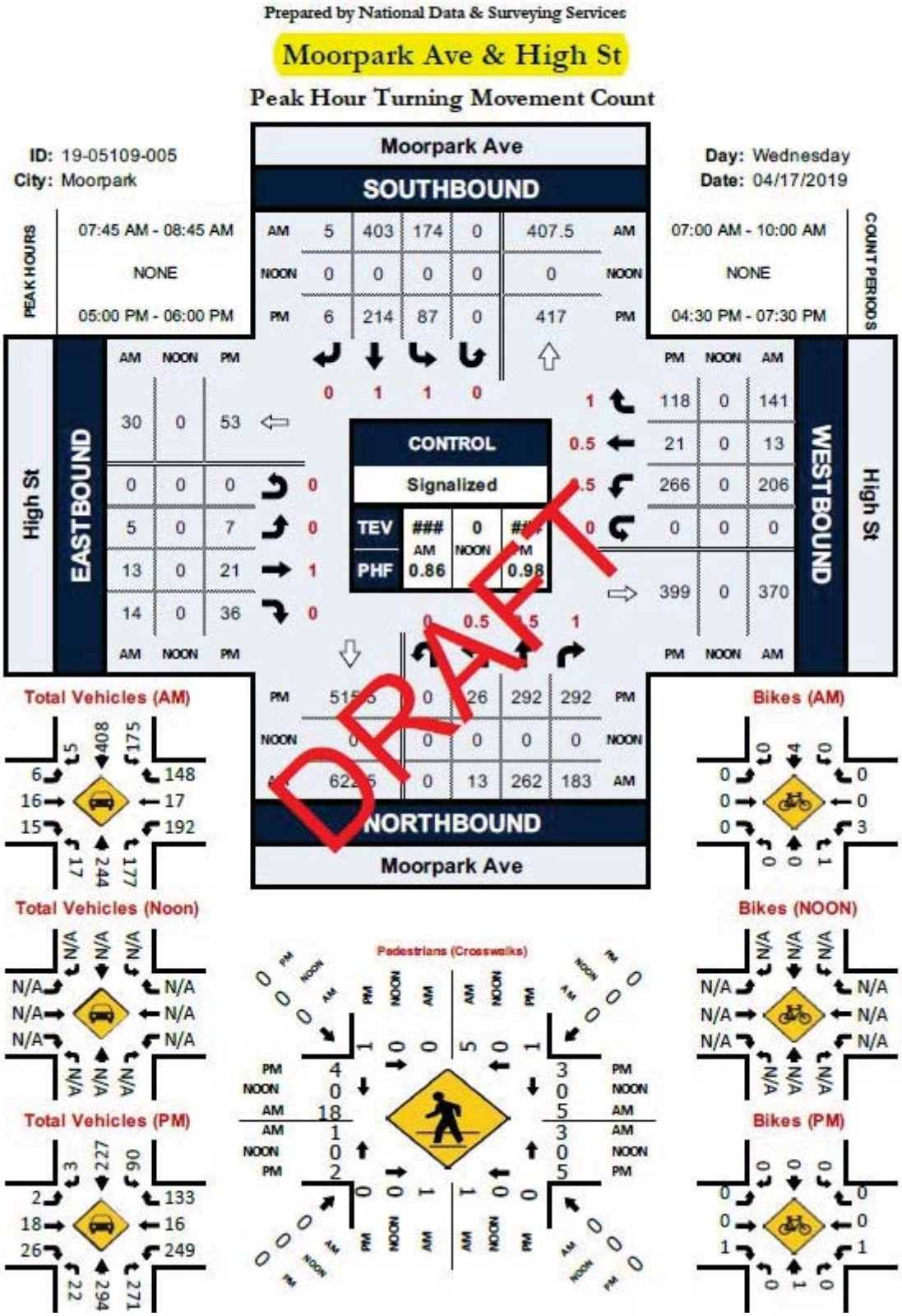
Total

NS/EW Streets:	Tierra Rejada Rd				Tierra Rejada Rd				Los Angeles Ave				Los Angeles Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	1	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	50	27	53	0	15	23	21	0	10	124	29	0	31	140	9	0	531
7:15 AM	36	16	36	0	16	17	21	0	21	188	38	0	36	138	17	0	578
7:30 AM	50	37	72	0	12	43	26	0	23	175	51	0	61	152	11	0	711
7:45 AM	59	59	139	0	13	60	17	0	32	173	62	0	93	143	16	0	861
8:00 AM	59	46	118	0	12	38	13	0	20	169	60	0	80	140	9	0	760
8:15 AM	42	44	122	0	8	47	25	0	20	184	55	0	64	135	10	0	754
8:30 AM	41	54	112	0	5	37	19	0	21	146	50	0	66	148	9	0	706
8:45 AM	36	42	100	0	8	43	15	0	16	119	42	0	85	112	16	0	631
9:00 AM	38	33	88	0	5	16	12	0	12	141	26	0	34	139	19	0	560
9:15 AM	34	16	49	1	8	10	14	0	13	116	22	0	31	113	9	0	432
9:30 AM	25	14	50	0	6	12	12	0	6	102	19	0	31	116	10	0	401
9:45 AM	24	14	46	0	8	11	10	0	11	107	32	0	41	95	8	0	404
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	492	398.5	981.5	0.5	113	355	202.5	0	202	1740.5	483.5	0	649.5	1568.5	140	0	7327
APPROACH %'s :	26.28%	21.28%	52.42%	0.03%	16.85%	52.95%	30.20%	0.00%	8.33%	71.74%	19.93%	0.00%	27.54%	66.52%	5.94%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	209	184	450	0	44	188	80	0	94	699	227	0	298	569	46	0	3086
PEAK HR FACTOR :	0.893	0.786	0.811	0.000	0.880	0.783	0.784	0.000	0.742	0.952	0.923	0.000	0.800	0.936	0.734	0.000	0.896
		0.824				0.876				0.960				0.908			

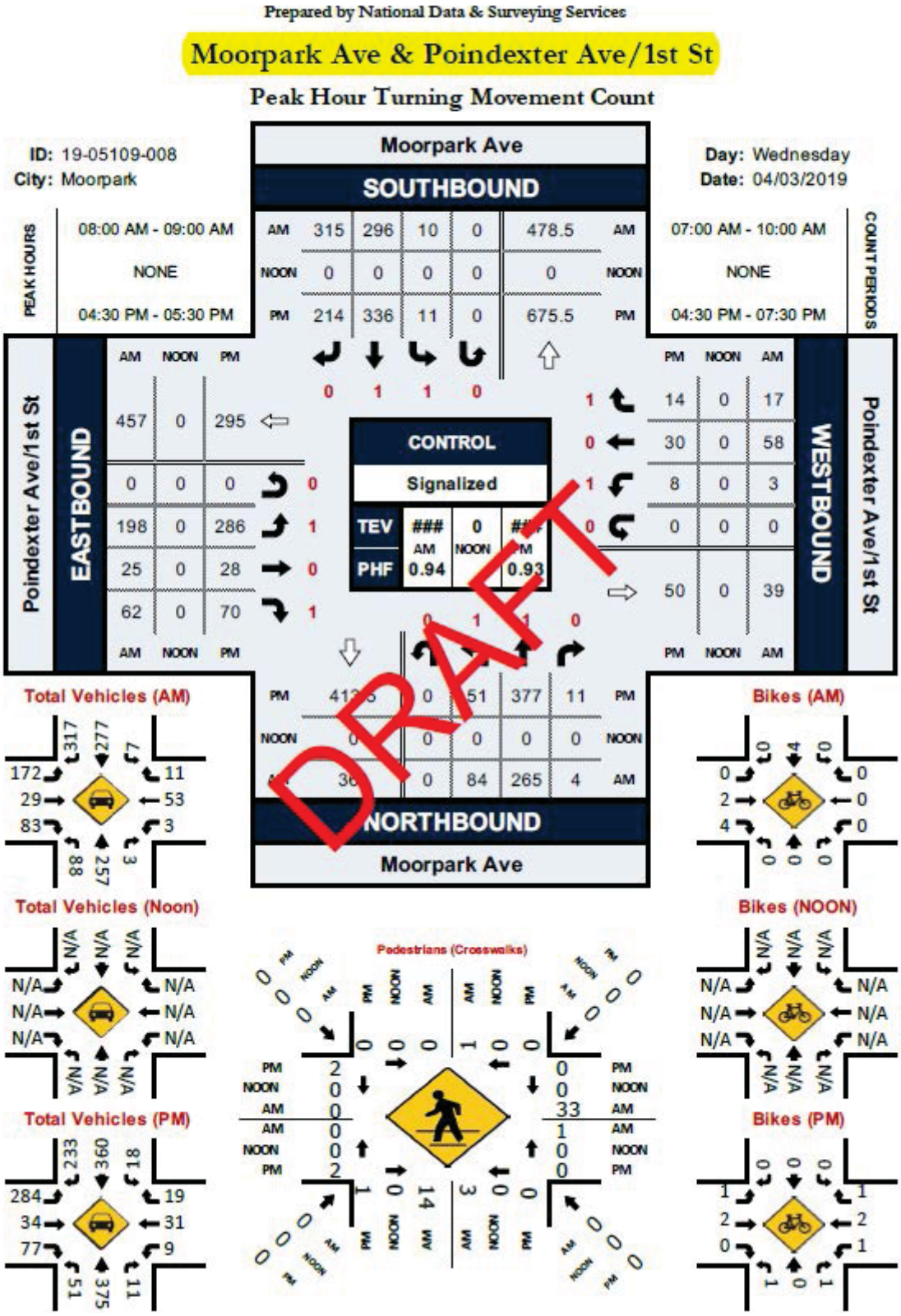
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	1	0	1	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:30 PM	47	31	63	0	30	40	37	0	22	174	71	0	80	167	19	0	778
4:45 PM	26	20	90	0	14	41	24	0	20	193	56	0	76	166	9	0	733
5:00 PM	34	26	84	0	12	56	36	0	17	150	52	0	80	192	7	0	743
5:15 PM	39	21	72	0	9	36	30	0	16	176	65	0	74	165	7	0	709
5:30 PM	34	20	60	0	5	30	19	0	25	171	62	0	74	171	10	0	677
5:45 PM	30	20	66	0	5	38	28	0	14	150	60	0	75	153	6	0	642
6:00 PM	30	17	70	0	4	23	21	0	22	[illegible]	47	0	80	158	9	0	639
6:15 PM	28	14	64	0	5	19	13	0	10	[illegible]	48	0	69	136	4	0	559
6:30 PM	29	16	56	0	4	21	17	0	8	110	[illegible]	0	66	124	4	0	483
6:45 PM	20	18	47	0	4	15	14	0	8	109	[illegible]	0	57	103	4	0	423
7:00 PM	25	16	78	0	5	22	13	0	[illegible]	96	[illegible]	0	68	106	2	0	458
7:15 PM	16	13	63	0	4	14	12	0	[illegible]	74	21	0	66	105	4	0	396
	NL	NT	NR	NU	SL	ST	SR	SU	[illegible]	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	355	228.5	810.5	0	98	352.5	261	0	[illegible]	1712	557.5	0	863	1743	81	0	7237
APPROACH %'s :	25.47%	16.39%	58.14%	0.00%	13.77%	49.54%	36.68%	0.00%	7.1[illegible]	70.03%	22.81%	0.00%	32.12%	64.87%	3.01%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	145	97	309	0	64	173	127	0	74	[illegible]2	243	0	310	689	41	0	2962
PEAK HR FACTOR :	0.780	0.791	0.862	0.000	0.538	0.772	0.855	[illegible]00	[illegible]	0.896	0.862	0.000	0.969	0.899	0.554	0.000	0.952
		0.958				0.852				0.937				0.935			

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INTERSECTION #3



INTERSECTION #4



INTERSECTION #5

National Data & Surveying Services

Intersection Turning Movement Count

Location: Moorpark Ave & Los Angeles Ave
City: Moorpark
Control: Signalized

Project ID: 19-05109-012
Date: 4/17/19

Total

NS/EW Streets:	Moorpark Ave				Moorpark Ave				Los Angeles Ave				Los Angeles Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1.3	0.3	1.3	0	1	3	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	14	11	32	0	33	5	11	0	12	177	4	0	16	167	25	0	506
7:15 AM	15	11	29	0	29	12	18	0	14	185	3	0	15	190	16	0	535
7:30 AM	22	13	39	0	28	11	24	0	17	197	4	0	15	213	22	0	602
7:45 AM	23	20	34	0	42	7	28	0	34	251	8	0	17	236	24	0	722
8:00 AM	16	26	32	0	39	12	32	0	44	236	8	0	22	207	36	0	709
8:15 AM	14	20	27	0	46	19	29	0	29	229	6	0	33	194	34	0	677
8:30 AM	17	22	23	0	40	11	19	0	26	190	10	0	30	216	26	0	627
8:45 AM	12	19	18	0	42	23	30	0	26	185	6	0	37	200	27	0	621
9:00 AM	15	10	18	0	37	10	15	0	18	179	8	0	34	213	23	0	578
9:15 AM	9	3	25	0	32	9	12	0	15	162	5	0	24	182	24	0	499
9:30 AM	9	8	22	0	38	8	18	0	15	161	3	0	31	161	24	0	495
9:45 AM	4	5	31	0	40	10	19	0	15	147	3	0	32	169	35	0	505
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	167.5	165	327	0	445	134	251	0	263.5	2295	65	0	302.5	2345	313	0	7073.5
APPROACH %'s :	25.40%	25.02%	49.58%	0.00%	53.61%	16.14%	30.24%	0.00%	10.04%	87.48%	2.48%	0.00%	10.22%	79.21%	10.57%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	69	87	116	0	167	48	108	0	133	905	31	0	101	852	119	0	2734
PEAK HR FACTOR :	0.750	0.832	0.849	0.000	0.905	0.649	0.840	0.000	0.756	0.901	0.816	0.000	0.777	0.904	0.826	0.000	0.947
		0.886				0.866				0.912				0.971			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1.3	0.3	1.3	0	1	3	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:30 PM	14	19	28	0	44	25	21	0	47	243	15	0	52	225	23	0	754
4:45 PM	16	14	27	0	56	27	26	0	35	224	9	0	67	237	25	0	759
5:00 PM	14	20	27	0	55	31	30	0	32	246	12	0	65	230	30	0	789
5:15 PM	11	13	40	0	45	30	25	0	45	231	14	0	71	225	30	0	778
5:30 PM	16	24	30	0	50	29	16	0	32	217	14	0	72	250	25	0	772
5:45 PM	14	18	29	0	42	24	20	0	23	206	14	0	81	245	24	0	737
6:00 PM	16	14	28	0	48	26	16	0	30	[illegible]	8	0	75	216	27	0	703
6:15 PM	12	16	31	0	43	22	20	0	21	[illegible]	10	0	80	217	24	0	709
6:30 PM	10	17	24	1	40	18	20	0	21	195	[illegible]	0	68	204	19	0	639
6:45 PM	11	13	32	0	40	28	15	0	25	172	[illegible]	0	61	168	23	0	594
7:00 PM	12	14	23	0	36	20	16	0	[illegible]	156	5	0	59	169	25	0	553
7:15 PM	9	12	18	0	32	17	18	0	[illegible]	152	9	0	59	177	13	0	531
	NL	NT	NR	NU	SL	ST	SR	SU	[illegible]	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	150.5	190.5	335.5	0.5	527	295.5	240.5	0	[illegible]	2456	122.5	0	807	2559	284.5	0	8314.5
APPROACH %'s :	22.23%	28.14%	49.56%	0.07%	49.58%	27.80%	22.62%	0.00%	11.[illegible]	83.99%	4.19%	0.00%	22.11%	70.10%	7.79%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	55	70	124	0	205	117	97	0	143	[illegible]	48	0	274	941	109	0	3098
PEAK HR FACTOR :	0.887	0.729	0.775	0.000	0.913	0.944	0.804	[illegible]000	[illegible]	0.934	0.848	0.000	0.958	0.942	0.904	0.000	0.981
		0.896				0.905				0.956				0.957			

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APPENDIX C
LEVEL OF SERVICE ANALYSIS

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing**
Intersection # **1**
Project: North Ranch Residential Development
North/South St: Gabbert Road
East/West St: Poindexter Ave
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left		1500								
Northbound	:Thru	1.0	1600	13	13	0.008		16	16	0.010	
	Right:	1.0	1500	261	261	0.174	0.174	186	186	0.124	0.124
	:Left		1500	19				9			
Southbound	:Thru	1.0	1600	17	17	0.011		9	9	0.006	
	Right:		1500								
	:Left		1500								
Eastbound	:Thru		1600								
	Right:		1500								
	:Left	1.0	1500	236	236	0.157	0.157	262	262	0.175	0.175
Westbound	:Thru		1600								
	Right:	1.0	1500	6	6	0.004		13	13	0.009	
Sum of Critical V/C Ratios							0.331				0.299
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.381**				**0.349**
Level of Service (LOS)							**A**				**A**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Project**
Intersection # **1**
Project: North Ranch Residential Development
North/South St: Gabbert Road
East/West St: Poindexter Ave

Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left	1.0	1500								
Northbound	:Thru	1.0	1600	13	13	0.008		16	16	0.010	
	Right:	1.0	1500	261	261	0.174	0.174	186	186	0.124	0.124
	:Left		1500	35				20			
Southbound	:Thru	1.0	1600	81	81	0.051		51	51	0.032	
	Right:		1500								
	:Left		1500								
Eastbound	:Thru		1600								
	Right:		1500								
	:Left	1.0	1500	236	236	0.157	0.157	262	262	0.175	0.175
Westbound	:Thru		1600								
	Right:	1.0	1500	11	11	0.007		31	31	0.021	
Sum of Critical V/C Ratios							0.331				0.299
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.381**				**0.349**
Level of Service (LOS)							**A**				**A**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative**
Intersection # **1**
Project: North Ranch Residential Development
North/South St: Gabbert Road
East/West St: Poindexter Ave
Date: 12/17/21
By: ET

Movement	No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
:Left	1.0	1500								
Northbound :Thru	1.0	1600	40	40	0.025		100	100	0.063	
Right:	1.0	1500	272	272	0.181	0.181	194	194	0.129	0.129
:Left		1500	22				11			
Southbound :Thru	1.0	1600	81	81	0.051		49	49	0.031	
Right:		1500								
:Left		1500								
Eastbound :Thru		1600								
Right:		1500								
:Left	1.0	1500	246	246	0.164	0.164	273	273	0.182	0.182
Westbound :Thru		1600								
Right:	1.0	1500	7	7	0.005		16	16	0.011	
Sum of Critical V/C Ratios						0.345				0.311
Adjustments for Lost Time						0.05				0.05
Intersection Capacity Utilization (ICU)						**0.395**				**0.361**
Level of Service (LOS)						**A**				**A**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative + Project**
Intersection # **1**
Project: North Ranch Residential Development
North/South St: Gabbert Road
East/West St: Poindexter Ave
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left	1.0	1500								
Northbound	:Thru	1.0	1600	40	40	0.025		100	100	0.063	
	Right:	1.0	1500	272	272	0.181	0.181	194	194	0.129	0.129
	:Left		1500	38				22			
Southbound	:Thru	1.0	1600	145	145	0.091		91	91	0.057	
	Right:		1500								
	:Left		1500								
Eastbound	:Thru		1600								
	Right:		1500								
	:Left	1.0	1500	246	246	0.164	0.164	273	273	0.182	0.182
Westbound	:Thru		1600								
	Right:	1.0	1500	12	12	0.008		34	34	0.023	
Sum of Critical V/C Ratios							0.345				0.311
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.395**				**0.361**
Level of Service (LOS)							**A**				**A**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing**
Intersection # **2**
Project: North Ranch Residential Development
North/South St: Gabbert Rd/Tierra Rejada Rd
East/West St: E. Los Angeles Ave

Date: 12/17/21
By: ET

Movement	No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
:Left	1.0	1500	213	213	0.142		148	148	0.099	
Northbound :Thru	1.0	1600	188	188	0.118		99	99	0.062	
Right:	1.0	1500	459	459	0.306	0.306	315	315	0.210	0.210
:Left	1.0	1500	45	45	0.030	0.030	65	65	0.043	0.043
Southbound :Thru	1.0	1600	192	192	0.120		176	176	0.110	
Right:	1.0	1500	82	82	0.055		130	130	0.087	
:Left	1.0	1500	96	96	0.064		75	75	0.050	
Eastbound :Thru	2.0	1600	713	357	0.223	0.223	706	353	0.221	0.221
Right:	1.0	1500	232	232	0.155		248	248	0.165	
:Left	2.0	1300	304	167	0.129	0.129	316	174	0.134	0.134
Westbound :Thru	2.0	1600	580	290	0.181		703	352	0.220	
Right:	1.0	1500	47	47	0.031		42	42	0.028	
Sum of Critical V/C Ratios						0.688				0.608
Adjustments for Lost Time						0.05				0.05
Intersection Capacity Utilization (ICU)						**0.738**				**0.658**
Level of Service (LOS)						**C**				**B**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Project**
Intersection # **2**
Project: North Ranch Residential Development
North/South St: Gabbert Rd/Tierra Rejada Rd
East/West St: E. Los Angeles Ave
Date: 12/17/21
By: ET

Movement	No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
:Left	1.0	1500	213	213	0.142		148	148	0.099	
Northbound :Thru	1.0	1600	195	195	0.122		121	121	0.076	
Right:	1.0	1500	459	459	0.306	0.306	315	315	0.210	0.210
:Left	1.0	1500	73	73	0.049	0.049	83	83	0.055	0.055
Southbound :Thru	1.0	1600	212	212	0.133		189	189	0.118	
Right:	1.0	1500	98	98	0.065		141	141	0.094	
:Left	1.0	1500	102	102	0.068		93	93	0.062	
Eastbound :Thru	2.0	1600	713	357	0.223	0.223	706	353	0.221	0.221
Right:	1.0	1500	232	232	0.155		248	248	0.165	
:Left	2.0	1300	304	167	0.129	0.129	316	174	0.134	0.134
Westbound :Thru	2.0	1600	580	290	0.181		703	352	0.220	
Right:	1.0	1500	56	56	0.037		74	74	0.049	
Sum of Critical V/C Ratios						0.707				0.620
Adjustments for Lost Time						0.05				0.05
Intersection Capacity Utilization (ICU)						**0.757**				**0.670**
Level of Service (LOS)						**C**				**B**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative**
Intersection # **2**
Project: North Ranch Residential Development
North/South St: Gabbert Rd/Tierra Rejada Rd
East/West St: E. Los Angeles Ave
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left	1.0	1500	222	222	0.148		154	154	0.103	
Northbound	:Thru	1.0	1600	207	207	0.129		139	139	0.087	
	Right:	1.0	1500	478	478	0.319	0.319	328	328	0.219	0.219
	:Left	1.0	1500	58	58	0.039	0.039	76	76	0.051	0.051
Southbound	:Thru	1.0	1600	227	227	0.142		200	200	0.125	
	Right:	1.0	1500	127	127	0.085		208	208	0.139	
	:Left	1.0	1500	109	109	0.073		104	104	0.069	
Eastbound	:Thru	2.0	1600	779	390	0.243	0.243	830	415	0.259	0.259
	Right:	1.0	1500	241	241	0.161		258	258	0.172	
	:Left	2.0	1300	368	202	0.156	0.156	363	200	0.154	0.154
Westbound	:Thru	2.0	1600	650	325	0.203		768	384	0.240	
	Right:	1.0	1500	96	96	0.064		92	92	0.061	
Sum of Critical V/C Ratios							0.757				0.683
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.807**				**0.733**
Level of Service (LOS)							**D**				**C**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative + Project**
Intersection # **2**
Project: North Ranch Residential Development
North/South St: Gabbert Rd/Tierra Rejada Rd
East/West St: E. Los Angeles Ave
Date: 12/17/21
By: ET

Movement	No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
:Left	1.0	1500	222	222	0.148		154	154	0.103	
Northbound :Thru	1.0	1600	214	214	0.134		161	161	0.101	
Right:	1.0	1500	478	478	0.319	0.319	328	328	0.219	0.219
:Left	1.0	1500	86	86	0.057	0.057	94	94	0.063	0.063
Southbound :Thru	1.0	1600	247	247	0.154		213	213	0.133	
Right:	1.0	1500	143	143	0.095		219	219	0.146	
:Left	1.0	1500	115	115	0.077		122	122	0.081	
Eastbound :Thru	2.0	1600	779	390	0.243	0.243	830	415	0.259	0.259
Right:	1.0	1500	241	241	0.161		258	258	0.172	
:Left	2.0	1300	368	202	0.156	0.156	363	200	0.154	0.154
Westbound :Thru	2.0	1600	650	325	0.203		768	384	0.240	
Right:	1.0	1500	105	105	0.070		124	124	0.083	
Sum of Critical V/C Ratios						0.775				0.695
Adjustments for Lost Time						0.05				0.05
Intersection Capacity Utilization (ICU)						**0.825**				**0.745**
Level of Service (LOS)						**D**				**C**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing**
Intersection # **3**
Project: North Ranch Residential Development
North/South St: Moorpark Ave
East/West St: High St
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left		1500	13				27			
Northbound	:Thru	1.0	1600	267	280	0.175	0.175	298	325	0.203	0.203
	Right:	1.0	1500	187	187	0.125		297	297	0.198	
	:Left	1.0	1500	177	177	0.118	0.118	89	89	0.059	0.059
Southbound	:Thru	1.0	1600	411	416	0.260		218	224	0.140	
	Right:		1500	5				6			
	:Left		1500	5				7			
Eastbound	:Thru	1.0	1600	13	27	0.017		21	58	0.036	
	Right:		1500	14				37			
	:Left		1500	210				271			
Westbound	:Thru	1.0	1600	13	223	0.139	0.139	21	292	0.183	0.183
	Right:	1.0	1500	144	144	0.096		120	120	0.080	
Sum of Critical V/C Ratios							0.432				0.445
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.482**				**0.495**
Level of Service (LOS)							**A**				**A**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Project**
Intersection # **3**
Project: North Ranch Residential Development
North/South St: Moorpark Ave
East/West St: High St
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left		1500	13				27			
Northbound	:Thru	1.0	1600	271	284	0.178	0.178	301	328	0.205	0.205
	Right:	1.0	1500	191	191	0.127		299	299	0.199	
	:Left	1.0	1500	177	177	0.118	0.118	89	89	0.059	0.059
Southbound	:Thru	1.0	1600	412	417	0.261		223	229	0.143	
	Right:		1500	5				6			
	:Left		1500	5				7			
Eastbound	:Thru	1.0	1600	13	27	0.017		21	58	0.036	
	Right:		1500	14				37			
	:Left		1500	211				275			
Westbound	:Thru	1.0	1600	13	224	0.140	0.140	21	296	0.185	0.185
	Right:	1.0	1500	144	144	0.096		120	120	0.080	
Sum of Critical V/C Ratios							0.436				0.449
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.486**				**0.499**
Level of Service (LOS)							**A**				**A**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative**
Intersection # **3**
Project: North Ranch Residential Development
North/South St: Moorpark Ave
East/West St: High St
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Critical Lane	A.M. V/C Ratio	A.M. Critical V/C	P.M. Peak Hour Volumes Total	P.M. Critical Lane	P.M. V/C Ratio	P.M. Critical V/C
	:Left		1500	27				73			
Northbound	:Thru	1.0	1600	373	400	0.250	0.250	503	576	0.360	0.360
	Right:	1.0	1500	225	225	0.150		341	341	0.227	
	:Left	1.0	1500	311	311	0.207	0.207	181	181	0.121	0.121
Southbound	:Thru	1.0	1600	600	605	0.378		372	378	0.236	
	Right:		1500	5				6			
	:Left		1500	5				7			
Eastbound	:Thru	1.0	1600	58	103	0.064		50	108	0.068	
	Right:		1500	45				58			
	:Left		1500	238				316			
Westbound	:Thru	1.0	1600	27	265	0.166	0.166	66	382	0.239	0.239
	Right:	1.0	1500	200	200	0.133		271	271	0.181	
Sum of Critical V/C Ratios							0.623				0.720
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.673**				**0.770**
Level of Service (LOS)							**B**				**C**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative + Project**
Intersection # **3**
Project: North Ranch Residential Development
North/South St: Moorpark Ave
East/West St: High St
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Critical Lane	A.M. V/C Ratio	A.M. Critical V/C	P.M. Peak Hour Volumes Total	P.M. Critical Lane	P.M. V/C Ratio	P.M. Critical V/C
	:Left		1500	27				73			
Northbound	:Thru	1.0	1600	377	404	0.253	0.253	506	579	0.362	0.362
	Right:	1.0	1500	229	229	0.153		343	343	0.229	
	:Left	1.0	1500	311	311	0.207	0.207	181	181	0.121	0.121
Southbound	:Thru	1.0	1600	601	606	0.379		377	383	0.239	
	Right:		1500	5				6			
	:Left		1500	5				7			
Eastbound	:Thru	1.0	1600	58	103	0.064		50	108	0.068	
	Right:		1500	45				58			
	:Left		1500	239				320			
Westbound	:Thru	1.0	1600	27	266	0.166	0.166	66	386	0.241	0.241
	Right:	1.0	1500	200	200	0.133		271	271	0.181	
Sum of Critical V/C Ratios							0.626				0.724
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.676**				**0.774**
Level of Service (LOS)							**B**				**C**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing**
Intersection # **4**
Project: Noth Ranch Residential Development
North/South St: Moorpark Ave
East/West St: Poindexter Ave/1st St

Date: 12/17/21
By: ET

Movement	No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Critical Lane	A.M. V/C Ratio	A.M. Critical V/C	P.M. Peak Hour Volumes Total	P.M. Critical Lane	P.M. V/C Ratio	P.M. Critical V/C
:Left	1.0	1500	86	86	0.057	0.057	52	52	0.035	0.035
Northbound :Thru	1.0	1600	270	274	0.171		385	396	0.248	
Right:		1500	4				11			
:Left	1.0	1500	10	10	0.007		11	11	0.007	
Southbound :Thru	1.0	1600	302	623	0.389	0.389	343	561	0.351	0.351
Right:		1500	321				218			
:Left	1.0	1500	202	202	0.135	0.135	292	292	0.195	0.195
Eastbound :Thru	1.0	1600	23	86	0.054		29	100	0.063	
Right:		1500	63				71			
:Left	1.0	1500	3	3	0.002		8	8	0.005	
Westbound :Thru	1.0	1600	59	76	0.048	0.048	31	45	0.028	0.028
Right:		1500	17				14			
Sum of Critical V/C Ratios						0.629				0.609
Adjustments for Lost Time						0.05				0.05
Intersection Capacity Utilization (ICU)						**0.679**				**0.659**
Level of Service (LOS)						**B**				**B**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Project**
Intersection # **4**
Project: Noth Ranch Residential Development
North/South St: Moorpark Ave
East/West St: Poindexter Ave/1st St

Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left	1.0	1500	87	87	0.058	0.058	57	57	0.038	0.038
Northbound	:Thru	1.0	1600	270	274	0.171		385	396	0.248	
	Right:		1500	4				11			
	:Left	1.0	1500	10	10	0.007		11	11	0.007	
Southbound	:Thru	1.0	1600	302	625	0.391	0.391	343	570	0.356	0.356
	Right:		1500	323				227			
	:Left	1.0	1500	210	210	0.140	0.140	297	297	0.198	0.198
Eastbound	:Thru	1.0	1600	23	90	0.056		29	103	0.064	
	Right:		1500	67				74			
	:Left	1.0	1500	3	3	0.002		8	8	0.005	
Westbound	:Thru	1.0	1600	59	76	0.048	0.048	31	45	0.028	0.028
	Right:		1500	17				14			
Sum of Critical V/C Ratios							0.637				0.620
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.687**				**0.670**
Level of Service (LOS)							**B**				**B**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative**
Intersection # **4**
Project: Noth Ranch Residential Development
North/South St: Moorpark Ave
East/West St: Poindexter Ave/1st St

Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left	1.0	1500	89	89	0.059	0.059	54	54	0.036	0.036
Northbound	:Thru	1.0	1600	413	417	0.261		658	669	0.418	
	Right:		1500	4				11			
	:Left	1.0	1500	10	10	0.007		11	11	0.007	
Southbound	:Thru	1.0	1600	525	870	0.544	0.544	546	782	0.489	0.489
	Right:		1500	345				236			
	:Left	1.0	1500	216	216	0.144	0.144	317	317	0.211	0.211
Eastbound	:Thru	1.0	1600	24	90	0.056		30	104	0.065	
	Right:		1500	66				74			
	:Left	1.0	1500	3	3	0.002		8	8	0.005	
Westbound	:Thru	1.0	1600	61	79	0.049	0.049	32	47	0.029	0.029
	Right:		1500	18				15			
Sum of Critical V/C Ratios							0.796				0.765
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.846**				**0.815**
Level of Service (LOS)							**D**				**D**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative + Project**
Intersection # **4**
Project: Noth Ranch Residential Development
North/South St: Moorpark Ave
East/West St: Poindexter Ave/1st St
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left	1.0	1500	90	90	0.060	0.060	59	59	0.039	0.039
Northbound	:Thru	1.0	1600	413	417	0.261		658	669	0.418	
	Right:		1500	4				11			
	:Left	1.0	1500	10	10	0.007		11	11	0.007	
Southbound	:Thru	1.0	1600	525	872	0.545	0.545	546	791	0.494	0.494
	Right:		1500	347				245			
	:Left	1.0	1500	224	224	0.149	0.149	322	322	0.215	0.215
Eastbound	:Thru	1.0	1600	24	94	0.059		30	107	0.067	
	Right:		1500	70				77			
	:Left	1.0	1500	3	3	0.002		8	8	0.005	
Westbound	:Thru	1.0	1600	61	79	0.049	0.049	32	47	0.029	0.029
	Right:		1500	18				15			
Sum of Critical V/C Ratios							0.803				0.777
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.853**				**0.827**
Level of Service (LOS)							**D**				**D**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing**
Intersection # **5**
Project: North Ranch Residenital Development
North/South St: Moorpark Ave
East/West St: E. Los Angeles Ave
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left	1.5	1500	70	47	0.031		56	38	0.025	
Northbound	:Thru	0.5	1600	89	178	0.111	0.111	71	142	0.089	0.089
	Right:	1.0	1500	118	118	0.079		126	126	0.084	
	:Left	1.0	1500	170	170	0.113	0.113	209	209	0.139	0.139
Southbound	:Thru	1.0	1600	49	49	0.031		119	119	0.074	
	Right:	1.0	1500	110	110	0.073		99	99	0.066	
	:Left	1.0	1500	136	136	0.091	0.091	146	146	0.097	0.097
Eastbound	:Thru	3.0	1600	923	318	0.199		935	328	0.205	
	Right:		1500	32				49			
	:Left	1.0	1500	103	103	0.069		280	280	0.187	
Westbound	:Thru	2.0	1600	869	435	0.272	0.272	960	480	0.300	0.300
	Right:	1.0	1500	121	121	0.081		111	111	0.074	
Sum of Critical V/C Ratios							0.587				0.625
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.637**				**0.675**
Level of Service (LOS)							**B**				**B**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Project**
Intersection # **5**
Project: North Ranch Residenital Development
North/South St: Moorpark Ave
East/West St: E. Los Angeles Ave
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left	1.5	1500	70	47	0.031		56	38	0.025	
Northbound	:Thru	0.5	1600	89	178	0.111	0.111	71	142	0.089	0.089
	Right:	1.0	1500	118	118	0.079		126	126	0.084	
	:Left	1.0	1500	174	174	0.116	0.116	212	212	0.141	0.141
Southbound	:Thru	1.0	1600	49	49	0.031		119	119	0.074	
	Right:	1.0	1500	110	110	0.073		99	99	0.066	
	:Left	1.0	1500	136	136	0.091	0.091	146	146	0.097	0.097
Eastbound	:Thru	3.0	1600	943	325	0.203		949	333	0.208	
	Right:		1500	32				49			
	:Left	1.0	1500	103	103	0.069		280	280	0.187	
Westbound	:Thru	2.0	1600	876	438	0.274	0.274	982	491	0.307	0.307
	Right:	1.0	1500	122	122	0.081		116	116	0.077	
Sum of Critical V/C Ratios							0.592				0.634
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.642**				**0.684**
Level of Service (LOS)							**B**				**B**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative**
Intersection # **5**
Project: North Ranch Residenital Development
North/South St: Moorpark Ave
East/West St: E. Los Angeles Ave
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left	1.5	1500	73	49	0.033		58	39	0.026	
Northbound	:Thru	0.5	1600	99	198	0.124	0.124	87	174	0.109	0.109
	Right:	1.0	1500	124	124	0.083		133	133	0.089	
	:Left	1.0	1500	303	303	0.202	0.202	312	312	0.208	0.208
Southbound	:Thru	1.0	1600	63	63	0.039		133	133	0.083	
	Right:	1.0	1500	183	183	0.122		185	185	0.123	
	:Left	1.0	1500	205	205	0.137	0.137	237	237	0.158	0.158
Eastbound	:Thru	3.0	1600	1027	353	0.221		1028	360	0.225	
	Right:		1500	33				51			
	:Left	1.0	1500	109	109	0.073		292	292	0.195	
Westbound	:Thru	2.0	1600	941	471	0.294	0.294	1086	543	0.339	0.339
	Right:	1.0	1500	186	186	0.124		268	268	0.179	
Sum of Critical V/C Ratios							0.757				0.814
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.807**				**0.864**
Level of Service (LOS)							**D**				**D**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative + Project**
Intersection # **5**
Project: North Ranch Residenital Development
North/South St: Moorpark Ave
East/West St: E. Los Angeles Ave
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left	1.5	1500	73	49	0.033		58	39	0.026	
Northbound	:Thru	0.5	1600	99	198	0.124	0.124	87	174	0.109	0.109
	Right:	1.0	1500	124	124	0.083		133	133	0.089	
	:Left	1.0	1500	307	307	0.205	0.205	315	315	0.210	0.210
Southbound	:Thru	1.0	1600	63	63	0.039		133	133	0.083	
	Right:	1.0	1500	183	183	0.122		185	185	0.123	
	:Left	1.0	1500	205	205	0.137	0.137	237	237	0.158	0.158
Eastbound	:Thru	3.0	1600	1047	360	0.225		1042	364	0.228	
	Right:		1500	33				51			
	:Left	1.0	1500	109	109	0.073		292	292	0.195	
Westbound	:Thru	2.0	1600	948	474	0.296	0.296	1108	554	0.346	0.346
	Right:	1.0	1500	187	187	0.125		273	273	0.182	
Sum of Critical V/C Ratios							0.762				0.823
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.812**				**0.873**
Level of Service (LOS)							**D**				**D**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Project**
Intersection # **6**
Project: North Ranch Residential Development
North/South St: Gabbert Rd
East/West St: N. Hills Pkwy
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Critical Lane	A.M. V/C Ratio	A.M. Critical V/C	P.M. Peak Hour Volumes Total	P.M. Critical Lane	P.M. V/C Ratio	P.M. Critical V/C
	:Left		1500	27				90			
Northbound	:Thru	1.0	1600	19	19	0.012		30	30	0.019	0.019
	Right:		1500								
	:Left		1500								
Southbound	:Thru	1.0	1600	37	37	0.023	0.023	18	18	0.011	
	Right:		1500								
	:Left	1.0	1500								
Eastbound	:Thru		1600								
	Right:	1.0	1500	80	80	0.053	0.053	53	53	0.035	0.035
	:Left		1500								
Westbound	:Thru		1600								
	Right:		1500								
Sum of Critical V/C Ratios							0.076				0.054
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.126**				**0.104**
Level of Service (LOS)							**A**				**A**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

K2 Traffic Engineering, Inc.

Intersection Capacity Utilization Analysis (ICU)

Traffic Scenario: **Existing + Growth + Cumulative + Project**
Intersection # **6**
Project: North Ranch Residential Development
North/South St: Gabbert Rd
East/West St: N. Hills Pkwy
Date: 12/17/21
By: ET

Movement		No, of Lanes	Critical Lane Capacity	A.M. Peak Hour Volumes Total	A.M. Peak Hour Volumes Critical Lane	A.M. Peak Hour V/C Ratio	A.M. Peak Hour Critical V/C	P.M. Peak Hour Volumes Total	P.M. Peak Hour Volumes Critical Lane	P.M. Peak Hour V/C Ratio	P.M. Peak Hour Critical V/C
	:Left		1500	27				90			
Northbound	:Thru	1.0	1600	47	47	0.029		116	116	0.073	0.073
	Right:		1500								
	:Left		1500								
Southbound	:Thru	1.0	1600	104	104	0.065	0.065	61	61	0.038	
	Right:		1500								
	:Left	1.0	1500								
Eastbound	:Thru		1600								
	Right:	1.0	1500	80	80	0.053	0.053	53	53	0.035	0.035
	:Left		1500								
Westbound	:Thru		1600								
	Right:		1500								
Sum of Critical V/C Ratios							0.118				0.108
Adjustments for Lost Time							0.05				0.05
Intersection Capacity Utilization (ICU)							**0.168**				**0.158**
Level of Service (LOS)							**A**				**A**

NOTES:

Level of Service (LOS)	
A	*0.00 ~ 0.60*
B	*0.601 ~ 0.70*
C	*0.701 ~ 0.80*
D	*0.801 ~ 0.90*
E	*0.901 ~ 1.00*
F	*1.00+*

Critical Lane Flow Factors		
0.5	*Lanes:*	*2.00*
1	*Lane:*	*1.00*
1.5	*Lanes:*	*0.67*
2	*Lanes:*	*0.50*
2.5	*Lanes:*	*0.40*
3	*Lanes:*	*0.33*

APPENDIX J
Noise Study



North Ranch Residential Development

Noise Study

prepared for

West Pointe Homes, Inc.
26500 West Agoura Road #652
Calabasas, California 91302

prepared by

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93003

January 2022

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

North Ranch Residential Development

Noise Study

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rinconconsultants.com

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Table of Contents

1 Introduction 1

2 Project Description 2

3 Setting 4
- 3.1 Overview of Noise and Vibration 4
- 3.2 Sensitive Receivers 5
- 3.3 Project Site Setting 6
- 3.4 Regulatory Setting 8

4 Significance Thresholds and Methodology 10

5 Impact Analysis 13
- 5.1 Item 1 – Temporary and Permanent Noise Increase 13
- 5.2 Item 2 – Vibration 14

6 References 15

Tables

Table 1 Noise Monitoring Results 8

Table 2 Interior and Exterior Noise Standards 8

Table 3 HVAC Noise Levels 11

Figures

Figure 1 Project Site Location 3

Figure 2 On-Site Noise Measurements 7

Appendix

Appendix A Noise Measurement Data

Appendix B RCNM Results

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1 Introduction

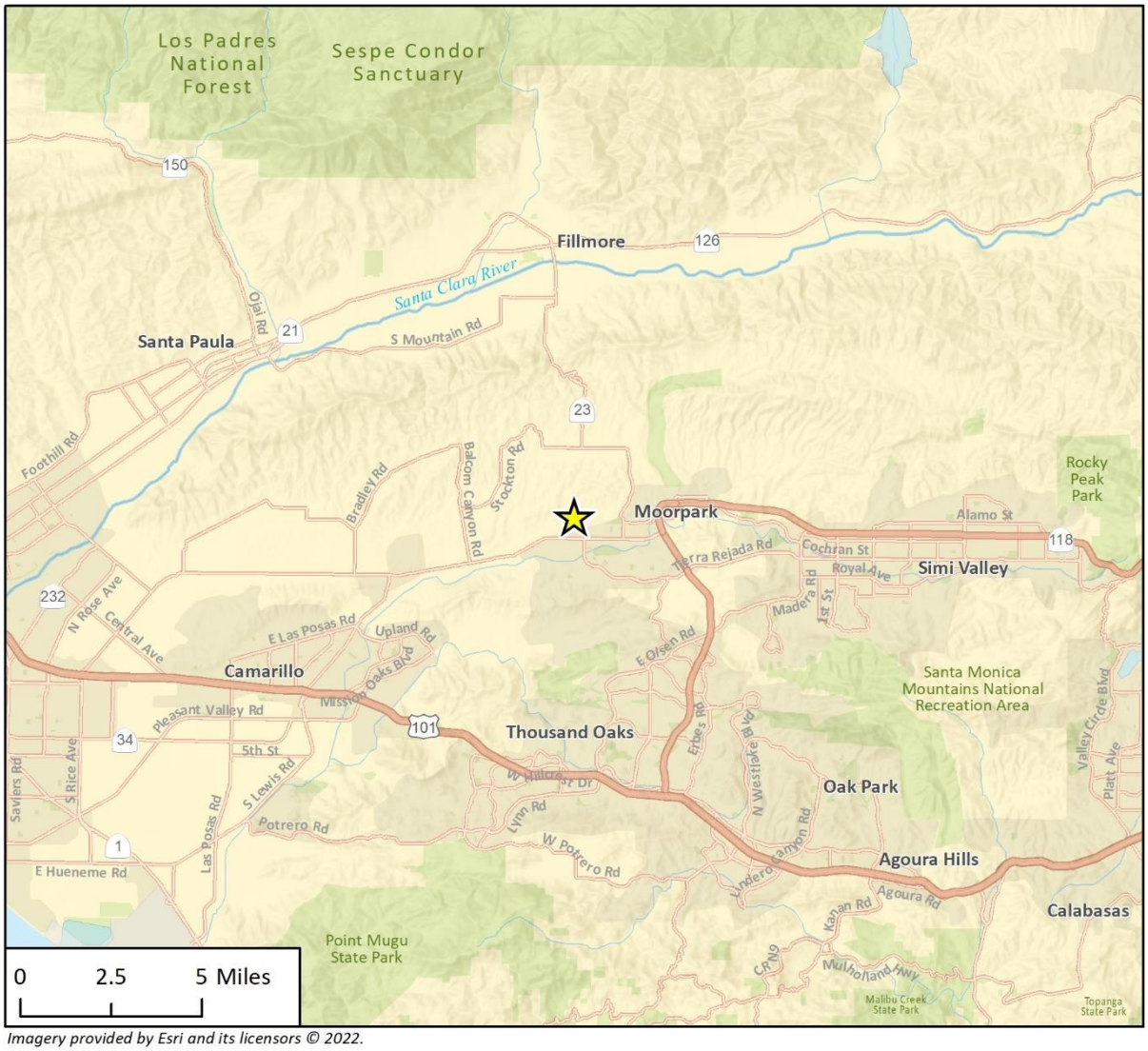
This study analyzes the potential noise impacts of the proposed North Ranch Residential Development (project) located in Moorpark, California. The study has been prepared by Rincon Consultants, Inc. under contract to West Pointe Homes, Inc., and at the request of the City of Moorpark, for use in support of environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to evaluate the project's potential temporary noise impacts associated with construction activity, long-term noise impacts associated with project operation, including roadway noise from vehicle trips generated by the project, and the potential exposure of future site residents to traffic noise. The analysis herein is based partially on the Traffic Impact Analysis prepared by K2 Traffic Engineering, Inc. (2021).

2 Project Description

The project site is a 68-acre property in the City of Moorpark and is bounded by Gabbert Road to the east and residential uses to the north. Lands to the east and south are undeveloped. The project site is primarily undeveloped, but is occupied by two residential homes, paved driveways, and a tennis court. Figure 1 shows the project site location and current condition.

The project would involve the construction of a residential development with 139 dwelling units and 5 estate lots in the northern portion of the project site. In addition, the project involves the construction of North Hill Parkway along the southern boundary of the site and a portion of North Village Road along the western boundary of the site. The remaining portions of North Village Drive, south of the intersection with North Hill Parkway and north of the northern project site boundary, would be constructed by developers of other parcels in the project site vicinity.

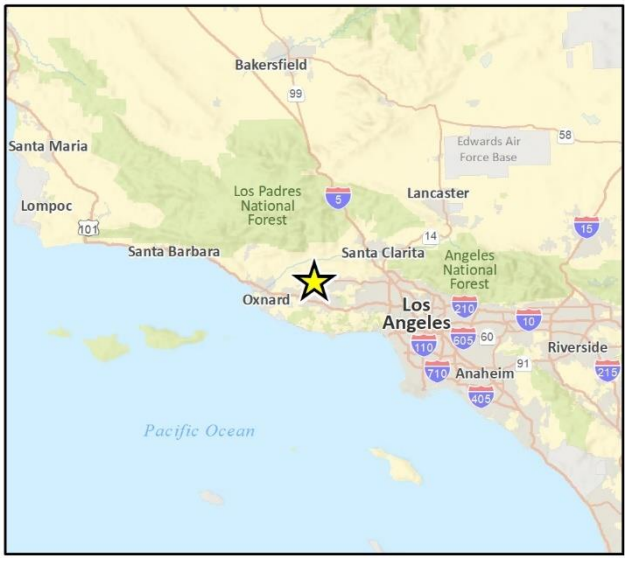
Figure 1 Project Site Location



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Project Location

N



3 Setting

3.1 Overview of Noise and Vibration

Noise

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dBA level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level would result in a negligible increase (less than 0.5 dB) in total ambient sound levels. In terms of human response to noise, studies have indicated that a noise level increase of 3 dBA is barely perceptible to most people, a 5 dBA increase is readily noticeable, and a difference of 10 dBA is generally perceived as a doubling of loudness. Quiet suburban areas typically have noise levels in the range of 40 to 50 dBA, while areas along arterial streets are typically in the 50 to 60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise from stationary or point sources (such as construction equipment and industrial machinery) typically attenuates (or drops off) at a rate of 6 dBA per doubling of distance over acoustically hard surfaces, and at a rate of 7.5 dBA per doubling of distance over acoustically soft surfaces. Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance, while noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. Noise levels may also be reduced by intervening structures. The amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain features such as hills and dense woods, and man-made features such as buildings and walls, can substantially alter noise levels. Generally, any large structure blocking the line of sight will provide at least a 5-dBA reduction in source noise levels at the receiver (Federal Highway Administration [FHWA] 2011). Structures can substantially reduce exposure to noise as well. The FHWA's guidelines indicate that modern building construction generally provides an exterior-to-interior noise level reduction of 20 to 35 dBA with closed windows.

In addition to the instantaneous measurement of noise levels, the duration of noise is important because noise that occurs over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period. Lmax is the highest root mean squared (RMS) sound pressure level within the measuring period, and Lmin is the lowest RMS sound pressure level within the measuring period. While L_{10} is the sound pressure level (measured in dBA) exceeded 10 percent of time within the measurement period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the daytime. Community noise is usually measured using Day-Night Average Level (Ldn), which is the 24-hour average noise level with a 10-dBA penalty for noise occurring during nighttime (10 p.m. to 7 a.m.) hours, or Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a 5 dBA penalty for noise occurring from 7 p.m. to 10 p.m. and a 10 dBA penalty for noise occurring from 10 p.m. to 7 a.m. Noise levels described by Ldn and CNEL typically do not differ by more than 1 dBA. In practice, CNEL and Ldn are often used interchangeably.

Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of Hz. The frequency of a vibrating object describes how rapidly it oscillates. The normal frequency range of most groundborne vibration that can be felt by the human body starts from a low frequency of less than 1 Hz and goes to a high of about 200 Hz (Crocker 2007).

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low-frequency rumbling noise, referred to as groundborne noise. Groundborne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hz), or when foundations or utilities, such as sewer and water pipes, physically connect the structure and the vibration source (FTA 2018). Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from vibration is that it can be intrusive and annoying to building occupants and vibration-sensitive land uses.

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations diminish much more rapidly than low frequencies, so low frequencies tend to dominate the spectrum at large distances from the source. Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances (Caltrans 2020). When a building is affected by vibration, a ground-to-foundation coupling loss will usually reduce the overall vibration level. However, under rare circumstances, the ground-to-foundation coupling may actually amplify the vibration level due to structural resonances of the floors and walls.

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (Caltrans 2020).

3.2 Sensitive Receivers

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. The City of Moorpark General Plan states that noise sensitive land uses include, but

are not limited to, residential areas, libraries, churches, hospitals, schools, guest lodging, libraries, and parks (City of Moorpark 1998).

The predominant noise sensitive land uses in the project site vicinity are residences, the nearest of which are located east of the project site across Gabbert Road and north of the project site boundary. The closest residences are approximately 150 feet from the northeast corner of the project site. Other adjacent land uses to the north and east of the site include horse and animal stables and other agricultural structures.

The project would involve constructing new residential uses on the project site. These proposed residential units would be new sensitive receivers. The existing noise source closest to the proposed residential units would be Gabbert Road (approximately 300 feet from roadway centerline to the nearest proposed onsite receiver). In addition to the existing roadways near the project site, the project also involves the construction of North Village Road along the western boundary of the site and North Hill Parkway along the southern boundary of the site.

3.3 Project Site Setting

The project site is located in the City of Moorpark and is bordered by single-family residential uses to the east and north and undeveloped land to the south and east. The project site is zoned as Rural Low Density Residential (1 DU/5AC). There are no substantial existing sources of noise on the project site. Existing uses onsite include two existing residences, paved driveways, and a tennis court. The remainder of the site is primarily undeveloped land consisting of low-lying vegetation and dispersed trees. The primary sources of noise in the project site vicinity are motor vehicles (e.g., automobiles, buses, trucks, and motorcycles) along Gabbert Road and Poindexter Avenue. The project site is located on the northside of West Los Angeles Avenue/State Route 118, approximately one-half mile south of the project. The project site is located approximately 1,300 feet north of an existing railroad. The closest airport to the project site is located 11 miles to the southwest in Camarillo.

To determine existing noise levels on the project site, Rincon staff conducted two peak-hour weekday morning 15-minute noise measurements near the project site using an ANSI Type II integrating sound level meter on September 21, 2016. In addition, while conducting these measurements, Rincon staff collected 15-minute traffic counts along Gabbert Road. In general, the immediate area has not substantially changed in terms of noise environment since 2016, and these measurements are able to provide a picture of current noise levels. These noise measurements represent peak-hour traffic noise and, therefore, provide a conservative estimate of existing on-site noise levels on the project site, which are primarily due to roadway noise from Gabbert Road. Table 1 identifies the noise levels and traffic counts during the measurement periods. Figure 2 shows the on-site noise measurement locations.

Figure 2 On-Site Noise Measurements



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Table 1 Noise Monitoring Results

Measurement Number	Measurement Location	Primary Noise Source [1]	Traffic Count	Sample Time	Leq [15] (dBA)
1	Northeast corner of project site	Gabbert Road (approximately 40 feet) Los Angeles Avenue (3,500 feet)	Cars: 4 Medium Trucks: 2	8:37 a.m. – 8:52 a.m.	54.7
2	Southeast corner of project site	Gabbert Road (approximately 400 feet) Los Angeles Avenue (3,000 feet)	Cars: n/a [2] Medium Trucks: n/a [2]	8:13 a.m. – 8:28 a.m.	39.9

[1] Measured to the center of the roadway. Distances are from centerlines of each street.

[2] Traffic Counts n/a due to distance from Los Angeles Avenue

Source: Field visit using ANSI Type II Integrating sound level meter, September 21, 2016

Refer to Figure 2 for noise measurement locations.

Refer to Appendix A for noise monitoring data sheets.

3.4 Regulatory Setting

City of Moorpark General Plan Noise Element

The Noise Element of the Moorpark General Plan identifies existing sources of noise in Moorpark, as well as noise-related goals, policies, and implementation. The Noise Element establishes noise standards for residential land use classifications. The goal of the City's noise standards is to maintain identified ambient noise levels and to limit, mitigate, or eliminate intrusive noise that exceeds the ambient noise levels within a specified zone. Table 2 shows the adopted interior and exterior noise standards for different land uses within the City.

Table 2 Interior and Exterior Noise Standards

Land Use Categories		CNEL	
Categories	**Uses**	**Interior**	**Exterior**
Residential	Single Family	45 (windows closed)/55 (windows open)	65

Source: Moorpark General Plan: Noise Element (1998)

City of Moorpark Municipal Code

The City of Moorpark Municipal Code addresses noise generation and regulations applicable to the proposed project in the following sections:

Title 9.28.010

The municipal code states that "it shall be unlawful for any person within any residential zone of the city to use or operate any radio, musical instrument, phonograph, television receiver, or other machine or device for the production, reproduction or amplification of the human voice or any other sound in such a manner as to create a noise level that disturbs the reasonable peace, quiet, or

comfort of any person who is more than fifty (50) feet away from the noise source. (Ord. 157 § 1, 1992)

Title 15.26 A

The municipal code states that "it is unlawful within the incorporated limits of the city to engage in or conduct any outdoor work relative to construction, except between the hours of seven (7:00) a.m. and seven (7:00) p.m., Monday through Saturday, unless a permit for different hours has first been issued by the public works director for projects within the public right-of-way; or by the community development director for projects on private property. Application for such a permit would be made in writing to the appropriate department director and should state the name and business address of the applicant, the location of the proposed work, the reason for seeking a permit to do the work on Sunday or between seven (7:00) p.m. and seven (7:00) a.m. on other days, and the estimated duration of the work. For purposes of this section "construction" means the erection, maintenance or repair of any building or structure, the moving or excavation of earth, the laying of pavement, the loading or unloading of material, equipment or supplies or any other construction activity."

4 Significance Thresholds and Methodology

To determine whether a project would have a significant impact to noise, Appendix G of the CEQA Guidelines asks whether a project would result in:

a. *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 local general plan or noise ordinance, or applicable standards of other agencies?*

b. *Generation of excessive groundborne vibration or groundborne noise levels?*

c. *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

Because the project site is located 11 miles from the nearest airport/airstrip, the project would not be exposed to substantial aircraft noise and would not result in a significant impact from this impact area. Therefore, checklist question c is not discussed further.

Construction

Construction noise was estimated using the FHWA Roadway Construction Noise Model (RCNM) (FHWA 2006). RCNM predicts construction noise levels for a variety of construction operations based on empirical data and the application of acoustical propagation formulas. Using RCNM, construction noise levels were estimated at noise sensitive receivers near the project site. RCNM provides reference noise levels for standard construction equipment, with an attenuation rate of 6 dBA per doubling of distance for stationary equipment.

Variation in power imposes additional complexity in characterizing the noise source level from construction equipment. Power variation is accounted for by describing the noise at a reference distance from the equipment operating at full power and adjusting it based on the duty cycle of the activity to determine the Leq of the operation (FHWA 2006). Each phase of construction has a specific equipment mix, depending on the work to be accomplished during that phase.

Construction activity would result in temporary noise in the project site vicinity, exposing surrounding nearby receivers to increased noise levels. Construction noise would typically be higher during the heavier periods of initial construction (i.e., site preparation and grading) and would be lower during the later construction phases (i.e., building construction and paving). Typical heavy construction equipment during project grading could include loaders, graders, and dump trucks. It is assumed that diesel engines would power all construction equipment. Construction equipment would not all operate at the same time or location. In addition, construction equipment would not be in constant use during the 8-hour operating day.

Project construction would occur nearest to the noise-sensitive uses (residences) located approximately 150 feet to the east of the project site boundary. Over the course of a typical construction day, construction equipment would be located as close as 150 feet but would typically be located at an average distance farther away due to the nature of construction and the lot size of

the project. For example, during a typical construction day, the equipment may operate across the horizontal distance of the site or vertical distance from a nearby noise receiver. Therefore, it is assumed that over the course of a typical construction day, the construction equipment would operate at an average distance of 300 feet from the nearest sensitive receivers.

Construction noise is typically loudest during activities that involve excavation and move soil, such as site preparation and grading. A potential high-intensity construction scenario includes a grader, loader, and dump truck working during grading to excavate and move soil. At a distance of 300 feet, a grader, loader, and a dump truck would generate a noise level of 67 dBA Leq (RCNM calculations are included in Appendix B).

The Moorpark Municipal Code does not state a quantitative threshold for construction. The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction in their *Transit and Noise Vibration Impact Assessment Manual* (FTA 2018). For residential uses, the daytime noise threshold is 80 dBA Leq and is used for this analysis.

Stationary Noise

Stationary noise sources associated with operation of the proposed project would consist of landscaping maintenance, general conversations, and mechanical equipment (e.g., heating, ventilation, and air conditioning [HVAC] units). Due to the distances and low noise levels associated with general site activities and landscape maintenance, these sources are not considered substantial and are not analyzed further.

Each HVAC unit would likely contain a screened split system HVAC unit located on the ground. In the modeling, it was assumed the closest distance between an HVAC unit and the nearest sensitive receiver would be 150 feet for the residences to the east of the project site. The unit used in this analysis is a typical to larger-sized residential condenser, a Carrier 38HDR060 split system condenser (Carrier 2011). The manufacturer's noise data is provided below in Table 3.

Table 3 HVAC Noise Levels

Noise Levels in dB[1] Measured at Octave Frequencies							Overall Noise Level in A-weighted Scale (dBA)[1]
125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz	
63.0	61.5	64.0	66.5	66.0	64.5	55.5	72.0

[1] Noise Levels for a Carrier 38HDR060 split system condenser (Carrier 2011).

Hz = Hertz; KHz = kilohertz

Traffic Noise

For analyzing the project's traffic-related noise increase to off-site receivers, impacts would be considered significant if project-generated traffic would result in exposure of sensitive receptors to an unacceptable increase in noise levels. For purposes of this analysis, a significant impact would occur if project-related traffic increases the ambient noise environment of noise-sensitive locations by 3 dBA or more, which is considered a barely perceptible noise increase.

Analysis of impacts of the environment on a project is generally not required for CEQA compliance (*Ballona Wetlands Land Trust et al. v. City of Los Angeles*). Therefore, noise exposure to new noise-sensitive land uses from transportation noise sources has been analyzed for informational purposes only. The project would be subject to transportation noise levels primarily from roadway noise. The railroad is located 1,300 feet south of the project site, with substantial topography intervening

between the trains and where project site residences would be located; at this distance and with this shielding, rail noise levels would be negligible at the project site and are not analyzed further. The Moorpark General Plan establishes noise standards for residential, commercial, and institutional land uses. The standard for interior noise at residential uses is 45 CNEL and the standard for exterior noise at single family residential uses is 65 CNEL.

Vibration

The project does not include any substantial vibration sources associated with operation. Thus, construction activities have the greatest potential to generate groundborne vibration affecting nearby receivers, especially during grading and excavation of the project site. The greatest vibratory source during construction within the project vicinity would be a vibratory roller. Neither blasting nor pile driving would be required for construction of the project. Construction vibration estimates are based on vibration levels reported by Caltrans and the FTA (Caltrans 2020, FTA 2018). A vibratory roller would generate an estimated vibration level of 0.210 inches per second at 25 feet (Caltrans 2020).

Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors; therefore, the vibration level threshold is assessed at occupied structures (FTA 2018). Therefore, all vibration impacts are assessed at the structure of an affected property.

The City of Moorpark Municipal Code does not provide a quantitative threshold for vibration impacts. Therefore, vibration standards from Caltrans' *Transportation and Construction Vibration Guidance Manual* are used for this analysis (Caltrans 2020). Vibration levels equal to or below 0.4 inches per second PPV at residential structures would prevent structural damage for most residential building and vibration levels equal to or less than 1.0 inches per second PPV would prevent damage to more substantial construction, such as high-rise, commercial, and industrial buildings. For human annoyance, the vibration level threshold at which transient, or temporary, vibration sources are considered to be distinctly perceptible is 0.24 inches per second PPV.

5 Impact Analysis

5.1 Item 1 – Temporary and Permanent Noise Increase

Item:	Would the project 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 local general plan or noise ordinance, or applicable standards of other agencies? *(Less Than Significant)*

Construction Noise

As described in Section 3.1, at a distance of 300 feet, a grader, loader, and a dump truck would generate a noise level of 67 dBA Leq at the nearest single-family residences to the project site. The FTA's daytime construction noise limit is 80 dBA Leq for residential uses; therefore, project construction noise levels would not exceed construction noise thresholds. In addition, the project would comply with the allowed construction hours in the City of Moorpark Municipal Code of between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday, Therefore, impacts from construction noise would be less than significant.

Stationary Noise

An HVAC unit that has a sound power level of 72 dBA would result in a noise level of approximately 31 dBA at a distance of 150 feet. This noise level would be well below the ambient noise levels measured in the area of 54.7 dBA and 39.9 dBA (as shown in Table 1). It would also be well below the residential land use compatibility standard of 65 CNEL for residential land uses in the city. Therefore, stationary noise levels from the project site would not exceed applicable thresholds, and impacts would be less than significant.

Traffic Noise

Off-site Traffic Noise

PM Peak hour trips on Gabbert Road were determined to be 473 trips (K2 Traffic Engineering 2021). The project's addition of 143 PM peak hour trips would increase noise levels by 30 percent, which would result in an approximate noise increase of 1 dBA. This would not exceed the significance threshold of a greater than 3 dBA increase over existing noise levels; therefore, traffic noise increases from the proposed project would be less than significant.

On-Site Traffic Noise

The proposed improvements on the project site include two new roadways. North Hills Parkway, along the southern boundary of the site, would align east/west and give access to the project site from Gabbert Road. North Village Drive, along the western boundary of the site, would align north/south, and connect to North Hills Parkway at the southwestern corner of the project site. Since Gabbert Road would be the primary point of entrance for vehicles traveling to and from the project site, this analysis assumes that all of the project-generated vehicle trips estimated in the traffic study would travel along the two new proposed roads. As described in the traffic study, the

project would result in a PM peak hour increase of 143 new vehicle trips on Gabbert Road. Therefore, this analysis assumes that there would be up to 143 daily trips on both North Hills Parkway and North Village Drive. Project traffic included with Gabbert Road traffic under the cumulative traffic scenario would be 714 PM peak hour trips. It was assumed that the peak hour traffic would be equivalent to the CNEL. The nearest project residences would be located approximately 100 feet from North Hills Parkway, 200 feet from North Village Drive, and 300 feet from Gabbert Road.

With these assumptions, the closest project residences to each roadway would be exposed to noise levels of 55 CNEL, 52 CNEL, and 61 CNEL, respectively. Therefore, noise levels at exterior use areas of the project would not exceed the City's 65 CNEL normally acceptable exterior noise standard for residential uses and would not conflict with the City General Plan.

Standard construction techniques for buildings under the California Building Code typically achieve a minimum 25-dBA reduction from exterior sources at interior locations when the windows are in a closed position. Therefore, if building façade noise levels exceed 70 CNEL, interior noise levels would potentially exceed the City's interior noise standard of 45 CNEL for residences. As projected noise levels would not exceed 70 CNEL, interior noise levels would not exceed 45 CNEL. Therefore, interior noise levels at the project would not conflict with the City's interior noise standard of 45 CNEL.

5.2 Item 2 – Vibration

Item:	Would the project result in generation of excessive groundborne vibration or groundborne noise levels? *(Less Than Significant Impact)*

Construction activities known to generate excessive groundborne vibration, such as pile driving, would not be conducted by the project. The greatest anticipated source of vibration during general project construction activities would be from a vibratory roller, which may be used within 150 feet of the nearest off-site residence. A vibratory roller creates approximately 0.210 inches per second PPV at a distance of 25 feet (Caltrans 2020). This would attenuate to a vibration level of 0.029 inches per second PPV at a distance of 150 feet. This vibration level is lower than the human annoyance threshold of 0.24 inches per second PPV. Therefore, vibration impacts associated with construction would be less than significant.

The project does not include any substantial vibration sources associated with operation. Therefore, operational vibration impacts would be less than significant.

6 References

California Department of Transportation (Caltrans). 2020 *Transportation and Construction Vibration Guidance Manual*. (CT-HWANP-RT-20-365.01.01) September. Available at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf.

Carrier. 2011. 38HDR Performance Series Air Conditioner with Puron Refrigerant, 1.5-5 Nominal Tons. Available at: https://www.americancoolingandheating.com/wp-content/uploads/carrier-product-data-specifications/38hdr-5pd.pdf

Federal Highway Administration. 2006. FHWA Highway Construction Noise Handbook. (FHWAHEP-06-015; DOT-VNTSC-FHWA-06-02). Available at: http://www.fhwa.dot.gov/environment/construction_noise/handbook.

_____. 2011. *Highway Traffic Noise: Analysis and Abatement Guidance.* (FHWAHEP-10-025). December. Available at: https://www.codot.gov/programs/environmental/noise/assets/fhwa-noise-guidance-dec-2011

Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment*. November. Available at: 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

K2 Traffic Engineering, Inc. 2021. Traffic Impact Analysis, North Ranch Residential Development. December 17.

Malcolm J. Crocker (Editor). 2007. *Handbook of Noise and Vibration Control Book*, ISBN: 978-0-471-39599-7, Wiley-VCH, October.

Moorpark, City of. 1998. City of Moorpark General Plan: Noise Element. Available at: https://moorparkca.gov/DocumentCenter/View/171.

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Appendix A

Noise Measurement Data

AMBIENT NOISE SURVEY DATA SHEET

Project: Rasmussen Res Project - 16-02891 Job Number: 16-02891
Date: 9.21.2016
Operator: Hannah Mize

	Station 1	Station 2
Begin	8.37AM	8.13
Measurement No.	1	2
Finish	8.52AM	8.28
Wind	0.0 mph	0.0 mph
Direction	NA	NA
Temperature	70 °F	70 °F
Cloud Cover Class		
Daytime	☐ 1 - Overcast >80%	☐ 1 - Overcast >80%
	☐ 2 - Light 20-80%	☐ 2 - Light 20-80%
	☒ 3 - Sunny <20%	☒ 3 - Sunny <20%
Nighttime	☐ 4 - Clear <50%	☐ 4 - Clear <50%
	☐ 5 - Overcast >50%	☐ 5 - Overcast >50%
Primary Noise Source	vehicles on Gabbert	traffic from LA Avenue
Distance	37 ft — centerline	.58 miles to centerline
Secondary Noise Sources	farm noise from adjacent property approx 200 ft	airplane @ 9.20
Notes	corral door slam @ 8.47AM	
Traffic LDA/T	2-headed S, 1-N	NA
MDT	2-headed S	
HDT		
Leq	54.7	39.9
Lmin		
Lmax		
Peak		
L(10)		
L(33)		
L(50)		
L(90)		
Calibration Start	94.0 dB	94.0 dB
Calibration End	94.0 dB	94.0 dB
	30-90 Range	30-90 Range
Response	☐ Slow ☒ Fast ☐ Peak ☐ Impulse	☐ Slow ☒ Fast ☐ Peak ☐ Impulse
Weighting	☒ A ☐ B ☐ C ☐ Linear	☒ A ☐ B ☐ C ☐ Linear
Octave Filter	☐ NA ☐ ____ Hz	☐ NA ☐ ____ Hz

Note: Provide Sketch of Location on Back.

AMBIENT NOISE SURVEY DATA SHEET

Project: Rasmussen Project Job Number: 16-02891

Date: 9.21.2016

Operator: Hannah Miz

Station:	Train	Begin :	8.02
Measurement	No. Train	Finish:	8.11
Wind:	0.0 mph	Direction:	NA
Temperature:	70 °F		

Cloud Cover Class

Daytime
- ☐ 1 - Overcast >80%
- ☐ 2 - Light 20-80%
- ☒ ~~3~~ - Sunny <20%

Nighttime
- ☐ 4 - Clear <50%
- ☐ 5 - Overcast >50%

Primary Noise Source: Train

Distance: .28 miles

Secondary Noise Sources: LA

Notes:

Traffic *LDA/T*:

MDT:

HDT:

Leq:	42.5 NA	L(10):	
Lmin:		L(33):	
Lmax:		L(50):	
Peak:		L(90):	

Calibration Start: 94.0 dB End: 94.0 dB 40-100 Range

Response: ☐ Slow ☑ Fast ☐ Peak ☐ Impulse

Weighting: ☒ A ☐ B ☐ C ☐ Linear

Octave Filter: ☐ NA ☐ _____ Hz

Station:		Begin :	
Measurement	No.	Finish:	
Wind:	mph	Direction:	
Temperature:			

Cloud Cover Class

Daytime
- ☐ 1 - Overcast >80%
- ☐ 2 - Light 20-80%
- ☐ 3 - Sunny <20%

Nighttime
- ☐ 4 - Clear <50%
- ☐ 5 - Overcast >50%

Primary Noise Source:

Distance:

Secondary Noise Sources:

Notes:

Traffic *LDA/T*:

MDT:

HDT:

Leq:		L(10):	
Lmin:		L(33):	
Lmax:		L(50):	
Peak:		L(90):	

Calibration Start: _____ dB End: _____ dB

Response: ☐ Slow ☐ Fast ☐ Peak ☐ Impulse

Weighting: ☐ A ☐ B ☐ C ☐ Linear

Octave Filter: ☐ NA ☐ _____ Hz

Note: Provide Sketch of Location on Back.

- Freq Weight : A
- Time Weight : FAST
- Level Range : 30-90
- Max dB : 84.1 - 2016/09/21 08:38:22
- Level Range : 30-90
- SEL : 84.2
- Leq : 54.7
-

No.s	Date Time	(dB)				
1	2016/09/21 08:36:04	76.0	67.4	67.9	53.0	50.4
6	2016/09/21 08:36:14	48.3	49.1	48.3	45.2	42.9
11	2016/09/21 08:36:24	44.5	43.5	47.9	46.4	45.7
16	2016/09/21 08:36:34	45.0	47.8	44.3	43.2	42.3
21	2016/09/21 08:36:44	41.4	43.3	44.7	47.5	44.9
26	2016/09/21 08:36:54	44.6	42.9	44.5	46.3	44.4
31	2016/09/21 08:37:04	46.5	46.3	45.1	45.7	45.5
36	2016/09/21 08:37:14	47.9	43.5	39.5	42.7	45.6
41	2016/09/21 08:37:24	47.1	45.4	44.6	44.7	48.6
46	2016/09/21 08:37:34	43.7	43.4	42.8	41.5	43.7
51	2016/09/21 08:37:44	46.2	46.9	55.0	70.6	59.5
56	2016/09/21 08:37:54	50.9	47.2	45.5	52.4	46.2
61	2016/09/21 08:38:04	45.2	47.6	45.6	46.6	42.7
66	2016/09/21 08:38:14	41.9	45.1	51.4	61.6	70.1
71	2016/09/21 08:38:24	58.5	52.0	48.6	48.1	45.5
76	2016/09/21 08:38:34	44.7	43.1	43.6	45.9	44.6
81	2016/09/21 08:38:44	44.4	43.2	42.5	41.7	42.2
86	2016/09/21 08:38:54	44.2	44.6	47.1	45.6	44.2
91	2016/09/21 08:39:04	44.7	45.2	46.4	41.3	40.3
96	2016/09/21 08:39:14	44.5	46.4	44.5	44.1	45.5
101	2016/09/21 08:39:24	45.3	44.4	45.3	43.3	43.7
106	2016/09/21 08:39:34	44.7	45.1	45.4	43.2	42.6
111	2016/09/21 08:39:44	43.3	43.0	44.7	44.8	44.4
116	2016/09/21 08:39:54	44.7	46.9	46.7	44.8	41.9
121	2016/09/21 08:40:04	42.9	45.7	44.6	44.1	46.3
126	2016/09/21 08:40:14	45.4	45.6	43.6	43.0	43.0
131	2016/09/21 08:40:24	46.7	57.0	72.3	57.2	49.6
136	2016/09/21 08:40:34	49.7	45.7	44.6	45.9	45.6
141	2016/09/21 08:40:44	46.4	45.5	50.6	53.1	45.0
146	2016/09/21 08:40:54	44.2	44.7	45.2	43.1	44.8
151	2016/09/21 08:41:04	45.3	44.6	44.4	42.8	42.6
156	2016/09/21 08:41:14	42.1	44.2	44.8	44.6	43.2
161	2016/09/21 08:41:24	44.7	43.4	42.2	43.5	42.8
166	2016/09/21 08:41:34	43.2	44.7	44.1	46.0	43.9
171	2016/09/21 08:41:44	40.1	46.1	41.9	43.0	42.9
176	2016/09/21 08:41:54	43.7	42.4	41.8	45.0	40.8
181	2016/09/21 08:42:04	44.2	42.2	43.3	45.7	43.7
186	2016/09/21 08:42:14	42.4	43.4	43.0	44.3	43.1
191	2016/09/21 08:42:24	42.7	43.8	44.2	44.1	43.7
196	2016/09/21 08:42:34	39.7	40.5	41.7	43.6	44.0
201	2016/09/21 08:42:44	42.9	44.8	41.7	40.3	40.0
206	2016/09/21 08:42:54	41.4	41.5	44.9	44.1	43.4
211	2016/09/21 08:43:04	42.5	41.6	44.5	45.3	46.9
216	2016/09/21 08:43:14	47.9	52.8	55.3	56.7	53.2
221	2016/09/21 08:43:24	48.4	42.9	42.2	43.9	44.1
226	2016/09/21 08:43:34	42.4	42.1	41.2	43.0	43.2
231	2016/09/21 08:43:44	42.3	43.7	44.9	43.7	42.4
236	2016/09/21 08:43:54	43.7	42.3	42.6	43.3	43.6
241	2016/09/21 08:44:04	45.0	42.4	44.3	44.5	42.1
246	2016/09/21 08:44:14	43.5	42.4	44.2	43.6	43.3
251	2016/09/21 08:44:24	42.6	42.0	41.0	42.8	42.1
256	2016/09/21 08:44:34	41.8	44.6	44.9	45.2	45.3
261	2016/09/21 08:44:44	42.9	42.2	43.8	44.1	43.7
266	2016/09/21 08:44:54	44.9	42.1	43.6	44.0	40.1
271	2016/09/21 08:45:04	43.8	42.2	44.1	43.2	43.6
276	2016/09/21 08:45:14	44.1	42.0	41.0	40.6	40.2
281	2016/09/21 08:45:24	41.6	44.2	43.2	41.6	43.0
286	2016/09/21 08:45:34	44.2	43.8	42.7	44.9	43.1
291	2016/09/21 08:45:44	42.9	42.5	42.2	41.9	41.8
296	2016/09/21 08:45:54	42.7	41.7	41.6	39.7	40.8
301	2016/09/21 08:46:04	39.4	39.9	42.3	44.9	44.0
306	2016/09/21 08:46:14	43.6	43.2	41.8	43.5	43.4
311	2016/09/21 08:46:24	42.0	43.3	42.6	42.9	41.1
316	2016/09/21 08:46:34	41.8	43.4	43.9	43.2	42.8
321	2016/09/21 08:46:44	42.3	35.5	39.6	37.0	38.0
326	2016/09/21 08:46:54	37.5	40.4	36.9	35.0	39.8
331	2016/09/21 08:47:04	38.1	34.4	39.2	32.3	32.6
336	2016/09/21 08:47:14	37.2	32.3	31.9	31.8	38.0
341	2016/09/21 08:47:24	32.2	32.8	32.3	40.0	32.0
346	2016/09/21 08:47:34	32.8	32.6	41.2	33.9	32.5
351	2016/09/21 08:47:44	32.8	32.6	33.2	32.6	33.4
356	2016/09/21 08:47:54	36.5	37.1	36.8	35.5	38.0
361	2016/09/21 08:48:04	38.0	43.5	45.3	41.1	41.8
366	2016/09/21 08:48:14	41.3	42.9	43.0	42.1	43.0
371	2016/09/21 08:48:24	39.5	37.9	38.6	39.0	37.8
376	2016/09/21 08:48:34	38.2	39.5	37.4	38.1	36.3
381	2016/09/21 08:48:44	36.9	37.2	36.2	38.2	38.5
386	2016/09/21 08:48:54	38.3	35.6	35.4	35.7	36.1
391	2016/09/21 08:49:04	36.9	34.7	38.7	35.9	33.6
396	2016/09/21 08:49:14	33.0	33.0	33.5	32.3	33.3
401	2016/09/21 08:49:24	33.0	32.5	33.3	33.2	32.1
406	2016/09/21 08:49:34	31.8	31.7	31.7	33.2	32.5
411	2016/09/21 08:49:44	34.0	32.2	45.4	34.8	33.1
416	2016/09/21 08:49:54	32.4	33.2	31.8	31.9	31.7
421	2016/09/21 08:50:04	31.8	32.1	32.9	32.6	31.9

426	2016/09/21	08:50:14	32.6	33.7	33.6	35.1	38.5
431	2016/09/21	08:50:24	43.8	53.7	70.6	60.1	53.0
436	2016/09/21	08:50:34	43.6	42.7	39.0	37.1	37.9
441	2016/09/21	08:50:44	37.1	35.0	34.5	34.6	34.8
446	2016/09/21	08:50:54	32.7	35.0	32.9	32.1	32.3

- Freq Weight : A
- Time Weight : FAST
- Level Range : 30-90
- Max dB : 59.5 - 2016/09/21 08:25:35
- Level Range : 30-90
- SEL : 69.4
- Leq : 39.9
-

No.s	Date Time	(dB)				
1	2016/09/21 08:13:18	39.8	37.2	36.7	37.1	36.7
6	2016/09/21 08:13:28	38.8	37.5	36.9	37.1	36.3
11	2016/09/21 08:13:38	36.9	37.0	37.3	37.1	38.4
16	2016/09/21 08:13:48	39.8	40.7	39.5	41.1	38.9
21	2016/09/21 08:13:58	42.2	37.8	38.3	41.2	39.9
26	2016/09/21 08:14:08	38.9	39.0	38.2	37.6	38.0
31	2016/09/21 08:14:18	39.0	36.6	36.8	38.3	37.8
36	2016/09/21 08:14:28	37.8	39.3	39.6	37.5	37.5
41	2016/09/21 08:14:38	36.4	35.9	36.4	35.9	36.0
46	2016/09/21 08:14:48	36.0	36.9	37.3	38.1	37.5
51	2016/09/21 08:14:58	38.2	38.4	37.7	38.4	39.3
56	2016/09/21 08:15:08	39.1	39.5	37.5	38.6	39.7
61	2016/09/21 08:15:18	38.7	39.0	37.5	37.8	37.3
66	2016/09/21 08:15:28	36.9	37.9	38.4	38.1	37.1
71	2016/09/21 08:15:38	37.1	37.3	37.0	37.5	37.4
76	2016/09/21 08:15:48	37.4	37.4	38.9	38.6	38.6
81	2016/09/21 08:15:58	39.1	38.9	37.9	38.3	37.9
86	2016/09/21 08:16:08	38.6	38.7	38.3	38.4	38.8
91	2016/09/21 08:16:18	39.1	38.7	37.7	37.6	37.2
96	2016/09/21 08:16:28	37.3	37.4	38.3	38.4	38.2
101	2016/09/21 08:16:38	38.6	38.4	37.2	37.6	35.8
106	2016/09/21 08:16:48	36.8	39.3	36.9	36.3	39.5
111	2016/09/21 08:16:58	40.7	38.8	40.3	42.3	41.5
116	2016/09/21 08:17:08	42.7	42.3	41.9	42.9	42.6
121	2016/09/21 08:17:18	43.0	42.0	42.3	42.5	43.2
126	2016/09/21 08:17:28	42.9	42.9	41.7	41.1	42.1
131	2016/09/21 08:17:38	41.7	39.3	41.8	40.1	42.8
136	2016/09/21 08:17:48	40.8	39.8	40.7	39.5	39.0
141	2016/09/21 08:17:58	38.8	38.2	40.8	39.6	39.9
146	2016/09/21 08:18:08	39.2	39.8	39.8	39.4	38.2
151	2016/09/21 08:18:18	38.4	38.1	37.6	36.9	36.6
156	2016/09/21 08:18:28	36.0	36.9	36.8	38.5	38.2
161	2016/09/21 08:18:38	37.2	36.5	35.6	36.4	37.0
166	2016/09/21 08:18:48	37.3	37.1	38.0	36.7	36.7
171	2016/09/21 08:18:58	36.6	39.4	38.6	37.2	36.7
176	2016/09/21 08:19:08	35.9	36.5	35.8	36.5	35.1
181	2016/09/21 08:19:18	36.4	35.7	34.8	34.6	35.1
186	2016/09/21 08:19:28	34.9	35.6	35.9	35.5	35.7
191	2016/09/21 08:19:38	35.1	35.0	35.5	37.0	36.1
196	2016/09/21 08:19:48	37.3	37.4	37.3	37.8	37.9
201	2016/09/21 08:19:58	37.8	37.6	38.9	42.2	39.0
206	2016/09/21 08:20:08	38.6	38.1	37.7	38.3	40.6
211	2016/09/21 08:20:18	38.9	36.9	38.5	38.9	36.1
216	2016/09/21 08:20:28	38.0	37.2	36.4	36.7	36.0
221	2016/09/21 08:20:38	39.1	37.6	37.1	36.5	36.9
226	2016/09/21 08:20:48	37.3	37.4	36.2	38.0	37.0
231	2016/09/21 08:20:58	38.4	37.4	38.3	37.0	36.7
236	2016/09/21 08:21:08	38.0	37.6	39.2	40.1	39.2
241	2016/09/21 08:21:18	40.1	39.0	38.5	39.5	39.1
246	2016/09/21 08:21:28	37.9	37.0	35.9	37.3	37.4
251	2016/09/21 08:21:38	37.6	38.0	38.0	38.9	39.4
256	2016/09/21 08:21:48	39.4	41.2	39.0	40.0	39.6
261	2016/09/21 08:21:58	39.0	38.6	40.1	37.2	39.5
266	2016/09/21 08:22:08	38.0	40.1	39.9	40.8	43.4
271	2016/09/21 08:22:18	43.6	45.8	43.2	44.2	44.7
276	2016/09/21 08:22:28	43.5	44.1	44.5	43.0	42.4
281	2016/09/21 08:22:38	43.1	45.6	45.2	44.4	42.9
286	2016/09/21 08:22:48	43.2	44.2	43.9	45.1	45.8
291	2016/09/21 08:22:58	43.4	46.2	46.2	44.6	45.1
296	2016/09/21 08:23:08	45.6	43.8	44.2	41.3	45.5
301	2016/09/21 08:23:18	41.4	43.1	40.6	41.8	42.1
306	2016/09/21 08:23:28	40.0	39.4	40.3	42.4	39.9
311	2016/09/21 08:23:38	40.0	40.5	41.0	39.5	40.5
316	2016/09/21 08:23:48	40.1	39.4	40.0	38.6	38.9
321	2016/09/21 08:23:58	39.0	39.1	39.2	39.6	40.2
326	2016/09/21 08:24:08	39.6	39.7	38.4	38.9	37.7
331	2016/09/21 08:24:18	38.1	38.4	38.4	38.1	38.5
336	2016/09/21 08:24:28	38.7	39.7	38.2	38.3	38.9
341	2016/09/21 08:24:38	38.5	38.4	37.4	39.2	38.5
346	2016/09/21 08:24:48	39.6	38.4	39.7	39.4	39.2
351	2016/09/21 08:24:58	39.2	38.9	40.0	41.1	40.0
356	2016/09/21 08:25:08	38.9	38.4	39.2	40.6	38.4
361	2016/09/21 08:25:18	41.5	40.0	40.9	40.7	38.8
366	2016/09/21 08:25:28	38.8	41.0	43.0	42.6	46.2
371	2016/09/21 08:25:38	40.6	39.5	42.2	43.6	42.2
376	2016/09/21 08:25:48	41.9	41.2	42.3	44.4	43.2
381	2016/09/21 08:25:58	42.3	44.4	42.4	41.7	42.9
386	2016/09/21 08:26:08	39.8	40.1	38.9	37.6	37.3
391	2016/09/21 08:26:18	37.2	38.0	38.5	39.0	38.9
396	2016/09/21 08:26:28	38.5	38.3	40.6	40.1	39.4
401	2016/09/21 08:26:38	38.3	38.0	38.2	38.8	39.2
406	2016/09/21 08:26:48	38.1	38.4	38.3	39.3	40.3
411	2016/09/21 08:26:58	44.5	43.0	42.0	41.4	41.5
416	2016/09/21 08:27:08	41.2	40.7	40.3	39.5	39.5
421	2016/09/21 08:27:18	40.2	39.7	40.9	40.1	39.7

426	2016/09/21	08:27:28	39.4	39.5	40.9	40.7	41.5
431	2016/09/21	08:27:38	42.6	40.6	40.9	42.7	42.3
436	2016/09/21	08:27:48	43.2	41.4	43.9	43.2	43.6
441	2016/09/21	08:27:58	44.3	43.9	43.4	43.4	41.9
446	2016/09/21	08:28:08	42.4	44.0	44.0	45.3	45.5

Appendix B

RCNM Results

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/19/2022
Case Description: North Ranch Residential

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
Residential	Residential	80	80	80

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		300	0
Front End Loader	No	40		79.1	300	0
Dump Truck	No	40		76.5	300	0

Results

	Calculated (dBA)	
Equipment	*Lmax	Leq
Grader	69.4	65.5
Front End Loader	63.5	59.6
Dump Truck	60.9	56.9
Total	69.4	66.9

*Calculated Lmax is the Loudest value.

APPENDIX L
Sewer Area Study

ASSOCIATED TRANSPORTATION ENGINEERS

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Since 1978

Richard L. Pool, P.E.
Scott A. Schell

May 20, 2022 22013L03

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Calabasas, CA 91302

TRIP GENERATION AND VEHICLE MILES TRAVELED ANALYSIS FOR THE NORTH RANCH RESIDENTIAL DEVELOPMENT – CITY OF MOORPARK

Associated Transportation Engineers (ATE) has prepared the following trip generation and Vehicle Miles Traveled (VMT) analysis for the proposed North Ranch Residential Project (the "Project"), located in the City of Moorpark. The analysis was prepared to assist City staff in their review of the Project.

PROJECT DESCRIPTION

The Project site is located at 5979 Gabbert Road in the City of Moorpark. The Project is proposing to construct a 139 single-family residential units on a site which is currently undeveloped. Figure 1 (attached) illustrates the Project site plan. As shown on the Project site plan, access to the site is provided via a driveway connection to the future North Hills Parkway extension.

PROJECT TRIP GENERATION

The trip generation analysis presented in the December 2021 traffic impact analysis prepared by K2 Engineering Inc. for the Project was based on the rates published in the Institute of Transportation Engineers (ITE), Trip Generation, 10th Edition for Single Family Residential - Detached Housing (Land Use #210). Table 1 summarizes the trip generation estimates presented in the K2 Engineering Inc. study for the Project.

Table 1
Project Trip Generation

Land Use	Size	ADT		AM Peak Hour		PM Peak Hour	
		Rate	Trips	Rate	Trips	Rate	Trips
Single Family Residential	139 Units	9.44	1,312	0.74	103 (26/77)	0.99	138 (87/51)

The data presented in Table 1 indicate that the Project is forecast to generate 1,312 ADT, 103 AM peak hour trips and 138 PM peak hour trips.

POTENTIAL TRAFFIC IMPACTS

The December 2021 traffic impact analysis prepared by K2 Traffic Engineering, Inc., determined that the Project would not have significant "Project-Specific" or "Cumulative" impacts to the City of Moorpark street system.

VEHICLE MILES TRAVELED ANALYSIS

The State of California, in compliance with Senate Bill 743, has developed a new set of CEQA guidelines and thresholds for transportation impacts that are based on a Vehicle Miles Traveled (VMT) metric rather than a Level of Service (LOS) metric. The State's Natural Resource Agency Updated Guidelines for the Implementation of the CEQA adopted in 2018, have designated VMT as the most appropriate measure of transportation impacts. "Vehicle miles traveled" refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. For land use projects, vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact.

VMT Thresholds

Local agencies have discretion to develop and adopt their own thresholds or rely on thresholds recommended by other agencies. Since the City of Moorpark has not yet adopted VMT impact criteria, the VMT analyses prepared for the Project was developed using VMT data presented in the recently updated Ventura County Transportation Commission (VCTC) traffic model for Ventura County and the following VMT thresholds published by the State.

The California Governor's Office of Planning and Research (OPR) published a technical advisory that includes recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures.[1] The recommended VMT impact threshold for residential projects is as follows:

[1] Technical Advisory on Evaluating Transportation Impacts in CEQA, Governor's Office of Planning and Research, December 2018.

"A proposed project exceeding a level of 15 percent below existing VMT per capita may indicate a significant transportation impact."

VMT Analysis

The VCTC traffic model provides home based VMT per capita data for the City of Moorpark as well as the various Traffic Analysis Zones (TAZs) within the City, including the TAZ that encompasses the Project site. Traffic model data was used to establish the home-based VMT per capita thresholds for the City of Moorpark and to estimate the home-based VMT per capita for the Project. Table 2 shows the existing home-based VMT per capita for the City of Moorpark, the VMT threshold (15% below existing home-based VMT per capita), and the Project's home-based VMT per capita based on the VCTC traffic model data (model data attached).

Table 2
North Ranch Per Capita VMT Summary

City of Moorpark VMT[(a)]	VMT Impact Threshold[(b)]	Project VMT Estimate[(c)]	Impact?
21.33 per capita	18.33 per capita	25.21 per capita	**Yes**

(a) City of Moorpark home-based VMT per capita based on VCTC traffic model.
(b) VMT Threshold is a 15% reduction from City VMT (21.33 x 0.85 = 18.33).
(c) Project home-based VMT per capita estimate based on VCTC model traffic analysis zones.

As shown, the existing city-wide home-based VMT in the City of Moorpark is 21.33 VMT per capita. Thus, the VMT threshold is 18.13 VMT per capita (15% below existing VMT: 21.33 x 0.85 = 18.13). The VCTC model shows that the homes within the Project TAZ generate 25.21 VMT per capita, which is above the 18.13 VMT per capita impact threshold. Thus, the Project would have a potentially significant VMT impact.

The total daily VMT for the Project and was estimated as described below and summarized in Table 3.

- *Total Project VMT: 25.21 VMT per Capita * 3.15 Persons per Household =79.41; 79.41 * 139 Units =* ***11,037.99 VMT*** *(3.15 Persons per Household U.S. Census Data).*

Table 3
Existing and Proposed Daily VMT Estimates

Land Use	#Units	VMT Estimate	Number of Residents(a)	Total Daily VMT
Residential	139 Units	25.21 VMT Per Capita	3.15 Per Household	11,037.99 VMT

Estimates based on U.S. Census data for the City of Moorpark.

The data in Table 4 shows the Project's total of daily VMT compared to the City of Moorpark's daily VMT threshold and identifies the excess daily VMT that needs to be mitigated.

Table 4
North Ranch Total VMT Generation Summary

	VMT per Capita	Total VMT
Project TAZ Data	25.21	11,038
VMT Impact Criteria	18.33	8,026
Excess VMT	6.88	3,012

As shown in Tables 4, without any Project Design Features (PDF's) or mitigation measures to reduce the VMT, the Project would exceed the VMT impact criteria by 6.88 VMT per capita which totals 3,012 daily VMT. Therefore, the Project must incorporate PDF's and mitigation measures that would reduce the VMT to less than significant. The following section discusses the PDF's and mitigation measure to reduce the estimated Project VMT to less than significant.

MITIGATION MEASURES

Projects must propose measures to reduce Project VMT and mitigate a CEQA transportation impact. Projects may select a combination of measures from the reduction parent strategies. When the selected measures are included during the planning and design stage as part of the project description and project plans, as applicable, the measures are reflected in the assessment of Project VMT.

When Project VMT exceeds the threshold(s) of significance, the Project will need to mitigate its CEQA transportation impact. Measures from the seven VMT reduction parent strategies can be used as mitigation measures. A Project may propose mitigation measures that are not included in the list of approved VMT reduction measures as described in the California Air Pollution Control Officers Association (CAPCOA) greenhouse gas mitigation document. In order to be considered as mitigation measures, the transportation consultant must submit substantial evidence of their effect on reducing Project VMT or mitigating a CEQA transportation impact for review and approval by City staff.

As noted, the Project will be required to select appropriate VMT mitigation measures from the list provided in the CAPCOA. The mitigation measures presented in Table 5 can be incorporated as part of the Project, or the Project can provide funding for improvements.

Table 5
VMT MITIGATION MEASURES

VMT MITIGATION MEASURES	CAPCOA VMT REDUCTION
Affordable And Below Market Rate Housing: Fifteen percent (20 of 139 lots) of the Project consist of affordable or below market rate housing units.	0.60%
Electric Vehicle Charging/Parking Spaces: The Project would install electric vehicle charging and parking stations. The charging and parking stations would be part of Neighborhood Electric Vehicle (NEV) Network for the future development of the area east of Moorpark Avenue.	8%
Remote Work and Telework: The on-set of COVID - 19 has created a shift in necessity of an in-person workforce for some occupations and industries. The Project would provide enhanced features to promote and encourage remote work from home opportunities.	6.04%
Metrolink: The Project site more than ½ mile from the existing Metrolink transit on High Street. The Project should coordinate with Metrolink the regional rail service provider to provide enhancements to encourage rail ridership in Moorpark.	6.4%
Pedestrian Amenities: The Project should provide safe pedestrian walkways that would connect to the pedestrian facilities along North Hills Parkway.	2%
Bikeways: The Project could commit funding improvements to the local bikeway system. The planned North Hills Parkway will be constructed with bike lanes.	5%
Bike Racks: The Project would provide on-site bike racks.	0.625%
Traffic Calming: The Project would implement traffic calming measures on-site and provide funding for off-site traffic calming in the vicinity of the Project site.	1%
School Transportation: The Project site is located within the Moorpark Unified School District (MUSD). If possible, the Project should coordinate with the MUSD to provide bus transportation for children residing in the Project.	5%

Table 6 shows the reduction in project-generated daily VMT that would be achieved through the implementation of the identified PDF's and mitigation measures.

Table 6
Project VMT Reduction

VMT Mitigation Measure	Estimated Project Reduction	
	Percentage	**VMT Reduction**
Affordable Housing/Below Market Rate Housing	0.60%	66
Electric Vehicle Charging/Parking	8%	883
Enhanced Remote Work and Telework	6.04%	667
Metrolink	6.4%	707
Pedestrian Amenities	2%	221
Bikeways	5%	552
On-Site Bike Parking	0.625%	69
Traffic Calming	1%	110
School Transportation	5%	552
Total Reduction:	34.66%	-3,827
Project VMT with Mitigation:		7,211

As shown in Table 6, implementing mitigation measure would result in a total VMT reduction of 3,837. The City of Moorpark's threshold is 8,026 VMT. The Project generates 11,038 daily VMT, with mitigation the Project VMT is reduced to 7,211 VMT which is below the threshold.

SUMMARY

The North Ranch Residential development is estimated to generate 1,312 ADT, 103 AM peak hour trips and 138 PM peak hour trips. Recent State law has adopted VMT as the new CEQA metric to determine transportation impacts. The existing home-based VMT per capita in the City of Moorpark is 21.33 and the impact threshold is 18.33 per capita. The VCTC traffic model shows that the home-based per capita VMT within the Project TAZ is 25.21, which is higher than the home-based VMT per capita impact threshold of 18.33. The Project would have a significant VMT impact which would require implementation of mitigation measures. The City of Moorpark's threshold is 8,026 daily VMT. The Project generates 11,038 daily VMT, with mitigation the Project VMT is reduced to 7,211 VMT which is below the threshold.

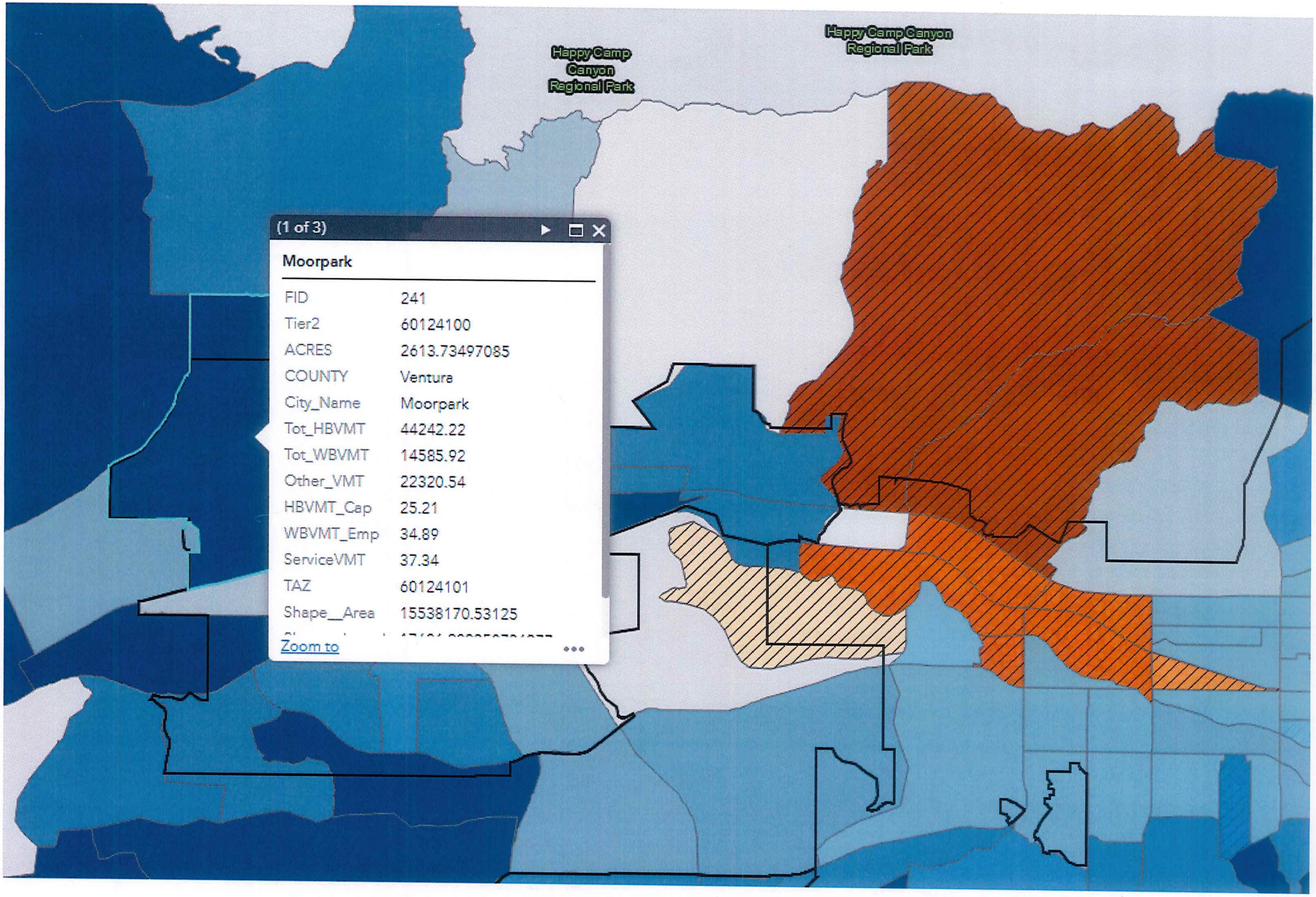
Associated Transportation Engineers



By: Scott A. Schell
Principal Transportation Planner

SAS/DFN

attachments: Figure 1 - Project Site Plan
VCTC Traffic Model VMT Data


Happy Camp Canyon Regional Park
Happy Camp Canyon Regional Park
(1 of 3)
Moorpark
FID 241
Tier2 60124100
ACRES 2613.73497085
COUNTY Ventura
City_Name Moorpark
Tot_HBVMT 44242.22
Tot_WBVMT 14585.92
Other_VMT 22320.54
HBVMT_Cap 25.21
WBVMT_Emp 34.89
ServiceVMT 37.34
TAZ 60124101
Shape__Area 15538170.53125
Zoom to

MEMORANDUM

To:	Meghan Gibson Chambers Group	Date:	June 22, 2022
From:	David Shender, P.E. Linscott, Law & Greenspan, Engineers	LLG Ref:	5-20-0525-1
Subject:	North Ranch Residential Development – VMT Mitigation Peer Review		

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Linscott, Law & Greenspan, Engineers (LLG) has completed a peer review of the Vehicle Miles Traveled (VMT) mitigation analysis provided in "Trip Generation and Vehicle Miles Traveled Analysis for the North Ranch Residential Development – City of Moorpark", prepared by Associated Transportation Engineers, dated May 20, 2022 (the "ATE report"). LLG previously prepared a peer review memorandum dated February 22, 2022 related to a prior version of the ATE report.

This memorandum summarizes LLG's peer review of the ATE report for the North Ranch Residential Development (the "Project"). In addition, this memorandum provides comments to the relevant document used as the source for the VMT reduction measures and quantification methods, a summary of the guidance provided on calculating VMT reductions, and a review and recommendations for the mitigation measures applicable to the Project.

Summary of VMT Impact and Mitigation Measures Presented in ATE Report

Table 2 of the ATE report presents the following findings related to the transportation impacts of the Project:

- The Project VMT per capita as derived from the transportation model prepared by the Ventura County Transportation Commission (VCTC) is 25.21 VMT per capita;
- The Moorpark citywide VMT per capita of 21.33; and
- The threshold of significance, which is 15% below the citywide VMT, or 18.13 VMT per capita.

Accordingly, prior to the consideration of mitigation measures, a significant transportation impact related to the Project is determined based on the VMT metric.

The ATE report suggests a list of measures to reduce Project-related VMT. However, some of these measures appear to have insufficient source or documentation. As described in the following sections, a revised set of mitigation measures is recommended for the Project. In addition, a suggestion is provided for updating the Project's VMT baseline calculation based on the effects of teleworking.

Effects of Telework on Project VMT

The baseline VMT results provided by the VCTC VMT spreadsheet and map-based visualization tools are based on data derived from the Southern California Association of Governments (SCAG) Regional Travel Demand Model (RTDM). It is noted that while the RTDM takes into account a wide variety of socio-economic data, including factors such as household size, income, and vehicle ownership, as well as aspects of travel mode choices relating to vehicle operating costs, transit wait times, etc., it does not account for all factors that affect travel behavior in the Southern California region. Specifically, the effect of telework or remote work on VMT generation is not reflected in the RTDM and is therefore not reflected in the baseline VMT forecasts reported by the VMT model.

Telework refers to the practice of working from home or other remote locations by using telecommunications services such as the internet and phone services to connect to a central office or place of business.[1] Further, the COVID-19 pandemic has substantially and likely permanently changed telework. By example, the Orange County Transportation Authority (OCTA) determined based on an employment travel survey that in February 2020[2] (pre-pandemic), an average of 0.76 days per five-day work week, or 15.1% of working days were worked remotely via teleworking. OCTA further found that teleworking increased to an average of 2.56 days per work week, or 52.8% of working days, in response to the COVID-19 pandemic. Further, surveyed employees expect to telework 1.55 days per work week on average, or 31.2% of working days, in post-pandemic conditions. It is therefore expected that the percent of employees teleworking will remain elevated in the post-pandemic period.

The degree of teleworking in the SCAG region is expected to remain higher than pre-pandemic levels for the foreseeable future. Further, the proposed residential units at the Project are sized appropriately to accommodate home offices and workspaces, and the site will accommodate new and efficient internet and cable systems to provide reliable communication connections; therefore, the Project will increase the number of residential units in the region which are well-suited to accommodate telework. Employed residents of the Project are expected to reflect the similar, and likely increased teleworking trends when compared to the region. Accordingly, an adjustment to the baseline VMT forecast to reflect the documented share of telework after the pandemic would therefore be most appropriate.

[1] It should be noted that the definition of telework typically does not include work which is primarily conducted in the home (i.e., self-employed, care-taker, etc.) or which require travel to off-site locations as part of the normal job duties (i.e., service technicians, drivers, etc.)
[2] "Employment & Travel Survey: Summary Report of Pandemic Impacts", prepared for OCTA by True North Research, Inc., December 14, 2021.

Based on the Project features, as well as the location of Moorpark relative to business centers, it is reasonable to expect that teleworking will be more prominent as compared to other areas of the SCAG region. Thus, 40% of working days (i.e., two days a week) are expected to be worked remotely at the Project via telework, which corresponds to a 40% reduction in home-based work trips. However, it is noted that this reduction in commute trips does not result in a 40% reduction in household VMT. Rather, home-to-work commute trips account for approximately 41% of all residential vehicle miles in the SCAG region.[3] Therefore the baseline forecasts for residential VMT may be adjusted downward by 16.4% (i.e., 41% of all residential VMT * 40% reduction in home-to-work commute trips = 16.4% reduction in total residential VMT) in order to reflect the effect of teleworking at the Project. It is noted that in areas located relatively further from primary business center such as the City of Moorpark, the proportion of home-to-work vehicle miles to total residential VMT is likely much higher than the SCAG regional average. Accordingly, the use of the 41% factor is conservative in estimating the Project VMT reduced due to telework.

Application of this adjustment to the baseline derived VMT forecast results in the following adjusted baseline VMT forecast:

- The Project is forecast to generate 21.07 residential VMT per capita (25.21 VMT/capita * (1 - 0.164) = 21.07 VMT/capita) when accounting for expected post-pandemic levels of telework in the SCAG region.

The Project VMT of 21.07 VMT per capita as adjusted for telework remains above the City's significance threshold of 18.33 VMT per capita. Accordingly, additional review of mitigation measures as outlined in the ATE report is provided in the following sections to further reduce the Project VMT.

Source of VMT Reduction Measures and Quantification Methods

The ATE report indicates that VMT mitigation measures have been selected from the list provided by the California Air Pollution Control Officers Association (CAPCOA). CAPCOA produced a report titled "Quantifying Greenhouse Gas Mitigation Measures" in August 2010 (the "2010 Report"), which provided substantial evidence for VMT reductions due to a variety of transportation demand management (TDM) strategies and measures. It is noted that CAPCOA recently adopted a revised report titled "Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity" in December 2021 (the "2021 Handbook"), which provides substantial evidence for VMT reductions based on the most current research and literature.

[3] CalEEMod Version 2022.1, Appendix Table G-16, MPO/RTPA Trip Lengths and Purpose Splits by Trip Type.

The proposed mitigation program in the ATE report reflects use of the 2010 Report. Some of the number of measures included in the program reflect VMT reductions (expressed as a percentage) which are no longer supported by the current literature referenced in the 2021 Handbook. Instead, measures such as providing bicycle parking and traffic calming are considered non-quantified or supporting strategies in the most recent guidance (although the 2021 Handbook does not suggest that VMT reductions are not justified). Therefore, the quantified reductions that were provided for these measures indicates that the 2010 Report was consulted.

For this review, LLG generally supports use of both the 2010 Report, as well as updated guidance in the 2021 Handbook for estimating VMT reductions related to the proposed strategies in ATE report. It is recognized that such technical guidance is evolving and subject to change. For example, the source for Project trip generation forecast provided in Table 1 of the ATE report – the 10th Edition of the "Trip Generation Manual" published by the Institute of Transportation Engineers – is now in its 11th Edition.

CAPCOA 2010 Report Guidance on Quantifying VMT Reductions

The 2010 Report provides a comprehensive set of guidelines for assessing and quantifying reductions in greenhouse gas emissions associated with land use, transportation, energy use, and other related project areas. The mitigation measures outlined in the 2010 report fall into general categories, within which the methods follow a common approach. For the measures related to transportation, the methodology is generally based on reductions in VMT. The 2010 report lists 50 transportation-related strategies covering a wide range of subcategories, including land use/site location, site design, parking policies, commute trip reductions, transit system enhancements, and roadway pricing/management. These strategies are broadly referred to as transportation demand management (TDM) strategies due to the focus on reducing the amount of automobile travel generated by a project.

The 2010 Report validates and quantifies the effectiveness of each TDM strategy in reducing VMT based on various factors, resulting in a percent reduction in VMT which can be applied to a project's VMT forecast. TDM measures are frequently implemented together with other measures. The 2010 Report acknowledges that while combining measures often leads to greater reductions than implementing a single strategy, when multiple measures are implemented to mitigate a single source (i.e., transportation emissions generated by VMT), the benefit of each additional measure diminishes. Each successive measure is slightly less effective than predicted when implemented on its own. Therefore, the effectiveness of multiple strategies should be multiplied, not added to determine a combined effectiveness, unless substantial evidence can be provided that reductions are independent of one another. This takes the form of:

$$Combined\ Reduction = 1 - [(1 - A) \times (1 - B) \times (1 - C) \times \dots]$$

Where A, B, and C are reduction percentages for individual strategies.

In particular, the interactions between the various categories of transportation-related strategies are complex and sometimes counter-intuitive. In order to protect the accuracy of the methodology, CAPCOA has provided maximum VMT reductions for the transportation strategies at multiple levels: within each subcategory; a Cross Category Maximum Reduction[4]; and a Global Maximum Reduction[5]. These maximum reduction values, or caps, reflect the highest reduction levels justified by the literature consulted in the preparation of the document.

The maximum VMT reduction caps are stated as a percent of the baseline project VMT, and applies to all VMT reduction strategies applied to the project, regardless of whether the strategy is implemented as a project design feature or as a mitigation measure. The cross-category and global caps are determined based on the project's location setting, which takes into account the land use characteristics of the project site and vicinity. The 2010 Report provides caps based on four (4) location settings: 1) Urban; 2) Compact Infill; 3) Suburban Center; and 4) Suburban. Based on a review of the definitions of the location settings and the development characteristics of VCTC Transportation Analysis Zone (TAZ) 60124101, the Project is located in a Suburban location setting[6]. Therefore, the Global Maximum Reduction in VMT that can be applied to the proposed project due to implementation of TDM strategies is capped at 15%. The maximum reduction provided for this location setting assumes that regardless of the measures implemented, the project's distance from transit, density, design, and lack of mixed-use destinations will keep the effect of any strategies to a minimum.

The revised Project VMT of 21.07 VMT per capita as adjusted for telework remains above the City's significance threshold of 18.33 VMT per capita. The Project VMT would need to be reduced by approximately 13% to be below the significance level, which is consistent with the guidance in the 2010 Report.

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[4] According to the 2010 Report, cross category maximum reductions are provided for any combination of: 1) land use/location; 2) neighborhood/site enhancements; 3) parking policy/pricing; and 4) transit system improvement strategies. The total project VMT reduction across these subcategories should be capped at these levels based on empirical evidence. Caps are provided for the location and development type of the project. VMT reductions may be multiplied across the four categories up to this maximum.

[5] According to the 2010 Report, global maximum reductions are provided for any combination of: 1) land use/location; 2) neighborhood/site enhancements; 3) parking policy/pricing; 4) commute trip reduction and; 5) transit system improvement strategies. This excludes reductions from road-pricing measurements. The total project VMT reduction across these five subcategories, which can be combined through multiplication, should be capped at these levels based on empirical evidence. Maximums are provided for the location and development type of the project.

[6] The City of Moorpark is classified as Suburban with Single-Family Homes (Neighborhood Type 5) in "Quantifying the Effect of Local Government Actions on VMT", Institute of Transportation Studies, UC Davis, February 14, 2014.

Applicability of Proposed Mitigation Measures in the ATE Report

The mitigation measures proposed in the ATE report were reviewed to confirm applicability based on the Project site location, proposed land use, and other features of the transportation network in the vicinity of the site. A review of each measure is provided below.

- Affordable and Below Market Rate Housing. This measure listed in the ATE Report corresponds to measure LUT-6 of the 2010 Report, which reflects the integration of deed-restricted low-income housing into residential developments of five (5) or more dwelling units, and is applicable in urban and suburban contexts. A total of 15% of the proposed project (i.e., 20 of 139 lots) consists of affordable or below market rate (BMR) housing units, and is located in a suburban setting, therefore this measure is applicable. The VMT reduction is correctly calculated in the ATE report as 0.60% (4% VMT reduction * 15% deed-restricted affordable/BMR housing = 0.60%).

  It is noted use of the methodology and assumptions provided in the 2021 Handbook for providing affordable or BMR housing (measure T-4) would result in calculation of a 4.29% VMT reduction (28.6% reduction in VMT * 15% deed-restricted affordable/BMR housing = 4.29% VMT reduction). Therefore, the 4.29% VMT reduction is appropriate for the Project, based on the most current supporting literature.

- Electric Vehicle Charging/Parking Spaces. LLG understands the Project will provide elective vehicle charging stations within each unit. The measure description provided in the ATE report indicates that electric vehicle (EV) charging and parking stations would be installed as part of a future Neighborhood Electric Vehicle (NEV) network in the area east of Moorpark Avenue. This measure appears to correspond to SDT-3 and/or SDT-8, which reflects implementation of a Neighborhood Electric Vehicle (NEV) network and EV parking. The calculated VMT reduction of 8% in the ATE report appears to assume a 63% penetration rate, or 0.63 NEV per household within the proposed development (12.7% reduction in VMT * 63% penetration = 8% VMT reduction).

  NEV are classified by the California Vehicle Code as "low speed vehicles", and may be legally used on roadways with a posted speed limit of 35 miles per hour or less (e.g., golf carts). While this measure is appropriate for application in suburban contexts, implementation of an NEV network also includes provision of appropriate on-street infrastructure such as NEV lanes, signing and striping, and signal modifications, in addition to charging and parking facilities throughout the community. LLG is not aware that the City of Moorpark has an

NEV network or other infrastructure which would support the effectiveness of the proposed EV charging/parking spaces in reducing VMT.

It is noted, however, that the 2021 Handbook includes a measure specifically related to the provision of EV charging infrastructure (measure T-14) which is unrelated to NEV networks. While this measure supports the reduction of GHG emissions, provision of EV charging spaces does not result in quantifiable VMT reductions. However, the overall purpose of SB 743 is to promote measures "…all with the goal of reducing greenhouse gas emissions." Therefore, it is appropriate to include the quantified VMT reductions (8%) related to the provision of EV charging in each unit as calculated from the 2010 Report irrespective as to whether the City develops and NEV network. As noted, this calculation is conservative as the Project proposes EV charging stations in each unit while the assumed penetration rate from the ATE report in determining the associated VMT reduction is 63%.

- Metrolink. The measure description provided in the ATE report indicates that the Project site is located over 0.50-miles from the existing Metrolink Ventura Line station located along High Street between Moorpark Avenue and Spring Street. It further indicates that the applicant would coordinate with Metrolink to encourage rail ridership. The associated percent VMT reduction of 6.4% in the ATE report suggests use of measure LUT-5. The methodology provided for LUT-5 along with the assumption that the Project site is located 1.0 mile from the transit station would result in a theoretical VMT reduction of 6.4% ([(-4.4 * 1 mi – 15.2)% - 1.3%] * 0.67 = 6.4%), which is the VMT reduction for this measure provided in the ATE report.

  Measure LUT-5 reflects the VMT reductions due to the use of transit by people traveling to/from high-density transit-oriented developments (TODs) located near high-quality transit (rail or bus) service. Projects eligible for the VMT reductions described by this measure should at a minimum be located within 0.5-miles of a rail station which provides fast, frequent, and reliable service to a high percentage of regional destinations, and should be located in a neighborhood designed for walking and bicycling. The methodology on which the calculations for LUT-5 are based was developed based on surveys of TODs within walking distance of a transit station with headways of 15-minutes or less, and which were intentionally developed as TODs.

  The Project is located approximately 1.6 miles from the transit station by walking path (i.e., not by direct-line or radius). Further, the Metrolink Ventura Line does not provide service with less than 15-minute headways. The location of the Project and nature of the rail service suggests that application of LUT-5 may not be appropriate.

The 2021 Handbook also includes a measure to quantify VMT reductions due to TODs (measure T-3), which has similar location and high-quality transit requirements. The Project is not anticipated to qualify as a TOD under the most recent guidance.

It should also be noted that the VMT reductions due to this measure should be applied to the initial VMT forecast for the Project, since the reductions are due to the project's location and transportation network context, rather than as a result of proactive actions taken by the project applicant to reduce VMT. Thus, for purposes of assigning an incremental VMT reduction related to the Project's proximity to the Metrolink station as a mitigation measure, the Project should provide additional incentives for both Project residents, as well as other potential users of the station to ride public transit. Accordingly, LLG recommends the Project coordinate with the City to install enhanced features at the existing Metrolink station, such as bicycle storage lockers to supplement the existing bike racks at the station. While the assumed 6.4% reduction in VMT as presented in the ATE report cannot be supported based on the Project's location, a modest 2% reduction in VMT is appropriately conservative for implementing the mitigation measure. This would include VMT reductions related to the Project, as well as other users of the Metrolink station.

- Pedestrian Amenities: This measure corresponds to SDT-1, which reflects VMT reductions due to the mode shift from driving trips to walking trips when pedestrian access is provided internally and connects to external roadways and pedestrian facilities contiguous to the project site. This measure is applicable in suburban contexts. The Project will provide sidewalks along all internal roadways and will provide sidewalks along the easterly access road and along the project frontage adjacent to the future extension of North Hills Parkway. Thus, the Project will provide pedestrian accommodations within the Project site. It is noted the existing off-site pedestrian network is underdeveloped in the vicinity of the Project (e.g., Gabbert Road does not provide pedestrian sidewalks north of Poindexter Avenue, and North Hills Parkway does not currently exist). The City may consider the planned roadway improvement projects in the vicinity of the Project site in order to determine the appropriateness of the assumption that the Project would connect to off-site facilities.

  Assuming that the roadways connecting to the Project site would accommodate pedestrian infrastructure such as sidewalks, curb cuts, crosswalks, etc., the VMT reduction of 2.0% is correctly stated.

- Bikeways. The measure description provided in the ATE report indicates that the project applicant would fund improvements to the local bikeway system, and that the planned North Hills Parkway will be constructed with bike lanes. This measure does not appear to correspond to any specific measures in the 2010 Report. While it is reasonable to assume that provision of additional bicycle infrastructure (e.g., paths, lanes, or bicycle routes) would reduce VMT by promoting a mode shift from driving trips to bicycling trips, additional information is needed to support the 5.0% VMT reduction credited to the measure in the ATE report.

  The 2021 Handbook recommends that VMT reductions due to expanding the bikeway network (measure T-20) should be considered at a community-wide scale, and thus would not be directly applicable to the proposed project as a mitigation measure. In summary, while increased bicycling would promote a reduction in Project VMT, because no specific bikeway project is proposed in the ATE report, it is recommended that no VMT reduction be quantified for this measure.

- Bike Racks. The measure description provided in the ATE report indicates that the project would provide on-site bike racks. As it assumed each unit will accommodate its own bike parking, it is not clear where bike racks would be provided on-site. Further, this measure does not appear to correspond to any specific measure in the 2010 Report, but instead may be based on the alternate literature source provided for a number of bicycle-related strategies. A review of the Center for Clean Air Policy (CCAP) Transportation Emission Guidebook assumed a 2.5% VMT reduction for all bicycle-related measures, and that a quarter (25%) of that reduction is due to the provision of bicycle parking alone, resulting in a 0.625% VMT reduction (i.e., 2.5% * 25% = 0.625%).

  The most closely applicable measures are SDT-6 and SDT-7, which address providing bicycle parking at non-residential projects and multi-family projects (i.e., apartment complexes or condominiums without garages). At the proposed project site, it is assumed that bicycle parking and secure storage for residents would be accommodated by the private garages provided with each housing unit. Provision of public bike racks within the Project site is not anticipated to result in additional mode shift by residents from vehicle trips to bicycle trips. Thus, application of the VMT reduction may not be appropriate.

  The 2021 Handbook includes provision of public bicycle parking (measure T-34) as a supporting or non-quantified measure. Thus, while the measure may enhance the effectiveness of the overall mitigation program, the current guidance indicates that providing bike parking as a stand-alone measure would not result in quantifiable VMT reductions.

As previously noted, LLG recommends the installation of bicycle storage lockers at the Metrolink station. Thus, the reduction in Project VMT related to public bike racks/bicycle storage facilities has already been incorporated into the Metrolink station mitigation measure.

- Traffic Calming. This measure corresponds to SDT-2, which reflects VMT reductions due to traffic calming, resulting in mode shifts from driving trips to other active transportation modes such as walking or bicycling trips. Traffic calming improvements may be applied to intersections and/or streets within project sites, and is applicable in suburban contexts. The measure description provided in the ATE report indicates the Project would implement traffic calming on-site and provide funding for off-site traffic calming in the vicinity.

  The 1.0% VMT reduction credited to this measure appears to be based on the assumption that all intersections and all roadways within the project site would provide traffic calming features. However, the ATE report does not identify the traffic calming measures proposed. Traffic calming measures could include marked crosswalks, count-down signal timers, curb extensions/bulb-outs, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts/mini-circles, on street parking, planter strips with street trees, chicanes/chokers, etc.

  The 2021 Handbook also includes traffic calming measures (T-35) as a supporting or non-quantified measure. Thus, while the measure may enhance the effectiveness of the overall mitigation program, the current guidance indicates that traffic calming as a stand-alone measure may not result in quantifiable VMT reductions. Therefore, it is conservatively recommended that no additional reductions in Project VMT be associated with on-site traffic calming measures.

- School Transportation. This measure corresponds to TRT-13, which reflects expanded school bus services in the project area and local community. The measure description provided by in the ATE report indicates the project applicant would coordinate with Moorpark Unified School District (MUSD) to implement a bus transportation program for children residing at the project site, therefore this measure may be applicable. It is recommended that MUSD provide input on the feasibility of providing school bus service to the proposed project. While it is reasonable to assume that provision of a school bus route that serves the project site would reduce household VMT, the ATE report does not provide information as to how the 5.0% VMT reduction credited to the measure was derived.

The 2021 Handbook also includes implementing a school bus program (T-40) as a supporting or non-quantified measure, however it is reasonable to assume that a school bus program would reduce household VMT. Thus, while the measure may enhance the effectiveness of the overall mitigation program, the current guidance does not provide sufficient substantial evidence for estimating quantifiable VMT reductions.

Summary and Conclusions

In summary, LLG recommends the following VMT-reducing mitigation measures related to the Project:

- Provide affordable housing at the Project;
- Provide EV charging stations within each unit at the Project;
- Install bicycle storage lockers at the Metrolink station; and
- Install on-site sidewalks and provide connections to the existing/future off-site pedestrian network.

Other measures in the ATE report, such as bike routes, on-site bike parking, installation of traffic calming measures, and encouraging transportation to schools by modes other than a private vehicle would produce reductions in Project VMT, but are not sufficiently defined or quantifiable to be included in the recommended mitigation package for the Project.

As previously stated, the adjusted baseline Project VMT is calculated at 21.07 VMT per capita when accounting for the recent and documented effects related to teleworking. The adjusted baseline Project VMT exceeds the derived City threshold of significance of 18.13 VMT per capita.

When taken together, the four mitigation measures are calculated to result in a reduction in the adjusted Project VMT by approximately 15.43%. The summary of the VMT analysis for the Project and calculated effectiveness of the VMT-reducing mitigation measures is summarized in the table below.

Summary of Project VMT Analysis and Mitigation Measures

Scenario	Source/Calculation	VMT
Project Baseline VMT	VCTC VMT model for Project TAZ	25.21 VMT per capita
Revised Baseline VMT for Telework	16.4% reduction in VMT	21.07 VMT per capita
<u>Mitigation Measures</u> Affordable Housing EV Charging Stations Metrolink (bike lockers) Pedestrian Amenities	 4.29 % reduction in VMT 8% reduction in VMT 2% reduction in VMT 2% reduction in VMT	
Total VMT Reducing Effects of Mitigation	1 – [(1-0.0429) * (1-0.08) * (1-0.02) * (1-0.02)] = 15.43% reduction in VMT	17.82 VMT per capita
Applicable Threshold of Significance	15% below derived City VMT (21.33 VMT per capita) from VCTC Tool	18.13 VMT per capita

As shown in the table above, the four mitigation measures are calculated reduce the Project VMT to 17.82 VMT per capita, which is below the City threshold of significance of 18.13 VMT per capita. Therefore, it is concluded that with implementation of the recommended mitigation measures, the Project's transportation impact as assessed through use of the VMT metric is less than significant.

APPENDIX K
VMT Analysis

Sewer Study

FOR

Tract 5487
City of Moorpark, California

Prepared for:

West Pointe Homes
Rasmussen Development

Prepared by:

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JN 10-10115

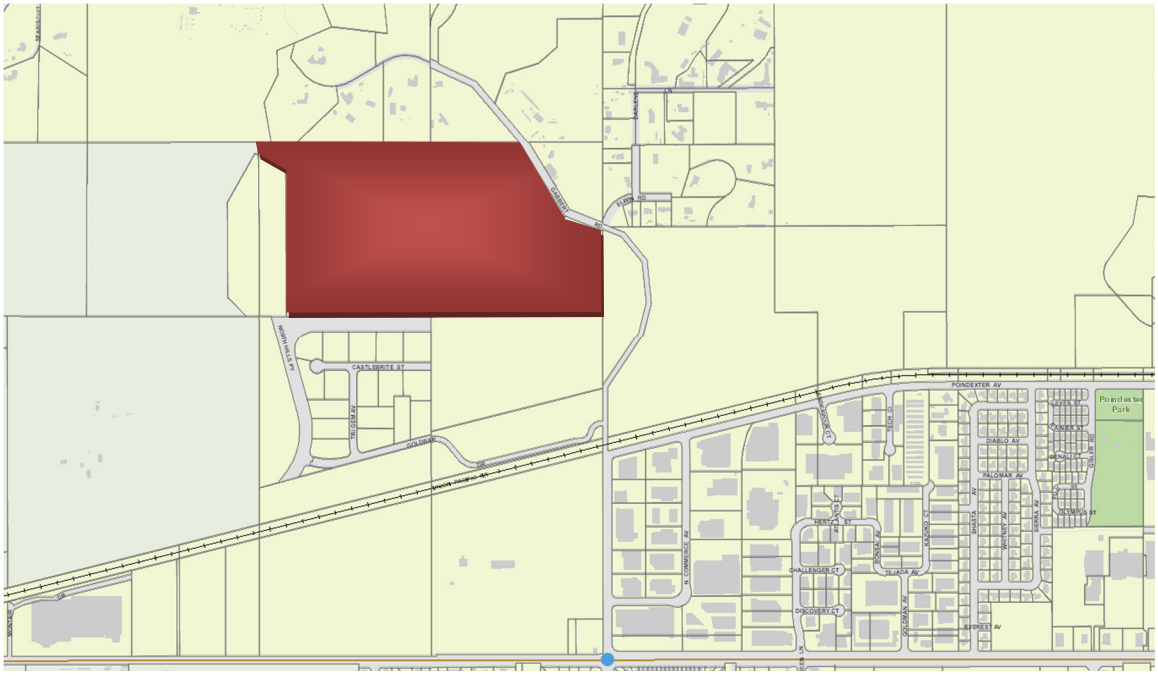
June 2020

TABLE OF CONTENTS

- INTRODUCTION.....1
- PROJECT DESCRIPTION.....2
- EXISTING SEWER SYSTEM.....2
- PROPOSED SEWER SYSTEM.....2
- METHODOLOGY.....2
- ANALYSIS.....3
- MITIGATION.....4
- CONCLUSIONS.....4
- REFERENCES.....4

INTRODUCTION

The project site is in the northwest area of Moorpark, north of the Union Pacific Railroad and west of Gabbert Avenue. It is approximately 68 acres and is currently undeveloped A-E (Agricultural exclusive) zoning.



LOCATION PLAN
NTS

The existing surrounding developments comprise of Single Family Residential and Agricultural Exclusive land use areas. Anticipated future developments within the surrounding area will comprise of similar projects built for Residential Planned Development (RPD).

PROJECT DESCRIPTION

Tract 5487 proposes to develop 139 single family dwelling units and 4 open space lots on approximately 68 acres.

EXISTING SEWER SYSTEM

The Ventura County Waterworks District No. 1 shall provide sewer service for the project site. The proposed project shall connect to the existing 8” sewer in Gabbert Road (Drawing No. 55994), south of Poindexter Road and ultimately drain via gravity to the 27” sewer main along the Arroyo Simi flood control channel.

PROPOSED SEWER SYSTEM

The proposed sewer system serving Tract 5487 shall drain via 8” gravity mains to Gabbert Road. An 8” sewer main in Gabbert Road from North Hills Parkway to Poindexter Road will be constructed (at 0.75% minimum) and shall connect to the existing 8” sewer at Gabbert Road and Poindexter Road. An 8” stub out in the manhole at North Hills Parkway and Gabbert Road will provide a point of connection for future development upstream of the project site.

METHODOLOGY

Analysis will be done for the new sewer system and the existing point of connection to ensure that sizing and performance meets the County of Ventura Design guidelines.

The sewage flow rate for the 139 lots of Tract 5487 are calculated based on the following formula:

Average Sewage Flow Rate:
Q_{ave}(cfs) = 0.00012 * (Number of Dwelling Units) * (Population Density)

Where : Q_{ave} = Sewer Discharge (cfs)
Number of Dwelling Units = 139 units
Population Density = 3.5 persons/Dwelling Unit (Per 2.121)

The sewage flow rate for the undeveloped upstream project areas are calculated based on Planning Zone R-O using the following formula:

Average Sewage Flow Rate:
Q_{ave}(cfs) = 0.00012 * (Area) * (Population Density) * (Building Density)

Where : Q_{ave} = Sewer Discharge (cfs)
0.00012 cfs/persons
Area = Area (acres)
Population Density = 3.5 persons/Dwelling Unit (Per 2.121)
Building Density = 1.9 Dwelling Units/acres (Per 2.122)
A = Area (acres)

Sewer Peaking Factor:
$PF = 2.65 * Q_{ave}^{-0.1}$

Peak Sewage Flow Rate:
Q_{peak} (cfs) = PF * [$2.65 * Q_{ave}^{-0.1}$]

ANALYSIS

Hydraulic analysis was performed using the Manning Equation.

Equation: $V=1.486R^{2/3}S^{1/2}/n$; fps
n = 0.013

Pipe capacity was analyzed based on their size. If sewer mains are 12-inches in diameter or less, they should be no more than 2/3- full depth, while mains 12-inches and over are designed to flow at a maximum of ¾-full depth.

Potential offsite flows from the Hitch Ranch Specific Plan all drain to Sierra Avenue to the east. PA5 and PA-6 are open space areas with non-contributing flows to the sewer system.

MITIGATION

Per calculation, the existing 8” sewer @ 0.075% slope in Gabbert Road can service the existing and proposed improvements.

CONCLUSIONS

The point of connection of the new sewer remains in the same tributary service area. Hydraulic Calculations shows that the system maintains design parameters of pipes flowing 2/3 full for pipe sizes less than or equal to 12-inches and under 3/4full for pipes greater than or equal to 12-inch diameter.

REFERENCES

- County of Ventura Sewage Manual dated 11/16/82
- Hitch Ranch Specific Plan (Table 2-1, Figure 2-1, Figure 3-3)

APPENDIX

OFFSITE - SEE SHEET 2

LOT 2

LOT 3

LOT 4

LOT 5

LOT 1

LOT F

LOT C

LOT E

LOT B

LOT D

LOT A

VCFCD

POINT D

POINT E

POINT A

POINT B

POINT C

POINT F

POINT G

THOROUGHBRED DRIVE

NORTH RANCH DRIVE

TENNESSEE WALKER DRIVE

SHETLAND WAY

APPALOOSA WAY

MORGAN WAY

QUARTER HORSE WAY

NORTH HILLS PARKWAY
(PUBLIC)

OFFSITE FLOWS

GABBERT ROAD

POINDEXTER ROAD

SOUTHERN PACIFIC RAILROAD

EXISTING 8" Ø0.75% PER DRAWING NO.55994

HITCH RANCH
PA-6
OPEN SPACE

HITCH RANCH
PA-5

SCALE: 1"=100'

VTTM NO. 5847

SEWER STUDY

PREPARED BY

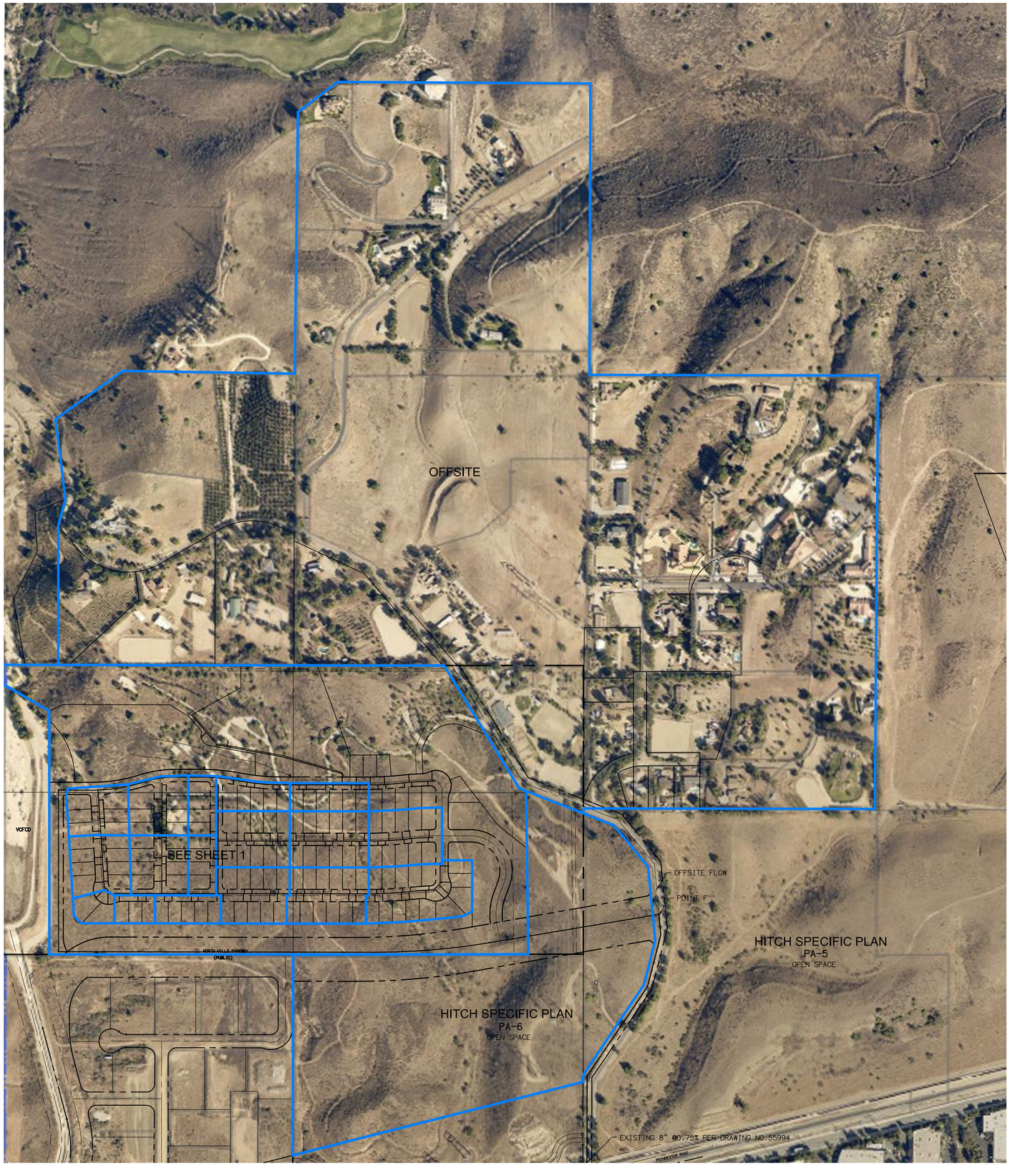
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SHEET 1 OF ____ SHEETS

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SAVE DATE:6/23/20 DPOON



100 50 0 100 200 300

SCALE: 1"=100'

VTTM NO. 5847

SEWER STUDY - OFFSITE

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Table 1: Proposed Conditions:Sakioka Specific Plan

Confluence Point	Sub-Area	Street Name	Segment MH #	Segment MH #	Pipe Size (in)	Pipe Slope (%)	n	Capacity $(cfs)_2$ 2/3 Depth (<12"); 3/4 Depth (>12")	Area (acres)	Zoning	# Dwelling Units	Population $Density_1$	Building $Density_2$	Calculated Avg Flows (cfs) Qavg=.00012* Pop. Density * Dwelling Unit	Peaking Factor PF=2.65 * $(Q_{avg})^{-0.1}$	Calculated Peak Flows (cfs) Peak Flow = Avg Flow * Peak Factor	Cumulative Peak Flow (cfs)	% Full of Maxium Capacity (Cumulative Flows / Capacity) X100	Reference Plan
	A1	North Ranch Drive			8	0.40	0.013	0.615	-	RPD	10	3.50	30.00	0.004	4.58	0.02	0.02	3.13%	
	A2	North Ranch Drive			8	0.40	0.013	0.615	-	RPD	12	3.50	30.00	0.005	4.50	0.02	0.04	6.81%	
	A3	North Ranch Drive			8	0.40	0.013	0.615	-	RPD	10	3.50	30.00	0.004	4.58	0.02	0.06	9.94%	
	A4	Morgan Way			8	0.40	0.013	0.615	-	RPD	4	3.50	30.00	0.002	5.02	0.01	0.07	11.31%	
A					8	0.40	0.013	0.615	-								0.07	11.31%	
	B1	Tennesse Walker Drive			8	0.40	0.013	0.615	-	RPD	14	3.50	30.00	0.006	4.43	0.03	0.03	4.23%	
	B2	Tennesse Walker Drive			8	0.40	0.013	0.615	-	RPD	12	3.50	30.00	0.005	4.50	0.02	0.05	7.92%	
	B3	Tennesse Walker Drive			8	0.40	0.013	0.615	-	RPD	10	3.50	30.00	0.004	4.58	0.02	0.07	11.05%	
	B4	Morgan Way			8	0.40	0.013	0.615	-	RPD	4	3.50	30.00	0.002	5.02	0.01	0.08	12.42%	
B	A+B				8	0.40	0.013	0.615	-								0.15	23.73%	
	C1	Tennesse Walker Drive			8	0.40	0.013	0.615	-	RPD	5	3.50	30.00	0.002	4.91	0.01	0.01	1.68%	
	C2	Appaloosa Way			8	0.40	0.013	0.615	-	RPD	8	3.50	30.00	0.003	4.68	0.02	0.03	4.24%	
	C3	Tennesse Walker Drive			8	0.40	0.013	0.615	-	RPD	7	3.50	30.00	0.003	4.75	0.01	0.04	6.50%	
C	A+B+C				8	0.40	0.013	0.615	-								0.19	30.24%	
	D1	Thoroughbred Drive			8	0.40	0.013	0.615	-	RPD	9	3.50	30.00	0.004	4.63	0.02	0.02	2.85%	
	D2	Thoroughbred Drive			8	0.40	0.013	0.615	-	RPD	10	3.50	30.00	0.004	4.58	0.02	0.04	5.97%	
	D3	Thoroughbred Drive			8	0.40	0.013	0.615	-	RPD	5	3.50	30.00	0.002	4.91	0.01	0.05	7.65%	
D					8	0.40	0.013	0.615									0.05	7.65%	
	E1	Tennesse Walker Drive			8	0.40	0.013	0.615	-	RPD	3	3.50	30.00	0.001	5.17	0.01	0.01	1.06%	
	E2	Tennesse Walker Drive			8	0.40	0.013	0.615	-	RPD	2	3.50	30.00	0.001	5.38	0.00	0.01	1.79%	
	E3	Shetland Way			8	0.40	0.013	0.615	-	RPD	8	3.50	30.00	0.003	4.68	0.02	0.03	4.35%	
	E4	Thoroughbred Drive/Shetland Way			8	0.40	0.013	0.615	-	RPD	6	3.50	30.00	0.003	4.82	0.01	0.04	6.33%	
E	A+B+C+D+E				8	0.40	0.013	0.615	-								0.22	36.57%	
F	A+B+C+D+E	Potential Offsite Flows			8	0.75	0.13	0.843	179.56	R-O	-	3.50	1.90	0.143	3.22	0.46	0.69	81.38%	
		Hitch PA-6 (Open Space)$_3$							28.76	-	-	-	-	-	-	-		-	
Gabbert/Poindexter		EXISTING 8" @0.75%			8	0.75	0.13	0.843									0.69	81.38%	Drawing No. 55994

Notes:
1. Per Section 2.121 of Sewage Design Manual of Ventura County
2. Per Section 2.122 of Sewage Design Manual of Ventura County. Only used for offsite and Area F4
3. Open space area per Hitch Ranch Specific Plan and no contributing sewer flows.

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Jun 22 2020

2/3 Full 8inch PVC @ 0.40%

Circular

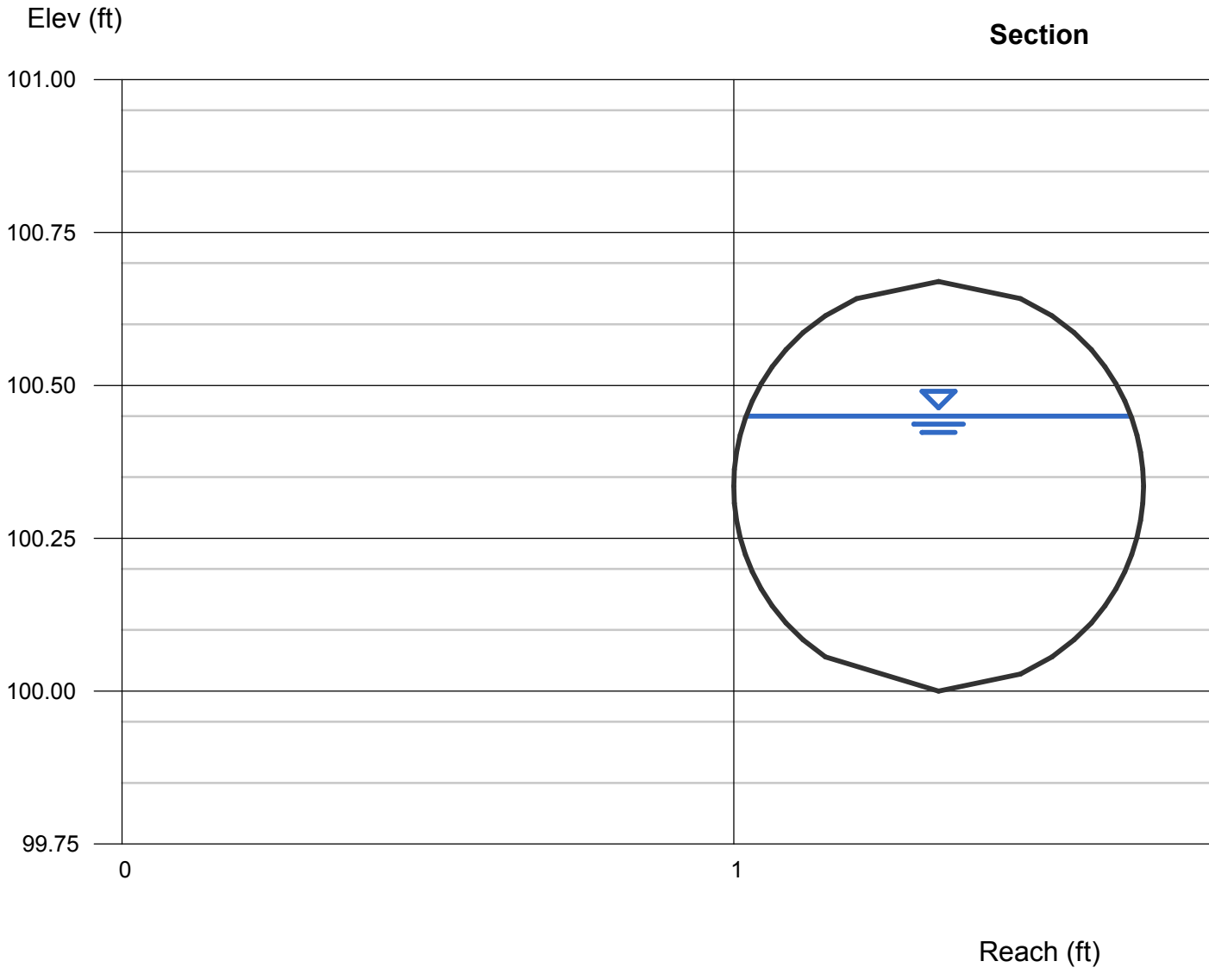
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.40
N-Value	= 0.013

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.45

Highlighted

Depth (ft)	= 0.45
Q (cfs)	= 0.615
Area (sqft)	= 0.25
Velocity (ft/s)	= 2.44
Wetted Perim (ft)	= 1.29
Crit Depth, Yc (ft)	= 0.37
Top Width (ft)	= 0.63
EGL (ft)	= 0.54



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Jun 22 2020

EXISTING 8INCH VCP @ 0.75%

Circular

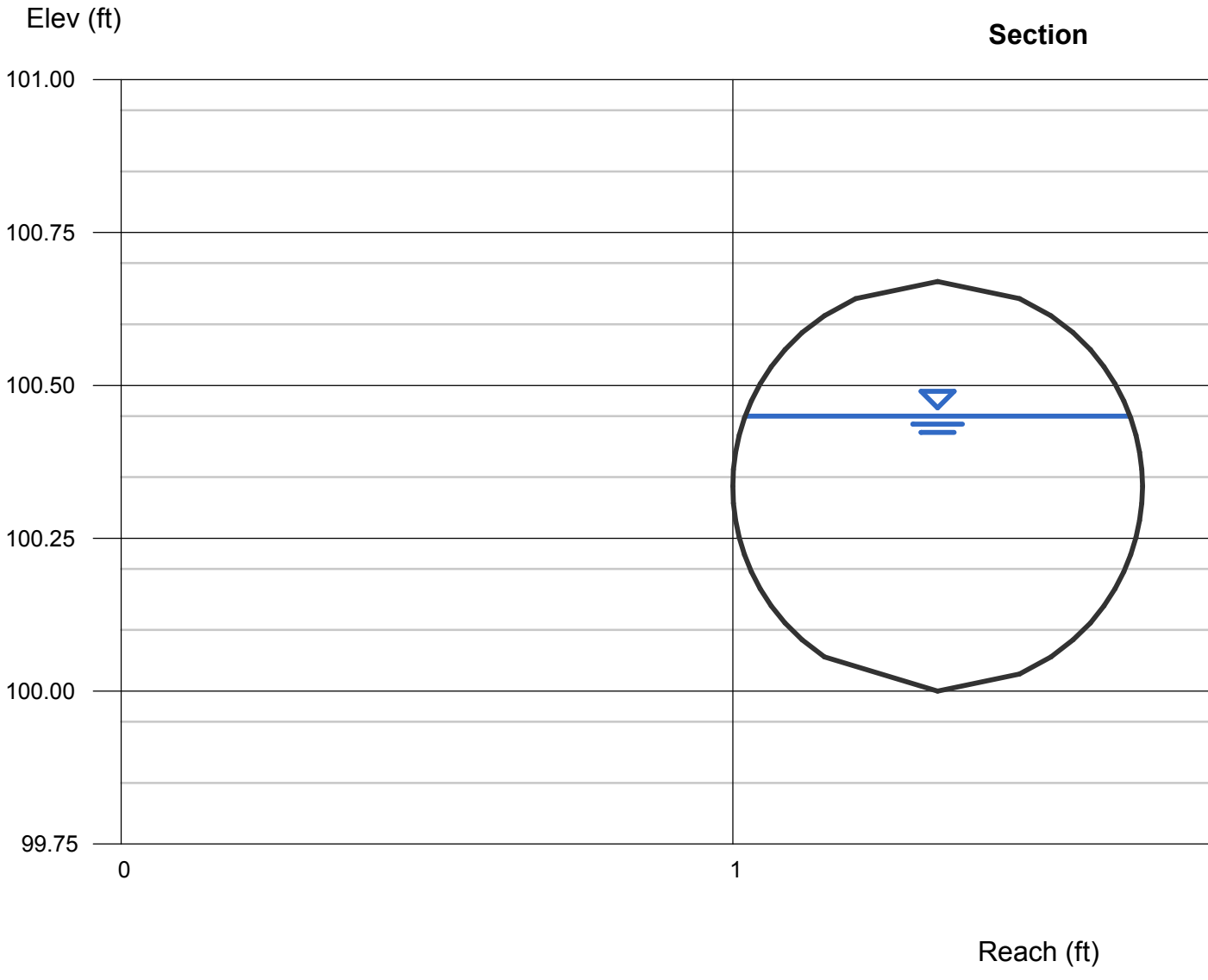
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.75
N-Value	= 0.013

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.45

Highlighted

Depth (ft)	= 0.45
Q (cfs)	= 0.843
Area (sqft)	= 0.25
Velocity (ft/s)	= 3.34
Wetted Perim (ft)	= 1.29
Crit Depth, Yc (ft)	= 0.44
Top Width (ft)	= 0.63
EGL (ft)	= 0.62



2.0 DESIGN CRITERIA

2.1 SEWER CAPACITIES

2.11 General

Sewers shall be designed to carry the peak flow rates from all areas tributary to them. Sewers shall be designed for both size and depth to accommodate developments in upstream tributary areas which would logically be served by them. The peak flow rate at any point shall be the average flow of all tributary areas times the factor

$$(2.65 * (\text{AVE CFS})^{-0.1}).$$

Zoning shown in this section is that in effect in March 1986 as shown in the Ventura County Ordinance Code. Changes in zoning regulations shall be taken into consideration in computing flows.

2.12 Residential

2.121 Population Densities

The following population densities shall be used in establishing sewage flow:

Population per Residential Unit

Type of Development	
Trailers and mobile homes on lots under 3000 S.F. in area	2.0
Multiple unit buildings with 5 or more residential units	2.2
Multiple unit buildings with 3 or 4 residential units	2.4
Multiple unit buildings with 2 residential units	2.8
Mobile homes on lots of 3000 to 6000 S.F. in area	2.8
Single family units and mobile homes on lots larger than 6000 S.F.	3.5

2.122 Building Density

Residential building density for undeveloped areas shall be taken from the following table.

Zoning	Dwelling Units per Acre
R-O	1.9
R-1	4.8
R-2	9.6
R-A	0.9
R-E	3.5
R-P-D	30

Densities given in this table may be reduced for areas where the average slope of the land exceeds 5% by multiplying the values in the table by (1 - 0.025 * Slope in %).

Existing developments or proposed developments with approved plans shall use the actual number of units.

2.123 Average Flow Rate

The average flow rate in cubic feet per second (CFS) shall be 0.00012 times the number of persons to be served.

2.13 Commercial and Manufacturing

Average flow rates for design shall be taken from the following table unless special conditions require additional capacity or an approved study indicates less capacity is required.

Zoning	Average Flow Rate CFS per Acre
C-O	0.005
C-I	0.003
C-P-D	0.006
M-I	0.009
M-2	0.009
M-3	0.012
PC	0.008

2.14 Hydraulic Design

2.141 Pipe size, flow quantity and hydraulic slope relationships shall be computed using the Manning Formula with n=0.013 or Hazen-Williams Formula with C=100 for pipes running full with adjustment of results for partially filled pipe based on ASCE Manual No. 37 (See Section 1.12) curves for Discharge and velocity when varies with depth.

2.142 To use full flow pipe formulas to determine pipe diameter or slope, multiply design flow or Manning's "n" by Factor A from the table below.

To use full flow pipe formulas to determine flow for a given pipe diameter and slope with n=0.013, divide the resultant flow by Factor A from the table below.

Pipe Diameter	Maximum Depth at Design Peak Flow	Factor A for use with full pipe formula
Less than 12"	2/3 Pipe Diam.	1.54
12" & greater	3/4 Pipe Diam.	1.25

2.15 Minimum Size

Minimum street sewer size shall be 8", except that 6" pipe may be used where all of the following conditions are met:

a. The minimum slope is at least 0.8%.

b. The length does not exceed 200 feet with no possibility of extension.

c. Not more than 10 house laterals contribute to the 6" portion.

2.2 Minimum Sewer Slopes

2.21 Purpose

Minimum slope requirements are necessary to assure self-cleansing and self-oxidizing velocities in order to avoid significant generation of hazardous, odorous, and corrosive sulfur compounds.

2.22 Minimum Slopes

Slopes of sewers shall equal or exceed those set forth in the following table:

Pipe Diameter	Corrosion Resistant Sewer Pipe Material (Sec. 3.41)	Other Sewer Pipe Material (Sec. 3.42)
6"	0.0080	0.0100
8"	0.0040	0.0088
10"	0.0028	0.0060
12"	0.0024	0.0056
14"	0.0020	0.0048
15"	0.0020	0.0044
16"	0.0016	0.0040
18"	0.0016	0.0036
20"	0.0012	0.0032
21"	0.0012	0.0028
24"	0.0012	0.0024
27"	0.0012	0.0020
30"	0.0012	0.0016
33"	0.0012	0.0016
36"	0.0012	0.0012

2.23 Substandard Slopes

Slopes below the minimum slopes may be used in order to avoid pumping only upon specific approval of the Engineer. Such approval should be solicited well in advance of completion of design.

2.24 Pipe for Substandard Slopes

Pipe, in substandard slope areas and pipe in all areas downstream from substandard slope areas to the point where the peak flow rate is four times that in the section with substandard slope, shall be corrosion-resistant sewer pipe in accordance with Section 3.41.

2.3 Sewer Location

2.31 Roads

The centerline of sewers constructed in County roads shall not be closer than 4 feet to the centerline of the road nor closer than 4 feet to the curb. On divided highways, a separate sewer shall be installed to serve each side of the highway. Exceptions to these location requirements may be made only on approval of the Engineer.

The Specific Plan provides a variety of housing types and residential densities. Additionally, the plan provides for a 14+ acre public park along High Street. Private recreation and open space lands are also integrated throughout the plan. A statistical summary of the land use mix is provided in Table 2-1 and the Land Use Plan is illustrated in Figure 2-1.

TABLE 2-1 LAND USE SUMMARY

Planning Area	Land Use Category	Land Use Description	Gross Area (Acres)	Net Area (Acres)	Units	Maximum Density (du/net ac)
Single-Family Residential						
1	RPD-3U	Single-family Residential	55.41	28.90	81	2.8
2	RPD-6U	Single-family Residential	59.76	35.70	188	5.3
3	RPD-11U	Mixed Residential	32.80	24.90	250	10.1
4	RPD-22U	Multi-family Residential	16.247	10.80	236	21.9
Total Residential			**164.44**	**100.3**	**755**	**7.53**
Other Uses						
5		Water Quality Treatment	2.33			
Park A&B		High Street Park	14.11			
6		Open Space Lot	28.78			
Other		Roadways, Detention Areas, Open Space and other Public Facilities	63.31			
Total Other			**106.20**			
Project Total			**270.64**		**755**	**2.79 (Gross Density)**



Figure 2-1: Illustrative Land Use Plan

3.2.2 Wastewater System

The Ventura County Waterworks District No. 1 will provide sanitary sewer service for the project site. The existing wastewater collection system is a gravity-collection system. The nearest wastewater lines to the project site are along Gabbert Road and Poindexter Avenue. Two sewer lines in Gabbert Road (12-inch) and Poindexter Avenue (18-inch) will provide sewer service for the project site. Both lines drain through a network of pipelines to the existing 27-inch wastewater trunk line along the north levee of the Arroyo Simi flood control channel. The District's Wastewater Master Plan does not indicate any current deficiencies in the system. The exact configuration of the sewage collection system for the project will be determined at the time individual tract maps are prepared for each phase of the Specific Plan. Figure 3-3 illustrates the proposed Wastewater System.

District No. 1 requires that new development wastewater systems connect to the District's existing wastewater system. Any developer constructing a new wastewater line is required to coordinate the construction and dedication of any such wastewater system with District No. 1 for future operation and maintenance. It would then be the responsibility of the District to upgrade the wastewater collection and treatment system by providing relief for existing trunk lines nearing capacity and expanding treatment facilities.

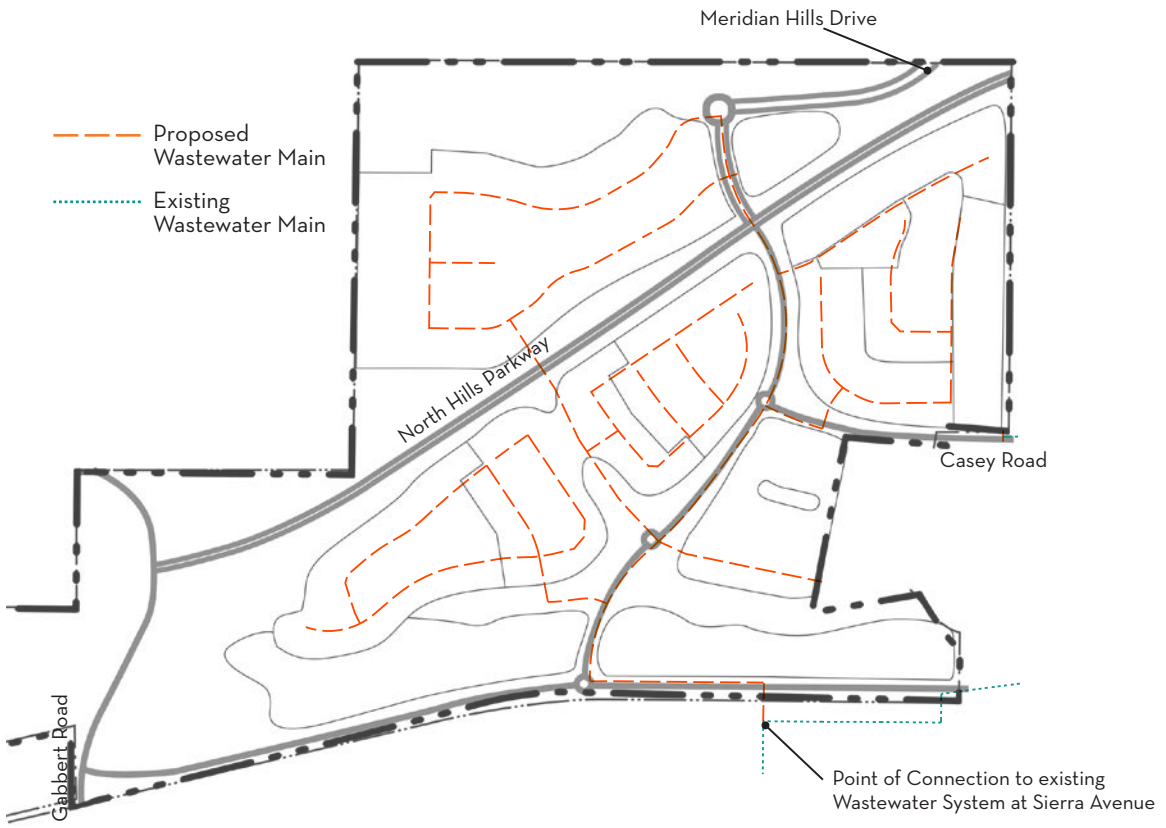


Figure 3-3: Wastewater System

APPENDIX M

Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM

NORTH RANCH RESIDENTIAL PROJECT
MOORPARK, CA

Prepared for:

CITY OF MOORPARK
799 Moorpark Avenue
Moorpark, California 93021

Prepared by:

CHAMBERS GROUP, INC.
600 West Broadway, Suite 350
Glendale, California 91204

September 2022

MITIGATION MONITORING AND REPORTING PROGRAM

Public Resources Code, Section 21081.6 (Assembly Bill 3180) requires that mitigation measures identified in environmental review documents prepared in accordance with California Environmental Quality Act (CEQA) are implemented after a project is approved. Therefore, this Mitigation Monitoring and Reporting Program (MMRP) has been prepared to ensure compliance with the adopted mitigation measures during the construction and operational phase of North Ranch Residential Project.

The City of Moorpark is the agency responsible for implementation of the mitigation measures identified in the MND. This MMRP provides the City of Moorpark with a convenient mechanism for quickly reviewing all the mitigation measures including the ability to focus on select information such as timing. The MMRP includes the following information for each mitigation measure:

- The phase of the project during which the required mitigation measure must be implemented;
- The phase of the project during which the required mitigation measure must be monitored; and
- The enforcement agency.

The MMRP includes a checklist to be used during the mitigation monitoring period. The checklist will verify the name of the monitor, the date of the monitoring activity, and any related remarks for each mitigation measure.

MITIGATION MONITORING AND REPORTING PROGRAM North Ranch Residential Project							
Mitigation Measure	**Implementation Phase**	**Monitoring Phase**	**Enforcement Agency**	**Level of Significance After Mitigation**	**Verification of Compliance**		
					Initial	**Date**	**Remarks**
Air Quality							
MM-AQ-1: The developer shall ensure that all onsite vehicles and equipment with horsepower greater than 50 shall meet, at a minimum, EPA Tier IV final engine certification requirements. If Tier IV final equipment is not available, the contractor may apply other technologies available for construction equipment such that it would achieve a reduction in NOx and particulate matter emissions comparable to that of Tier IV final construction equipment. Where alternatives to EPA Tier IV are utilized, the contractor shall be required to provide evidence that these alternative technologies would achieve comparable emissions reductions. Certifications or alternative reduction strategies shall be required prior to receiving a construction permit.	Prior to construction	Construction	Planning Department	Less than Significant			
MM-AQ-2: The developer shall ensure that the architectural coating activities shall be phased such that they extend for a minimum of 150 days over the duration of the Project construction.	Prior to construction	Construction	Planning Department	Less than Significant			
Biological Resources							
MM-BIO-1: If it is feasible, the clearing of vegetation and construction activities will be conducted between August 31st and February 1st, which is outside of the typical breeding/fledging season for the sensitive bird species and migratory birds that may nest on or in the immediate vicinity of the Project site. If clearing of vegetation and construction activities within the selected projects are planned between February 1st and August 31st, then breeding bird surveys will be conducted by qualified biologists at a maximum of two (2) weeks prior to the commencement of activities. Nests and birds exhibiting breeding behavior will be identified within 500 feet of the area to be impacted and efforts will be made (including the creation of appropriate buffers around the nests and areas used by breeding birds, rerouting vehicular traffic, limiting the number of vehicles, the use of non-mechanized tools, etc.) to limit disturbances to the nests. A qualified biologist will monitor the identified nests and birds exhibiting breeding behavior during the duration of the work or until successful fledging occurs, whichever comes first. If the monitor notes that identified birds and nests are being negatively affected by the construction activity, then the buffers will be increased to an appropriate distance to ensure fledging is successful. After the completion of the construction activities or the completion of onsite breeding activities, a letter report summarizing the work and its effect on the breeding birds will be produced and submitted to the CDFW.	Prior to construction	Prior to and during construction	Planning Department / CDFW	Less than Significant			

MITIGATION MONITORING AND REPORTING PROGRAM North Ranch Residential Project							
Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance		
					Initial	Date	Remarks
MM-BIO-2: Prior to the commencement of ground disturbance or vegetation removal activities, including but not limited to grubbing, grading, and fuel modification, two preconstruction surveys for special-status wildlife species, including coast horned lizard, coastal western whiptail, California glossy snake (Arizona elegans occidentalis), Coast patch-nosed snake, and western spadefoot, by a qualified biologist(s) to determine presence/absence of these species at the site. The first survey shall be conducted within 14 days and the second survey shall be conducted within three days of commencement of ground or vegetation disturbing activities. These surveys should coincide with weather conditions that are conducive for each species; sunny late-spring or summer days with above-average temperatures for, coast horned lizard, coastal western whiptail California glossy snake and the Coast patchnosed snake spadefoot. If the any of the four species are found to occur onsite during the additional surveys, then Mitigation Measure BIO-3 shall be instituted.	Prior to construction	Prior to construction	Planning Department/ CDFW	Less than Significant			
MM-BIO-3: If any individual of the four species are found during the survey, then a salvage program will be initiated for the site. The salvage program will consist of the capture of individuals from the area to be impacted by the Project implementation and their relocation to a predetermined offsite location, which has CDFW's approval, with appropriate habitat that will not be impacted by the Project activities or other construction activities in the vicinity. Time allowed for the salvage program will be determined by the size of the Project site and the abundance of the species that are found onsite. The salvage program will continue with the monitoring of the initial ground disturbance construction activities. The salvage program will conclude when all of the ground within the grading limits has been affected by construction activities. After the completion of the salvage program a letter report summarizing the surveys and salvage opportunities will be prepared and submitted to the CDFW.	Prior to construction	Prior to construction	Planning Department/ CDFW	Less than Significant			
MM-BIO-4: Prior to the initiation of any grading and during initial grubbing and topsoil salvage, biologists shall attempt to capture and relocate all reptiles within the impact area. Other ground dwelling wildlife, i.e. amphibians and mammals, shall be relocated if the opportunity presents itself. Wildlife shall be relocated to preserved areas of the site when appropriate or to nearby (in the same watershed) permanent open space areas. It is assumed that a two-person team can adequately salvage the reptiles on the entire site in half a day.	Prior to construction	Prior to construction	Planning Department	Less than Significant			
MM-BIO-5: To reduce impacts resulting from construction vehicle traffic, routes and trips shall be restricted to a minimum number. Earth-moving equipment shall be confined to the narrowest possible corridor during construction. Earth-moving and other construction equipment shall be confined to the Project footprint and shall not operate or maneuver in areas outside the Project footprint. The entire edge of grading shall be fenced with brightly colored "snow fence" or similar material. This shall serve to alert equipment operators of the grading limits. All vehicle access shall be via areas within the impact zone. No temporary access roads shall be made through portions of the site that shall be preserved as natural open space.	During construction	During construction	Planning Department	Less than Significant			
MM-BIO-6: The construction of litter barriers (i.e.: walls or small mesh-chain link fence) around the Project site shall be accomplished in order to limit the progression of litter into the open spaces of the Project area or surrounding areas. Continuous deflective separation units shall be installed in the storm drain inlets to remove gross pollutants from storm water.	During construction	During construction	Planning Department	Less than Significant			

MITIGATION MONITORING AND REPORTING PROGRAM North Ranch Residential Project							
Mitigation Measure	**Implementation Phase**	**Monitoring Phase**	**Enforcement Agency**	**Level of Significance After Mitigation**	**Verification of Compliance**		
					Initial	**Date**	**Remarks**
MM-BIO-7 In order for any remaining unmodified natural open space within or adjacent to the Project site to continue to function as a natural part of the regional ecosystem to the greatest extent possible, the applicant shall develop a management plan for the protection and maintenance of remaining onsite open space areas. The plan shall be incorporated into the CC & R's for the tract and shall contain at least the following elements: • Goals and Objectives • Permitted and Prohibited Uses • Exotic Plant and Animal Management • Litter Management • Responsible Parties • Funding • Enforcement and Penalties • Trespass Remediation • Contingencies The Project's Homeowners Association is expected to be the long-term owner of the any remaining unmodified natural open space and would be responsible for any necessary maintenance.	Prior to construction	During operation	Planning Department	Less than Significant			
MM-BIO-8: To reduce coastal sage scrub loss resulting from fuel modification, a fuel modification zone shall be developed to restrict brush clearance to the minimum distance specified by the Ventura County Fire Department. Clearance distances shall take into account the presence of any block walls used between developable areas and the adjacent native habitat areas.	Prior to construction	During construction and operation	Planning Department	Less than Significant			
MM-BIO-9: Any coastal sage scrub that is remaining after full Project development will be preserved and enhanced. Any natural open space areas (excluding areas of mule fat scrub and southern alluvial fan scrub) and not affected by fuel modification requirements will be used for the creation of coastal sage scrub. Details of the proposed restoration and creation efforts and success criteria shall be described in a Mitigation and Monitoring Plan that is to be approved by CDFW prior to implementation.	Post construction	During operations	Planning Department/ CDFW	Less than Significant			

MM-BIO-10: Grading and fuel modification impacts to the California brittle bush scrub plant community shall be compensated by restoration of in-kind habitat in an area(s) to be preserved as permanent open space. To the extent possible, this shall be accomplished by the on-site restoration of disturbed habitats (e.g., non-native grassland) in-kind habitats. Restoration should be implemented only where suitable conditions exist to support viable in-kind habitats. If on-site restoration is not possible, compensation for the loss or modification of the California brittle bush scrub communities may be accomplished by off-site restoration of in-kind habitat or by a contribution to an in-lieu fee program approved by the City of Moorpark. A Mitigation and Monitoring Plan shall be developed by a qualified biologist, restoration ecologist, or resource specialist, and approved by the City of Moorpark prior to issuance of the grading permit for the Project. In broad terms, the plan shall at a minimum include: • Description of the project/impact and mitigation sites • Specific objectives • Success criteria • Plant palettes • Implementation plan • Maintenance activities • Monitoring plan Contingency measures/adaptive management Success criteria shall at a minimum be evaluated based on percent cover of planted native species, as well as control of invasive plant species within the restoration area. The performance standards for the Mitigation and Monitoring Plan shall be at a minimum the following: • Within five years after introducing the native plants to the mitigation site, the acreage of restored California brittle bush scrub shall be no less than the acreage lost to project construction. • Within five years after introducing the native plants to the mitigation site, the absolute cover of native species shall be no less than 80% within the restoration area. • Non-native species in the treated area shall be less than 15% relative cover by the end of the third year of treatment and less than 5% relative cover by the end of the fifth year of treatment; and, • Restoration will be considered successful after the success criteria have been met for a period of at least 2 years without any maintenance or remediation activities other than invasive species control. The restoration project shall be initiated prior to development of the Project, and shall be implemented over a five-year period. The restoration project shall incorporate an iterative process of annual monitoring and evaluation of progress, and allow for adjustments to the restoration plan, as necessary, to achieve desired outcomes and meet success criteria. Annual reports discussing the implementation, monitoring, and management of the restoration project shall be submitted to the City of Moorpark. Five years after Project start, a final report shall be submitted to the City, which shall at a minimum discuss the implementation, monitoring, and management of the restoration project over the five-year period, and indicate whether the restoration project has been successful based on established success criteria. The annual reports and the final report shall include as-built plans submitted as an appendix to the report. The project shall be extended if success criteria have not been met at the end of the five-year period to the satisfaction of the City.	Prior to issuance of Grading Permit	During operation	Planning Department	Less than Significant			

MITIGATION MONITORING AND REPORTING PROGRAM North Ranch Residential Project							
Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance		
					Initial	Date	Remarks
If impacts to the California brittle bush scrub are to be mitigated by a contribution of an in-lieu fee, the applicant shall provide evidence of payment of the in-lieu fee prior to issuance of the grading permit. The fee shall be based on the cost per acre to restore or create in-kind habitat and the acreage of the plant community impacted. In-lieu fees shall be used for the restoration of in-kind habitat.							
MM-BIO-11 To eliminate potential unapproved or offsite grading incidents earth-moving equipment shall be confined to within the approved limits of grading during construction. The limits of grading shall be fenced so that construction equipment does not impact areas outside the approved limits of grading.	During construction	During construction	Planning Department	Less than Significant			
MM-BIO-12 Prior to issuance of the grading permit, the Applicant shall prepare and submit a Streambed Alteration Notification package to the CDFW for alterations to CDFW jurisdictional streambed and habitat. A Streambed Alteration Agreement shall be entered into with the CDFW under Section 1602 of the California Fish and Game Code, and the Applicant shall comply with the associated conditions. Prior to issuance of the grading permit, the Applicant shall also consult with RWQCB and United States Army Corps of Engineers (USACE) to determine if permits are required from those agencies. If required, the appropriate permits shall be obtained from the RWQCB and/or USACE, and the Applicant shall comply the permit conditions. The Applicant shall provide evidence to VCDRP that the required permits have been obtained prior to issuance of a grading permit. Mitigation for unavoidable impacts to jurisdictional waters and habitat shall be provided through implementation of the Habitat Mitigation and Monitoring Plan as required by MM-BIO-13.	Prior to issuance of Grading Permit	During construction and operations (if restoration/offsite mitigation is required)	Planning Department/ CDFW/ USACE/ RWQCB	Less than Significant			

MM-BIO-13 A habitat mitigation and monitoring plan shall be developed prior to issuance of any building or grading permit. The plan shall mitigate for permanent grading impacts to 0.24 acre (1,155 linear feet) of RWQCB waters of the State/CDFW streambed at a 2:1 ratio. The Habitat Mitigation and Monitoring Plan shall mitigate for the permanent impacts to jurisdictional areas via an acceptable mitigation approach that involves one or a combination of the onsite or offsite enhancement of degraded in- kind habitats subject to the approval of the City of Moorpark, CDFW, and RWQCB (if applicable). The preferred mitigation approach is enhancement of on-site or off-site habitats within the ephemeral drainage, including plantings of appropriate native species and weed removals. The final Habitat Mitigation and Monitoring Plan shall be developed by a qualified biologist, restoration ecologist or resource specialist and submitted to and approved by the City of Moorpark, CDFW, and RWQCB prior to issuance of a grading permit for the Project. In broad terms, this Program shall at a minimum include: ▪ Description of the Project/impact and mitigation sites; ▪ Specific objectives; ▪ Success criteria; ▪ Plant palette; ▪ Implementation plan; ▪ Maintenance activities; ▪ Monitoring plan; and ▪ Contingency measures. Success criteria shall at a minimum be evaluated based on appropriate survival rates and percent cover of planted native species, which shall be determined by examining reference sites, as well as eradication and control of invasive species within the restoration or enhancement area. The target species and native plant palette, as well as the specific methods for evaluating whether the Project has been successful at meeting the above-mentioned success criteria shall be determined by the qualified biologist, restoration ecologist, or resource specialist and included in the mitigation plan. The mitigation project shall be initiated prior to development of the Project. The mitigation project shall be implemented over a five-year period and shall incorporate an iterative process of annual monitoring and evaluation of progress and allow for adjustments to the program, as necessary, to achieve desired outcomes and meet success criteria. Annual reports discussing the implementation, monitoring, and management of the mitigation project shall be submitted to the City of Moorpark, RWQCB, and CDFW. Five years after Project start, a final report shall be submitted to the City of Moorpark, RWQCB, and CDFW, which shall at a minimum discuss the implementation, monitoring, and management of the mitigation project over the five-year period and indicate whether the mitigation project has been successful based on established success criteria. The annual reports and the final report shall include as-built plans submitted as an appendix to the report. Restoration or enhancement will be considered successful after the success criteria have been met for a period of at least 2 years without any maintenance or remediation activities other than invasive species control. The mitigation project shall be extended if success criteria have not been met at the end of the five-year period to the satisfaction of the City of Moorpark, RWQCB, and CDFW.	Prior to issuance of building or grading permits	During operation	Planning Department/ CDFW/ RWQCB	Less than Significant			
Cultural Resources							

MITIGATION MONITORING AND REPORTING PROGRAM North Ranch Residential Project							
Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance		
					Initial	Date	Remarks
MM-CUL-1: A qualified archaeological monitor will periodically spot-check monitor Project ground disturbance activities to ensure that sensitive archaeological artifacts, features, or deposits are not being encountered. Spot-check monitoring will take place three (3) times a week for the duration of the Project grading and subsurface disturbance within native soils. Daily monitoring reports will be generated and submitted to the City at the end of ground disturbance as proof of compliance. If prehistoric or older historic (pre-1950s) archaeological material or features are discovered, either by the archaeological monitor or by the construction team when the monitor is not present, then a project "discovery" protocol will be followed. The discovery of material will also trigger the increasing of monitoring to full-time until no more cultural material is being encountered by the construction team, at which point spot-check monitoring will resume.	During construction	During construction	Planning Department	Less than Significant			
Geology and Soils							
MM-GEO-1: Fill soils shall be compacted to a minimum of 90 percent relative compaction. In area of fill exceeding 40 feet in vertical thickness, all tests achieve a minimum relative compaction of 95 percent. An updated seismic settlement analyses shall be completed once the 40-scale grading plan is available. Removal of the upper 10 feet of Alluvium shall occur prior to placement or fill regardless if any overlying artificial fill is planned within areas of planned structures.	During construction	During construction	Planning Department	Less than Significant			
MM-PALEO-1 Prior to issuance of a Zoning Clearance for a grading permit, the applicant shall be required to obtain the services of a qualified project paleontologist to remain on-call for the duration of the proposed ground disturbing construction activity. The paleontologist selected must be approved in writing by the Community Development Director. Upon approval or request by the Community Development Director, a paleontological mitigation plan (PMP) outlining procedures for paleontological data recovery shall be prepared for the Proposed Project and submitted to the Community Development Director for review and approval. The development and implementation of the PMP shall include consultations with the Applicant's engineering geologist as well as a requirement that the curation of all specimens recovered under any scenario shall be through the Los Angeles County Museum of Natural History. All specimens become the property of the City of Moorpark unless the City chooses otherwise. If the City accepts ownership, the curation location may be revised. The PMP shall include developing a multilevel ranking system, or Potential Fossil Yield Classification (PFYC), as a tool to demonstrate the potential yield of fossils within a given stratigraphic unit. The PMP shall outline the monitoring and salvage protocols to address paleontological resources encountered during ground disturbing activities. As well as the appropriate recording, collection, and processing protocols to appropriately address any resources discovered. The cost of data recovery is limited to the discovery of a reasonable sample of available material. The interpretation of reasonableness rests with the Community Development Director.	Prior to issuance of a Grading Permit	During construction	Community Development Department	Less than Significant			
MM-PALEO-2 At the completion of all ground-disturbing activities, the project paleontologist shall prepare a final paleontological mitigation report summarizing all monitoring efforts and observations, as performed in line with the PMP, and all paleontological resources encountered, if any. As well as providing follow-up reports of any specific discovery, if necessary.	After completion of ground-disturbing activities	During construction	Community Development Department	Less than Significant			
Transportation							

MITIGATION MONITORING AND REPORTING PROGRAM North Ranch Residential Project							
Mitigation Measure	Implementation Phase	Monitoring Phase	Enforcement Agency	Level of Significance After Mitigation	Verification of Compliance		
					Initial	Date	Remarks
MM-TRA-1: Electric Vehicle Charging/Parking Spaces: The Project would install electric vehicle charging and parking stations within each garage for the initial 134 units.	Prior to operation	Prior to operation	Planning Department	Less than Significant			
MM-TRA-2: Metrolink Incentives: The Project shall provide incentives for the Project residents and other potential users of the station to utilize the public transit system. The Proposed Project shall include enhanced features at the Metrolink station such as bicycle storage lockers to supplement the existing bike racks at the station.	Prior to operation	Prior to operation	Planning Department	Less than Significant			
MM-TRA-3: Pedestrian Connectivity. The Project shall install on-site sidewalks and provide connections to the existing/future off-site pedestrian network.	During construction	During construction	Planning Department	Less than Significant			